



Joint Service REGULATION

Defense Logistics Agency (DLA)	DLAR 4145.11
Department of the Air Force	AFJMAN 23-209
Department of the Army	TM 38-410
Department of the Navy	NAVSUP PUB 573
United States Marine Corps	MCO 4450.12A

Effective Date: March 4, 2020

OPR: DLA Logistics Operations (J3), J344

SUBJECT: Storage and Handling of Hazardous Materials

REFERENCES: See Enclosure 1.

1. PURPOSE:

a. In accordance with (IAW) Defense Logistics Agency Instruction 5025.01, this regulation cancels DLAI 4145.11/TM 38-410/NAVSUP PUB 573/MCO 4450.12A/ AFJMAN 23-209 (Enclosure 1 (b)) and reissues this publication to update policy, responsibility, and procedures for the Storage and Handling of Hazardous Materials.

b. Replaces and cancels DLAI 1515, "Storage and Handling of Hazardous Materials".

c. This regulation establishes uniform procedures and prescribes supply procedures and responsibilities for the receipt, storage, use, inspection, transportation, and handling of hazardous materials for all Department of Defense (DoD) components, installations and supply activities. These standards can only be applied to shop-level stock through local policy. Services may provide further clarifying guidance on applicability of these procedures to base operations. In depth, guidance and details are covered in Enclosure 1, reference (au), Part II, chapters 204 and 208, and Enclosure 1, (r).

d. This process is intended to improve operational safety, workforce confidence and compliance with legal requirements pertaining to storage and handling of hazardous materials. The focus of the activities conducted during hazardous materials processing is on ensuring that distribution operations are efficient, effective, safe, and compliant; and that customer orders for these items are satisfied at the right price, at the right time. Use in conjunction with pertinent Service/Agency Hazardous materials procedures, regulations, manuals, and guidance documents to support safe, effective and environmentally sound management of hazardous materials throughout their life cycle. These procedures are designed to assure optimum personnel safety by all DoD activities. It applies to packaged items that are supplied with regulated hazardous ingredients as compounds, mixtures or pure substances. For the purpose of this regulation, a Hazardous material is any chemical, bare item, or article that is regulated by Title 10, Chapter I, Part 40, Section 40.4 - Nuclear Regulatory Commission (NRC); Title 29, Subtitle B, Chapter XVII, Part 1910, Subpart A, Section 1910.6 – Occupational Safety and Health Administration (OSHA); Title 40, Chapter I, Part 2, Subpart B, Section 2.306 – Environmental Protection Agency (EPA); Title 49, Chapter I, Part 171, Section 171.8 – Department of Transportation; International Maritime Organization (IMO); International Air Transport Association (IATA), International Civil Aviation Organization (ICAO); and AFMAN 24-204//TM 38-250/NAVSUP PUB 505/MCO P4030.19/ DLAI 4145.3, Preparing Hazardous Materials For Military Air Shipment.

e. The information herein provides guidance and direction in the storage and handling of hazardous materials normally procured, stocked, and used within the DoD. It serves as a source of technical knowledge regarding the management of hazardous materials, especially for warehouse personnel. For this reason it touches a number of topics, such as packaging, transportation and safety and health that are covered in other DoD documents (e.g. DTR, Part II, Chapter 208; Packaging and Handling, DTR, Part II, Chapter 204: Hazardous Material, and DLAR 4145.41; Packaging of Hazardous Materials). For these areas, it is a source of information for general knowledge and general awareness to assist these personnel in performing their jobs more effectively and is not intended to replace or supersede pertinent DoD documents (e.g. DTR, Part II, Chapter 208; Packaging and Handling, DTR, Part II, Chapter 204: Hazardous Material, and DLAR 4145.41; Packaging of Hazardous Materials). This document does not address the many more hazardous materials used in the commercial industry. Some of these unaddressed hazardous materials may find their way into the military system. Some of these materials may be extremely hazardous. Identify and isolate these materials in a protected location away from any non-compatible materials until specific direction on their safe handling and storage can be established.

f. Radioactive commodities in the DoD supply system are covered in detail in Enclosure 1, (c).

g. Compressed gases and cylinders in the DoD supply system are covered in detail in Enclosure 1, (w).

2. SUMMARY OF CHANGES: Changes include updated references, updated placards and labeling, samples of Safety Data Sheets and samples of various required forms.

3. APPLICABILITY:

a. This regulation applies to all DoD/DLA components that receive, store, issue, use, maintain, recondition, and perform associated services with or containing hazardous materials or hazardous waste. For enduring and non-enduring locations outside the United States, this regulation applies to the extent it does not conflict with the provisions of whichever of the following apply: international agreements, the Overseas Environmental Baseline Guidance Document (OEBGD), country specific Final Governing Standards (FGS), Geographic Combatant Command policy and environmental annexes to operation orders (OPORDs), operation plans (OPLANs), or other operational directives.

b. This regulation may be supplemented at the major command, installation, and activity levels, subject to Service Component policy/guidance.

4. DEFINITIONS: See Glossary.

5. POLICY: It is policy that:

a. Hazardous materials be received, stored, issued and handled as uniformly as possible and IAW applicable laws and DoD policy.

b. DoD personnel will be protected from accidental death, injury, or occupational illness pursuant to Enclosure 1 (aj) of the enclosure.

c. DoD personnel strictly adhere to policy and procedures pertaining to commodities/ materials IAW guidelines provided in the references enclosure of this regulation and with Federal, State, and local regulations.

d. The Safety Data Sheet (SDS) or product information will be acquired or developed and entered into the Hazardous Materials Information Resource System (HMIRS)/enterprise data repository as required by Enclosure 1, (ac) before the first delivery arrives at its first destination.

All hazardous items will be recognizable by their packaging labels and markings for the purpose of conveying product hazards in accordance with 29 CFR 1910.1200 and discrimination from non-hazardous items. The identification process for hazardous items will be detailed enough to match differently formulated items of the same National Stock Number (NSN) with the precise SDS that applies to it. This process will be capable of being automated by receiving, shipping, and trans-shipment activities.

e. Priority will be given to the supply of environmentally friendly or non-hazardous substitutes without affecting customer requirements.

f. Long-term storage (more than 6 months) of hazardous materials will be reduced as much as possible. Keep daily storage levels to a minimum without diminishing customer support or affecting mission requirements.

g. On-hand quantities will be managed IAW the DoD shelf-life policy and practices Enclosure 1, (l), and the generation of hazardous waste will be minimized to the extent practicable. Hazardous waste when generated, will be handled within DoD guidelines (Enclosure 1, (cc) for hazardous waste managed and disposed in the United States and Enclosure 1, (cb) for hazardous waste managed and disposed at enduring installations outside the United States).

h. Accomplish the movement of hazardous materials by the most direct means possible and with the least amount of handling to reduce product and facility damages and potential harm to personnel and the environment.

i. Facility operators will participate in and promote sound personal, occupational safety, environmental protection, and community relations relative to the proper storage, handling, and management of hazardous material.

j. At locations outside the United States, DoD personnel strictly adhere to policy and procedures pertaining to commodities/materials IAW guidelines provided in the references enclosure in this regulation to the extent it does not conflict with provisions of applicable international agreements. Apply the appropriate OEBGD, FGS, Combatant Command (COCOM) policy, and environmental annexes to operational directives.

k. Services/Agencies are required to provide information on any known policy/regulations/guidance changes involving commodities/materials pertaining to this regulation to the Program Manager, DLA HQ.

6. RESPONSIBILITIES: See Enclosure 2.

7. PROCEDURES:

a. ENCLOSURE 1 “REFERENCES” provides the procedures for the storage and handling of hazardous materials. These references provide policy, guidelines, applicable Federal laws that govern the use, handling, storage, transportation and disposal of hazardous materials. Laws, regulations and policy are constantly changing; therefore, it is imperative to review and verify such changes periodically to ensure you are acting IAW the latest requirements.

b. It is recommended when unsure if in compliance, to contact the local environmental, safety and occupational health offices and/or installation designated legal advisor regarding the various legal requirements, or to ensure that a particular action/plan/approach is legally sound.

c. Refer to Enclosure 3 for detailed procedures.

8. INFORMATION REQUIREMENTS: None.

9. RELEASABILITY: UNLIMITED. This regulation is approved for public release and is available on the Internet from the DLA Issuances Internet Website (<https://issuances.dla.mil/pages/default.aspx>).

10. INTERNAL CONTROLS: The internal management control requirements (see Responsibilities and Procedures) are subject to evaluation, testing, and approval.

11. EXPIRATION DATE: We will reissue or cancel this Joint Service DLAR by the fifth anniversary of its publication date. If not, it will automatically expire effective March 4, 2030.

On behalf of the DLA Director:

For: WILLIAM M. BOWERS
Director
DLA Transformation

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ENCLOSURE 1: REFERENCES

- (a) DLAI 5025.01, "Management of Policies and Procedures", Latest Revision
- (b) DLAR 4145.11/AFJMAN 23-209/TM 38-410/NAVSUP PUB 573/MCO 4450.12A, "Storage and Handling of Hazardous Materials," February 1990 (hereby cancelled)
- (c) Title 10 CFR Energy, "Nuclear Regulatory Commission"¹
- (d) Title 29 CFR, "Occupational Safety and Health, Department of Labor"²
- (e) Title 40 CFR, "Protection of Environment, Environmental Protection Agency"³
- (f) Title 49 CFR, "Transportation, Department of Transportation"⁴
- (g) IMO International Maritime Organization⁵
- (h) International Air Transport Association (IATA)⁶
- (i) International Civil Aviation Organization (ICAO) Technical Instructions⁷
- (j) International Maritime Dangerous Goods Code (IMDG Code)⁸
- (k) DLAI 4145.3/AFMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19, "Preparing Hazardous Materials for Military Air Shipment", Latest Revision
- (l) DoD 4140.27-M, "Shelf-Life Item Management Manual", (Superseded by 4140.27 Volume 1 and Volume 2, Latest Revision
- (m) DoD 4160.21-M, "Defense Materiel Disposition Manual", Latest revision
- (n) Canadian Government Transport of Dangerous Goods (TDG)⁹
- (o) FED-STD-313E, Federal Standard 313E, "Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities", Latest Revision
- (p) Title 42 CFR, "Public Health"¹⁰
- (q) MIL-STD-129R, "Military Marking for Shipment and Storage", Latest Revision
- (r) DLAR 4145.41/AR 700-143/NAVSUPINST 4030.55C/AFM 24-210/MCO 4030.40, "Packaging of Hazardous Materials," Latest Revision

¹ Title 10 CFR, <http://www.ecfr.gov/cgi-bin/ECFR?page=browse>

² Title 29 CFR <http://www.ecfr.gov/cgi-bin/ECFR?page=browse>

³ Title 40 CFR <http://www.ecfr.gov/cgi-bin/ECFR?page=browse>

⁴ Title 49 CFR <http://www.ecfr.gov/cgi-bin/ECFR?page=browse>

⁵ IMO <http://www.imo.org/en/Pages/Default.aspx>

⁶ IATA <http://www.iata.org/Pages/default.aspx>

⁷ ICAO <http://www.icao.int/Pages/default.aspx>

⁸ IMDG <http://www.imo.org/en/Publications/IMDGCode/Pages/Default.aspx>

⁹ Canadian Government Transport of Dangerous Goods (TDG) tr dg goods
<https://www.tc.gc.ca/eng/tdg/clear-menu-497.htm>

¹⁰ Title 42 CFR <http://www.ecfr.gov/cgi-bin/ECFR?page=browse>

- (s) ANSI Z129.1 American National Standards Institute for Hazardous Industrial Chemical-Precautionary Labeling¹¹
- (t) MIL-STD-3004-1, "Quality Assurance/Surveillance", Latest Revision
- (u) MIL-STD-147E, "Palletized Unit Loads", Revision E with Change 1, Latest Revision
- (v) DRMS-M 6050.1, "Environmental Considerations in DRMS Disposal Process"
- (w) DLAI 4145.25/AR 700-68/NAVSUPINST 4440.128/MCO 10330.2C/ AFJMAN 23-227, "Storage and Handling of Liquefied and Gaseous Compressed Gasses and Their Full and Empty Cylinders," Latest Revision
- (x) DLAR 4500.15/NAVSUPINST 4610.33/MCO P4610.19/AR 55-38, "Reporting of Transportation Discrepancies in Shipments", Latest Revision
- (y) DLM 4000.25, "Defense Logistics Management Standards (DLMS), Volume 2, Chapter 17- "Supply Discrepancy Reporting".
- (z) TM 38-400/NAVSUP PUB 572/AFJMAN 23-210/MCO 4450.14/DLAM 4145.12, "Joint Service Manual for Storage and Materials Handling," Latest Revision
- (aa) MIL-STD-3007F, "Standard Practice for Unified Facilities Criteria and Unified Facilities Guide Specifications, Latest Revision.
- (ab) UFC 4-442, Latest Revision
- (ac) DoDi 6050.05 Change 1, "DoD Hazard Communication Program", Latest Revision.
- (ad) DLAI 4145.8/AR 700-64/NAVSUPINST 4000.34/AFJI 23-504/MCO P4400.105, "Radioactive Commodities in the DoD Supply Systems," Latest Revision
- (ae) NFPA STD 43A, "Code for the Storage of Liquefied and Solid Oxidizers", (Revised and Renumbered to ANSI/NFPA 430-1995)¹²
- (af) National Safety Council Data Sheet (NSCDS) 1-523, Rev 81," Chemical Burns", NSCDS 1-523-Rev 81¹³
- (ag) DoDi 6055.5, "Occupational Health Surveillance Manual Reprint", (Reissued by 6055.05, Latest Revision
- (ah) NFPA STD 231C, (This document was withdrawn in Annual 1999 and incorporated into NFPA 230)¹⁴
- (ai) NFPA STD 30, "Flammable and Combustible Liquids Code", 2015¹⁵

¹¹ ANSI Z129.1, https://global.ihs.com/doc_detail.cfm?document_name=ANSI%20Z129.1

¹² NFPA STD 43A, <http://infostore.saiglobal.com/store/details.aspx?ProductID=953677>

¹³ <http://www.nsc.org/Membership%20Site%20Document%20Library/495.pdf>

¹⁴ NFPA 230: Standard for the Fire Protection of Storage, <http://www.nfpa.org/codes-and-standards/all-codes-and-standards/free-access>

¹⁵ <http://www.nfpa.org/codes-and-standards/all-codes-and-standards/free-access>

- (aj) ANSI/NFPA STD 101, “NFPA 101: Life Safety Code”, 2015¹⁶
- (ak) DoDi 6055.01 Change 1, “Department of Defense Safety and Occupational Health Program”, Latest Revision
- (al) Title 16, “U.S. Code: Title 16 – CONSERVATION”¹⁷
- (am) NFPA-15, “Standard for Water Spray Fixed Systems for Fire Protection”¹⁸
- (an) NFPA-70, “National Electrical Code”¹⁹
- (ao) ANSI Z 358.1,
- (ap) NFPA-77, “Recommended Practice on Static Electricity”, 2014²⁰
- (aq) AR700-15/NAVSUPINST 4030.28E/AFMAN 24-206_IP/MCO 4030.33E/DLAR 4145.7, “Packaging of Materiel,” Latest Revision
- (ar) UCMJ, “Uniform Code of Military Justice”²¹
- (as) Federal Personnel Manual (FPM) supplement 751, (FPM 751), “Departmental Personnel Manual 751-1 Discipline”²²
- (at) AFI 36-704/AR CPRS1/NAV CMMI 751.1/MC NCPI 750/DLAR FPM Chapter 751, “Agency Code of Penalties”, Latest Revision
- (au) DoD 4500.9-R, “Defense Transportation Regulation”, Latest Revision
- (av) Uniform and Consolidated Freight Classifications (UCFC) Rule 27²³
- (aw) Association of American Railroads (AAR) Circular No. 42-E, “General Rules Concerning Loading of Carload Shipments of Commodities in Closed Cars” and all AAR pamphlets covering the loading and securing of shipments on open top cars.²⁴
- (ax) MIL-STD-1386 (Navy), “Loading of Hazardous Materials in MILVAN Containers”,

¹⁶ NFPA 101: Life Safety Code, <http://www.nfpa.org/codes-and-standards/all-codes-and-standards/free-access>

¹⁷ U.S. Code: Title 16 – CONSERVATION, <https://www.law.cornell.edu/cfr/text/16>

¹⁸ NFPA 15: Standard for Water Spray Fixed Systems for Fire Protection, <http://www.nfpa.org/codes-and-standards/all-codes-and-standards/free-access>

¹⁹ NFPA 70: National Electrical Code, <http://www.nfpa.org/codes-and-standards/all-codes-and-standards/free-access>

²⁰ NFPA 77: Recommended Practice on Static Electricity, <http://www.nfpa.org/codes-and-standards/all-codes-and-standards/free-access>

²¹ UCMJ, <http://www.au.af.mil/au/awc/awcgate/ucmj.htm>

²² CHAPTER 751 – DISCIPLINE, <http://www.dm.usda.gov/employ/employeerelations/dpm-751-1.htm>

²³ UCFC, <http://www.nmfta.org/pages/nmfc?AspxAutoDetectCookieSupport=1>

²⁴ AAR, <https://www.aar.org/>

Latest Revision

- (ay) National Contingency Plan (NCP)²⁵
- (az) FEMA 10, “Federal Emergency Management Agency planning Guide and Checklist for Hazardous Materials Contingency Plans and Hazardous Materials Planning Guide”,²⁶
- (ba) Transport of Dangerous Goods (TDG) (United Nations), referred to as “Orange Book”²⁷
- (bb) National Pest Control Association (NPCA) 1976, “Managing Pesticide Spills”²⁸
- (be) Armed Forces Pest Management Board (AFPMB) 2009, Technical memorandum Number 15, “Pesticide Spill Prevention and Management”²⁹
- (bd) Environment Canada, 1986, Report EPS 9/SP/2EN Canada, “A Survey of Chemical Spill Countermeasures”³⁰
- (be) US EPA, 1979, EPA-600/9-79-045, “National Pollutant Discharge Elimination System Best management Practices Guidance Document”³¹
- (bf) North American Emergency Response Guidebook³², Latest Revision
- (bg) National Fire Protection Association, FPH1686: “Fire Protection Handbook”³³

²⁵ NCP, <https://www.epa.gov/emergency-response/national-oil-and-hazardous-substances-pollution-contingency-plan-ncp-overview>

²⁶ FEMA-10, <https://training.fema.gov/is/courseoverview.aspx?code=IS-10.a>

²⁷ TDG-UN, <http://www.unece.org/trans/danger/danger.html>

²⁸ NPCA, <https://catalog.hathitrust.org/Record/009663947>

²⁹ AFPMB, <http://www.acq.osd.mil/eie/afpmb/techguides.html>

³⁰ Environment Canada,
[http://library.sl.nsw.gov.au/search~S2?/tReport+\(Canada.+Environment+Canada\)+%3B+EPS+9%2FSP%2F2/treport+canada+environment+canada+eps++++9+sp++++2/-3,-1,0,B/browse](http://library.sl.nsw.gov.au/search~S2?/tReport+(Canada.+Environment+Canada)+%3B+EPS+9%2FSP%2F2/treport+canada+environment+canada+eps++++9+sp++++2/-3,-1,0,B/browse)

³¹

<http://nepis.epa.gov/Exec/ZyNET.exe/9100FCSA.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1981+Thru+1985&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C81thru85%5Ctxt%5C00000017%5C9100FCSA.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C->

<http://nepis.epa.gov/Exec/ZyNET.exe/9100FCSA.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1981+Thru+1985&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C81thru85%5Ctxt%5C00000017%5C9100FCSA.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p%7Cf&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL>

³² <http://www.phmsa.dot.gov/hazmat/outreach-training/erg>

³³ <http://www.nfpa.org/>

- (bh) Hazardous Materials Planning Guide (National Response team) (NRT-1)³⁴, Latest Revision
- (bi) DoDi 5100.52, “Nuclear Weapons Accident Response Procedures (NARP), Latest Revision
- (bj) DoDi 6055.13, “Transportation Accident Prevention and Emergency Response Involving Conventional DoD Munitions and Explosives”, Latest Revision
- (bk) DoDi 6055.08, “Occupational Radiation Protection Program”, Latest Revision
- (bl) AFI 91-203, Air Force Consolidated Occupational Safety Instruction, Latest revision
- (bm) AFI 48-148, ‘Ionizing Radiation Protection’, Latest Revision
- (bn) AFI 90-821, “Hazard Communication (HAZCOM) Program”, Latest Revision
- (bo) DTR 4500.9-R, “Defense Transportation Regulation”, Latest revision
- (bp) DoDD 6055.9, “Explosives Safety Management and the DoD Explosives Safety Board”, Latest revision
- (bq) DoD 5200.1-R, “Information Security Program”, Latest Revision
- (br) DoD 5100.76-M, “Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives”, Latest Revision
- (bs) DoD 4500.32-R, “Military Standard Transportation and Movement Procedures (MILSTAMP), Volume I”, Latest Revision
- (bt) AFI 32-7086, “Hazardous Materials Management”, Latest Revision
- (bu) AFI 32-7042, “Waste Management,” Latest Revision
- (bv) DoDi 4140.62, “Material Potentially Presenting an Explosive Hazard”, Latest Revision
- (bw) DoD 4160.28, “Defense Demilitarization Program”, Latest Revision
- (bx) DoD 6055.09-M, DoD Explosives Safety Board (DDESB)”, Latest Revision
- (by) ASTM D 4359-84, “Standard Test Method for Determining Whether a Material is a Liquid or a solid³⁵
- (bz) Title 14 CFR, Federal Aviation Administration Regulations or a Solid³⁶
- (ca) DLAI 4145.4/AR-740-3/AFMAN 23-125/MCO 4450.15, “Stock Readiness”, Latest Revision
- (cb) DoDi 4715.05, “Environmental Compliance at Installations Outside the United States”, November 1, 2013, Incorporating Change 1; Latest Revision
- (cc) DoDi 4715.06, “Environmental Compliance in the United States”, Latest Revision
- (cd) DoDi 4715.22, “Environmental Management Policy for Contingency Locations”, Latest Revision

³⁴ <https://www.epa.gov/emergency-response/nrt-1-hazardous-materials-planning-guide>

³⁵ <http://www.astm.org/train>

³⁶ <http://www.ecfr.gov/cgi-bin/ECFR?page=browse>

ENCLOSURE 2: RESPONSIBILITIES

1. DIRECTOR, DEFENSE LOGISTICS AGENCY (DLA): By the authority, direction, and control of the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD (AT&L)), through the Assistant Secretary of Defense for Logistics and Material Readiness (ASD (L&MR)), will:

a. Be responsible for staff supervision and oversight of the DoD program for Storage and handling of hazardous materials.

b. Be responsible for writing the policy, receiving, reviewing, updating, and coordinating, with the Services, information about changes or possible changes to International, Federal, State and local laws.

2. DIRECTOR, DLA LOGISTICS OPERATIONS (J3): The J3 will:

a. Be responsible for staff supervision and oversight of the DoD program for Storage and handling of hazardous materials.

b. Be responsible for writing the policy, receiving, reviewing, updating, and coordinating, with the Services, information about changes or possible changes to International, Federal, State and local laws.

c. Keep this regulation current and issue revised policy necessary to maintain effective management of storage and handling of hazardous material.

3. EXECUTIVE DIRECTOR, DLA LOGISTICS POLICY & STRATEGIC PROGRAMS (J34): The J34 will:

a. Be responsible for staff supervision and oversight of the DoD program for Storage and handling of hazardous materials.

b. Be responsible for writing the policy, receiving, reviewing, updating, and coordinating, with the Services, information about changes or possible changes to International, Federal, State and local laws.

c. Keep this regulation current and issue revised policy necessary to maintain effective management of storage and handling of hazardous material.

4. SECRETARIES OF THE MILITARY DEPARTMENTS AND DEFENSE AGENCIES (DoD COMPONENTS): will:

a. Implement and fulfill the requirements of this regulation and its enclosures.

- b. Ensure all people under their command who: Use, handle, maintain, recondition, or store, hazardous materials are aware and comply with this regulation and its enclosures.
- c. Ensure the quality of the hazardous materials procured or managed are IAW commercial, MILSPEC, QPL or other specifications, laws and /or regulations as required.
- d. Provide guidance as needed to all activities under their command that: Use, handle, maintain, retest, recondition, or store, hazardous materials to uphold a satisfactory and constant safety and quality control program.
- e. Conduct inspections as needed and keep accurate records of the inspections.
- f. Annually, review the quality control and related technical contents of this regulation and its Enclosures, and in collaboration with HQ DLA, keep the correct principle parts current.
- g. Maintain and segregate all hazardous materials and waste IAW policy, procedures, guidelines, laws and regulations according to their condition.
- h. Assign condition codes, and report IAW with the requirements of this regulation and its enclosures.
- i. Ensure that all installations under their command operate robust environmental programs IAW Enclosure 1 references (cb) and (cc) in support of appropriate handling and storage of hazardous materials; this includes, but is not limited to spill prevention and planning, toxic chemical reporting, hazardous waste management.

ENCLOSURE 3: FEDERAL, STATE, LOCAL AND INDUSTRY
REGULATIONS/STANDARDS/REQUIREMENTS

1. FEDERAL LAWS AND REGULATIONS: Federal laws dealing with health, safety and environment have a great impact on all operations within the DoD. The following Federal regulations are summarized to help identify those that may be applicable to a specific operation:

a. Title 49 CFR Parts 171-177: The US Congress issued the Hazardous Materials Transportation Act (HMTA) of 1974 and the Hazardous Materials Uniform Safety Act of 1990 delegating the responsibility for regulating the transportation of hazardous materials to the Department of Transportation (DOT). DOT, in turn, issues Title 49 Code of Federal Regulations (CFR), which governs the classification, description, packaging, marking, labeling, placarding, and proper condition of Hazardous Materials (HM) being offered or accepted for transportation in interstate or intrastate commerce. Additionally, Title 49 CFR authorizes the use of the Canadian Government Transport of Dangerous Goods (TDG), the International Maritime Dangerous Goods Code (IMDGC), and the International Civil Aviation Organization (ICAO) Technical Instruction (TI) for shipments into and out of the United States. The communication systems described in these publications help to quickly identify hazardous materials requiring special shipping, storage and handling requirements. These requirements were enacted so that first responders had immediate indicators of hazards during emergencies.

b. Title 40 CFR, Parts 1-799, Protection of Environment: The following statutes are relevant to the identification of Hazardous Wastes and are administered by the Environmental Protection Agency (EPA):

(1) The Resource Conservation and Recovery Act (RCRA) of 1976, as amended in 1984, focuses on regulating Hazardous Wastes (HWs). RCRA (40 CFR, Parts 260-282) defines hazardous wastes by their characteristic of ignitability, corrosiveness, reactivity, toxicity, or a special EPA listing. The regulations established a cradle-to-grave manifest system for tracking hazardous wastes. Owners of underground storage tanks containing petroleum products and regulated substances will notify the states of the existence of all underground tanks.

(a) Owners and operators will also meet technical standards and corrective action requirements set forth in 40 CFR Part 280 and applicable State and local requirements for all underground storage tanks.

(2) The Superfund, Emergency Planning and Community Right-to-Know programs provide a system for identifying and cleaning up chemical and hazardous substances released into the air, water, ground water, and on land (40 CFR, Parts 300-399). This requires spills or discharges of over 700 substances in excess of 1 to 5,000 pounds (depending on the substance) be reported immediately to the National Response Center. In the event of a hazardous substance release, EPA may initiate an emergency response, which follows the procedures, and methods set forth in the National Contingency Plan, including discovery, investigation, evaluation and removal activities. Executive Order (EO) 13693 directs all Federal agencies to comply with SARA Title III, Emergency Planning and Community Right-to-Know Act (EPCRA 302, 304, 311, 312, and 313). EPCRA Section 302 requires facilities to notify the State Emergency

Response Commissions (SERC) and Local Emergency Planning Committee (LEPC) of the presence of any extremely hazardous substance (40 CFR Part 355 Appendix A and B). Identify hazardous chemicals at facilities by reviewing Safety Data Sheets (SDS), which are required by DoDi 6050.05, the Occupational Safety and Health Administration (OSHA). Inventories of hazardous chemicals in excess of 500 lbs. or the Threshold Planning Quantity, whichever is lower will be identified in the Tier I or Tier II report submitted to the SERCs and LEPCs. Submit annual Form R to EPA and the SERC for toxic chemical use, release, and disposal, which exceed threshold levels. Facilities will also immediately report to the proper authorities any emergency release that exceeds the Reportable Quantity (RQ) of extremely hazardous substances or CERCLA listed substances. EO 13834 “Efficient Federal Operations” states that Federal agencies must prioritize reducing waste, cutting costs, enhancing the resiliency of Federal infrastructure and operations, and that these reductions should be tracked to ensure accountability. The Executive Order sets forth requirements that agencies have to meet to make the Federal Government’s operations more sustainable, and agencies have to show compliance by tracking and reporting their performance.

(3) The Toxic Substances Control Act (TSCA) of 1976 (40 CFR Part 700-799) gave EPA the broad authority to regulate chemical substances which were not covered by other laws and which have the potential to create adverse health or environmental effects. Chlorofluorocarbons (CFC), because they deplete stratospheric ozone, and Polychlorinated Biphenyls (PCBs), because of their chronic health effects, are two examples of TSCA regulated chemicals. Chemical manufacturers and importers will provide EPA with a Pre-manufacture Notice and provide available health and environmental effects data at least 90 days prior to the manufacture and sale of any chemical. EPA can approve the chemical, request further testing, control the manufacture and sale of the chemical, or prohibit its manufacture.

(4) Under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) of 1972, (40 CFR 150-180) manufacturers will register all new pesticides with the EPA, who then evaluates their environmental and health effects. All amounts of active ingredients along with use restrictions are printed on the EPA label along with a signal word and hazard statement.

(5) The Clean Air Act (CAA), The Clean Air Act (CAA), (40 CFR 50-99) is the comprehensive federal law that regulates air emissions from stationary and mobile sources. Among other things, this law authorizes EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and public welfare and to regulate emissions of hazardous air pollutants.

Section 112 of the Clean Air Act addresses emissions of hazardous air pollutants.

(a) CAA Section 112(r), the Office of Emergency Management (OEM) administers the Risk Management Plan Rule.

c. The Occupational Safety and Health (OSH) Act of 1970 (29 CFR): This Act assigns national worker protection authority to the Occupational Safety and Health Administration (OSHA). Title 29 CFR Part 1910.1200, the Hazard Communication Standard (HCS), requires the hazards of all chemicals produced or imported are evaluated, and that information concerning

their hazards are made available to employers and employees. All employers where hazardous chemicals are used in the workplace will: ensure containers are labeled, SDSs are available, and workers are trained on chemical hazards and develop a HAZCOM plan IAW 29 CFR 1910.1200 and Enclosure 1, (ac). Chemical manufacturers or importers are required to assess the hazards of chemicals they produce or import and provide this information in the form of SDSs, labeled products, and other forms of warning. Distributors of hazardous materials will comply with SDS and labeling requirements. HCS is aligned with the Global Harmonization System (GHS) to provide an international common approach to classifying chemicals and communicating hazard information on labels and SDSs. 29 CFR 1910.120 describes requirements for emergency response and cleanup operations for releases and spills of hazardous substances. 29 CFR, 1910.1450 outlines occupational safety and health requirements for use of hazardous chemicals in laboratories.

(1) OSHA does not require additional labels on pesticides that require labels under EPA requirements. However, OSHA does have SDS requirements that will still be applied and have been applied since the HCS first went into effect.

(2) OSHA anticipates that EPA will provide guidance to their regulated community (such as through a Pesticide Registration Notice) on how to develop an OSHA GHS-compliant SDS that will not be in conflict with the pesticide label. Therefore, pesticides will be covered in the same manner under the HCS, since its inception.

d. Title 29 CFR, Part 1910.1200, Hazard Communication: HAZCOM requirements for general employers requires the employers to obtain SDSs, label chemical containers, implement a HAZCOM program and train personnel working with/in/around hazardous materials. This requires that chemical manufacturers or importers assess the hazards of chemicals they produce or import and provide this information in the form of SDSs, labeled products, and other forms of warning. The Federal Government has implemented this requirement through contractual requirements to its suppliers. FED-STD-313 contains SDS requirements for government purchases. With respect to SDSs, the method used by DoD to comply with this rule is defined in DoDi 6050.05, DoD Hazard Communication Program.

e. Title 29 CFR, Part 1910.1000, Subpart Z-Toxic and Hazardous Substances: This specifies precautionary labels for OSHA regulated items having substance-specific health hazards. The exact minimum wording required on these labels is unique for each hazardous material. OSHA considers most of these to be known or suspected carcinogens. This Subpart contains the requirements for warning signs to be posted in restricted limited access areas where exposure to these chemicals may be excessive.

f. Title 42 CFR, Part 72, Public Health: This regulation contains the requirements for packaging, labeling and shipment of etiologic agents/biomedical materials (infectious substances) for transportation.

g. Title 10 CFR, Energy: This regulation contains the Nuclear Regulatory Commission (NRC) requirements for radioactive material use, possession, storage, marking, posting, transport, and disposal.

2. STATE AND LOCAL REQUIREMENTS: State and local laws and regulations may be more restrictive than the federal regulations cited above. Check with your state/local regulator to ensure you are following the applicable requirements.

3. DEPARTMENT OF TRANSPORTATION REQUIREMENTS: DOT imposes communication criteria for materials defined as hazardous for the purpose of transportation. The marking, labeling, placarding, and shipping paper requirements are the techniques used to communicate hazards in the transportation environment and these requirements apply to persons who offer hazardous materials for transportation and carriers who transport them by air, highway, rail, or vessel (water). The applicable sections in Title 49 CFR are described below in general terms for information purposes and are discussed in enclosure 8. Obtain specific details from the regulations.

a. Placarding: Unless excepted, ensure placards are affixed to each side and each end of a transport vehicle, freight container, bulk packaging, unit load device, and rail car containing hazardous materials (See Appendix E). Placard according to Title 49 CFR, Part 172, Subpart F.

b. Shipping Papers: Shipping Papers provide additional information on hazardous materials not provided by placards or labels. Prepare shipping papers according to Title 49 CFR, Part 172, Subpart C and applicable transportation modal regulations.

(1) An example of a commercial Bill of Lading (shipping paper) for hazardous materials is located in Appendix K.

(2) When hazardous materials are offered for transportation by commercial air, complete a "Shipper's Declaration of Dangerous Goods" form for each consignment in addition to the Air Waybill or Bill of Lading. There are specific requirements for the size and coloration of the form. The form will be in English and signed appropriately. As with the shipping paper requirements under Title 49 CFR, there are a number of specific requirements regarding the documentation on the form, which, are spelled out in the International Air Transport Association (IATA) Dangerous Goods Regulations. An example of the IATA shipper's declaration form is shown in Appendix K. Documentation requirements for Military Air shipments are located in AFMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19G/DLAI 4145.3, Preparing Hazardous Materials for Military Air Shipments.

(3) When hazardous materials are packed into freight containers or road transport vehicles for shipment by vessel, the person offering the consignment will certify the packaging conforms to all the requirements of the International Maritime Dangerous Goods (IMDG) Code. This certification requires completion of an IMDG Shipper's Declaration of Dangerous Goods (Vessel) form. As with Title 49 CFR and IATA, there are specific requirements for the documentation on the declaration, which are spelled out in the IMDG regulations.

c. Shipping Labels: Unless a stated exception to 49 CFR 172.400a, all non-bulk packages and bulk packages of less than 640 cubic feet or 1000 gallons containing hazardous materials that meet one or more hazard class definitions and are offered for transportation will have a

hazardous material shipping label. Each hazard class or division has a specific label design that is widely recognized and understood, helping to rapidly identify the type of packaged material. Label according to Title 49 CFR, Part 172, Subpart E and applicable transportation modal regulations.

d. Marking: Mark each package, freight container, or transport vehicle offered for transportation containing a hazardous material as specified in Title 49 CFR, Part 172, Subpart D and MIL-STD-129P.

e. Retention of markings, placards, and labels: All required hazard markings, labels, and placards on hazardous material packaging are to be retained until the package is sufficiently cleaned of residue and purged of vapors to remove any potential hazards. This requirement is specified in 29 CFR 1910.1200.

For non-bulk packages which will not be reshipped, the provisions are met if a label is affixed IAW the Hazard Communication Standard (29 CFR 1910.1200).

4. ENVIRONMENTAL PROTECTION AGENCY REQUIREMENTS: The labeling requirements for pesticides are contained in Title 40 CFR Part 156. Every pesticide product will bear an EPA label containing the information specified by Federal Insecticide, Fungicide, and Rodent ACT (FIFRA), including warning and precautionary statements. The front panel statements are determined by the toxicity category of the pesticide, category I am being the most toxic and IV the least. Toxicity category I requires the "DANGER" signal word, category II "WARNING", and category III and IV "CAUTION". If a category I is assigned based on oral, inhalation or dermal toxicity, the word "POISON" in red is added. The signal word is followed by precautionary statements about hazards to humans and domestic animals, hazards to the environment, and physical or chemical hazards. The table used to assign a toxicity category is in Appendix B. Pesticides in toxicity categories I and II are usually regulated, labeled and/or marked for transportation, but category III and IV pesticides are not. Pesticides with the "CAUTION" label should be evaluated for hazardous materials storage. The category IV pesticides have a very low hazard and do not require hazardous materials storage.

5. DoD REQUIREMENTS:

a. MIL-STD-129, "Military Marking for Shipment and Storage": MIL-STD-129 provides the uniform marking of military supplies and equipment for shipment and storage. Marking is defined as the application of numbers, letters, labels, tags, symbols, or colors to provide identification and to expedite handling during shipment and storage. Unless exempted at the time of acquisition, all DoD supplies and equipment, including material shipped from storage, are marked IAW MIL-STD-129.

b. Markings and Labels: Even if a material is not regulated as hazardous for transportation, it may pose an unreasonable risk to health, safety and property when stored, used or discarded. The following examples are other labels and markings that may indicate an item is hazardous:

(1) If the Federal Supply Classification (FSC) of the material is listed in Table I of FED-STD-313, "Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities", it is possible that the item contains a hazardous material. The Table I FSCs are primarily in the 6800, 8000, and 9100 series and are chemical type items. All FSCs listed in Table I generally require the submission of an SDS. Those listed in Table II require an SDS if they are identified by the manufacturer as hazardous. However, recognize that not all chemical items are hazardous. The SDS will provide the data to allow health professionals and other technical personnel to determine if a hazard exists.

(2) If the manufacturer or vendor is a known chemical company or their company name indicates an association with chemicals, the item may contain hazardous materials.

(3) The item nomenclature may indicate the item contains hazardous materials.

(4) In Title 49 CFR, a flashpoint marking of 140°F (60°C) or less indicates that the material is FLAMMABLE and a flashpoint marking greater than 140°F (60°C) or more but less than 200°F (93°C) indicates that the material is COMBUSTIBLE under transportation regulations. However, under 29 CFR 1910.106, a flashpoint marking of less than 199.4°F (93°C) indicates that the material meets the GHS criteria for a flammable liquid, but Category 4 flammable liquids (flash point of 100°F or more but less than 199.4°F) are considered to be COMBUSTIBLE. These materials require hazardous and/or specialized storage under 29 CFR 1910.106. In addition, HCS 2012 requires all shipments of hazardous materials to be accompanied with an SDS and GHS hazard warning label. Refer to HAZCOM 2012 and DoDi 6050.05 labeling requirements." Divide flammable liquids into four categories as follows:

(a) Category 1 shall include liquids having flashpoints below 73.4 °F (23 °C) and having a boiling point at or below 95 °F (35 °C).

(b) Category 2 shall include liquids having flashpoints below 73.4 °F (23 °C) and having a boiling point above 95 °F (35 °C).

(c) Category 3 shall include liquids having flashpoints at or above 73.4 °F (23 °C) and at or below 140 °F (60 °C). When a Category 3 liquid with a flashpoint at or above 100 °F (37.8 °C) is heated for use to within 30 °F (16.7 °C) of its flashpoint, it shall be handled IAW the requirements for a Category 3 liquid with a flashpoint below 100 °F (37.8 °C).

(d) Category 4 shall include liquids having flashpoints above 100 °F (60 °C) and at or below 199.4 °F (93 °C). When a Category 4 flammable liquid is heated for use to within 30 °F (16.7 °C) of its flashpoint, it shall be handled IAW the requirements for a Category 3 liquid with a flashpoint at or above 100 °F (37.8 °C).

When liquid with a flashpoint greater than 199.4 °F (93 °C) is heated for use to within 30 °F (16.7 °C) of its flashpoint, it shall be handled IAW requirements for a Category 4 flammable liquid.

These materials require hazardous and/or specialized storage under 29 CFR 1910.106. In addition, HCS 2012 requires all shipments of hazardous materials to be accompanied with an SDS and specific labeling requirements. Refer to HAZCOM 2012 and Enclosure 1 (ac) labeling requirements.

(5) If the package has a United Nations (UN) standard marking (Performance Oriented Packaging (POP)), it normally contains a hazardous material. However, nonhazardous material may be shipped in a package containing a UN POP marking.

(6) Items with shelf-life markings may be unstable and become hazardous if they deteriorate.

6. NON-REGULATORY REQUIREMENTS (INDUSTRY):

a. ANSI Z129.1. "American National Standard for Hazardous Industrial Chemicals-Precautionary Labeling": ANSI Z129.1 contains recommended labeling information for communicating the immediate (acute) and delayed (chronic) health hazards of chemicals. The precautionary label usually identifies the hazardous material followed by a signal word, the type of hazard, precautionary measures, first aid instructions, antidotes, notes to physicians, instructions in case of fire and spill or leak, and instructions for container handling and storage. The signal words DANGER, WARNING, and CAUTION indicate the relative degree of severity of an immediate hazard in decreasing order. The word POISON suggests a highly toxic chemical. The acute effects referred to most frequently are irritation, corrosivity, sensitization and lethal dose. The chronic effects are usually carcinogenicity, teratogenicity and mutagenicity. Although these are important health effects, they do not adequately cover the considerable range of acute and chronic effects, which may occur because of occupational exposure. If a package is labeled with a precautionary label but not a Department of Transportation (DOT) label, the material may not be a physical safety hazard for transportation or storage but is a potential health risk when handled or used.

b. Labeling. National Fire Protection Association (NFPA). Another commonly used warning labeling system is one developed by the NFPA, which is used primarily by the fire protection community. It is a diamond shaped label which is divided into four quadrants with a number ranging from 0 to 4 in the upper three quadrants to denote the degree of hazard (0 being the lowest and 4 the highest) and the bottom quadrant used to identify a specific hazard symbol for additional fire-fighting information. These numbers are intended to provide a general idea of the severity of the health, fire, and reactivity hazards as they relate to fire prevention, exposure and control. The objectives are to provide an appropriate alerting signal and on the spot information to safeguard the lives of firefighting personnel. While the label is satisfactory for the intended purpose of fire protection, it is not acceptable for hazard communication purposes nor can it be visible during shipment as it can be confused with a DOT shipping label. When used, apply NFPA labels to hazardous materials in storage only.

7. INTERNATIONAL REQUIREMENTS: Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH). REACH is a European Union (EU) regulation that has resulted in a ban of some chemicals and the restrictions of others within the European Union. REACH streamlines and improves previous legislation in the EU, by replacing numerous pieces of legislation. Its' primary goal is to improve the protection of human health and the environment from risks that can be caused by chemicals. The consequences of REACH will be banning, restricting, or altering formulations of some chemicals. DoD organizations and installations will follow the DoD Reach Strategic Plan. DoD entities and installations in Europe will address REACH in Europe IAW the DoD Strategic plan. The European Chemicals Agency (ECHA) is the central point for coordination and implementation of REACH. ECHA is the authority on evaluating, authorizing, restricting and banning chemicals manufactured and imported into the EU. Additional requirements are found in Enclosure 8; "Selection and Issue of Hazardous Materials" and Enclosure 11; "Hazardous Material Training". Please refer to the ECHA website for the latest REACH information and updates. (<http://echa.europa.eu>)

8. SOURCES OF REGULATORY INFORMATION: Employees who identify hazardous materials for receipt, storage, or packaging purposes will only use current reference documents and regulations. Purchase annual editions of the Code of Federal Regulations from the United States Government Printing Office (US GPO) and reprints are available from a number of private sources. The Code of Federal Regulations is kept up to date by the individual issues of the Federal Register and, is available on the web (<http://www.gpoaccess.gov>). These two publications will be used together to determine the latest version of any given rule. Free label and placard charts are available from DOT, which also include regulatory references. A particularly useful chart, DOT Hazardous Material Warning Labels/Placards (DOT Chart 15), may be obtained from the Department of Transportation, Research and Special Programs Administration, Washington, DC 20590.

ENCLOSURE 4: IDENTIFICATION OF HAZARDOUS MATERIALS

1. IDENTIFICATION OF HAZARDOUS MATERIALS: This Section addresses strategies for the identification of Hazardous Materials other than bulk petroleum products that are received, stored, and handled by DoD installations. Guidance applicable to bulk petroleum storage and handling is set forth in MIL-STD-3004, Petroleum Operations.

a. Many commodities used by DoD are hazardous or contain hazardous materials that have special requirements for storage and handling. The dangers posed by these items can be serious and personnel need to be aware of the domestic and international laws and regulations associated with them. These laws and regulations place special emphasis on communicating the hazards associated with these products because exposure can result in serious personal injury, permanent disabilities and even death. Property and the environment may also be damaged or destroyed. It is imperative that all workers recognize and understand the hazards associated with these commodities. No single functional area is exempt from these risks to health, safety and property.

b. Identification: Accurately identify hazardous materials ensure safe storage, handling and disposal. Federal regulatory agencies require manufacturers and distributors to identify the physical, health and environmental hazards of their commodities in several ways. Placards, labels, markings, and SDS are just some of the means used to convey this information. Individuals working with these materials from the responsibility of having full awareness and understanding of the requirements for hazard communications. In addition, hazardous material personnel will be responsible, unless otherwise specified, for full compliance with the mandatory provisions referenced in this publication.

2. COMMUNICATING THE HAZARDS OF MATERIALS:

a. Occupational Safety and Health Administration (OSHA) Requirements: Per Enclosure 1 (d), the OSHA Hazard Communication Standard (HCS) requires a comprehensive hazard evaluation and communication process aimed at ensuring that the hazards of all chemicals in the workplace are evaluated. The HCS requires information concerning the potential hazards and protective measures be provided to both employers and employees. The HCS generally applies to any chemical, which is a health, or physical hazard to which employees may be exposed under normal use conditions or in a foreseeable emergency. The modified standard (HCS 2012) provides a single set of harmonized criteria for classifying chemicals according to their health and physical hazards and specifies hazard communication elements for labeling and safety data sheets.

b. The four information communication components in HCS are:

(1) Hazard classification: Chemical manufacturers and importers are required to determine the hazards of the chemicals they produce or import. Hazard classification under this standard provides specific criteria to address health and physical hazards as well as classification of chemical mixtures.

(2) Labels: Chemical manufacturers, distributors, importers, and employers will provide a label that includes a signal word, pictogram, hazard statement, and precautionary statement for each hazard class and category.

(3) Safety Data Sheets: SDSs require 16 specific sections, ensuring consistency in presentation of important protection information. SDSs provide detailed technical information and serve as a reference source for exposed employees, industrial hygienists, safety professionals, emergency responders, health care professionals and other interested parties. HCS requires SDSs be updated within three months of learning of significant new hazard information. SDS information may be found in HMIRS.

(4) Information and training: To facilitate understanding of the new system, this standard requires workers be trained on the new label elements and safety data sheet format, in addition to the current training requirements. Training is designed to ensure employees understand the chemical hazards in their workplace and are aware of protective measures to follow.

Labels, SDSs, and training are essential parts of a comprehensive hazard communication program each element reinforces the knowledge necessary for effective protection of employees. Information required by the HCS reduces the incidence of chemical-related illnesses and injuries by enabling employers and employees to implement protective measures in the workplace.

c. Acquisition Specialists review lists of Environmental Attribute Codes in the Federal Logistics Information System for new equipment or building material. (i.e., They will ensure a statement of “lead alternative” or “no lead containing materials” before procurement. Employers can select less hazardous chemical alternatives and ensure that appropriate engineering controls, work practices, and personal protective equipment are in place. (DoD Green Procurement Program Guide, February 2009 v2).

d. On-site supervisors are to ensure the following information is available for all chemicals stored, handled, or used in the workplace:

(1) Copies of any SDS received and maintained so that employees have access to the information. This requirement will be met using the DoD Hazardous Materials Information Resource System (HMIRS), or other service-specific environmental, safety, and occupational health hazardous material tracking systems as dictated by service policy.

(2) Chemical warning labels are affixed to each container and are not removed or defaced/altered.

(3) A written hazard communication program is required where hazardous chemicals are packaged, handled, reacted, transferred, or used. This written plan should not be complicated and will identify how the requirements for labels and other forms of warning, SDS, and employee information and training will be met at a particular location.

e. For every chemical found to be hazardous, the chemical manufacturer or importer will develop a container label and an SDS and provide both documents to downstream users of the

chemical. All employers with employees who work with hazardous chemicals will develop a hazard communication program, and ensure they have access to SDSs, and training on the hazardous chemicals in their workplace.

f. Enterprise Data Repository/HMIRS: Specific manufacturer's SDS information is readily available to DoD personnel through the DoD HMIRS. Transportation data, hazard warning labels data, and environmental data are available supplemental data. The system provides a means of distributing SDSs on demand without requiring the shipment of hard copies with the materials. HMIRS is available on-line through worldwide web access (<https://dlahng.hmms.dla.mil>). Service focal points are listed in Appendix H. U.S. Navy ships are provided the HMIRS Navy unique DVDs by NAVSUP WSS Mechanicsburg, PA.

(1) The HMIRS provides a means for the identification and classification of hazardous materials through the assignment and use of the Hazard Characteristic Code (HCC). The definitions for the HCCs are in Appendix B of this publication. The HCC can be assigned to each specific item when an SDS is provided prior to purchase. Assign an HCC for any item the service/agency desires to manage as a hazardous material. When the assigned HCC is entered into HMIRS, it becomes a tool in determining storage segregation and compatibility requirements, described in Appendix C.

(2) To assure proper SDS information is received (as required by Title 29 CFR) and forwarded to the HMIRS, specific procedures have been developed within the DoD. For centrally managed and local purchase items, the contracting organization places requirements in the solicitation mandating the submission of an SDS and use of OSHA compliant hazard warning labels on the product. Warning labels are important since they are usually the first indication to users and/or receiving activities that hazards are associated with the products. Forward the SDS to the service/agency focal point for review. Upon receipt from the contracting agency, the focal point is responsible for reviewing the SDS for completeness, technical accuracy, and consistency. Following the review, the focal point will enter the SDS into HMIRS. All local contracting offices are required to submit the SDS to their local safety/industrial hygiene/bioenvironmental engineering office for review. When this is the case, that office is responsible for forwarding the SDS to the service/agency focal point following their review.

(3) The HMIRS database is a useful system for maintaining technical information on hazardous materials; and to the extent possible, operational Automated Data Processing (ADP) systems should utilize the data to enhance their daily operational processing of hazardous materials. Chemical users: Continue to update safety data sheets when new ones become available, provide training on the new label elements and update hazard communication programs if new hazards are identified.

g. Installation functions or Depots involved with the procurement of Hazardous materials will ensure implementation of hazardous material information and management controls that minimize the use of hazardous materials, to include obtaining product hazard data in accordance with DoDi 6050.05.

Additional information: For more on the hazard communication standard, including the link to the Federal Register notice can be found on OSHA's hazard communication safety and health topics page at <https://www.osha.gov/dsg/hazcom/index.html>.

ENCLOSURE 5: RECEIPT OF HAZARDOUS MATERIALS

1. PURPOSE AND APPLICABILITY:

a. Purpose: The purpose of this enclosure is to prescribe procedures that incorporate, where appropriate, regulatory requirements as they apply to the receipt of hazardous materials. This enclosure contains procedures for processing damaged hazardous materials, packaging discrepancies, and specifies actions to be taken in the event a spill or leakage is detected during the receiving process. Compliance with the specific requirements identified in this enclosure will substantially reduce the risks to personnel, installations, and the environment while ensuring compliance with both Federal laws and DoD policies.

b. Applicability: The contents of this enclosure are applicable to all personnel involved in the receipt of hazardous materials.

2. PLANNING AND COORDINATING THE RECEIVING OPERATION:

a. Planning for Receiving Operations: Planning for receiving operations requires complete coordination among organizational elements responsible for the different phases of the operation. Detailed planning assumes even greater importance in the case of hazardous materials. Proper evaluation of advance information and planning action taken prior to the actual arrival of the material will help ensure that appropriate steps are taken to receive it as efficiently, economically, and safely as possible. Any correspondence concerning due-in hazardous materials should be considered in the planning process. Prepositioned Material Receipt Documents (PMRDs), contract schedules, reshipments, advance copies of bills of lading, or other shipping documents should be used to determine approximate arrival dates and the type and quantity of material due in. Pertinent information on significant due-in receipts of hazardous material will be given to personnel concerned with warehousing, transportation, preservation, packing, and inspection.

b. Advance Planning and Coordination: Advance planning and coordination will promote effective storage space utilization, efficient assignment of labor and equipment resources, and timely identification and classification of materials requiring specialized handling due to their hazard characteristics. While the reservation of specific storage space for due ins is not recommended, advance planning will permit tentative storage determinations and, in turn, will facilitate receipt processing.

3. IMPACT OF FEDERAL REGULATIONS, OTHER THAN TRANSPORTATION, ON RECEIVING OPERATIONS:

a. Personnel will be aware of federal regulations 49 CFR 174.81, 40 CFR 240-267 and §761 and DoD policies and their possible impact on receiving operations. These regulatory requirements are discussed in detail in Enclosure 6-Storage and Care of Hazardous Materials,

Enclosure 9- Environmental, and Enclosure 10-Safety and Health. While processing receipts of hazardous material, personnel will be particularly alert to the following:

b. Defense Installations: Defense installations, are subject to the regulatory requirements of Title 40 CFR concerning the processing and reporting of releases of hazardous substances that may occur in connection with the unloading and movement of hazardous materials. Also, determination of the applicability of 29 CFR 1910.119; Process Safety Management of Highly Hazardous Chemicals should be made by the appropriate personnel.

c. Processing Pesticides: During the course of processing receipts from procurement, personnel may receive pesticides that are off specification, outdated, or in broken containers. Such material cannot be forwarded to storage but will be processed through the local DLA Disposition Services Office where it will be processed according to existing procedures.

d. Thefts or Losses of Explosives: Thefts or losses during transportation of materials classified as explosives will be reported to the Bureau of Alcohol, Tobacco, and Firearms, Department of the Treasury, within 24 hours of discovery. DoD Component Heads will report Arms, Ammunition and Explosives (A, A &E) that are lost, missing, or stolen to Office of Undersecretary of Defense (Intelligence) (OUSD(I)), Security and Policy Oversight Directorate IAW DoD 5100.76-M.

e. Radioactive Material Incidents: The radioactive material receipt and reporting requirements for potential incidents involving release are contained in CFRs 10 and 49.

4. HAZARD CHARACTERISTIC CODES (HCCs):

Hazardous Materials Management and HCCs: It is essential that hazardous materials management be properly planned to prevent interactions adversely affecting personnel, installations, and the environment during receipt, storage, and handling. To reduce the risk of hazards associated with incorrect classifications or categorizations by untrained personnel, a two-digit alphanumeric HCC has been developed for categorizing hazardous materials. This code has been developed to assist personnel in receiving, storing, and issuing material categorized by law or regulation as hazardous. HCCs are assigned by qualified safety, health, and transportation personnel representing service HMIRS focal points. Use of the HCC assures uniformity in the identification and management of hazardous materials and will assist in proper recognition and safe storage by compatibility. Current HCCs, including hazardous characteristic groups and definitions are shown in Appendix B. Storage and warehousing should utilize the HCCs as an effective tool for the proper storage of hazardous materials.

5. ARRIVAL OF HAZARDOUS MATERIALS AT THE INSTALLATION

a. DLA/Major Subordinate Commands (MSCs) /DLA Supply Chains:

(1) The Sub-Processes for hazardous materials at storage and distribution facilities are described in general terms and at a sufficiently high level to present the process as a standard. The sub-processes relate primarily to the requirements associated with the processing of new hazardous items into the system or process. Once a new hazardous item is entered into the system or process, the computer systems will quickly recognize subsequent shipments for the same item when the package markings and shipping documentation are obvious and accurate. The steps involved take into consideration the general flow of the items with respect to their safe and compliant handling requirements and address storage and handling situations where hazardous materials may become a legal or safety problem due to accidental damages, expired shelf-life or other reasons. Receivers should coordinate with the installation's security office regarding access requirements for transporters and shipments. Common errors that may delay shipments include transporter not having appropriate documentation, driver not authorized to access the installation, or entry through the incorrect gate or access point.

(a) Delivery of Hazardous Material. Shipments consisting of hazardous materials are delivered to the main entry of the storage and distribution facility. An Advance Shipment Notice (ASN) should be provided ahead of the delivery via Invoicing, Receipt, Acceptance, and Property Transfer (I RAPT) to ensure the receiving activity is aware of the type and amount of hazardous material involved. In some cases, however, the ASN is not provided and the receiving activity may be unaware of the delivery containing regulated hazardous materials.

(b) Process Hazardous Material through Conveyance Control. The facility gate guards normally control the entry of conveyances (e.g., trucks) and provide direction on where they are to be unloaded. The driver's shipping papers and/or placards will be reviewed to determine if hazardous materials are included with the load. Based on this review a decision is made with respect of facility protocol to direct the vehicle to Central Receiving or the Specialized Hazardous Materials Storage facility. Normally, this decision is based on the amount of hazardous material on the load. Full loads and partial loads that are primarily hazardous materials are routinely routed directly to the Hazardous Materials Storage facility.

(c) Process Hazardous Material Through Central Receiving. Hazardous materials arriving at Central Receiving need to be separated from non-hazardous items. Once the load is carefully scrutinized for hazardous items, it may be processed at this function by specially trained personnel and subsequently moved to the Specialized Hazardous Materials facility for storage. Hazardous items are normally identified, segregated, and moved by local conveyance vehicles to the Specialized Hazardous Materials Storage facility where they can be processed for receiving as hazardous materials.

(d) Handle Hazardous Material in the Hazardous Materials Storage Facility. Items delivered to this facility have been recognized – not necessarily identified – as hazardous materials (i.e., high-level discrimination judgment). All items are carefully unloaded and handled as if they are hazardous materials. The workers will focus on spilled materials, damaged packages, missing items and other criteria relating to safety, security, and compliance concerns.

(e) Identify the Hazardous Material. As part of the receiving process, hazardous items will be identified by their National Stock Number (NSN), Contracting and Government Entity

(CAGE) and Part Number (PN) and/or Trade Name. Some or all of this information may be present on the product package. When insufficient information is available to properly identify the item, it may be set aside for further research.

(f) Match the Hazardous Material to its Safety Data Sheet (SDS). This is another critical step in the process of safely and effectively receiving hazardous materials into a storage and distribution facility. An item will not be inducted into the operating system until there is a perfect match established between the hazardous item identified in the Distribution Standard System (DSS) and the many SDSs or product information sheets that may apply to it in the Hazardous Materials Information Resource System (HMIRS). There can be more than one SDS or product information sheet for an NSN identified item. For this reason, it is preferred that the items are delivered with a full complement of identifying information as described above. Since the identification numbers assigned by the HMIRS and the suppliers for the SDS and product information sheets are different, the process will rely upon the training and experience of the workforce. Many choices for an SDS or product information sheet may appear to represent the item being received. Careful scrutiny of the item data may take several hours or days to ensure a perfect match between the item being received and its SDS or product information sheet. Until this step is accurately and confidently completed, the facility and workers are at risk of unknown dangers associated with these items. To ensure a near flawless receipt process for hazardous materials, future systems will take into consideration the development of emerging technologies [i.e., Automatic Identification Technology (AIT) using the Global Trade Item Number (GTIN) or other equivalent commercial developments with national and international application].

(g) Load SDS Number and Hazard Characteristic Code (HCC) in DSS. When a precise match between the item and its SDS or product information sheet are confirmed, the SDS number in HMIRS and the HCC will be added to DSS. At this point the item can be considered accurately identified and the operating system will complete the receipt processing for it.

(h) Stow by HCC and SDS Number. When the receiving action is complete and all the necessary technical data associated with the item are satisfactorily populated in DSS, the system will provide a stow action based on the HCC and SDS Number that is assigned to it in the HMIRS. This step is critical to the proper storage segregation/separation for hazardous materials in storage.

(i) Store by HCC and SDS Number. A precise storage location is provided for each item IAW the storage segregation and separation requirements established by law and programmed in DSS. The system ensures compliance with storage compatibility standards and improves the effectiveness of emergency response personnel when responding to spills and disaster releases. The stowage of hazardous items by the SDS number avoids the danger of incompatible materials being placed in the same storage location at the same time. All items are maintained in these segregated locations consistent with the depot storage standards and shelf-life requirements. Facility surveys and physical inventories are performed periodically IAW standard warehousing practices. Hazardous items that are found damaged or deteriorating in storage will be responded to immediately and processed through recoupment back to ready-for-issue stock or prepared for disposal. Any product that is released from its packaged container should be reported and responded to in a manner consistent with the Emergency Planning and

Community Right to Know Act (EPCRA), Executive Order (EO)13834, and any other environmental or emergency response regulation that applies locally. Specially trained teams are used to contain the release and clean up any spilled hazardous materials. Warehouse workers involved in the processing of hazardous items will be trained on how to recognize such situations and know what to do when such incidents occur (see (<http://www.dtc.dla.mil/env/>) for training requirements). Special testing and approval as directed by the managing Inventory Control Point (ICP) is required for returning any recovered material or items to stock. Material or items that cannot be recovered for issue processing will be properly packaged, marked and labeled for disposition and processed by the local DLA Disposition Services Office IAW local policy/procedures.

(j) Process the Material Release Order (MRO). A customer order will cause an MRO to be generated by the managing activity and delivered to the storage distribution facility. When the MRO is received, the storage activity is prompted to select the item requested and prepare it for shipping to the customer within the priority timeframes established for it.

(k) Select the Hazardous Material from Stock. Hazardous items are selected IAW standard depot processing protocol in DSS. During this time, the segregation of items by the HCC is to be maintained to the extent reasonable and practicable.

(l) Pack the Hazardous Material. This is critical to the proper package processing of hazardous materials. Selected items are moved to the packing area. Separate lines may be designated for the various types of hazards that may exist at the time. The items ordered will be packaged IAW legal requirements for the types of hazardous items being shipped. To the extent possible, products are purchased in the most popular commercial packages desired by the customers. Sometimes, however, the order is less than the size stocked. In these cases, new packages will be prepared to accommodate these items. The employees responsible for preparing hazardous items for shipment will be properly trained (see DLA Environmental Hazardous Material/Hazardous Waste (HM/HW) Training Plan for training requirements) to select a compliant package and prepare the item for legal movement by the mode planned for it. Instruction on the proper packaging of hazardous materials is defined in DLAR 4145.41, Packaging of Hazardous Materials.

(m) Offer the Hazardous Materials for Transportation. Package-certified items are offered to transportation for document preparation and transportation certification.

(n) Prepare Shipping Documentation. Shipping documentation includes preparing the shipping papers IAW the legal requirements associated with the mode of movement. The workers in this functional area require special training (see DLA Environmental Hazardous Material/Hazardous Waste (HM/HW) Training Plan for training requirements) on the preparation of these documents; and for some, they may need to qualify for and be officially assigned the authority to certify the shipments for the facility.

(o) Ship the Hazardous Materials. Hazardous items are loaded IAW modal compatibility tables and other restrictions. The shipping container is sealed. The driver is

provided the proper placards to be placed on the shipment container and shipping papers to accompany them to their destination.

b. Hazardous Material Receipts:

(1) An Advance Shipment Notice (ASN) should be provided ahead of delivery via iRAPT; however, Hazardous material receipts may arrive with little or no advance notice. Consequently, the identification process commences upon arrival of the carrier's vehicle or transport conveyance at the installation's main gate or other designated point of entry. Activity entrance personnel (Security or Transportation) will be sufficiently trained in hazardous materials identification on the basis of placards and shipping papers. Directing the vehicle to the desired unloading site accomplishes the following:

(a) Minimizes travel distances from the point of base access to the receiving or storage area.

(b) Minimizes materials handling equipment (MHE) operations.

(c) Confines unloading operations to areas of the installation where experienced supervisory and other personnel are likely to be available to respond to leakage or spills.

(2) Any SDS arriving with the freight will remain with the material until it arrives at the actual warehouse receipt area to assure that workers are fully aware of what they are handling during the receipt process. Also, this will assure the SDS will be forwarded to the HMIRS focal point for entry into the HMIRS if needed.

c. Security Personnel Responsibility: Upon arrival of transport vehicles, security personnel should conduct a visual inspection of the conveyance for evidence of leaks or the presence of odors that might be indicative of damage. This inspection will include a review of shipping papers and an identification of placards that may have been affixed to the exterior of the conveyance. If a placard has been affixed, personnel should determine from the vehicle operator the exact location of the hazardous materials on the conveyance. When it is determined that the material can be off-loaded without double handling, the shipment may be spotted directly at the appropriate storage area designated for the hazard class or division involved.

d. Visual Inspection: If the visual inspection discloses evidence of suspected leakage or spills, no effort will be made to open the conveyance for further investigation. Damaged containers will be repaired or over-packed before further transportation is authorized. Personnel will, under no circumstances, insist that the carrier remove damaged hazardous materials from the confines of the installation. Personnel will immediately notify the appropriate office IAW the installation spill plan. Spill Response Team deployment, package repair or over-pack, or other disposition of the material will be completed before the conveyance is permitted to proceed to the storage area, central receiving, or returned to the supplier.

6. REPORTS OF HAZARDOUS MATERIALS INCIDENTS:

a. Regulatory Requirements: There is a voluminous and complex array of federal reporting requirements that are applicable during a hazardous materials incident, which may include but is not limited to; The Comprehensive Environmental, Response, Compensation and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. In addition, personnel will comply with all state and local reporting mandates. When such incidents occur during the course of transportation, the requirements of 49 CFR 171.15 and 171.16 are applicable and will be followed as a minimum. Individual service/agency regulations that may be applicable will be followed as appropriate. For the purposes of this publication, transportation includes loading, unloading, and temporary holding while under active shipping papers.

b. Notification Responsibility: Notification responsibility will be determined based on circumstances. Personnel should be familiar with their Installation Spill Contingency Plan (ISCP) to ensure the proper actions and notifications are accomplished. If a hazardous substance or etiologic agent is released during off-loading operations performed by carrier representatives, notification of the DOT is a carrier responsibility. If, however, the release occurs during off-loading by non-carrier/ receiving personnel, or after release of the carrier's vehicle, notification is the responsibility of the installation commander, or designated representative, IAW Title 49 CFR. Under the circumstances described above, the release is likely to occur on military property, so it is in the best interest of the facility to notify the installation regardless of who has the formal responsibility. Advise military service/agency headquarters after the appropriate notifications are made.

c. Releases of Reportable Quantities: Notification by the installation commander is also required to report releases of hazardous substances equal to or greater than their reportable quantities. Reportable quantities (RQ) can be found in either CFR 40, Section 302.4, CFR 40, 355 or CFR 49, Appendix A to Section 172.101. The employee having first knowledge of the incident will evacuate the area and notify first responders and comply with their ISCP. The supervisor will report the incident IAW the Installation Spill Contingency Plan (ISCP). In addition, the responsible supervisor will limit access to the spill area until spill response teams or other trained personnel arrive at the scene. A written report concerning the releases of hazardous substances will be made so preventative measures can be reviewed or implemented. In addition, reportable quantity releases of hazardous substances will be reported, IAW Title 40 CFR, part 302.6, and to the National Response Center (NRC) at (800) 424-8802 (toll free) or (202) 426-2675 (toll). For Air Force units, this reporting is accomplished by the installation environmental office. Also, a written report is required for releases of hazardous waste in any quantity during transport, loading, or unloading. The specific requirements of the report are given in 49 CFR 171.16.

7. RECEIVING INSPECTION OF HAZARDOUS MATERIALS:

a. Purpose of Inspection: The purpose of inspecting hazardous materials upon receipt is to verify that the material is properly identified, documented, packaged, safe to handle, and IAW

contractual documents. In preparing for inspection of hazardous materials, shipping papers will serve as the basic source of identification. Based upon this information, the vehicle or rail container will be positioned in an area, or at a dock that will facilitate the inspection and off-loading of the material. Once the hazard class has been determined, the off-loading process may commence; however, a preliminary visual inspection will be performed by the receiving and inspection personnel before any cargo is off-loaded. In addition, receiving and inspection personnel will ensure that arriving material is compatible with other material located in the receiving area.

b. Preliminary Inspection:

(1) Prior to commencing the off-loading of cargo known to include hazardous materials, a preliminary inspection will be performed to detect damage that might have been caused during transit by improper loading, blocking, or bracing. One of the first indications of such damage will be crushed or fallen containers, or evidence that the load has shifted to such a degree that safe unloading is impeded. Particular care will be taken to ensure leakage or spills of liquids, or solids are detected at this time. An indication of concealed damage is the presence of odors.

(2) Should the preliminary inspection disclose actual or suspected damage, the conveyance will be closed, and receipt processing actions will be terminated immediately. The circumstances will be reported to the immediate supervisor who will take actions to report and resolve the matter IAW locally published procedures.

(3) Exercise care during off-loading operations to ensure incompatible hazardous materials are adequately segregated on the receiving dock. Separate incompatible materials as directed in Title 49 CFR. For a more precise determination of material segregation on a receiving or freight dock, refer to Title 49 CFR, part 177.848 which is reprinted in Appendix C, Figure 6-3. The HCC segregation chart Appendix C may also be consulted as a guide for proper segregation.

c. Inspection of Receipts from Procurement:

(1) The purpose of inspecting procurement receipts is to assure that the material actually received corresponds with that specified in the procurement documentation. Since movements to storage will in part be based on labels, shipping papers, and SDS, receiving personnel also will be alert to the quality of shipping papers and the appropriateness of labels. Hazardous materials, like other commodities, generally become the property of the Government at the point of origin or manufacture, or at a commercial redistribution facility (FOB origin). The point of origin inspection, normally conducted by a Quality Assurance Representative (QAR) of the appropriate Defense Contract Management District (DCMD) or the General Services Administration (GSA), is limited to a statistical sampling of the lot of material to be shipped. Consequently, deficiencies may exist in the uninspected portion of the shipment. For this reason, it is imperative that receiving personnel have the procurement documentation available to them. In addition, receiving personnel will be knowledgeable of the regulations and procedures governing the packaging, marking, labeling, and handling of hazardous materials. Also, this is the proper point in the process to assure that an SDS record is in the HMIRS. This is very important because the

HMIRS assigns an SDS serial number to the SDS when the record is introduced into the system. A number of warehousing systems use this number as a basis for matching the product in storage with the correct SDS in the HMIRS thus establishing a method for calculating the daily balance of hazardous materials which will be reported each year. For the Air Force (AF), the AF-approved hazardous materials tracking system is used to link hazardous material inventory and the correct SDS to calculate the daily balance.

(2) Inbound hazardous materials will be inspected for piece count, evidence of external damage, and identification verification. In addition, material procured FOB destination normally has not been previously inspected by a QAR or other Government inspector for completeness, proper identification, packaging requirements, and condition code, and will require inspection for compliance with the procurement documentation.

(a) During the off-loading process, personnel will carefully inspect all incoming material to ensure that the packaging is in full compliance with the quality assurance specifications and conditions of the contract. Only when positively determined by inspection the packaging meets contractual requirements will such material be forwarded to the designated hazardous materials storage area.

(b) When it is determined that the packaging does not meet contractual requirements, the deficiencies will be noted immediately and a Supply Discrepancy Report (SDR)/Report of Discrepancy (ROD) will be prepared as per reference (y), DLM 4000.25, VOL 2, Chap 17. Suspend material found not meeting contractual specifications under supply condition code L. Hold suspended material in the appropriate hazardous materials storage area pending the receipt of disposition instructions from the appropriate Supply Planner (SP) or contracting officials. Containers found to be leaking or otherwise not in compliance with DOT regulations will be over-packed IAW DOT regulations. Forward packages requiring marking or minor packaging repairs to the packaging facility for restoration

(c) Proper palletization of hazardous materials should be accomplished incident to shipment IAW MIL-STD-147, Palletized Unit Loads.

d. Customer and Unit Returns:

(1) Base or retail supply level hazardous materials facilities will perform the same basic receiving functions. Incorporate the following guidelines in local operating procedures, customer handbooks, and other media:

(a) Serviceable hazardous material returns should be coordinated between the local using activity and the base supply or support activity. The using unit should provide information such as condition of the material, condition of the container(s) or package(s), material nomenclature, shelf life information, and appropriate SDS.

(b) Based on the information provided, the base supply activity will either accept the material or provide additional disposition instructions. Base supply activities that issue and receive hazardous materials will not add excessive requirements that could cause illegal

dumping. Consider when developing local policies, many unit level activities do not have proper storage facilities for excessive amounts of hazardous materials and waste.

(2) The base supply activity will inspect customer returns for serviceability. This inspection will be performed by personnel trained in the identification, packaging, and storage of hazardous materials. Materials determined to be unserviceable will be disposed of IAW Reference (m), DoD 4160.21-M.

(3) Report excess serviceable hazardous materials to the responsible Integrated Material Manager (IMM) or Inventory Control Point (ICP) for disposition instructions.

(4) Use should be made of the automated Hazardous Material Management System (HMMS) or the service -approved automated tracking system (whichever applies) to ensure complete control of hazardous materials at the facility.

e. Inspection of Radioactive Material:

(1) Radioactive material may be received as part of a larger shipment of other hazardous materials, or the Government may be required to pick it up at a carrier's terminal. Follow procedures relating to package pickup, monitoring of external package surfaces, notification of appropriate authorities, and maintenance of records and written procedures as specified in Title 10 CFR part 20.1906. In all cases, document the results of monitoring. It should be noted that while Title 10 CFR, part 20.1906, exempts certain packages from immediate monitoring, all packages containing radioactive material will be monitored prior to opening.

(2) During the preliminary inspection, examine each package containing radioactive material for evidence of possible leakage. As a result of leakage, segregate the package or material suspected of containing radioactive contamination from personnel contact, and contact the Radiation Protection Officer (RPO) for advice. When the exterior of a radioactive material container shows signs of damage or leakage, monitor the transport vehicle for contamination. Decontaminate a previously contaminated vehicle prior to returning to service. Decontaminate to the levels specified in Title 49 CFR, part 173.443. The shipper and any carrier(s) will be informed of potential contamination of transport vehicles and the need for possible radiation surveys.

(3) In all cases, leaking containers will be resealed in the presence of the RPO or other properly trained personnel designated to represent the RPO. When the cause of leakage has been determined (e.g., packaging deficiency or damage in transit), a discrepancy report will be submitted IAW Reference (y).

(4) Inspect radioactive material for identification, packaging requirements, quantity, and labeling IAW Title 49 CFR, part 172.

f. Astray/Misdirected Shipments:

(1) It is entirely possible that installations will, in the course of off-loading and processing inbound shipments of hazardous material, receive material consigned to other installations. Title 49 CFR, part 174, requires that a carrier or installation in possession of an "astray" shipment of hazardous materials, other than explosives, forward it promptly to its intended destination, if known. Do not forward such material until it has been confirmed by inspection the package is in proper condition for transportation.

(2) When an incident involving hazardous materials occurs during this transportation process, a report may be required IAW Title 49, parts 171.15 and 171.16.

g. Inspection of Pesticides (Insecticides, Herbicides, Fungicides, Rodenticides, Repellents, Growth Regulators, Defoliant, Desiccants, or Biocides):

(1) Receipt processing procedures for pesticides (FSC 6840) will vary somewhat from those prescribed for other hazardous materials. Take the following actions if inspection of incoming pesticides discloses that the manufacturer's labels have been mutilated or obliterated and rendered unfit for further issue under FIFRA:

(a) Process the pesticide as a receipt and immediately suspend in supply condition code L (Litigation).

(b) Immediately alert the office administering the contract to the labeling problem. Prepare a discrepancy report within 24 hours and forward IAW Reference (y).

(c) Installation personnel will immediately contact the Supply Planner (SP) or contracting officer and request the pesticides be relabeled by or returned to the manufacturer. As the EPA registrant, the manufacturer is the only person allowed to affix a label to a package intended for distribution or sale.

(d) If the pesticide is determined to be sufficiently toxic to justify storage in a designated poison storage area (i.e., FIFRA categories I, II, or III), the pesticide will be temporarily stored in such area pending other disposition. Signs indicating the common name of the pesticide (e.g., Malathion, etc.) and the appropriate signal word(s) (e.g., "Danger," "Poison," or "Caution") will be affixed to the exterior of the storage area.

(2) When instructed by the manufacturer, the item manager, or the office administering the contract, via response to the SDR/ROD, to return the pesticide, the package, container, and over-pack will be clearly marked with the following information:

(a) NSN and appropriate MIL-STD 129 markings.

(b) Nomenclature and percentage of active ingredient.

(c) Total quantity (gallons for liquids and pounds for solids).

(d) Date of return to the contractor (month/year).

(e) The phrase "For Return to Manufacturer's Location for Reprocessing."

(3) In the event the manufacturer does not respond/concur to the ICP request for relabeling or is no longer in business, the pesticide will be declared unserviceable and will be placed in supply condition code H pending receipt of disposition instructions from the Supply Planner (SP). The exterior of the package or container will be marked as shown above except "For Disposal Only" will be substituted for the term "For Return to Manufacturer's Location for Reprocessing."

(4) Pesticides identified for transfer to the DLA Disposition Services Office will be processed IAW the procedures outlined in Title 40 CFR, part 165, Regulations for the Acceptance of Certain Pesticides and Recommended Procedures for the Disposal and Storage of Pesticides and Pesticide Containers; DoD 4160.21- M, Defense Materiel Disposition Manual; and DRMS-M 6050.1, Environmental Compliance for the DRMS Hazardous Property Program.

(5) If inspection discloses that a container or package of pesticides is leaking due to damage in transit, that package will automatically classify, under RCRA, as a waste pesticide and will be processed IAW local policy/procedures.

h. Pilferable or Security Material: Highly pilferable or security material will be processed IAW component directives addressed to the subject.

i. Inspection of Compressed Gases in Cylinders: Inspection of compressed gases in cylinders will be performed IAW the procedures contained in section 4, DLAR 4145.25/AR-700-68/OPNAVINST 4440.27/MCO 10330.2, Storage and Handling of Compressed Gases in Cylinders and Compressed Gas Association Pamphlet P-1-1965 (29 CFR 1910.101).

j. Discrepancies in Shipment:

(1) The purpose of reporting discrepancies in shipment is to provide claim offices with documented facts to support loss and damage claims against a carrier or contractor to ensure recovery of Government funds. The two commonly used discrepancy reports are as follows:

(a) DD Form 361 Transportation Discrepancy Report (TDR). DD Form 361 is used for notifying or confirming notification of damages to material while in transit. Prepare DD Form 361 IAW AR 55-38/NAVSUPINST 4610.33C/MCO P4610.19/DLAR 4500.15 and/or DTR, Part II, Chapter 210.

(b) SF 364 Supply Discrepancy Report (SDR)/Report of Discrepancy (ROD). SF 364 is used for reporting, adjusting, and accounting for supply (item) discrepancies; packaging and supply item identification marking deficiencies; and lost or damaged parcel post shipments. Prepare SF 364 IAW Reference (y), DLMS 4000.25, Volume 2, Chapter 17.

8. DETERMINING THE HCC DURING RECEIPT PROCESSING:

a. Current Processing Procedures: Current processing procedures, outlined in various local manuals and regulations will apply when processing receipts of hazardous materials. In addition, all system requirements pertaining to report performance criteria, adjustment actions, etc., will apply.

b. In the Event an HCC Has Not Been Assigned: In the event an HCC has not been assigned, and there are indications that the item may in fact be hazardous (e.g., special requirements codes, type cargo codes, transportation compatibility codes, labels, etc.), appropriate procedures will be followed to obtain a valid HCC and enter it into the appropriate system. Assistance on HCC assignment may be obtained from the service focal points listed in Appendix H.

c. How to Obtain an HCC: Obtain the HCC from the local on-line database or from the DoD HMIRS. If an HCC is not available from of these sources, or if the HCC is determined to be incorrect, challenge the data according to established procedures. If an HCC is needed immediately, assign a temporary HCC IAW the following procedures:

- (1) For packages with a DOT label affixed, refer to Appendix D, table, D-1.
- (2) For packages reflecting precautionary label text as recommended by ANSI Z129.1, refer to Appendix D, table D-2.
- (3) For material listed in Title 29 CFR, part 1910, subpart Z, refer to Appendix D, table D-3.
- (4) Assign a temporary HCC T5 to pesticides that do not have a DOT label attached to the shipping package or container. Refer to Appendix B. If a DOT label is attached to a pesticide container, refer to Appendix D, table D-1. Assign a temporary HCC T4 to the pesticide not packaged for shipment.
- (5) In the event a package or container does not contain a hazard communication label, or if doubt remains on the part of installation personnel as to the exact nature of the hazard, contact the HMIRS Functional Management Office by phone at, DSN 695-5878, commercial 804-279-5878 or submit an inquiry by email at hmirmsfm@dla.mil."
- (6) It should be noted that Appendix D, except for table D-3, in addition to providing HCCs, reflects the recommended storage area, both primary and by subdivision.

9. QUALITY CONTROL DURING RECEIVING OPERATIONS:

a. Purpose: The general purpose of quality control programs is to inform management of the effectiveness of installation operations by detection of defects in materials and errors in procedures. The basic aim is to provide reliable, timely, and comprehensive data to be used as a guide in directing corrective actions. Since installation operations in hazardous materials

management are governed by Federal laws and regulations, installation quality control programs will be expanded to include specific procedures for ensuring that such laws and regulations are not violated. Noncompliance with Titles 29, 40, and 49 CFR may subject installation commanders and responsible managers to criminal and civil penalties. Because of the high political and legal visibility associated with hazardous materials management, consistent compliance with enforcement standards designed to protect human life and the environment is required.

b. Minimum Quality Control Procedures: Minimum quality control procedures governing the installation receiving function will incorporate additional periodic sampling procedures designed to ensure:

(1) Monitor leaking packages of hazardous materials, or packages requiring minor repair, during their movement to the recoument or packaging facility, as appropriate, and during their return to the normal receiving process or disposal.

(2) Properly assign HCCs and storage locations.

(3) That all reports and/or notifications are made in connection with accidental releases of hazardous materials within allowable time frames.

(4) That types and quantities of hazardous wastes generated are accurately determined for the purposes of determining waste generator category and, in turn, the extent of compliance required.

10. WASTE MINIMIZATION APPLICABLE TO RECEIVING:

a. General: Many defense activities are considered potential sources of hazardous waste generation, because of the volume of hazardous materials received and stored. Consequently, defense activities will have in place a formal waste minimization program as directed by the Office of the Assistant Secretary of Defense (OASD). Waste minimization has been defined by OASD as "any action that reduces the need for disposal of hazardous waste." Accidental releases or spills occurring within activities are considered uncontrollable waste generation actions. There are a number of waste minimization actions considered to be controllable. Local supply instructions or procedures shall include, as a minimum, the following elements for the receiving function:

(1) Training of material handlers in the identification of hazardous materials based on placards, labels, and shipping papers. Warehouse workers, including supervisory personnel, should receive general awareness and hazard communication training IAW 29 CFR 1910.120 and 1910.1200.

(2) Procedures for identifying releases and spills and notifying spill response teams and authorities.

(3) Compliance with the provisions of DoD 4140.27-M regarding the documentation of the initial packaging date and the remaining shelf life of incoming hazardous materials.

(4) Compliance with the requirements of this document and Appendixes B and D regarding the assignment of HCCs.

(5) Detailed plans for minimizing the need to handle hazardous materials within the receipt processing area. Accidental spills can be significantly reduced by lessening the amount of hazardous materials handling during the receiving process. Such plans should provide for the repositioning of these materials to facilitate pickup by Material handling Equipment (MHE). MHE operators will not exceed the rated capacity of MHE at any time, but especially not when moving hazardous materials.

(6) Each service is to comply with their Military Service unique Hazardous material policy requirements applicable to installation level activities and infrastructure required for ongoing identification, management, tracking, and minimization of HAZMAT. The AF has established the Hazardous Material Management Process (HMMP), per AFI 32-7086, "Hazardous Material Management" to manage the procurement and use of HAZMAT to:

- (a) Support AF missions
- (b) To protect the safety and health of personnel on AF installations and communities surrounding AF installations by ensuring proper management of HAZMAT
- (c) To minimize AF use of HAZMAT consistent with mission requirements
- (d) And to maintain AF compliance with environmental requirements for HAZMAT usage

b. Guidelines: The above elements are not intended to serve as an "all inclusive" list of required actions, but rather as a guideline in developing waste minimization procedures tailored to fit the local operating environment. Employees should be encouraged to submit recommendations for achieving waste minimization goals. In addition to the requirement for legal compliance, Federal Law 5 USC 4503 (Beneficial Suggestion Program) allows payment of incentive bonuses to civilian personnel whose extra effort produces savings.

ENCLOSURE 6: STORAGE AND CARE OF HAZARDOUS MATERIALS AND
HAZARDOUS WASTES

1. GENERAL:

a. Purpose: This enclosure provides general requirements for allocating space for the storage of hazardous materials, defines the various types of storage required to satisfy safety and regulatory requirements, outlines storage procedures, and prescribes a storage quality control program.

b. Applicability: The provisions of this enclosure are applicable to all personnel involved in the storage and care of hazardous materials.

c. Reporting of Storage Space: Storage Space Status Reports are current records of space utilization and occupancy. All warehouse space dedicated to the storage of hazardous materials will be accurately reported in DD Form 805, Storage Space Management Report as specified by TM 38-400/NAVSUP PUB 572/AFJMAN 23-210/MCO 4450.14/DLAM 4145.12, Joint Service Manual for Storage and Materials Handling.

d. Hazardous Waste Minimization Responsibilities:

(1) Installations are legally compelled to take positive and specific actions in day-to-day management of hazardous materials and hazardous waste. Standards for hazardous waste generators are in Title 40 CFR, part 262. Installations, as generators, are required to submit a report every two years to the Regional Administrator of the EPA. In addition to covering generator activities during the previous calendar year, the report will include a description of the efforts taken during the year to reduce the volume and toxicity of waste generated. Within the Warehousing Division, a significant source of hazardous waste will be associated with the movement of material into and out of storage locations and the deterioration of materials in storage.

(2) Local supply instructions or procedures and Hazardous waste minimization plans (if required) should include, but not be limited to, the following elements:

(a) Improved Material Handling Practices: While material handling practices may vary, the basic principles remain constant. These principles are Enclosure 1 (z) and are particularly applicable to the movement of hazardous materials, since it is much easier to prevent an incident than to respond to one. The goal of material handling practices is to prevent accidents and spills that damage the environment and the material being moved, either directly or indirectly. Warehouse workers will be sensitive to the fact that damage to a pallet or outer container will often result in a spill, an accident, or damage to the material. Warehouse workers and materials handling equipment (MHE) operators will understand the hazardous properties of the materials. They should be aware that certain items are sensitive to an increase in

temperature, or to vibration, and that other items may react adversely to water. MHE operators will be thoroughly trained to:

1. Avoid handling incompatible materials at the same time.
2. Select the proper piece of equipment to move specific items.
3. Safely operate MHE.
4. Report spills of any size when they occur.
5. Identify items as hazardous materials prior to moving them.
6. Properly use Personal Protective Equipment (PPE) (refer to Enclosure 10)

(b) Storage Location Accuracy: Stock location systems will pinpoint an exact storage location in a simple, easily understood manner. Clearly display suitable location markings. Establish procedures to ensure positive control of all additions, deletions, and changes to the Stock Locator File. Stock locator systems will be validated at least annually or more often if warranted to ensure accuracy.

(c) Care of Supplies in Storage (COSIS) Program: The use of quality control techniques will enable a COSIS program IAW reference (ca), DLAI 4145.4/AR 740-3/AFMAN 23-125/MCO 4450.15, "Stock Readiness". Quality control and deterioration data will be generated and used to improve storage serviceability standards. COSIS program actions include performing scheduled inspections of material in storage; properly identifying items; determining the adequacy of the storage environment, preservation, packing, and marking; and arresting all forms of deterioration that will adversely affect the end use of the item. Periodic inspections of hazardous materials in storage are an important step in quality surveillance of such material. While the material is in storage, until it is shipped to the user, it will be systematically inspected to detect degradation, deterioration, corrosion damage, and other deficiencies caused by improper storage methods, expiring shelf-life, or the material's inherent deterioration characteristics. The focus should be on detecting minor deficiencies before they become significant, thus providing time for corrective actions before the material becomes unserviceable or unusable and requires disposal as hazardous waste.

(d) Shelf-Life Management: Storage personnel are responsible for executing the control programs directed by their component and installation. Effective shelf-life control at the warehouse level requires vigilance by all personnel, careful supervision, and understanding of the intent and purpose of the control procedures prescribed by DoD 4140.27-M, Shelf-Life Management Manual. Direct issues against the oldest stocks (those with the least remaining shelf life). Under normal circumstances, this policy prescribes a strict application of first-in first-out (FIFO) issue control techniques unless exceptions are authorized IAW chapter IV, DoD 4140.27-M.

(e) Hazardous Waste Storage Practices: If an installation elects to store hazardous waste in containers (defined in Title 40 CFR, section 260.10, as any portable device in which material is stored, transported, treated, disposed of, or otherwise handled), the following EPA requirements are applicable to permitted facilities under Part 264 and interim permitted facilities under part 265. For AF installations, contact the installation environmental office prior to storing any wastes.

1. Each container will comply with the requirements of Title 40 CFR, part 262, subpart A, and be clearly labeled with the words "Hazardous Waste", an indication of the hazards of the contents, and with the date the installation began to collect waste in that container.

2. Containers will be kept in good condition, compatible with waste, handled carefully, and leaking ones will be replaced immediately IAW Title 40 CFR, part 262 subpart A, part 264.171 and 265.171, as appropriate.

3. Hazardous waste will not be stored in a container if it may cause rupture, leaks, corrosion, or other failure IAW Title 40 CFR, part 262 subpart A, part 264.171 and 265.171, as appropriate.

4. Keep containers closed except when filling or emptied IAW Title 40 CFR, part 262 subpart A, part 264.173 and 265.173, as appropriate.

5. Inspect containers weekly for leaks or corrosion IAW Title 40 CFR, part 262 subpart A, part 264.174 and 265.174, as appropriate.

6. To create a buffer zone when storing ignitable or reactive wastes, containers will be placed as far as practicable inside the installation property lines, but at least 50 feet away IAW Title 40 CFR, part 262 subpart A, part 264.176 and 265.176, as appropriate.

7. Wastes that could react together to cause fire, leaks, or other releases will not be placed in the same container IAW Title 40 CFR, part 262 subpart A, part 264.177 and 265.177, as appropriate. In addition, separate incompatible wastes from one another to prevent the possibility of accidental mixing that could result in a reaction.

8. Generators may accumulate hazardous wastes on-site for 90 days for large quantity generators and 180 days for small quantity generators (270 days if the waste is transported 200 miles or more) provided certain provisions are met as specified in Title 40 CFR, part 262 subpart A.

9. Permitted facilities will have a secondary containment system for hazardous wastes as specified in Title 40 CFR, part 264.175.

10. The date upon which each period of accumulation begins will be clearly marked and visible for inspection on each container IAW Title 40 CFR, part 262, subpart A.

11. Examples of potentially incompatible wastes are contained in Title 40 CFR, parts 264 and 265, Appendix V.

12. Decide as to the applicability of Title 40, part 264 or 265 (as appropriate), parts 1080-1091, Organic Air Emission Standards for Tanks, Surface Impoundments, and Containers.

13. Lastly, requirements constantly change, therefore it is recommended to contact the installation environmental office for instructions in the Hazardous Waste Management Plan for the installation.

(f). Ozone Depleting Substances (ODS): The DoD ODS program is administered by DLA and is responsible for ensuring that:

1. All Class 1 ODS material shipped from the Military Services and Defense Agencies is accepted by the Defense ODS Reserve, including fire extinguishers, refrigerants, system spheres, and canisters. The only Class 2 ODS that is accepted is HCFC-22 (R-22).

2. Implement storage and handling practices in the receipt, reclamation, recycling, storage, and transportation of Reserve ODS material.

3. AF installations will follow AFI 32-7086 ODS procedures for the authorization for use of ODS and turn in of excess.

4. Reference DoDM 4160.21 for ODS reserve materials.

2. HAZARDOUS MATERIALS STORAGE REQUIREMENTS:

a. General: 29 CFR 1910.1200 has specific labeling requirements for chemicals with differing characteristics, as does the UN labeling (DOT) requirements to include those chemicals being recouped, all requiring different storage requirements. It is not the intent of this chapter to provide definitive guidance for the design and construction of hazardous materials storage facilities. The considerations outlined are purposely broad to serve as a general guide for storing commodities possessing chemical and physical properties that involve serious risk to personnel, the facility, and the environment. Derive actual facility design criteria from several sources within DoD, various Federal agencies, and industry. National Fire Protection Association (NFPA) standards, for example, are consensus standards developed in committee by representatives of industry, Government standards agencies, and specialized consulting firms. Consequently, such standards reflect a mixture of both subjective and objective criteria that may or may not meet the specific requirements of the DoD. A facility designed to store hazardous materials in compliance with DoD requirements will address the following, as a minimum, in the system safety analysis (SSA): roof/ceiling, walls/columns, walking/working surfaces, climate control, ventilation, access/egress, electrical systems, lighting, alarms, monitors, communications, plumbing, fire suppression, heat/smoke and explosion venting, spill control and containment, emergency eyewash/shower and first aid, storage aids, and training and emergency

spill procedures. Specific guidance addressing fire protection for facilities is available in MIL-STD-3007F, Standard Practice for Unified Facilities Criteria and Unified Facilities Guide Specifications. Comply with MIL-STD-3007F for fire protection of hazardous materials storage facilities.

b. Storage Compatibility Considerations:

(1) While developing storage layout plans, note that hazardous materials have characteristics that require the materials be specially stored or handled to prevent risks to personnel or to the facility in which they are stored. Identify such materials based on transportation placards and labels in Enclosure 4. This method of identification helps ensure such materials are directed to a designated storage area, recognize transportation codes and regulations do not necessarily apply to the storage of materials. Transportation and storage are two different operations requiring different controls. The guidelines in this section are designed to ensure the maximum possible protection against commingling of incompatible items in storage. To ensure the maximum correct storage controls and protection of the safety and health of workers, a hazardous material/chemical inventory is required of all hazardous materials being stored. This inventory will consist of the same product identity as specified on the SDS, the quantity on hand, and the date the inventory was established. The inventory should be revised as often as needed depending on the severity of the hazardous chemicals and specific control requirements as delineated in 29 CFR, part 1910, subpart Z, Toxic and Hazardous Substances.

(2) In developing the current system of identification by transportation placards and labels, terminology such as compatibility and reactivity has been considered. However, these terms should be used with extreme caution since so many variables are involved. Generally, contact between incompatible materials will produce a reaction such as fire, explosion, polymerization, boiling or spattering, severe heat, or the release of poisons or hazardous gases. The matter is more complex by the fact that reactivity of chemicals with the same molecular formula may differ because they possess different structures. The unpredictability and complexity of the hazard will be understood when planning and allocating storage facilities. The following examples are presented for information only:

(a) Certain chemicals may have the same molecular formula but be assigned different hazard classes when offered for transportation because the DOT regulation is open to interpretation in some cases.

(b) Varying interpretations of regulations, or sometimes-conflicting regulations published by different agencies, may result in the same chemical being classified in different hazard classes for purposes of transportation further complicating the problem of assuring that incompatible hazardous materials are properly segregated in storage. For example, one manufacturer has shipped 110-gallon containers of p-toluidine as NA1993, combustible liquid, n.o.s., or as IMO Division 6.1, poison, for export via ocean going vessels. On the other hand, another has shipped the same material as a non-regulated solid. Still another company has simply described the material as a combustible liquid (OSHA-regulated class III).

(3) Storage areas shall be arranged in a manner that facilitates manual (4-foot aisles) and/or MHE (10-foot aisles) access and handling, maintains stability, allows inspections, promotes good housekeeping, and safe evacuation in the event of an emergency.

c. Types of Storage Facilities:

(1) The definitions applicable to types of storage facilities are found in the Joint Service Manual for Storage and Materials Handling (TM 38-400/NAVSUP PUB 572/AFJMAN 23-210/MCO 4450.14/DLAM 4145.12) and include: General Purpose Warehouse, Controlled Humidity (CH), Refrigeration, Hazardous Materials Facility, Dry tank, Shed, Transitory Aboveground Magazine, Earth-covered Magazine, Nontraditional Warehouse, Open Storage Space

(2) Within facilities, two other defined areas are required:

(a) Separate Inside Storage. A room or building used for the storage of materials in containers or portable tanks, separated from other types of storage occupancies.

(b) Segregated Storage. Segregated storage is when materials are physically separated by sills, curbs, and distance. The distance used to separate materials may be occupied by nonhazardous, compatible material. Maintain the distance between hazardous materials even if nonhazardous, compatible material is moved.

d. Features of Hazardous Materials Storage Facilities: In view of the inherent risks to personnel and facilities posed by the storage of hazardous materials, consider protective features in designing and allocating storage space. UFC 4-442-01N "Design: Covered Storage" and MIL-STD-3007. UFCs are located at www.wbdg.org, outlines requirements for climate control; electrical lighting; plumbing; fire protection; automatic sprinklers; alarms; monitors; communications; heat/smoke and explosion venting; ventilation; and shelving/rack systems. Storage aids are to be extensively utilized for storage of hazardous materials to prevent double and triple stacking of pallet loads that cannot survive the load bearing weight of the top pallet. Do not double or triple stack as containers frequently collapse under this pressure and the stacks start to fall.

e. Types of Hazardous Materials Storage Areas: Generally, classify hazardous materials by their primary hazard characteristic since it is not practical to provide a completely detailed, item-by-item listing of these materials and their storage requirements. The 10 broad areas of hazardous materials storage are:

HAZARD STORAGE AREA CODES:

A Radioactive	G Gas, Compressed
C Corrosive	L Low Hazard (General Purpose)
D Oxidizer	P Peroxide, Organic
E Explosive	R Reactive
F Flammable	T Poison

They provide for separation of materials with a view towards reducing the risks of hazardous reactions. They also provide a means, when used in conjunction with Appendix C, for directing hazardous materials to the storage area most appropriate for the item being stored. Within each of the 10 major storage areas, as shown in Appendix C, Table C-8 (Hazardous material Storage Segregation Chart), further segregation is required based on the compatibility of the individual items whose general properties indicate they may be stored in the same storage area. Appendix C addresses this concept in the form of notes relating to secondary storage within the primary storage area. These notes do not intend to solve a space problem when a primary storage area is full. That issue should be resolved at the local installation level after consultation with base safety and health, fire department, and environmental personnel as well as higher headquarters personnel.

f. DoD Storage Type A: Radioactive Material Storage:

(1) Purpose. Use the radioactive storage area to store items of Government property composed in whole or in part of radioactive materials, which can be identified by NSN or part number.

(2) Hazard Considerations. Radioactive materials are substances that spontaneously decay and emit energetic rays or particles in the process. There are two types of radiation hazards, external exposure and internal exposure.

(a) An external radiation hazard is ionizing radiation contacting the body from an external source. Background radiation is naturally occurring external radiation; however, the hazard described here is additional to background radiation and is caused by radiation emanating from materials being handled. Reduce external radiation exposure by limiting the time warehouse workers are exposed, increasing the distance between them and the source of radiation, and increasing the amount of source shielding.

(b) An internal radiation hazard is any radioactive material that is consumed, inhaled, or absorbed through the skin. Internal radiation exposure could occur while handling leaking sources, working in contaminated areas or in airtight storage areas containing leaking gaseous sources, and during accidents. Internal radiation hazards may be reduced by following these procedures:

1. Prohibiting smoking, eating, and drinking in areas where radioactive materials may have been handled.

2. Prohibiting the storage of foods, beverages, and eating and drinking utensils in the radioactive materials storage areas.

3. Requiring personnel to wash their hands and faces upon leaving the radioactive materials storage areas.

4. By following proper procedures in handling unsealed sources or ensuring availability of protective clothing to handle potential accidental release of radioactive material.

(c). The risk of radiation exposure is compounded by the fact that emissions from radioactive materials cannot be directly detected by any of the human senses. Significant levels of radiation exposure under emergency conditions could cause acute injury or death. Radioactive materials present no unusual fire hazards, because their fire characteristics are the same as the fire characteristics of the nonradioactive form of the same compound. Expect radioactive materials to melt, vaporize, become airborne, or oxidize under fire conditions. The principal reason radioactive materials are sealed is to prevent the spread of contamination. A sealed source may burst if its contents are subject to fire. Under these conditions, it is conceivable that certain radioactive materials might be oxidized to a radioactive dust or smoke. In addition, such radioactive commodities may lose their integrity during storage and use, possibly releasing radioactive material and creating a potentially hazardous situation.

(3) Applicable HCCs: The following HCC should be stored in storage type A:

(a) A1, Licensed Radioactive Material (gamma, alpha, or beta emitters) (except depleted uranium (DU) munitions).

(b) A2, Radioactive Material, License Exempt.

(c) A3, Radioactive Material, License Exempt, Authorized.

(4) Storage Arrangement: Keep areas used for the storage of radioactive materials to the minimum needed for adequate control. Radioactive materials shall not be stored in the same warehouse section with explosives, flammable materials, photosensitive items (e.g., photographic film), food products, or other incompatible commodities. An exception applies for DU munitions, which are stored as conventional ordnance. Prohibit smoking, eating, and drinking in areas where radioactive materials are stored and handled. Commodities that contain radioactive gases or radium should be stored in well-ventilated structures.

(5) References. Additional information may be found in:

(a) MIL-STD-129, Marking for Shipping and Storing.

(b) DoDi 6050.5, DoD Hazard Communication (HAZCOM) Program

(c) AR 700-64/DLAM 4145.8/NAVSUPINST 4000.34B/AFR 67-8/MCO P4400.105C, Radioactive Commodities in the DoD Supply Systems.

(d) NFPA Standard 801; Recommended Fire Protection Practice for Facilities Handling Radioactive Materials.

g. DoD Storage Type C: Corrosive Material Storage:

(1) Purpose: Use this area to store liquid or solid materials classified by UN class 8 as corrosive materials. In addition, these materials may, be corrosive, be either acidic or alkaline.

(2) Hazard Considerations: Materials packaged and labeled as corrosive have a destructive effect on tissue and a corrosive effect on both steel and aluminum. Note, on packages labeled as corrosive for transportation, no distinction is made between acidic or alkaline materials. Corrosive solutions are measured by their pH value. A value of 1 up to 7 indicates acidity and a value of greater than 7 up to 14 indicates alkalinity. A value of "7" indicates neutrality. If a corrosive material also meets the DOT criteria for classification as another hazard (e.g., oxidizer, flammable, poison, etc.), a second label describing the additional hazard will be affixed to the package. Many acids, when mixed with other acids, undergo hazardous reactions that may, in turn, result in an explosion. For this reason, individually evaluate each material to determine specific storage and/or safety requirements. An additional problem arises in the case of material that is received in the warehouse, packaged and labeled for transportation as corrosive, but that later loses its transportation label identity when the package is opened for issue. Since only the outer package or wrapping was labeled corrosive for transportation, the remaining units of the original package may not provide any indication that the material is corrosive. For example, wet electric storage batteries, transported as corrosive, are embossed with "EXPLOSIVE" and "POISON" warnings, but are not labeled as either for transportation. When the outer packaging, bearing the "corrosive" label, is removed and discarded, care will be taken to ensure that the material is treated as "corrosive" for storage purposes. Acetic acid, for example, will be protected against physical damage and separated from oxidizing materials. Storage near combustible materials will be avoided, and it will be kept above its freezing point (62oF) to avoid rupture of carboys and glass containers. Other corrosives will be protected from excessive heat. Organic acids should always be stored under automatic water sprinklers, whereas sprinkler protection is not required for mineral acids. Appropriately segregate combustible and oxidizing acids from each other and from other combustible or incompatible materials. Note, although a building or area is dedicated to corrosive storage, evaluate each material stored therein individually to determine its special storage and/or safety requirements. Peroxyacetic acid, a strong oxidizer, for example, will never be stored on wooden pallets since a leak may cause a fire or explosion. Hydrochloric acid, on the other hand, should never be stored on a metal pallet since a leak may cause explosive hydrogen vapors to form.

(3) Applicable HCCs: The following HCCs should be stored in storage type C:

- (a) B1, Alkali, Corrosive, Inorganic.
- (b) B2, Alkali, Corrosive, Organic.
- (c) C1, Acid, Corrosive, Inorganic.
- (d) C2, Acid, Corrosive, Organic.
- (e) C4, Acid, Corrosive and Oxidizer, Inorganic.

(f) C5, Acid, Corrosive and Oxidizer, Organic.

(4) Storage Arrangement: Corrosives should be stored on pallets that are compatible with the material being stored. Use pallet racks or box pallets to store corrosive solids. The storage arrangement should permit constant surveillance and monitoring to detect leaking containers. Do not stack incompatible corrosive materials in pallet racks, above or below each other. Acids (C1, C2, C4, C5) and alkalis (B1, B2) are incompatible corrosives that should be separated by a wall or an aisle equal to or greater in width than the pile heights of the corrosives.

(5) References: Find additional information pertaining to the storage of corrosives in:

(a) NFPA Standard 43A, Code for the Storage of Liquid and Solid Oxidizing Materials.

(b) National Safety Council Data Sheet 1-523-Rev 81, Chemical Burns.

(c) DLAM 6055.5-M, Occupational Health Surveillance Manual.

h. DoD Storage Type D: Oxidizer Material Storage:

(1) Purpose: This type of storage should be used for UN division 5.1, oxidizing materials.

(2) Hazard Considerations: Several important groups of chemicals known as oxidizing agents readily yield oxygen or other oxidizing gases (e.g., chlorine, bromine, fluorine, etc.) for combustion. Although most oxidizing chemicals are not combustible, they may increase the ease of ignition of flammable or combustible materials and usually will increase the intensity of burning. A few oxidizing agents such as calcium hypochlorite, are unstable and susceptible to hazardous decomposition when in contact with moisture and organic or other flammable or combustible materials. This situation provides all of the ingredients for a fire or explosion. Calcium hypochlorite should be stored in a cool, dry, and well-ventilated place, away from flammable or combustible materials.

(3) Applicable HCCs: The following HCCs should be stored in storage type D:

(a) D1, Oxidizer.

(b) D2, Oxidizer and Poison.

(c) D3, Oxidizer and Corrosive, Acidic

(d) D4, Oxidizer and Corrosive, Alkali

(4) Storage Arrangement: Some general requirements are:

(a) The arrangement and quantity of oxidizers in storage depends upon their NFPA class (1, 2, 3, or 4), type of container, type of storage (segregated, cutoff, or detached), type of fire protection provided, and manufacturer's instructions.

(b) Approval of the storage arrangement shall take into consideration the potential evolution of large quantities of toxic vapors that would present a severe hazard to surrounding areas.

(c) Oxidizers shall be stored to avoid contact with incompatible materials such as combustibles, flammable liquids, greases, and those materials, including other oxidizers, which could react with the oxidizer or catalyze its decomposition.

(d) Oxidizing chemicals shall not be stored in the same storage area with combustible materials and flammable liquids. Combustible packaging and wood pallets may represent a severe hazard and should be eliminated from the oxidizer's storage areas to the maximum practicable extent.

(5) References: Find additional information in:

(a) NFPA 43A, Code for the Storage of Liquid and Solid Oxidizing Materials.

(b) Title 29 CFR, parts 1900-1910.

i. DoD Storage Type E: Explosive Material Storage:

(1) Purpose: The primary purpose of type E (magazine) storage is for DoD-managed ammunition and explosives assigned a DoDAC. Low-risk explosives may also be stored in type E storage when space is available. Enclosure 10 of this document provides generalized guidance for ammunition and explosives. Follow specialized DoD and service directives for storage of military ammunition and explosives.

(2) Applicable HCCs: The following HCCs should be stored in storage type E:

(a) E1, Explosive, Military.

(b) E2, Explosive, Low Risk. (Alternative to storage type L, if space available).

(3) References: Find additional information in:

(a) DoD 6055.09-M; DoD Ammunition and Explosives Safety Standards.

(b) Joint Service Manual for Storage and Materials Handling (TM 38-400/NAVSUP PUB 572/AFJMAN 23-210/MCO 4450.14/DLAM 4145.12).

j. DoD Storage Type F: Flammable Material Storage.

(1) Purpose: Flammable and combustible liquids, solids, aerosols, and flammable liquids with corrosive properties shall be stored in a flammable storage area.

(2) Hazard Considerations: Strictly speaking, flammable and combustible liquids do not "cause" fires; they are merely fuel. Flammable vapors, rather than liquids, in the presence of air and an ignition source cause fire. The principal hazard of storing closed containers is the rupture of the containers resulting from increased internal pressure when they are exposed to fire. This release and vaporization of liquid adds to the intensity of a fire and may cause the rupture of other containers, resulting in a rapidly spreading fire. Flammable solids include chemicals that are solids at 100°F or above. Flammable aerosols include flammable liquids in small-pressurized spray cans such as hair sprays or paints that have a demonstrated ability to rupture violently from internal pressure when heated in a fire. Upon explosion, these items become fireballs and rocketing projectiles that may leave a trail of burning liquid. Aerosol products have been directly involved in and sometimes responsible for extensive, costly warehouse fires.

(3) Basic Requirements: Flammable storage areas at facilities include detached flammable liquid warehouses and areas within general purpose warehouses, modified to make them acceptable. Flammable liquids in containers will be stored in pallets or pallet racks subject to the quantities and height limitations prescribed in 29 CFR 1910.106. Utilize single or double storage racks. Every inside storage room will be provided with either a gravity or mechanical exhaust ventilation system, having complete change of air within the room at least six times per hour.

(a) Outdoor storage of flammable liquid products in metal drums is not recommended. The risk associated with a pressure buildup in the drums due to thermal loading from the sun, and the likelihood of subsequent rupture, or drum failure due to corrosion or handling, creates a significant spill containment and environmental hazard. The cost of cleanup and negative public reaction to hazardous materials spills far exceeds the benefits of outdoor storage.

(b) Detached flammable liquids warehouses or areas within general-purpose warehouses modified for the storage of flammables should include the protective features for hazardous materials storage identified.

(c) Aerosol Can Storage: Aerosol cans, will be stored in a room separate from other flammables if space permits. A barrier will separate aerosol cans from other flammables, and it will be capable of containing aerosol cans that can become self-propelled projectiles and airborne sources of ignition. If aerosol cans will be stored in the same area with other flammables, use a wire mesh, expanded metal, or chain-link type of material as a floor-to-ceiling or surrounding cage type barrier. Personnel access/egress will be addressed IAW NFPA 101, Life Safety Code. If access through the aerosol can barrier is required by MHE to service pallet racks, use a self-closing gate to maintain the effectiveness of the barrier.

(4) Applicable HCCs: The following HCCs should be stored in DoD storage type F:

- (a) F1, Flammable Liquid, Packing Group I, OSHA IA.
- (b) F2, Flammable Liquid, Packing Group II, OSHA IB.
- (c) F3, Flammable Liquid, Packing Group III, OSHA IC.
- (d) F4, Flammable Liquid, Packing Group III, OSHA II.
- (e) F5, Flammable and Poison.
- (f) F6, Flammable Liquid and Corrosive, Acidic.
- (g) F7, Flammable Liquid and Corrosive, Alkali.
- (h) F8, Flammable Solid.
- (i) V2, Aerosol, Nonflammable.
- (j) V3, Aerosol, Flammable.
- (k) V4, DOT Combustible Liquid, OSHA IIIA.

(5) Storage Arrangement: Liquids in containers should be stored on pallets or pallet racks subject to the quantities and height limits prescribed in Title 29 CFR. Use storage racks, either single- or double-row.

(6) References: Find additional information in:

- (a) NFPA standard 231C, Rack Storage of Materials.
- (b) NFPA standard 30, Flammable and Combustible Liquids Code.
- (c) Title 29 CFR, section 1910.106.

k: DoD Storage Type G: Compressed Gas Cylinder Storage:

(1) Purpose: The following products should be stored in this area:

(a) Filled cylinders containing compressed gases classified by DOT as poison, flammable, or nonflammable for transportation.

(b) Filled cylinders containing compressed gases classified by DOT as poison, flammable, or nonflammable but having the additional hazard of being oxidizers, corrosives, or poisons.

(c) Filled cylinders assigned a DOT hazard classification of flammable liquid, poison, or another hazard.

(d) Unused new, purged, and clean cylinders that contain a positive pressure of dry, oil-free air or nitrogen.

(e) Previously used but still clean and serviceable cylinders that have been cleaned of all hazardous materials, purged and charged with a positive pressure of an inert gas (e.g., nitrogen) or dry, oil-free air.

(f) DOT specification 8 and 8AL cylinders classified as new for transportation and storage purposes. These cylinders contain a porous filler saturated with flammable acetone or a similar solvent, not regulated for purposes of transportation and storage. However, they will be stored in the flammable gas storage area.

(g) Fire extinguishers containing a compressed gas will be stored in the compressed gas area according to the assigned HCC.

(2) Hazard Considerations: Cylinders may contain poisonous, flammable, corrosive, reactive, oxidizing, or other hazardous materials. Many cylinders are filled with hazardous and nonhazardous gases under moderately or extremely high pressures. The prolonged storage of cylinders at temperatures in excess of 125°F may also cause leakage, distortion, failure of safety release devices, or explosion. Care will be exercised to ensure that unprotected valve outlets are not physically damaged during storage and handling.

(3) Basic Requirements:

(a) Separate all storage facilities for compressed gases from other buildings by at least 50 feet. Compressed gases should be stored in roofed, open-sided sheds on an above-grade concrete slab if climatic conditions are favorable and security precautions are adequate. Sheds should be constructed of light, noncombustible materials. Cylinders of flammable gases and gases that support combustion will be stored in separate sheds with a distance of at least 50 feet between sheds or by an approved firewall or fire barrier. The storage arrangement should protect the cylinders from direct exposure to sunlight.

(b) An enclosed storage facility, if used, should be a single story detached, compressed gas warehouse or cutoff area within a general-purpose warehouse modified for the storage of compressed gases. It should include the protective features for hazardous materials storage identified. In addition, consideration should be given to the recommendations identified for the specific hazards associated with each cylinder (flammables, poisons, corrosives, and oxidizers), outlined under each type of hazardous materials storage.

(c) To assure complete identification, label compressed gas cylinders IAW 29 CFR 1910.1200 and tag/label with the stock number for the full cylinder and the stock number for the empty cylinder.

(4) Applicable HCCs: The following HCCs should be stored in storage type_G:

- (a) G1, Gas, Poison (Nonflammable).
- (b) G2, Gas, Flammable.
- (c) G3, Gas, Nonflammable.
- (d) G4, Gas, Nonflammable, Oxidizer.
- (e) G5, Gas, Nonflammable, Corrosive.
- (f) G6, Gas, Poison, Corrosive (Nonflammable).
- (g) G7, Gas, Poison, Oxidizer (Nonflammable).
- (h) G8, Gas, Poison, Flammable.
- (i) G9, Gas, Poison, Corrosive, Oxidizer (Nonflammable).

(5) Storage Arrangement: Storage aids for compressed gas cylinders should be noncombustible and should include steel edge protectors, frames and frame supports, separators, battens, and pallets. Cylinders of compressed gases should not be stored near readily ignitable substances or combustibles. Take precautions to ensure that cylinders are not stored near unprotected platform edges or in other locations where they are likely to be struck by heavy, moving objects or MHE. Storage temperatures should not exceed 125°F as measured at the surface of the cylinder. When stored inside, cylinders should not be stored near exits.

(6) References: Additional information may be found in:

- (a) Title 29 CFR, section 1910.101 and 1910.253.
- (b) DLAR 4145.25/AR 700-68/NAVSUPINST 4440.128/MCO 10330.2C, Storage and Handling of Compressed Gases and Liquids in Cylinders.
- (c) MIL-STD-147, "Palletized Unit Loads."
- (d) TM 38-400/NAVSUP PUB 572/AFJMAN 23-210/MCO 4450.14/DLAM 4145.12, Joint Service Manual for Storage and Materials Handling.

(e) Handbook of Compressed Gases published by The Compressed Gas Association, Arlington, VA.

1. DoD Storage Type L: Low Hazard Material (General Purpose) Storage:

(1) Purpose: This area is a general-purpose storage area and should be used to store products that are classified as low hazard (low risk) materials.

(2) Hazard Considerations:

(a) For purposes of this enclosure, it would be impossible to provide a detailed listing of all the products involved and the rationale for their classification as low hazard material. Low hazard is generally assigned based on physical and chemical properties of the material and a review of the constituents listed on the SDS with consideration being given to the hazard manifested to personnel and the environment while in storage. Such a decision relies on the professional judgment and experience of the person reviewing the relevant data and assigning the HCC. Although not always regulated by DOT for transportation purposes, these materials sometimes contain constituents that could be hazardous under circumstances other than routine storage and handling. Consider these circumstances in the decision process, the primary factor influencing the classification is how the material is stored within the DoD. Sodium bicarbonate, saline solution, calcium chloride, and distilled water, for example, are assigned NSNs in FSC 6800 (Chemicals), but are handled as low hazard material under normal storage and handling conditions.

(b) Low-risk explosive materials should be packaged and labeled with the requirements of 29 CFR 1910.1200 (Hazard Communication Standard) and IAW UN division 1.4S and 1.6 explosives. These substances and articles present only a small hazard in the event of ignition during transportation. The effects are largely confined to the package, and no projection of fragments of appreciable size or range is expected. When exposed to external fire, virtually instantaneous explosion of most of the package's contents will not occur.

(c) Materials grouped as “general” miscellaneous hazardous materials (V1, V5, V6, and Z series, except Z6, Z8), may be stored in low hazard general-purpose storage areas.

(d) Under certain circumstances, individual services or agencies may allow small quantities of selected hazardous materials to be stored in general purpose storage areas when a specific mission may otherwise be adversely impacted. Avoid the risk in these situations, is the one encountered through the accumulation of small quantities of these miscellaneous hazardous materials in sufficient quantities to create a high-risk storage situation. In addition, local, state, and federal occupational and environmental regulations. The decision to deviate from these guidelines should be situation specific and the decision process fully documented and coordinated. Enclosure 6, paragraph 4.20 provides recommendations for storage under these circumstances as they relate to the Hazard Characteristic Codes.

(3) Basic Requirements: Since the materials are assigned a low risk hazard classification, they may be stored in a general-purpose (i.e. low hazard) warehouse.

(4) Applicable HCCs: The following HCCs should be stored in storage type L:

- (a) C3, Acid, Low Risk.
- (b) B3, Alkali, Low Risk.
- (c) E2, Explosive, Low Risk (alternatively may be stored in an explosive area (type E) if space is available).
- (d) M1, Magnetized Material.
- (e) N1, Not Regulated as Hazardous
- (f) T4, Poison, Food Contaminant.
- (g) T5, Pesticide, Low Risk.
- (h) T6, Health Hazard.
- (i) V1, Miscellaneous Hazardous Materials Class 9.
- (j) V5, High Flash Point Liquids, OSHA IIIB.
- (k) V6, Petroleum Products.
- (l) V7, Environmental Hazards.
- (m) Z1, Article Containing Asbestos.
- (n) Z2, Article Containing Mercury.
- (o) Z3, Article Containing Polychlorinated Biphenyl (PCB)
- (p) Z4, Article, Battery, Lead Acid, Nonspillable
- (q) Z5, Article, Battery, Nickel Cadmium, Nonspillable
- (r) Z7, Article, Battery, Dry Cell

(5) Storage Arrangement: Storage aids should offer the most practical and efficient use of space while simultaneously protecting the material from physical damage. Such aids may consist of pallet racks, pallet support sets, bins, cantilever racks, drive-through racks, and gravity

flow racks. Bulk storage space should be available to accommodate single height palletized loads of material that do not require storage aid support. Stacking heights of materials to be stored should be limited based on ceiling heights, material weight, floor load weight limitations, and minimum clearance required to accommodate fire suppression equipment.

(6) References: Find additional information in:

(a) Title 29 CFR, part 1910.

(b) ASNI/NFPA standard 101, Life Safety Code.

m. DoD Storage Type P: Organic Peroxide Material Storage:

(1) Purpose. Use this storage area to store those DOT-regulated organic peroxide formulations that are classified by NFPA standard 43B as class I, II, or III. Consider classes IV and V low risk and store in either type L or P storage.

(a) Class I describes formulations that are capable of deflagration but not detonation.

(b) Class II describes formulations that burn very rapidly and present a severe reactivity hazard.

(c) Class III describes formulations that burn rapidly and present a moderate reactivity hazard.

(d) Class IV describes formulations that burn in the same manner as ordinary combustibles, and present, a minimal reactivity hazard.

(e) Class V describes formulations that do not sustain combustion and present no reactivity hazard.

(2) The organic peroxides that fall under NFPA classes I, II, and III are required to be labeled with a DOT "ORGANIC PEROXIDE" label (UN Class 5.2) for transportation purposes, which also facilitates directing them to type P storage. Classes IV and V may or may not be identified with the DOT "ORGANIC PEROXIDE" label.

(3) Hazard Considerations:

(a) Class I, organic peroxide formulations present a hazard through easily initiated, rapid, explosive decomposition. Class I may include formulations that are relatively safe only under closely controlled temperatures. Excessively high or low temperatures may increase the potential for severe explosive decomposition.

(b) Class II, organic peroxide formulations present a severe fire hazard similar to that presented by NFPA class I flammable liquids; however, the decomposition is not as rapid,

violent, or complete as that produced by class I formulations. As with class I formulations, this class may include formulations that are relatively safe under controlled temperatures or when diluted.

(c) Class III, organic peroxide formulations present a fire hazard similar to NFPA class II combustible liquids. They are characterized by rapid burning and high heat liberation, due to decomposition.

(d) All organic peroxide formulations are incompatible with strong acids, strong alkalis, strong oxidizers, acetone, transition metal salts, promoters, and reducing agents.

(4) Basic Requirements: Detached organic peroxide storage areas within general-purpose warehouses modified for the storage of organic peroxides should include the protective features for hazardous materials storage identified in the reference cited in Enclosure 6, paragraph 4.7 with additional consideration given to:

(a) All storage areas containing organic peroxide formulations should be conspicuously identified by the words "ORGANIC PEROXIDE" (SF 443 or DOT placards are acceptable) and by class, and if more than one class is stored in the same area, then it should be marked for the most severe class present.

(b) Packages containing organic peroxides requiring temperature control should be marked with the recommended storage temperature range, and they should be stored in an environment within that range (i.e., refrigerated).

(5) Applicable HCCs: The following HCC should be stored in storage type P:

(a) P1, Peroxide, Organic, DOT regulated, NFPA classes II, III, and I.

(b) P2, Peroxide, Organic, Low Risk, NFPA classes IV and V.

(6) Storage Arrangement: The quantity of organic peroxide formulations and pile height/width limits stored in a single area shall not exceed the maximum allowable quantities specified in table 2-11 of NFPA standard 43B. Do not permit unsealed or open packages of organic peroxides in the storage area at any time. Fifty-five-gallon drums of organic peroxides shall be stored only one-drum high. Incompatible materials shall not be stored in the same storage area with organic peroxides. Bulk storage in bins or piles shall not be permitted.

(7) Reference: Find additional information in NFPA standard 43B, Code for the Storage of Organic Peroxide Formulations.

n. DoD Storage Type R: Reactive Material Storage:

(1) Purpose: This storage area should be used to store materials that are air and/or water reactive (spontaneously combustible or pyrophoric) or water reactive (dangerous when wet), but not simultaneously in the same room. In addition, lithium batteries are stored in this area.

(2) Hazard Considerations: The risk of fire is the principal hazard associated with spontaneously combustible or water reactive (dangerous when wet) materials. Some of these materials may also emit toxic gases when burning. Nearly all hazardous materials handled by facilities and classified as spontaneously combustible or dangerous when wet are flammable. However, since such materials may ignite upon contact with air and/or water, they should not be stored with flammable liquids or solids because they provide the ignition source required for flammable materials to catch fire. Package these materials IAW Enclosure 1 (f), in clean, dry, waterproof, airtight containers meeting the Performance Oriented Packaging drum configuration such as 1A2, when offered for transportation. Consult DOT Regulations (Title 49) for the exact packaging configuration. The same packaging requirement also applies to these materials when stored at freight terminals or warehouse facilities. These materials do not present an unacceptable storage risk when (1) properly stored in an environment compatible with the material, (2) stored in original containers, (3) handled with care to avoid container damage, and (4) the manufacturer's recommended shelf-life items are not exceeded.

The following additional hazard considerations for water and/or air reactive materials also apply:

(a) Significant fire hazards are associated with spontaneously combustible materials that may be water and/or air reactive. Significant quantities of heat are released during reactions, making combustible material capable of self-ignition. Therefore, incompatible materials should not be permitted in reactive storage areas. Materials such as aluminum hydride, aluminum alkyls, yellow phosphorous, and other similar chemicals will be stored in a manner that prevents contact with air. Yellow phosphorous, for example, will be stored underwater. On the other hand, materials such as aluminum alkyls that react with both air and water will be stored under a liquid or gas that is inert to the material.

(b) Dangerous when wet water reactive materials such as anhydrides, carbides, hydrides, sodium hydrosulfite, and similar chemicals, will be stored in dry areas and kept off the floor by use of pallets or rack storage. Dangerous when wet materials should never be stored directly beneath active water sprinklers.

(3) Basic Requirements: Use a modified general-purpose warehouse storage area for the storage of reactive materials. Particular emphasis should be placed on the type of floor construction and its maintenance. There should be no basement or depressions below the storage area into which water could flow or fall. Specific requirements for reactive storage areas include:

(a) For R1, spontaneously combustible materials (UN Class 4.2), specific storage requirements should be evaluated on a case-by-case basis. Sources of storage information include the manufacturer of the material, technical information data sheets or pamphlets, SDSs, military specifications (MILSPECs), and other DoD sources.

(b) R2, dangerous when wet materials, shall be stored in the original shipping container or in a compatible container of equal or greater strength. Storage areas shall be conspicuously posted with signs or notices indicating "DANGEROUS IF NOT KEPT DRY - KEEP WATER AND FLAMES AWAY" or equivalent wording.

(4) Applicable HCCs: The HCCs of materials to be stored in this storage area include:

(a) R1, Reactive Chemicals, Flammable, includes:

1. Spontaneously combustible materials, UN class 4.2.

2. Pyrophoric liquids that ignite in dry or moist air at or below a temperature of 130°F as defined in 29 CFR 1910.1200.

(b) R2, Water Reactive Chemicals, includes dangerous when wet, UN class 4.3.

(c) Z6, Article, Battery, Lithium.

(d) Z8, Article, Battery, Lithium Large Form.

(5) Storage Arrangement: Reactive materials should be palletized in a manner that prevents direct contact between the material and the floor or ground. Use pallet racks or single height stacks to prevent excessive stress on the containers. MHE and load width will dictate the amount of aisle space required. All aisles should be kept clear of obstructions.

(a) Particular emphasis should be placed on the physical condition of the package or container in which the item is stored. Packages should show no evidence of damage or deterioration, and all warning statements or labels shall be completely legible. Exercise care to ensure warning statements and labels are not covered or obliterated when applying tape. Items should be arranged in a manner that will facilitate both periodic inspection and adherence to the FIFO principle of issue control. These materials should not be stored in Supply Condition Code "A" (CC "A") beyond the manufacturer's shelf-life expiration date.

(b) Water reactive materials and materials that are both water reactive and pyrophoric should not be stored in a facility equipped with active overhead water sprinkler systems. The specific area of a facility used for the storage of water reactive materials should be isolated by a waterproof or water-resistant barrier (e.g., plastic sheeting or tarpaulin) to protect the materials from water in the event the sprinkler system is activated elsewhere in the facility. Prior to storing reactive materials, all combustible rubbish, dry or oiled paper wrapping material, and other combustible materials shall be removed from the storage area. The area should be conspicuously marked or posted to indicate the material being stored. Access to the reactive materials storage area should be restricted. Do not permit personnel to enter the area unless accompanied by an individual familiar with the hazards of the material stored in the area.

(6) References: Additional information may be found in:

(a) Title 29 CFR, part 1910.

(b) ANSI/NFPA standard 101, Life Safety Code.

o. DoD Storage Type T: Poison Material Storage:

(1) Purpose: This area should be used to store packaged materials meeting the definition of Unclasps 6.1, inhalation hazards, packing group I or II, carcinogens, infectious or cytotoxic drugs, or oxidizers or flammable liquids that are also poisons.

(2) Hazard Considerations: The release of materials stored in this area may adversely affect the environment and/or cause personnel injury through inhalation, skin absorption, or ingestion. Materials stored in this area are likely to be assigned multiple hazards. Such materials may be flammable, combustible, oxidizing, or corrosive, in addition to being poisonous. Determining a suitable storage area for material assigned the single hazard poison, for example, may be relatively simple. Based on the combined hazard, a poison assigned a secondary hazard, will be further segregated in storage. To avoid the risk of fire or explosion, for example, material assigned hazard classifications of both poison and oxidizer cannot be permitted to come into direct contact with flammables or combustibles. Determination of a suitable storage area for materials assigned multiple hazards, however, will be made on a case-plan should provide for positive horizontal and vertical isolation of incompatible materials. Achieve isolation by using separate inside storage or detached storage.

(3) Basic Requirements: Select poison storage sites with due regard to the amount, toxicity, and environmental hazards of the poisons stored, and the number and size of containers to be handled. Storage areas containing poisons shall be conspicuously marked with signs or placards identifying them. Consider the manufacturer's recommendations regarding the temperature range required to maintain the effectiveness of pesticides to be stored when determining the suitability of a particular poisons' storage area for individual pesticides. The ventilation system should assure that vapors from the poison storage areas do not migrate to other storage areas, staging areas, access aisles, etc. within the building. There should be a means to verify airflow such as a manometer or suspended airstrips.

(a) Access/Egress: Make provisions to prevent unauthorized entry with door locking mechanisms that do not impede emergency exits.

(b) Spill Control and Containment: Place particular emphasis on control and containment of water sprinkler runoff because of the insidious threat to personnel and animals of the hazardous materials stored in the poisons storage areas. Incidents which result in the release of any carcinogen, identified in 29 CFR 1910.1003, into any area where workers may be potentially exposed, will be reported within 24 hours to the nearest OSHA Area Director. A follow-up written report is required within 15 calendar days.

(4) Applicable HCCs: The following HCCs should be stored in storage type T:

- (a) K1, Infectious Substance.
- (b) K2, Cytotoxic Drug.
- (c) T1, DOT Poison - Inhalation Hazard.
- (d) T2, UN Poison, Packing Group I.
- (e) T3, UN Poison, Packing Group II.
- (f) T7, Carcinogen.

(5) Storage Arrangement: Use pallet racks, box pallets, or shelving when vertical storage is required. Poisonous materials should be stored in a manner that will prevent direct contact of the material with the floor. Only compatible materials of the same hazard class should be placed in any single vertical rack. Place materials with multiple hazard classes in separate vertical racks. Poisons should never be stored, even temporarily, next to food, food items, or other items intended for consumption by humans or animals. Cyanides and cyanide mixtures will not be stored with acids or acidic materials to prevent their accidental combination and the subsequent release of hydrogen cyanide.

(a) Access to areas where cytotoxic drugs are stored should be limited to authorized personnel. Post such areas with a large warning sign, a list of all drugs covered by cytotoxic drug policies, and a sign detailing spill response procedure. Detailed spill procedures are contained in Enclosure 9. Do not use facilities for storing cytotoxic drugs with storage for other drugs, and design to prevent drugs from falling to the floor. Apply warning labels to all containers as well as to shelves and bins where these containers are permanently stored.

(b) To prevent diversion to unlawful use, cyanide in pellet or other easily pilferable forms shall be accorded high security, sensitive item storage status.

(6) References: Additional information is available in:

(a) Title 29 CFR, section 1910.106, Criteria for Flammable and Liquid Warehouses or Storage Buildings.

(b) Title 40 CFR, section 165.10, Recommended Procedures and Criteria for Storage of Pesticides and Pesticide Containers, and NFPA standard 43D, Procedures and Criteria for the Storage of Pesticides.

(c) Title 49 CFR, section 177.848(d), Segregation and Storage of Hazardous Materials.

(d) Title 29 CFR, part 1910, subpart Z, Toxic and Hazardous Substances.

(e) DoDi 6055.1 Change1, Department of Defense Occupational Safety and Health Program.

p. Special Storage and Handling:

(1) Purpose. This area is a locally designated storage area intended for the storage of those products, which in the technical opinion of local safety, fire, or other officials offers such unique hazards to local personnel, or property is completely segregated from all other products.

(2) Hazard Considerations: The products stored in this area can cover a wide variety of hazards. When the SDS for the item appears in the HMIRS, assign one of the other standard HCCs which, in the opinion of the technical personnel reviewing the SDS, reflect the hazard characteristics of the product. However, local authorities familiar with their own facilities may completely segregate the product because of unique local conditions, regulations, or practices.

(3) Basic Requirements: The decision to segregate a product into a separate storage area will be supported by documentation such as an SDS, product bulletin, other technical literature, independent research, or through documented experience, which has proved that the item possesses unique hazards. Any decision to segregate such a product relies heavily on the professional judgment of the technical personnel at the installation.

(4) Storage Arrangement: Separate products placed in this area from all other products by at least a physical distance determined by local authorities and preferably by a wall or in another building. Storage sites should be selected with due regard to the amount, the potential safety and environmental hazards associated with the product, and the number and size of containers to be handled. Storage areas containing these items shall be limited to authorized personnel and conspicuously marked with signs or placards identifying them. Consider the manufacturer's recommendations and other technical literature regarding the type of storage aids, fire protection, storage temperature, security measures, etc. when determining the suitability of a particular storage area. The ventilation system should assure that vapors from the poison storage areas do not migrate to other storage areas, staging areas, access aisles, etc. within the building. Establish a means to verify airflow such as a manometer or suspended airstrips and a periodic air-sampling program.

(5) References: Find additional in:

(a) Manufacturers technical literature.

(b) Various technical references.

(c) DoDi 6050.05 Change 1, DoD Hazard Communication (HAZCOM) Program.

q. Storage of Operating Stock of Hazardous Materials in General Purpose Storage Areas:

(1) Each military service or agency may allow small quantities of hazardous materials to be stored in general purpose storage areas provided a specific limitation be placed on the types of hazardous materials stored, the unit container size, and the maximum volume to be stored. In addition, the guidance provided will address the type of storage device allowed, such as storage room or cabinet, and the specifications for construction of the storage device. The local guidance may be more restrictive but not less restrictive than applicable federal, state, local, and/or host nations' regulations. Consult with the installation prior to purchasing or using hazardous materials (e.g. aerosol cans, cleaners/solvents, adhesives) for normal operations.

(2) This section addresses primarily those storage needs associated with accomplishment of a mission where the amount of hazardous materials stored is incidental to the accomplishment of that mission. It is not intended to limit the quantity of hazardous materials brought into an area for immediate use. The recommended limits below are based on the requirement that storage cabinets meeting 29 CFR 1910.106(d) (3) will be used although it is recognized that the regulations apply only to flammable liquids. Follow all applicable regulatory ventilation and electrical requirements for the storage cabinets.

(3) The guidance below is provided as a guideline for the storage of hazardous materials in a general-purpose area and may be amended as appropriate by the military service or agency. The authority to issue storage guidelines may be delegated to lower commands by service/agency headquarters.

RECOMMENDED STORAGE LIMITS FOR HAZARDOUS MATERIALS IN GENERAL PURPOSE AREAS

TYPE MATERIAL	HCC	OSHA CLASS	LIMITS PER BLDG/FIRE AREA		OSHA MAX QTY
			MAX QTY	MAX QTY	
			MAX UI SIZE		
FLAMMABLE LIQUID	F2	IB	32 oz/1000 ml	25 Gal	25 Gal
FLAMMABLE LIQUID	F3	IC	32 oz/1000 ml	25 Gal	25 Gal
FLAMMABLE LIQUID	F4	II	64 oz/2000 ml	120 Gal	120 Gal
COMB LIQUID	V4	IIIA	1 Gal/4000 ml	120 Gal	120 Gal
AEROSOL, FLAM	V3		16 oz/500 ml	25 Gal	25 Gal
AEROSOL, NONFLAM	V2		16 oz/500 ml	--	--
ALKALI, CORROSIVE, INORGANIC	B1		1 Gal/4000 ml (Liquids)	180 Gal	--
			2.5 Lb/1.14 Kg (Solids)	990 Lb	--
ALKALI, CORROSIVE, ORGANIC	B2		1 Gal/4000 ml (Liquids)	180 Gal	--
			2.5 Lb/1.14 Kg (Solids)	990 Lb	--
ACID, CORROSIVE, INORGANIC	C1		1 Gal/4000 ml (Liquids)	180 Gal	--
			2.5 Lb/1.14 Kg (Solids)	990 Lb	--
ACID, CORROSIVE, ORGANIC	C2		1 Gal/4000 ml (Liquids)	180 Gal	--
			2.5 Lb/1.14 Kg (Solids)	990 Lb	--
OXIDIZER	D1		6 oz/188 ml (Liquids)	10 Gal	--
			2.5 Lb/1.14 Kg (Solids)	250 Lb	--
OXIDIZER & POISON	D2		6 oz/188 ml (Liquids)	10 Gal	--
			2.5 Lb/1.14 Kg (Solids)	250 Lb	--
FLAM LIQUID AND CORROSIVE, ACID	F6		4 oz/125 ml (Liquids)	10 Gal	25 Gal
FLAM LIQUID AND CORROSIVE, ALKALI	F7		4 oz/125 ml (Liquids)	10 Gal	25 Gal
FLAMMABLE SOLID	F8		No Limit	30 Lb	--
FLAMMABLE & POISON	F5		4 oz/125 ml (liquids)	10 Gal	--
GAS, FLAMMABLE	G2		1 Lb	220 Lb	--
GAS, NONFLAMMABLE	G3		10 Lb	300 Lb	--
UN POISON, PG II	T3		16 oz/500 ml (Liquids)	45 Gal	--
			3 oz/85 Gm (Solids)	7.5 Lb	--

Notes:

1. For flammable liquids, maximum quantity based on 29 CFR 1910.106(e) (2) (b) based on the application of horizontal standard for storage of materials.
2. Progression in U/I sizes chosen based on maximum quantity of 1 gal. as desirable for storage.
3. All HAZMAT in general purpose storage area would be placed in storage cabinets meeting requirements of 29 CFR 1910.106(d) (3). A maximum of 3 storage cabinets allowed in fire area. Additional group of up to 3 cabinets will be separated from other cabinets or group of cabinets by at least 100 ft. as specified by NFPA 30.
4. In lieu of storage cabinets, separate storage rooms constructed as specified in 29 CFR 1910.106(d)(4) are allowed.

5. Maximum storage for flammable aerosols based on fact that flammable aerosols are considered same as OSHA IA liquids for storage purposes per the definition in 29 CFR 1910.106 (A)(13).
6. Maximum quantity of corrosives chosen based on fact that maximum desired amount in storage should not equal EPCRA reportable quantity of Sulfuric Acid and Sodium Hydroxide as these are common corrosives.
7. Storage of kits containing multiple types of hazardous materials will be determined by the most restrictive size/quantity limitations, compatibility constraints, and most severe hazard classification.
8. Incompatible products shall be placed in separate storage

3. STORAGE QUALITY CONTROL:

a. General: The general purpose of the storage quality control program is to assure compliance with established DoD storage management principles, and regulatory requirements of Titles 29, 40, and 49 CFR. In addition to the quality control procedures contained in local SOPs, installation quality control programs should provide for rigid compliance with the principles described in the following paragraph to assure achievement of hazardous waste minimization goals.

b. First-In First-Out (FIFO) Method:

(1) The basic principle affecting the storage quality control plan is the FIFO method. Take care ensure that hazardous materials items with the least remaining shelf life are arranged in the storage location in a manner that will allow access while minimizing the need to move or handle such material.

(2) Take action to ensure that all hazardous materials shelf-life items are assigned a shelf-life code. If a shelf-life code has not been assigned to an item that is in fact a shelf-life item, it may deteriorate in storage and, in turn, introduce unnecessary safety or health risks and disposition/disposal costs.

c. Surveillance Programs:

(1) Provide necessary surveillance to ensure that hazardous materials items are always in a ready-for-issue condition IAW applicable DoD standards or other appropriate technical documentation. Storage personnel performing routine surveillance should be alert for expired shelf-life dates (Type I items) or for inspection/test dates which have past (Type II items) and ensure that the appropriate office is notified when these stocks are discovered.

(2) To assist in operating shelf life programs, the DLA HQ administers the Shelf-Life Extension Program (SLES), which consists of two major databases. They are the Material Quality Control Storage Standards (MQCSS) and the Quality Status List (QSL). In addition, a

course entitled DoD Shelf-Life Management is available from DLA HQ. This course explains how to use the databases and provides knowledge and skills to determine the condition of shelf life material upon receipt, in storage, during surveillance, upon shipment, and when test or restorative actions are required to maintain or return stocks to a ready-for-issue status.

d. Disposal of Excess Stocks: Services operating HAZMIN centers and shelf life extension programs shall follow guidelines and policy set forth by their respective headquarters. Exhaust all reuse and redistribution opportunities at the installation level prior to any disposal actions. Once determined that hazardous materials shelf-life items are excess and disposal action is required, immediately, process through the Defense Logistics Agency Disposition Services site (DLADISPO) or recoument facility, as appropriate. Prompt disposal action will reduce disposal cost and lessen other environmental problems. Some States, under their environmental laws, interpret the expiration of shelf life for hazardous materials as the point at which the item becomes classifiable as solid waste, subject to a hazardous waste determination. See Enclosure 13 for procedures to process hazardous materials to a DLADISPO site.

e. Control of Storage Locations:

(1) Installations will establish procedures to provide for positive control of all hazardous material removed from permanent storage locations to temporary storage areas, packaging, or the recoument facility, for correction of deficiencies detected during routine surveillance inspection.

(2) Provide necessary surveillance to ensure all hazardous materials in storage are assigned the proper HCC and that such material is in fact stored in the proper storage area.

f. Physical Inventory of Hazardous Materials: Before permitting to participate in physical inventories of hazardous materials, thoroughly indoctrinate personnel in the hazards involved. Refer to Enclosure 11 of this publication for training requirements.

4. RECOUPMENT OF HAZARDOUS MATERIALS:

a. Purpose and Applicability:

(1) The purpose of this section is to prescribe procedures to safely receive, inspect, store, segregate, and recoup hazardous materials. Implementation of the requirements identified in this chapter should reduce the risks to personnel, installations, and the environment while assuring compliance with Federal, DoD, and host nation regulations. DoD services/activities operating facilities with established hazardous materials/hazardous waste management systems shall follow guidelines and policy set forth by their respective headquarters.

(2) If recoument facilities, equipment, or personnel are not available or are inadequate for the material involved, then prepare the hazardous material for disposal as outlined in Enclosure 13.

(3) The contents of this enclosure are applicable to personnel involved in the physical recoupment of hazardous materials or in the decision-making process of recoupment operations.

b. Background:

(1) During the recoupment process, stock items in a Not Ready for Issue (NRFI) state are reclaimed, brought back to an issuable state, and returned to stock. Most hazardous materials relegated to a recoupment facility are deteriorated or were damaged during handling or storage; however, some materials may have been damaged during shipment. Damage or deterioration may be superficial and may only require replacement of labels, markings, or packing. However, damage or deterioration (e.g., dented, leaking packages) may require transfer of the material to a new package. Replacement of labels, markings, or packing is a packaging function; replacement of packages will be the responsibility of recoupment facilities. Do not mistakenly relegate materials with an expired shelf life to a recoupment facility. Assure recoupment personnel follow quality assurance directives.

(2) Recoupment, an important part of an installation's hazardous materials operation, has three primary objectives: (1) minimizing hazardous waste; (2) minimizing loss of stock; and (3) maintaining product quality. Return NRFI items to stock through recoupment, rather than relegating them to disposal for sale as excess personal property or as hazardous waste. Direct this positive and specific action toward decreasing stock loss and hazardous waste generated by installation operations. An effective recoupment operation will have fast turnaround of damaged stock with no loss of product quality.

(3) A recoupment operation depends on a variety of factors: recoupment processes, the physical state of the material (e.g., solid, liquid, powder), the hazards associated with the material (e.g., flammability, reactivity, corrosivity, toxicity), and the type and size of the package. Actual recoupment operations that can safely be performed depends on the types of transfer, materials handling, and safety equipment available and on the design of recoupment facilities. Relabeling the hazardous material poses little threat to personnel health. However, operations that involve open packages of hazardous materials (e.g., transfer of hazardous materials to new packages, handling damaged/leaking packages of hazardous materials) pose a risk to personnel, the environment, and the facilities. The degree of risk is a function of the material and its associated hazards. The probability of a hazardous material mishap resulting in a serious incident (e.g., commingling of incompatible materials, fire, explosion, toxic fume generation, environmental/personnel exposure) is higher during recoupment operations than during normal operations because open packages of hazardous materials are involved. Incorporate strict procedural and engineering controls into recoupment operations to prevent any damage or injury to personnel, facilities, or the environment.

c. Impact of Federal Regulations: Recoupment personnel will be aware of pertinent Federal regulations and their impact on recoupment operations. In addition to the requirements identified in this instruction, recoupment personnel will be particularly alert to the following:

(1) To comply with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and Title 40 CFR, concerning pesticides, manufacturers and formulators will submit pesticide labels to EPA for registration before distribution of the pesticide; use of any other label for distribution is unlawful. Recoupment of damaged or deteriorated pesticide labels, packs, or packaging cannot be performed. Return NRFI pesticides to the manufacturer for recycling or will be processed through the DLADISPO site as waste.

(2) Radioactive substances exceeding exempt concentrations require licensing by the NRC according to Title 10 CFR. Radioactive materials not licensed by the NRC may require licensing by the DoD component. If a licensed radioactive material is damaged, emergency procedures and reporting should be implemented. Do not open a seal radioactive material source. All maintenance operations with radioactive materials will be licensed or authorized by NRC or the appropriate service-licensing official.

(3) Management of hazardous waste generated during recoupment operations, including contaminated equipment and residues from damaged containers, will conform to regulations in Title 40 CFR concerning hazardous waste disposal. Contact the installation environmental office for instructions.

(4) To comply with the Clean Air Act, regulated by the EPA under Title 40 CFR, each State will develop and enforce an air quality control plan that will attain and maintain the levels of specified air pollutants at the national standard. Recoupment of hazardous materials may result in the emission of air pollutants regulated by air quality control plans (e.g., hydrocarbon vapors). Recoupment personnel at each facility should contact the Environmental Office to determine whether recoupment operations affect the installation's emissions.

d. Planning and Coordinating Recoupment Operations:

(1) To conduct safe and efficient recoupment operations, advance planning and coordination of activities are required. Recoupment personnel should receive advance notification of NRFI materials including identification of the material (e.g., national stock number (NSN), noun name), the unit of issue, the quantity, and the nature of the damage. Recoupment personnel (in conjunction with competent authorities) will assure that sufficient interim storage space is available, that proper equipment and sufficient personnel are available to perform recoupment operations, ensure items are safe to accept, and that recoupment procedures and emergency planning specific to a material can be prepared. Proper advance planning and coordination will promote a safe environment for the receipt, interim storage, and recoupment of NRFI materials and, in turn, will expedite the return of materials to stock.

(2) After receiving notice of materials requiring recoupment, recoupment personnel should prepare for the arrival of NRFI items as follows:

(a) The description of the item's condition will determine whether to perform recoupment immediately upon receipt, or whether to place the item in temporary storage until recoupment operations may be conveniently scheduled. Recoup packages showing evidence of

leaks, punctures, or deterioration as soon as possible; place these materials in over-packs or salvage drums before transport to recoupment facilities.

(b) When placing the item in interim storage, assure that sufficient and acceptable storage space is available. If space is not available, reschedule the date of arrival for a time when space will be available, or coordinate with the Installation Environmental Office to find a suitable storage area.

(c) Based on the material identification and HCC recoupment personnel should determine the hazards associated with the specific material, plan the recoupment procedures, and determine the necessary emergency response procedures (if not already identified in the Installation Spill Contingency Plan (ISCP)). Information concerning a material's hazards can be determined from material-specific references such as an SDS or the HMIS.

(d) Assure appropriate labels, packaging materials, and packages are available that conform to UN packaging requirements and NSN specifications.

(3) To assure that personnel can safely perform recoupment operations, competent authorities at each installation will assess the equipment and facilities available to determine which hazard classes can be processed. This assessment should take into consideration any Federal, state, local, DoD or host nation regulations concerning storage and handling of hazardous materials (e.g., Titles 29, 40, 49, 16, and 10 CFR); applicable building codes (including NFPA codes, the National Electric Code, structural codes); and system safety analyses that have been performed on recoupment facilities or operations. Process only the hazard classes certified by authorized personnel at a recoupment facility.

(4) Regulatory limitations or the high risk to personnel does not allow recoupment of the following materials at any facility:

(a) Radioactive commodities (HCC A1) which are unsealed due to damage. Replace damaged packaging if the source is undamaged and sealed, if the installation possesses a license for the item, and if the RPO has authorized the action.

(b) Pesticides. Return pesticides (HCC T5) to the manufacturer/formulator for relabeling or repackaging or processed for disposal IAW Enclosure 13.

(c) Aerosols. Send Aerosols (V2, V3) for disposal or crushing to a state- or Federal-permitted facility that has the engineering controls and safety features comparable to those of an aerosol-filling facility. Coordinate this action through the DLADISPO site.

(d) Explosives. Explosives (E1, E2) will be disposed of IAW DoD 6055.9, Department of Defense Ammunition and Explosives Safety Standards.

(e) Compressed Gases. Compressed Gases (G1 - G9) in Cylinders and Flasks. These will be processed IAW DLAR 4145.25/AR 700-68/NAVSUPINST 4440.128/MCO 10330.2C, Storage and Handling of Compressed Gases and Liquids in Cylinders.

(f) Spontaneously Combustible Materials. Send spontaneously Combustible (R1) materials for disposal to a state- or Federal-permitted facility that has engineering controls, and safety features on the same order as those of a manufacturing facility. Coordinate this action through the DLADISPO site.

(g) K1 Infectious Substances. For disposal of infectious substances (K1), contact the medical officer, veterinary officer, or Defense Personnel Support Center, or process IAW Title 42 CFR.

(5) The recoupment operation will ensure the following:

(a) Ensure contract number, batch, and CAGE code are perpetuated when re-containerizing to negate loss of identity of contractor/manufacturer.

(b) Only, stage workload that can be physically processed in any given shift. Material, unless seriously leaking or potentially harmful to personnel or the environment, should stay in conforming storage until workload allows recoupment.

(c) Perform proper recordkeeping in order to establish an audit trail of costs incurred for person-hours and materials. This will ensure reimbursement to proper parties.

(d) Pay particular attention to section 3.22 of this regulation in regard to toxic materials they may or may not be able to recoup.

5. RECEIVING HAZARDOUS MATERIALS AT A RECOUPMENT FACILITY:

a. General:

(1) Upon arrival of the hazardous material at a recoupment facility, perform a visual inspection of the exterior to assure a release has not occurred. Prior to an actual physical inspection of the interior, review the manifest to determine if a potential exists for an adverse impact if any breakage did occur. If so, personnel should suit-up in appropriate personal protective equipment to include respiratory protection prior to opening and/or entering the vehicle for the inspection. Physical evidence for a potential release includes crushed/fallen/shifted loads. If the inspection reveals a hazardous materials spill, personnel should discontinue receiving operations and implement emergency procedures as outlined in Enclosure 9 of this publication.

(2) Accompany material sent to a recoupment processing facility with a Storage Quality Control Report (DD Form 1225). This report identifies the material and describes the corrective action required to return the material to an issuable status.

b. Receiving Inspection:

(1) The purpose of inspection is to assure that materials are properly identified and assigned the appropriate HCC, and that the facility is equipped to perform recoupment of the material.

(2) Perform a receiving inspection prior to offloading; however, if this is impractical, offload materials onto a staging area for inspection. Segregate incompatible materials as outlined in section II.

(3) Receiving inspection should verify that the following information is available:

(a) Material identification including NSN, manufacturer's name, product identity (part number/trade name), SDS, and HCC.

(b) Unit of issue and type of package, including number of packages per pack.

(c) Quantity of material.

(d) Shelf-life code (i.e., type I or II), expiration date or inspection/test date.

(e) Identification of activity or organization turning in materials for recoupment.

(f) Details of the cause and nature of the defect, including whether personnel suspect material contamination.

(4) Recoupment personnel should verify that the specific recoupment operation could be performed at the recoupment facility. Process non-recoupable material for disposal IAW Enclosure 13.

(5) Discrepancies discovered during the receiving inspection should be resolved per local procedures.

c. Accepting Receipt:

(1) If no discrepancies are discovered during the receiving inspection, recoupment personnel should accept receipt of the material. Contact the HMIS focal point, if an HCC has not been assigned, and request an HCC assignment.

(2) At the time of receipt, materials should be included on the recoupment schedule. The recoupment schedule should be a prioritized list. The materials that will be recouped right away should appear first (e.g., leaking, punctured, or open packages that are over-packed; Condition

Code E materials with pending back orders). The materials that should be recouped as soon as possible should follow these (e.g., packages that are likely to leak; rusting containers; materials with an extendible, expired shelf life or with an extendible shelf-life expiration date within 3 months). Any remaining materials (e.g., slightly damaged containers) should have the lowest priority.

(3) When the material can be safely offloaded and receipt can be accepted, carefully remove the materials from the transport vehicle or staging area and place directly into the appropriate recoupment, processing, or holding area. Segregate incompatible materials IAW section II at all times during storage and transport.

(4) If test samples have not already been taken, at this, time draw samples of materials suspected to be contaminated and of materials with an extendible, expired shelf life. These tests are required to assure that product quality is within specifications. Contact Quality Assurance concerning test sampling (see section IX of this enclosure).

6. PROCESS HOLDING OF HAZARDOUS MATERIALS AT A RECOUPMENT FACILITY:

a. General: The purpose of a holding area at recoupment facilities is to provide a means of segregating incompatible materials until recoupment. NRFI items turned in to recoupment facilities have a higher probability of leaking during handling or storage than during normal operations. Efficient segregation and procedural controls are required to prevent commingling of materials that may result in hazardous reactions (e.g., fire, explosion, toxic fume generation, etc.).

b. Holding Storage Area Requirements:

(1) The holding area will provide segregated storage for each storage group that is processed through a facility (as defined by Hazard Storage Area Code (HSAC) and HCCs in this chapter). A list of HSACs follows, with corresponding HCCs to be handled at facilities. Provide a segregated storage area for each HSAC. (HCCs that should not be processed within a facility are not included.)

(a) HSAC A: HCCs A2, A3

(b) HSAC C: HCCs C1, C2, B1, B2, C4, C5

(c) HSAC D: HCCs D1, D2, D3, D4

(d) HSAC R: HCCs R2, Z6, Z8

(e) HSAC F: HCCs F1, F2, F3, F4, F5, F6, F7, F8, V4

(f) HSAC L: HCCs C3, B3, M1, N1, P2, T4, T6, V1, V5, V6, V7, Z1, Z2, Z3, Z4, Z5, Z7

(g) HSAC T: HCCs K2, T1, T2, T3, T7

(h) HSAC P: HCCs P1

(2) Segregate incompatible storage areas. Appendix C details segregation within compatible storage areas.

c. Holding Area Procedures:

(1) Segregate and place materials brought to recoupment facilities, according to HCC, in a compatible holding area as outlined previously in this section.

(2) Place materials that are leaking or likely to leak in spill pans or over-pack drums before storing in the recoupment facility.

(3) Personnel should simultaneously handle compatible materials only. Segregate incompatible materials during all phases of recoupment operations. Segregation within compatible holding areas defined by HSACs C and L is required as follows:

(a) HSAC C: HCCs C1, C2, C4 and C5 a minimum of 6 feet from HCC B1, and B2.

(b) HSAC L: HCC P2 a minimum of 6 feet from combustible/high flash materials (V4, V5, V6).

(4) Frequently perform a walkthrough inspection of the holding area by supervisory personnel to detect actual or potential release of hazardous materials. Upon discovery of a release, recoupment personnel should implement emergency procedures as directed in Enclosure 9 of this regulation.

7. FACILITY AND EQUIPMENT REQUIREMENTS FOR HAZARDOUS MATERIALS RECOUPMENT:

a. Requirements for Hazardous Materials Recoupment:

(1) A hazardous materials recoupment facility will provide a safe working environment that protects personnel against injury or illness, protects the facility against costly damage, prevents hazardous materials from contacting incompatible materials or conditions, and prevents release of hazardous materials into the environment. Ideally, structural, electrical, and mechanical components incorporated into the facility design (in conjunction with transfer, emergency, and safety equipment) should accomplish the tasks listed below. However, personnel and procedural controls (discussed in section VIII) may be required to fully achieve these goals. The facility design will accomplish the following:

- (a) Minimize personnel exposure to hazardous materials and prevent personnel exposure to toxic materials (especially HCCs D2, F5, K2, T1 through T4, and T7).
- (b) Segregate incompatible materials to prevent dangerous reactions.
- (c) Eliminate conditions that may decrease a material's stability or usefulness (e.g., ignition sources, water, warm temperatures, cool temperatures, contamination).
- (d) Prevent escape of hazardous materials into the external environment.

(2) This section describes basic criteria that will be incorporated into the design of recoupment facilities; however, authorities at each installation will perform a final assessment to determine which hazard classes can be safely processed in the available facilities. To make this determination, personnel will comply with appropriate Federal, state, local, DoD, component, and host nation regulations concerning handling, transfer, and dispensing of hazardous materials; applicable building codes (e.g., NFPA codes, NEC), and system safety analyses. Requirements for flammable/combustible liquids have been included in this section, since a majority of materials handled by recoupment facilities belong to this hazard class.

(3) A recoupment facility should be a completely enclosed building without crawl spaces or basements. In some cases, perform recoupment in a multipurpose facility as long as walls with a minimum 2-hour fire resistance rating isolate the recoupment area from the rest of the locations, per NFPA 30. Interior firewalls should extend from the floor to the ceiling and should extend a minimum of 32 inches through the ceiling if the ceiling has less than a 1.5-hour fire resistance rating. Exterior walls should have a minimum fire resistance rating of 2 hours.

(4) To provide sufficient segregation for safe recoupment of incompatible materials, the facility layout should have a minimum of six (and preferably seven) isolated recoupment workrooms. Assign each workroom a group of compatible materials, based on the HCCs, as follows: (1) flammable/combustible materials (HCCs F1 through F8 and V4). (2) acidic materials (HCCs C1, C2, C4, C5). (3) alkaline materials (HCCs B1, B2) (these materials also may be recouped in workrooms assigned to toxic materials or to flammable/combustible materials). (4) oxidizing materials (HCCs D1 through D4). (5) organic peroxides (HCCs P1 and P2). (6) Dangerous when wet materials (HCC R2). (7) Toxic and low hazard materials (HCCs K2, M1, N1, T1, T2, T3, T4, T6, T7, V1, V5, V6, Z1 through Z5, Z7); and radioactive materials (HCCs A2, and A3). Recoupment in workrooms should be restricted to the assigned hazard categories only. However, if a sufficient number of workrooms are unavailable, recoupment of different hazard categories can be performed in the same workroom as long as the following procedures are followed: (1) the workroom is completely decontaminated between operations, including cleaning up spills and removing wastes that have been generated. (2) transfer equipment (e.g., funnels, tubing) is used for compatible materials only. (3) Do not recoup flammable/combustible liquids and solids in the same room as acids, oxidizers, organic peroxides, and water reactive materials.

(5) Incorporate a personnel change/decontamination area into recoupment facilities consisting of a "clean" room (used for donning work clothes and PPE) and a "contaminated" room (used for showering and for removing contaminated work clothes and PPE).

(6) Incorporate spill control and containment features to prevent spread of spills, commingling of incompatible materials, and release of hazardous materials into the environment. This includes diking around the perimeter of each room in the recoupment facility; continuous, nonporous surfaces; sealed construction joints; and sealed impervious finish of floor surfaces. Dikes should be capable of containing accumulation from sprinkler system water flow (IAW NFPA 15). Incorporate ramps to provide access for personnel and MHE with a maximum slope of 12 percent for personnel exits and a maximum slope of 8 percent for cargo exits.

(7) A spill control/containment system is also required for the facility's load/unload pad. This system should include the features mentioned above and a containment trench with a release valve to allow drainage of rainwater accumulation.

(8) Each room in the facility should have two emergency exit routes. However, recoupment workrooms may be too small to accommodate an additional emergency exit. In such cases, arrange workstations within a workroom so that personnel will have a clear, unobstructed exit route if an emergency occurs. Emergency exits will be equipped with panic hardware and illuminated exit signs and will open in the line of egress.

(9) Separate all rooms (including recoupment workrooms) by walls rising to an integral with the roof. Install fire-rated observation windows (in doors or walls) to allow personnel to view rooms prior to entry.

(10) Provide a ventilation system capable of functioning in both a general use mode and an emergency mode. The ventilation system should supply and exhaust air via mechanical or passive means or a combination of both and should maintain negative pressures in recoupment workrooms relative to adjacent rooms (including interior corridors and staging areas). The ventilation system should not interfere with the airflow of local exhaust hoods (see transfer equipment requirements in 4.37.K.2.b) but should provide a minimum of six room air changes per hour. Exhaust air ducts should be situated a maximum of 12 inches above the floor for recoupment of NFPA class I flammable liquids. Ensure the ventilation system providing that shop air is not shared with any administrative areas where personnel unprotected by PPE may be working.

(11) Electrical components should consist of; in-conduit wiring and conform to NEC class I, division 2 standards as specified in NFPA 70, Article 500. In areas where NFPA class I flammable liquids will be recouped, all electrical components within 3 feet will conform to class I, division 1 standards. Areas where flammable liquids are transferred from one to another are included in division 1 whereas division II includes storage areas where the liquid is normally confined in closed containers and can escape only in an accidental release.

(a) An automatic fire suppression system is required for recouplement of flammable or oxidizing materials. The system should use an appropriate extinguishing medium. Upon activation, the fire suppression system should deactivate ventilation systems and activate alarm systems.

(b) Equipment Requirements for Hazardous Materials Recouplement:

1. Equip recouplement facilities with a variety of equipment to safely transfer hazardous materials to new packages. Transfer equipment is required to prevent release of a material or its vapors and to facilitate transfer with a minimal loss of the product. Provide safety and emergency equipment that will prevent or minimize personnel exposure/injury and damage if a mishap occurs. This section describes the equipment requirements for a hazardous materials recouplement facility.

2. A variety of factors influence the specific transfer equipment required for recouplement, including a material's physical characteristics (e.g., vapor pressure, physical state), a material's hazardous characteristics (e.g., flammability, corrosivity, toxicity), and the package. Transfer equipment, in conjunction with controls (e.g., spill control/containment, ventilation, eye washes, deluge showers, etc.), should prevent release of materials or dispersal of vapors or dust into the work environment during recouplement operations. Transfer equipment requirements include the following:

a. Transfer equipment, including pumps and funnels, will not react with or absorb the material being recouped. Take particular care when choosing equipment for solvents, corrosives, and reactive.

b. When recouping flammable, reactive, or shock sensitive materials, transfer equipment should be non-sparking and designed to minimize friction and static charge buildup. Equipment will be bonded or grounded when flammable/combustible materials (including organic peroxides) are transferred between containers that are conductive (e.g., metal cans) or nonconductive and with capacity greater than 5 gallons (e.g., plastic-lined drums). Use one of the following methods to achieve bonding or grounding:

*keeping transfer equipment (e.g., fill spout, nozzle, fill pipe, funnel, strainer) in continuous contact with the edge of the fill opening.

*attaching a bond wire between metal parts of both containers; and

*attaching a ground wire between metal parts of each container and the ground.

c. Whenever practical, recouplement operations that release or generate airborne contaminants will be equipped with engineering controls that prevent operators from receiving exposures that exceed the occupational exposure limits. Engineering control methods include, but are not limited to, containment in cabinets or hoods, reduced temperature for vapor reduction, wet methods for dust control, and local exhaust ventilation to remove contaminants from the air. Design controls to maintain toxic vapor/particulate concentrations below the

permissible exposure limits established by OSHA in Title 29 CFR, part 1910, and by American Conference of Governmental Industrial Hygienists (ACGIH), and to maintain flammable vapor concentrations at a maximum of 25 percent of the Lower Explosive Limit (LEL). If properly designed and used, control devices will minimize personnel exposure to hazardous substances and prevent the buildup of an explosive atmosphere. The Industrial Hygiene Office should periodically monitor recoupment workrooms to assure that the control devices are functioning properly.

d. Special MHE, such as a "Hydro lift" carrier, may be required for managing large containers.

e. Perform recoupment of highly toxic materials, infectious substances, and cytotoxic drugs in a glove box or biological safety cabinet.

(3) Safety and emergency equipment will protect personnel from exposure or injury and the facility from damage in the event of a mishap involving hazardous materials. Safety and emergency equipment requirements include the following:

(a) Appropriate personal protective equipment (PPE) generally consisting of appropriate gloves, goggles, boots, and coveralls. Additional PPE such as respirators, face shields, and chemical-resistant coveralls, may be required depending on the material's hazardous characteristics. When selecting PPE, consideration will be given to the chemical and physical characteristics and related hazards of the material and to the protection already given by facility and equipment controls. Conduct a job hazard analysis to determine the exact PPE requirements based on the tasks being performed and the materials used. Consult the safety and health officer and/or industrial hygienist concerning additional PPE requirements.

(b) Provide eyewash/shower stations that conform to the "American National Standard for Emergency Eyewash and Shower Equipment" (ANSI Z358.1), or the individual military service equivalent. Place eyewash/shower stations within 25 feet from each recoupment workstation. Competent authorities assure tempered water (i.e., 60°F. to 95°F.) is provided to eyewash/shower stations and valves are designed to provide a continuous flow of water for at least 15 minutes without the need for constant activation. Provide a shutoff valve to enable deactivation of the system when required.

(c) First-aid kits and fire blankets should be strategically located within the facility unless individual military service policy specifies otherwise.

(d) Spill control and containment equipment including absorbents, neutralizers, and chemical mops should be available.

(e) Provide fire extinguishers containing the appropriate fire extinguishing media in each recoupment workroom and interim storage area.

(f) Install and equip the facility with a pull-box alarm at each exit, and heat/smoke detectors that activate alarms both locally and at the fire department.

8. PROCEDURAL REQUIREMENTS FOR HAZARDOUS MATERIALS RECOUPMENT:

a. General:

(1) Divide recoupment of hazardous materials into two categories, "care, preservation, and open container transfer." Care and preservation recoupment require relabeling, remarking, cleaning, or repacking materials without opening the original package. Packaging personnel will perform care and preservation recoupment under the COSIS Program. Open container transfer recoupment involves the transfer of hazardous materials from damaged packages to new packages and thereby exposes personnel and facilities to the hazards associated with the material (e.g., flammability, toxicity, corrosivity, reactivity). To safely transfer the materials, procedural controls will be implemented that will augment the safety provided by recoupment facility and equipment controls. This section describes the procedures required to safely, and efficiently return to an issuable state material with severely damaged or deteriorated packages in need of replacement. This section details general procedural requirements. Section 4.39 details preparation for transfer and transfer procedures, decontamination and cleanup procedures in section 4.40, and emergency procedures relevant to recoupment operations in section 4.41.

(2) During all phases of recoupment operations, segregate incompatible materials as outlined in section II for holding areas. In addition, recoupment personnel should assure that incompatible conditions that may reduce the stability of a product are eliminated from the environment in which the material is recouped. Incompatible conditions may include flame, heat, sparks, sunlight, water, humidity, air, or other manufacturer-identified conditions.

(3) Maintain the quality of the product. Before beginning recoupment, recoupment personnel should verify that the shelf life has not expired, and during open container transfer operations, personnel should assure the material is not contaminated. Implement quality control procedures detailed in section IX.

(4) Recoupment personnel should maintain the following records:

(a) Maintain an inventory of hazardous materials in the holding area and recoupment area and send periodic updates to the fire department and spill response team. This will provide a means for emergency response personnel to quickly assess the hazards present in the facility in the event of a mishap.

(b) A record of recoupment operations should be maintained, including the identity of personnel who performed the recoupment, the identity and quantity of material recouped (including NSN, hazardous constituents, and type of package), the type of recoupment performed, and any mishaps that occurred during recoupment (e.g., spill, personnel exposure).

Use these records to improve recoupment operations. They may be vital in determining the health condition and required treatment of injured personnel.

(c) Maintain an inspection and maintenance log for each piece of equipment. The log at a minimum should identify equipment inspected/tested, the nature of the defect discovered, corrective action taken, and the responsible party.

(d) Maintain an entry/exit log identifying the personnel and visitors present in the facility.

(5) Access to recoupment facilities and interim storage areas will be restricted at all times. Escort visitors by authorized recoupment personnel.

(6) Eating, drinking, smoking, and chewing should be prohibited in recoupment work areas and interim storage areas. Provide an isolated area for personnel breaks.

(7) Recoupment personnel perform operator's maintenance or assure that operator's maintenance is performed on equipment and mechanical components. If equipment requires repair, personnel should schedule repair work with appropriate maintenance personnel as soon as possible. Verification of repair work performed on equipment protecting personnel or facilities (e.g., ventilation system, fire suppression system, and emergency eyewash/shower), by competent authorities that the equipment functions properly.

(8) The recoupment supervisor and personnel will have appropriate training, which should include the following as a minimum:

- (a) Safe procedures for handling, storage, and transfer of hazardous materials.
- (b) Recognition and classification of hazards associated with materials brought to recoupment facilities.
- (c) Personal protective equipment program requirements.
- (d) Emergency response procedures, especially first aid.
- (e) Understanding and use of SDS.

(9) Transfer materials from holding areas to recoupment areas at the time recoupment is performed. Return recouped materials to stock as soon as possible.

(10) When replacing a material's cushioning, dunnage or outer container, packaging personnel verify the material's packaging is not deteriorated or damaged. If the packaging has deteriorated or has been damaged. Process the material through a recoupment facility meeting criterion specified in section VII.

b. Preparation for Open Container Transfer:

(1) Open container transfer recoupment involves the transfer of hazardous materials from a damaged or deteriorated package to a new package. During open container transfer operations, recoupment personnel and facilities are at risk of exposure to materials and their related hazards. For safe transfer of the material to new packages, recoupment personnel will prepare for the specific operation and will implement procedural controls to assure that a mishap (e.g., spill, personnel exposure, fire) does not occur.

(2) To assure that transfer operations will run smoothly and safely, take the following actions before recoupment operations begin:

(a) The recoupment supervisor shall request that local qualified safety and health personnel evaluate the workplace and assure that the facility is adequate for hazardous materials recoupment. Periodic testing of facility equipment (e.g., local exhaust hoods, ventilation systems) may be required.

(b) Recoupment personnel and supervisors review and be aware of a material's hazards including its toxicity, incompatible materials and conditions to avoid, and necessary emergency procedures to follow if a mishap occurs.

(c) Specific recoupment procedures, including safety procedures, should be developed and reviewed before operations begin. Compile these into a safety/procedural manual, used by recoupment personnel, describing the procedures for recoupment of hazard classes that may be encountered.

(d) The recoupment supervisor shall request that local qualified safety and health personnel evaluate the workplace and select appropriate personal protective equipment (PPE) for use by workplace personnel. Minimal PPE requirements are appropriate gloves, chemical splash goggles, boots, and coveralls. However, additional PPE may be required. When selecting PPE, personnel should first evaluate the available equipment and determine the equipment's effectiveness in reducing the material's hazards. Next, the types of PPE (e.g. face shields, respirators) will be selected that will provide complete protection to recoupment personnel. Selected PPE will resist degradation, penetration, and permeation by the materials being recouped; will not limit personnel mobility; will be resistant to tears and punctures; and will be disposable or easy to clean.

(e) The recoupment supervisor will assure that equipment is functioning properly and post the appropriate hazard warning signs.

(3) Perform the transfer of hazardous materials in a manner that will prevent personnel exposure to the material, that will prevent exposure of the material to incompatible materials and conditions, and that will prevent any release of the material. Incorporate the following procedures into all transfer operations:

(a) A minimum of three recoument personnel should be present during all transfer operations, so that if personnel injuries occur, one person can assist the injured person, and the remaining employee can call for help.

(b) Personnel and visitors present in recoument areas shall wear appropriate PPE.

(c) Transfer of hazardous materials will be in a work area segregated from incompatible materials. Use equipment for compatible materials only.

(d) Eliminate incompatible conditions (e.g., ignition sources, water) from recoument work areas.

(e) Activate ventilation systems (including local exhaust hoods) during transfer operations to maintain a proper airflow and keep the doors to the work area closed.

(f) When using local exhaust hoods, recoument personnel should position package openings as close as possible to the hood's intake vent.

(g) Recoument personnel should assure that they have a clear emergency egress route during all phases of recoument operations. Do not block exit routes with equipment, debris, or materials being processed through the recoument facility.

(h) Transfer operations of liquids should assure that splashing of the material does not occur.

(i) During the transfer operations of volatile materials, assure hazardous concentrations do not accumulate in the workroom and appropriate control measures for hazardous waste air emissions and implement 40 CFR, Part 264 when appropriate.

(j) Transfer operations should assure that dispersion of powdered material does not occur.

(k) Transfer operations of flammable or shock-sensitive materials should assure that friction does not occur and that a static charge does not build up. During recoument bond or ground, all equipment and packages of these materials as directed in section VII paragraph 4.37.K.2.b.2 and in NFPA 77.

(l) If the specifications of a material have changed due to transfer operations (e.g., remnants of a 55-gallon drum were transferred to 5-gallon cans), recoument personnel should assure that a new and appropriate NSN is assigned. Take action to label new packages with the correct NSN, manufacturer's name or CAGE and part number/trade name and to make necessary adjustments to stock records.

(m) New packages and their labeling will conform to DOT regulations (Title 49 CFR, parts 171 through 178) and to NSN specifications. Use only package configurations tested to performance-oriented packaging specifications to package hazardous materials.

c. Decontamination and Cleanup:

(1) After recoupment is complete and at the end of each workday, appropriate cleanup and decontamination procedures should be followed to assure that waste generated during operations is disposed of properly and that recoupment personnel are not exposed to hazardous residues.

(2) Collect and place solid or liquid waste, including disposable contaminated equipment and PPE, in airtight sealed containers. Place incompatible wastes in separate containers. Dispose of waste IAW Enclosure 13 of this publication.

(3) Old packages containing residues of materials listed in Title 40 CFR, part 261.33(e), will be triple rinsed with an appropriate solvent. Dispose of the rinsed liquid residue as hazardous waste as outlined in Enclosure 13. Slash and process the triple-rinsed packages as scrap or sent to a landfill. Process packages do not triple rinsed, as hazardous waste IAW Enclosure 13 of this publication and the installation's hazardous waste management plan.

(4) Decontaminate, Clean, and dry equipment and PPE before reuse in another recoupment operation. Reuse equipment and PPE with compatible materials only. If unable to clean, dispose of any equipment or PPE as hazardous waste. Dispose of contaminated cleaning solutions, detergents, rags, etc. as hazardous waste. Consult the installation hazardous waste management plan for specific disposal requirements.

(5) Decontaminate, clean and dry floors and working surfaces (including workbenches) at the end of each workday. Completely clean up and process residues process according to its hazard.

(6) Personnel handling hazardous materials will wash their faces and hands before taking personal or administrative breaks. Each person should take a complete shower at the end of each working day before leaving the recoupment facility.

d. Emergency Procedures for Hazardous Materials Recoupment:

(1) If a hazardous materials spill occurs or a fire starts during any part of recoupment operations, personnel should evacuate the area, immediately notify the spill response team and/or fire department, and follow procedures outlined in Enclosure 9.

(2) Once verified there is no danger that a rescuer will be overcome by chemical vapors, and notification to rescue personnel, recoupment staff will take immediate action to save the injured or exposed worker exposed to hazardous materials during a mishap. (Follow the procedures in Enclosure 9.)

9. RECOUPMENT QUALITY CONTROL:

General:

a. Procedures should be included in recoupment operations to assure the integrity of recouped materials. Do not issue materials when they do not conform to product specifications, deteriorated quality, or when contaminated. Recoupment operations will return materials to stock in a condition as good as that of the original unused product.

b. If facility or recoupment personnel suspect that material has deteriorated, contact the appropriate personnel to draw a sample. Discontinue recoupment if sampling would result in a residual quantity unsuitable for a specification NSN (paragraph D below); turn in the material to the DLADISPO site or dispose of through contract with a licensed commercial firm or through inter-service/interagency support agreements. Test s to assure the material meets specifications. Situations requiring testing include the following:

(1) Facility or recoupment personnel know or suspect the material has been contaminated (during transport, warehousing, or recoupment operations).

(2) If the shelf life has expired (or if the shelf life will expire within 3 months) and the installation is applying for an extension of the shelf life; the shelf life can be extended for materials with a Type II shelf-life code only.

c. If the test sample proves that the material has not deteriorated, recoupment procedures can continue. However, if the product has deteriorated, or the shelf life cannot be extended, turn the material in to the DLADISPO site, or dispose of through contract with a licensed commercial firm, or through inter-service/interagency support agreements.

d. Another aspect of maintaining product quality is to assure that no loss of material has occurred. Personnel will assure that a recouped package contains the full amount of material as specified by the NSN. If a partially empty package is turned in for recoupment, transfer the material to smaller packages that will meet specifications.

e. DLADISPO personnel obtaining samples shall follow all safety requirements as specified in this regulation.

ENCLOSURE 7: SELECTION AND ISSUE OF HAZARDOUS MATERIALS

1. GENERAL

a. Purpose: The issue function is a critical function for the entire logistics operation. The basic objective is to satisfy the customers' demands on time and at the lowest cost possible to the Government. In the case of hazardous materials, however, cost considerations will include the additional effort required to ensure compliance with regulations designed to minimize the risk to personnel safety and environmental damage and cost associated with cleanup and disposal of hazardous wastes. Additional costs associated with the movement of hazardous materials, makes it essential they are properly identified and segregated during movement from storage locations to the packaging branch. Exercising sound judgement is equally important when consolidating the materials for shipment to ensure compliance with Federal regulations.

b. Applicability: The provisions of this enclosure apply to all personnel involved in processing wholesale and retail issue/release documents, selecting stock, staging, and moving hazardous materials to the packaging line. Local supply procedures may supplement this guidance when stricter warehousing processes apply, and issues are managed differently by Service specific Logistics or HAZMAT Tracking IT systems.

c. Planning and Coordinating the Operation: The effectiveness of the shipping operation depends on how well storage-tracking operations have been performed during the stock selection process. In some cases, the only indication that the material is hazardous will be that it is located in a warehouse dedicated to the storage of hazardous materials. When unit and/or intermediate container quantities necessitate the removal of material from the outer container during stock selection and issue, the DOT shipping and warning labels normally will not be on the inner containers. Make provisions to effectively segregate incompatible materials from the time of stock selection, until movement to the packaging operation is completed. When required, the packaging section will repackage, and or apply the DOT shipping and warning labels prior to offering the material for transportation. Transportation load planning for hazardous materials will be IAW the load/compatibility requirements specified by the regulation or tariff governing the mode of transportation selected. Effective coordination is required, therefore, between storage operations, packaging operations, and the facility transportation officer. Consolidate outgoing shipments into shipping units (SU) and, in turn, into transportation units (TU) to minimize costs. Many facilities effectively track hazardous materials using computerized data systems. Such systems are generally designed to store, and pick materials based on pre-programmed criteria. Exercise care to assure that the criteria used follow the latest regulatory requirements.

d. Impact of Federal Regulations on Issue Operations: Hazardous materials arrive at the installation packed and labeled IAW the provisions of the procurement activities contract; often ground transportation meeting 49 CFR. During the storage period, the material is subject to the provisions of Title 29 CFR, 40 CFR, and to DoD regulations. When the material is removed

from stock and prepared for reentry into domestic and international transportation systems, the provisions of Title 49 CFR again become applicable.

e. Hazardous Waste Minimization Responsibilities: Hazardous waste minimization responsibilities are generally applicable to material issue operations. However, the following measures are of particular importance during stock selection and movement of material to the packaging line:

(1) Unless otherwise excepted by DoD Directive 4140.27-M, stock selectors will strictly adhere to the FIFO principle. Direct issues against the oldest stocks or those with the least remaining shelf life unless those stocks are restricted from issue to specific units, activities, or geographical areas due to short shelf-life expectancy (e.g., Supply Condition Code B or C).

(2) During the course of stock selection, employees will be alert to material for which the shelf life has expired (Type I) or is past inspection/test date (Type II), and for packages that have been damaged during storage. In those instances where type II material is past the inspection/test date, initiate action to determine if the material can be extended. When there is a shelf life extension, employees are to document and ensure the extension with a DD Form 2477, or its equivalent, located on the DoD SLES website.

(3) Take precautions to prevent accidental damage to materials during removal from storage locations and subsequent movement to staging areas or the packaging operation. Release of hazardous substances discovered during stock selection will be reported IAW the provisions of Enclosure 9 as otherwise specified herein.

(4) Prior to any usable/serviceable expired material disposal action, check first whether there are other potential non-weapon systems uses for the material. Disposal should only be a final option and any reuse or redistribution (such as Free Issue programs) is fully encouraged. To prevent future expired materials, review stock replenishment levels to ensure the right amount of material is being procured to meet mission objectives while minimizing excesses.

2. ISSUE PROCESSING:

a. Processing Release Documents:

(1) Mechanically subject each release document to a validation audit to assure that all essential data is complete. Additional electronic or manual validation is required to ensure the originator is authorized to order/receive requested hazardous material. Return unacceptable or invalid release documents to the originator.

(2) Acceptable release documents will be subjected to additional consolidation logic prior to release for issue processing. (Note that the Distribution Standard System (DSS) uses the Variation Code to distinguish between different formulations under the same CAGE and NSN and the Hazardous Materials Information Resource System (HMIRS) uses different product record serial numbers to distinguish between different formulations under the same CAGE and

NSN.) Consolidate issues based on load/storage compatibility requirements specified by DOT, ICAO, IMO, and AFMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19/DLAI 4145.3, "Preparing Hazardous Material for Military Air Shipment", as applicable. Maintain segregation of incompatible materials during the stock selection process.

b. Stock Selection Procedures:

(1) Distribute hardcopy release documents in the sequence logic set by the system. When radio frequency (RF) capability is used, notify the user when a pick is available based on logic set in the system.

(2) Select material from stock based on the data contained in parameter tables in the system and information contained on the requisition. Select the exact quantity specified on the release document whenever possible. The DD Form 1348-1 (Issue Release/Receipt Document) displays pertinent information such as document number, quantity, NSN, and condition, etc. An RF device or hardcopy pick ticket displays information pertaining to locations.

(3) If the required quantity is not available in the location shown on the pick ticket/RF device, the release document will be processed IAW denial action procedures.

(4) Select stock based upon SHELF LIFE criteria/FIFO principles for shelf life items. For non-shelf life items, the policy is to use most efficient pick path thereby limiting the number of locations to pick.

(5) If the NSN is under inventory, follow local selection procedures.

(6) Query at some point in the receiving process or prior to offering for transportation, the product to ensure an SDS is in the HMIRS. If not, an SDS will be obtained IAW local procedures, input into the HMIRS, and offered with each shipment until the HMIRS SDS input has been confirmed. In the event of Foreign Military Sales (FMS), offer an SDS with each shipment since FMS and non-DoD recipients generally do not have access to the HMIRS.

c. Temporary Staging of Hazardous Materials: When circumstances dictate not to move materials directly from storage to the packaging operation, make provisions for segregating the material in a manner that will preclude commingling of incompatible materials. The probability of accidental damage or release of hazardous substances significantly increases during this phase of operations. In some cases, material originally packaged and labeled for transportation will lose its hazard identity when outer packaging and labels are discarded for various reasons. It is imperative segregation requirements be rigidly maintained from the time material is removed from stock, to the time it has again been packaged and labeled for transportation. When space considerations permit, achieve required segregation by retaining the material in the immediate vicinity of the storage location from where selected. When an alternative central staging area is used, take precautions to ensure and maintain segregation throughout all movements until receiving the material at the hazardous materials packaging operation. The primary method of segregation used should be the HCC system described in Enclosure 6. Follow this method until

staging the material prior to loading. At this point, segregation requirements are determined based on the hazard class of the material and the segregation table for carriage by public highway, shown in Appendix C, figure 6-3 of these documents, and printed in 49 CFR 177.848.

d. Direct Shipments from Storage Areas: In some cases, it will be more practicable to issue and ship directly from the storage area than to move the hazardous materials to a staging area or freight consolidation area. This is particularly true in the case of bulk shipments, drummed products or compressed gas cylinders stored in open areas. Develop local procedures to provide complete control of issue and transportation documentation during such transactions.

e. Material Found Damaged during Stock Selection: Immediately report packages found damaged or leaking during the stock selection process to the supervisor and manage IAW the host Hazardous Material/Hazardous Waste Management Plan and the Installation Spill Contingency Plan (ISCP). Suspend operations in the immediate area and do not be resume until authorized by the supervisor. If the material can be repackaged, process it through recoupment and return to stock. Process material neutralized or over-packed by the spill response team, IAW Enclosure 9.

f. Processing Disposal Release Orders (DRO): As DROs are received, subject to a validation audit in the same manner specified for release documents. In the case of hazardous materials, however, do not remove the material from the stock location until the turn-in has been coordinated with the installation environmental office or appropriate IST and servicing DLADISPO site. DLADISPO site acceptance of physical custody of hazardous materials depends on a conforming storage determination by the DLADISPO site and the availability of proper equipment and trained personnel to accept turn-in. Defense activities will forward turn-in documentation to the DLADISPO site, which in turn may, schedule a pre-receiving visit to the facility. Physical custody of the material will be determined during this visit. Detailed procedures are contained in DoD 4160.21-M, Defense Materiel Disposition Manual.

g. Reports of Hazardous Materials Incidents:

(1) Notifications of incidents involving personnel exposure to ionizing radiation, property damage, or releases of radioactive material will be made to the Nuclear Regulatory Commission and appropriate service/agency officials IAW AR700-64/DLAM 4145.8/ NAVSUPINST 4000.34/AFJI 23-504/MCO P4400.105, Radioactive Commodities in the DoD Supply Systems, and local directives.

(2) In the event of an accidental release or spill of an item assigned an RQ, the report will be submitted IAW the provisions of Enclosure 9 of this publication or IAW military service procedures.

(3) Title 29 CFR, part 1904.8, requires an oral or written report to the nearest office of the Area Director of OSHA, US Department of Labor, in the case of accidents involving a fatality or the hospitalization of three or more employees. Make this report within 8 hours after the occurrence.

3. ISSUE PROCESSING QUALITY CONTROL:

a. General: Minimum quality control procedures applicable to the issue or stock selection function will incorporate additional periodic sampling procedures designed to ensure that:

- (1) Adhere to the FIFO principle in selecting stock for issue.
- (2) Make all reports and notifications in connection with accidental releases of hazardous substances or exposure to ionizing radiation occurring in connection with issue processing.
- (3) Perpetuate the identity of hazardous material items throughout the issue and packaging process. This identity will go down to and include the part number/trade name under which the product is sold.
- (4) Maintain required segregation of hazardous materials from time and point of issue until material movement to the packaging operation.

ENCLOSURE 8: PREPARATION FOR MOVEMENT

1. GENERAL:

a. Purpose: This enclosure outlines the general requirements for packaging, marking, and labeling hazardous materials to ensure compliance with Federal and other requirements.

b. Applicability: The provisions of this enclosure apply to all hazardous materials received, stored, and distributed by installations and are applicable to all installation employees, whose duties involve care of supplies in storage (COSIS) or the packaging, marking, and labeling of hazardous materials in preparation for shipment.

c. Installation Packaging Responsibilities: Installations supporting a packaging activity have the following responsibilities:

(1) To repackage items in storage as required by the results of periodic surveillance inspections. During prolonged storage, packaging materials may deteriorate or become damaged, thus failing to provide the required protection. This is particularly true in the case of hazardous materials.

(2) To package repaired or modified items for storage or shipment. At the installation level, packages containing hazardous materials will occasionally require repackaging because of recoupment actions.

(3) To package outbound shipments IAW the specific requirements outlined in applicable transportation modal regulations. Normally, procurements written to meet 49 CFR ground transportation may require repackaging to meet IATA and IMDG regulations at time of shipment.

d. Regulations Applicable to Installations:

(1) DLAR 4145.7/AR 700-15/NAVSUPINST 4030.28/AFMAN 24-206/MCO 4030.33, Packaging of Materiel. This regulation covers packaging requirements, specifications, levels of protection, and project information exchange requirements. Policies and procedures for UN standard packaging (performance-oriented packaging) (POP) and the protection of electrostatic discharge sensitive items are incorporated.

(2) DLAR 4145.41/AR 700-143/NAVSUPINST 4030.55/AFMAN 24-210/MCO 4030.40, Packaging of Hazardous Material. This publication establishes uniform procedures for the Military Services and DLA for packaging hazardous materials for safe, efficient, and legal storage, handling, and transportation. Authorized by 49 CFR 173.7, certify packages of equal or greater strength.

(3) Prepare hazardous materials for transportation according to the applicable modal regulation. Enclosure 3 introduces regulations governing commercial shipments. Prepare

shipments for transportation by military or DoD commercial contract aircraft according to AFMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19/DLAM 4145.3, Preparing Hazardous Materials for Military Air Shipments.

(4) 49 CFR is not always the mode applicable to the shipment. ICAO/IATA or IMDG is applicable to international shipments. Utilize the provisions applicable to the mode of transport.

e. Hazardous Waste Minimization Responsibilities: The responsibilities outlined in Enclosure 6, are applicable to packaging operations.

f. DOT Special Permits (Exemptions) and DoD Certificates of Equivalency (COE), Competent Authority Approvals and Packaging Waivers: DLAR 4145.41/AR 700-143/NAVSUPINST 4030.40/AFMAN 24-210/MCO 4030.40, "Packaging of Hazardous Material" defines procedures for submitting SPs, COE, CAA, and packaging waivers.

g. Waivers of Military Air Packaging Requirements: Comply with AFMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19/DLAM 4145.3, for shipments of hazardous materials and their packaging by military air. Activities will obtain waiver approval before releasing materials or packaging not in compliance with this publication into the Military Air transportation system. Chapters 2 and 3 of the above publication, covers deviations, waivers, and special requirements.

2. PLANNING THE PACKAGING OPERATION:

a. General: There will be a substantial reduction in the difficulty associated with the storage, handling, and transportation of hazardous materials provided all concerned recognize the importance of proper packaging. Packaging personnel will, have a thorough understanding of the hazard class of the material to be packaged and the mode(s) of transportation that will be involved. In addition, they will ensure that the material being processed is safely packaged and, when offered for transportation, meets all packaging, marking, and labeling requirements of the appropriate modal regulation (i.e. Title 49 CFR, ICAO, IMDG, military regulations), and MIL-STD-129.

b. Packaging Operation Layout: General guidelines for planning a packaging operation layout are IAW component directives. Base the actual layout, which will vary by installation, on the total volume of material to be packaged, available space, and various other local operating conditions. In addition to basic layout factors, consider the requirement for the segregation of incompatible materials. While a separate packaging line is not required for each hazard class or HCC, take strict precautions to reduce the possibility of accidental co-mingling of incompatible materials during this phase of the operation.

c. Pack Area and Inspection: Immediately move material to the pack area, inspect for possible damage occurring during stock selection or subsequent movement from the storage area to the packaging operation. Installation employees performing this inspection will be aware that their failure to identify and correct deficiencies at this time may cause additional hazards during

transportation. If inspection discloses that the damage or deficiency is minor (e.g., obliterated labels or markings, minor package abrasions or tears, etc.) and the material is not a pesticide, it may be moved directly to the packaging operation where required repairs will be made. In the case of pesticides, take corrective action IAW Enclosure 5, of this regulation. In the event of substantial package damage or evidence of leaks or suspected leaks, notify the supervisor and initiate spill response procedures IAW Enclosure 9 of this regulation.

3. PACKAGING, MARKING, AND LABELING OF HAZARDOUS MATERIAL:

a. General Packaging Requirements:

(1) Title 49 CFR, Section 173.24 contains the general packaging requirements for hazardous materials. Design, construct, maintain, fill, and close each package used for the shipment of hazardous materials under normal conditions of transport:

- (a) There will be no identifiable release of hazardous material to the environment.
- (b) Do not reduce the effectiveness of the package. Maintain impact resistance, strength, and packaging compatibility for minimum and maximum temperature changes encountered during transport.
- (c) There will be no mixture of gases or vapors in the package, which could through increase of heat or pressure significantly reduce the effectiveness of the packaging.

(d) In addition to the general packaging requirements for hazardous materials, package materials destined for NATO and European IAW the REACH Classification, Labeling, and Packaging (CLP) Regulation. The main purpose of the CLP Regulation is to communicate hazard classification to the user, alert the user of a hazard presence and exposure risks. Classify substances or mixtures as hazardous and label and package IAW CLP standards. The following information is required on labels of hazardous substances or mixtures:

The name, address, and telephone number of the supplier(s) of the substance or mixture.

The nominal quantity of the substance or mixture in the packages made available to the public, unless specified elsewhere on the package; product identifiers; and, where applicable:

Hazard pictograms

Signal word

Hazard statements

Appropriate precautionary statements

Supplemental information.

Write labels in the official language(s) of the Member State(s) where the substance or mixture is placed on the market, unless the Member State(s) concerned provides otherwise. Please refer to the ECHA website for further details and guidance of the CLP Regulation

(<http://echa.europa.eu/>).

(2) Outage and Filling Limits: When filled packaging or receptacles with liquid hazardous materials, leave sufficient ullage (outage) to ensure there is no leakage or permanent

distortion of the packaging or receptacle because of expansion due to temperature changes encountered during transportation. Liquids will not completely fill a receptacle at a temperature of 55° C (131° F) or less.

(3) Authorized Packaging: A package is authorized to contain a hazardous material only if the packaging is cited in the specific packaging section in Column 8 of the 49 CFR 172.101 Table for that material and conforms to the special provision requirements of Column 7 of the 172.101 Table or per the appropriate modal regulation. Specification packaging (including UN standard packaging) will meet the requirements in Parts 178 and 179 of Title 49 CFR. UN packaging will meet the performance test requirements specified in Part 178 of Title 49 CFR for the packing group shown in Column 5 of the 172.101 Table.

(4) Title 49 CFR, Section 173.27 cites the general requirements that apply to packages offered or intended for transportation by aircraft. The requirements of this section are in addition to the requirements of Title 49 CFR, Section 173.24.

(5) Export Shipments: Often the shipper will not know the ultimate mode of transportation for export shipments. When this happens, package the item for surface while intermediate shippers may plan for air shipment. When this possibility exists, the original shipper will attempt to contact down-line shippers and forwarders to determine if air eligible packaging and certification is required because this can generally be accomplished in a more cost effective manner if performed by the original shipper rather than by downstream shippers. It is the originating shipper's responsibility to prepare the shipment and all documentation for transportation to the ultimate destination.

(6) Palletization: Proper palletization will be accomplished incident to shipment IAW MIL STD 147, Palletized Unit Loads.

b. Packaging Process:

(1) The first step in determining packing, marking, and labeling requirements is to select the mode(s) of transportation. Decide by the nature of the material, mode restrictions, transportation priority, required delivery date, weight and cube of the shipment, cost of transportation, shipping distance, and mode(s) of transportation serving the installation and the consignee.

(2) When the mode of shipment has been determined, specific packing, marking, and labeling requirements can be determined. Although a central database may provide information on packing, marking, and labeling requirements, packaging personnel will have a working knowledge of Title 49 CFR and other regulations governing the shipment of hazardous materials. Personnel involved in this operation will have current copies of the regulations available for use.

(3) Select the mode of shipment and inspect the material for packaging configuration, consult the regulation(s) that governs that mode of transportation and the Department of Defense Personal Computer Performance Oriented Packaging database (DoD PC POP). Section I,

Appendix E of this regulation shows a general guide for determining the packaging requirements.

(4) When required to construct a hazardous material package, DoD personnel will use the United Nations - Performance Oriented Packaging (UN-POP) program to determine packaging configurations tested to the performance standards. For access to this program, contact: DLA Distribution, <https://dod.distribution.dla.mil/pop/client/default.asp>

c. Marking Requirements:

(1) Installations offering packages containing hazardous materials for shipment will be marked IAW the requirements outlined in Title 49 CFR, Part 172, Subpart D, DoD POP database, and MIL-STD-129 or per the appropriate modal regulation.

(2) Section II, Appendix E of this publication shows a guide for determining marking requirements.

d. Labeling Requirements:

(1) Requirements for labeling are in Title 49 CFR, Part 172, Subpart E. Each person who offers for transportation or transports a hazardous material will label the package with labels specified for the material in Column 6 of the table in 49 CFR, Section 172.101 or per the appropriate modal regulation.

(2) Exception to Labeling Requirements. Part 173 of Title 49 CFR provides certain exceptions to labeling requirements for limited quantities.

(3) Selected labeling requirements, which may be of special interest to DoD personnel, are summarized as follows:

(a) “Label,” is “an appropriate group of written, printed or graphic information elements concerning a hazardous chemical that is affixed to, printed on, or attached to the immediate container of a hazardous chemical, or to the outside packaging.”

(b) “label elements” the specified pictogram, hazard statement, signal word, and precautionary statement for each hazard class and category.”

(c) Labels and other forms of warning. The HCS provides information through three different media:

1. labels or other forms of immediate warning
2. safety data sheets
3. training.

Labels attached to the container of chemicals, provide the information that employees have ready access to in the workplace. Attached to containers, they are by necessity somewhat limited for information they can present. The labels provide a snapshot or brief summary of the more detailed information provided to employees in training programs, or available to them on safety data sheets. They are not intended to be a complete or detailed source of information on the chemical.

(d) The hazard warning is to provide specific information about the health or physical hazards posed by the chemical.

(e) Address hazards not otherwise classified on the SDS.

(f) A label is not required on a package or unit of military explosives, including ammunition, shipped by or on behalf of the DoD when in freight container load, carload or truckload shipment, if loaded and unloaded by the shipper or DoD. A label is not required for unitized or palletized break-bulk shipments, by cargo vessel under charter to DoD, displaying at least one required label on each unitized or palletized load.

(g) A label is not required on a package containing a hazardous material other than ammunition loaded and unloaded under the supervision of DoD personnel and escorted by DoD personnel in a separate vehicle.

(4) In addition to transportation labels, the OSHA Hazard Communication Standard (HCS) requires hazard-warning labels on a package. Prior to leaving the installation, label each container of hazardous materials with the:

- (a) Identity of the hazardous chemical(s)
- (b) Appropriate hazard warnings
- (c) Name and address of the chemical manufacturer, importer, or other responsible party.

Do not affix new labels if existing labels already convey the required information. When the manufacturer's label has been removed or obliterated, the DoD OSHA Hazard Communication Standard warning label may be obtained from the applicable HMIRS product record.

(5) Section III, Appendix E of this regulation shows a guide for determining transportation related labeling requirements.

(6) The OSH Act will improve the HCS by changing the performance requirements for labels to the GHS - specific requirements that labels include four standardized elements: a signal word; hazard statement(s); pictogram(s); and precautionary statement(s).

(a) The signal word typically appears near the top of a warning, sometimes in all capital letters, and is determined by the GHS hazard categories that apply to the material. DANGER and WARNING are the only signal words included in the GHS classification and

labeling system. The signal word is generally understood to serve a dual purpose: Alerting the user to a hazard and indicating a particular level of hazard. For example, users generally perceive the word DANGER to indicate a greater degree of hazard than materials assigned the signal word WARNING."

(b) Hazard Statements and Precautionary Statements: Hazard statements describe the hazards associated with a chemical. Precautionary statements describe recommended measures to take to protect against hazardous exposures, or improper storage or handling of a chemical.

(c) "Pictogram" is defined as a "composition that may include a symbol plus other graphic elements such as a border, background pattern, or color, that is intended to convey specific information about the hazards of a chemical."

(d) Precautionary statements are also required on GHS labels. The GHS provides precautionary statements; codified (numbered), yet not considered formally harmonized. In other words, regulatory authorities may choose to use different language for the precautionary statements and still be harmonized with the GHS. The GHS has codified these statements (*i.e.*, assigned numbers to them) as well as aligned them with the hazard classes and categories. Codification allows referencing the precautionary statements in a shorthand form and makes it easier for authorities using them in regulatory text to organize them. In addition, there are provisions to allow inclusion of supplementary information so that chemical manufacturers can provide data in addition to the specified core information.

(e) The revisions to the HCS will require establishments that package or label hazardous chemicals to affix labels that include hazard-warning pictograms enclosed in a red-bordered diamond and require pictograms to have a red frame, with a black symbol on a white background, for all shipped chemicals regardless of destination.

4. PACKING, MARKING, AND LABELING OF HAZARDOUS WASTE:

a. General:

(1) Title 40 CFR (EPA) regulates hazardous wastes. The EPA requires that a hazardous waste generator package, mark, and label hazardous wastes IAW DOT regulations (Title 49 CFR) before transporting or offering it for transportation off-site. This activity at Air Force installations will be coordinated through the installation environmental office.

(2) Packing: Hazardous wastes generated as a result of accidental spills, damage, expired shelf life, process wastes, etc., will be packaged IAW the applicable DOT regulations under Title 49 CFR, Parts 173, 178, and 179. Use used waste containers, in lieu of new containers, as long as the package conforms to the applicable DOT regulations.

(3) Marking: Title 40 CFR, section 262.32, requires that, prior to offering hazardous waste for transportation off-site; each generator will mark each package of non-bulk hazardous

waste IAW DOT requirements of Title 49 CFR. Substitute commercially procured Hazardous Waste Warning labels meeting the requirement of Title 40 CFR for marking requirements on non-bulk containers. Each non-bulk container will have as a minimum the following words and information displayed IAW the requirements of Title 49 CFR, Section 172.304:

(a) HAZARDOUS WASTE - Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the US Environmental Protection Agency.

(b) Generator's name and address

(c) Manifest document number

(4) Title 40, CFR, Section 262.34(a)(2) specifies that the date upon which each period of hazardous waste accumulation begins is clearly marked and visible for inspection on each container.

(5) Labeling: Hazardous Waste will be labeled IAW the applicable DOT regulations under Title 49 CFR, Section 172.101, Column 6.

b. Salvage Drums: At Air Force installations the following activities are coordinated through the installation environmental office. Place packages of hazardous materials that are damaged, defective, or found leaking and hazardous materials that have spilled or leaked in a metal or plastic removable head salvage drum and shipped for repackaging or disposal IAW Title 49 CFR, Part 173.3 under the following conditions:

(1) The drum will be a UN 1A2, 1B2, 1N2 or 1H2 tested and marked for Packing Group II or higher for liquids or solids and a leak-proof test of 20 kpa (3 psi). The capacity of the drum may not exceed 450 Liters (119 gallons).

(2) Provide each drum sufficient cushioning to prevent excessive movement and adequate absorption material to absorb any liquids that may leak.

(3) Each drum will be marked with the PSN and the name and address of the consignee. The drum will be marked "Salvage Drum".

(4) Properly labeled each drum for the material it contains.

(5) The shipper will prepare shipping papers IAW Title 49 CFR, Part 172, Subpart C. For hazardous wastes, the shipping paper will be a Hazardous Waste Manifest IAW Title 40 CFR, Part 262.20.

5. PACKAGING QUALITY CONTROL:

a. General: Minimum quality control procedures applicable to installation functions will incorporate additional sampling procedures designed to ensure that:

- (1) Do not co-mingle Incompatible hazardous materials during the packaging process.
- (2) UN specification containers are authorized for the commodity being packaged.
- (3) Leaking containers are not packaged and prepared for shipment.
- (4) Leaking containers are properly over-packed and disposal action initiated.
- (5) Containers are not marked as meeting UN specifications unless they do.
- (6) Do not offer improperly packaged material for shipment.
- (7) Labels on outer containers represent mixed packages of hazardous materials when appropriate.
- (8) Labels on containers are consistent with the hazard class of the material.
- (9) Color and/or size of labels meet the standards of Title 49 CFR, section 172.407.
- (10) Commodity descriptions, or PSNs, are marked on containers.
- (11) Containers shipped under DOT exemption/DOT Special Permit (SP) reflect the DOT exemption/DOT SP number on the outer container.
- (12) Combination packages having inner packaging containing liquid hazardous materials are marked with package orientation markings (UP ARROWS).
- (13) Reconditioned drums are properly marked.
- (14) Meet MIL-STD-129 and the applicable modal regulation's marking requirements.

6. SHIPMENT PLANNING:

a. General: After hazardous materials have been packaged, marked, and labeled for transportation, maintain segregation of incompatible materials. If feasible, commanders will, designate an appropriate area of a warehouse or freight terminal as a dedicated temporary storage area for hazardous materials awaiting shipment.

b. Understanding the Shipping Environment:

(1) In recent years, there has been a gradual shift from break-bulk shipments to intermodal transportation of hazardous materials. It is commonplace today for intermodal containers to move, in a single trip, via three modes of transport: by highway, by rail (COFC), and by vessel. Trailers can move on railcars (TOFC) and on ships (RO/RO).

(2) The first step in planning a load is to understand the forces to which the load will be subjected during shipment. Each mode of transport represents a different shipping environment that will be accommodated in the load plan. The range of forces encountered in a single mode, or in the combination of modes, makes proper loading and securing of hazardous materials packages imperative. Loading and securing of freight in containers or trailers is as important as packaging in the process of shipment preparation. Improperly loaded and secured freight can result in underutilization of space, damaged packaging, and loss of product, damage to freight or the carrier's equipment, and even personnel injury and environmental damage. A container carried on a chassis via highway, for example, will be subject to different forces than a container carried on a rail flatcar, and therefore, a different system may be required to secure the load. Appendix F provides some illustrations of various types of blocking and bracing applicable to hazardous materials.

(3) The highway mode is considered the least severe shipping environment. Applying brakes causes the forward movement of improperly braced loads on steep descents or by stopping suddenly to avoid hitting people or other vehicles. Ascending steep hills, load rebounds after the sudden application of brakes or sudden increases in speed causes rearward movement of loads. Rounding corners on sharp curves, traveling on high crowned or banked roads, or swerving to avoid accidents causes sideward movement of loads. Snug and adequately brace full loads to reduce stress resulting from impact against loading docks, braking, acceleration, and sway.

(4) Shipping by maritime (vessel) mode is different and encounters different forms of distribution forces. As illustrated in Appendix F, a ship at sea may move in all of the following six directions: pitching about a vertical axis; yawing about a vertical axis; rolling about a longitudinal axis; surging in a fore and aft motion; swaying in a side-to-side motion; and heaving in an up and down motion. In addition, wave impact or water entry into faulty containers can affect loads and damage containers.

(5) Rail transport includes railcars, TOFC, and COFC. Typical forces encountered in the rail transport environment include vertical, side-wards, and lengthwise pressures.

(a) Vertical pressure or vibrations, over and above the overhead weight of the load, are the most numerous forces but are small in magnitude and cumulative. Generally, interior cushioning or bracing within the individual package or container absorbs the damaging action from vertical pressure or vibrations.

(b) Side-wards pressure toward the sidewalls happens when a car rounds a curve, an action that tends to move the containers out of alignment with adjacent containers. In addition, side-wards pressures tend to crush the containers on the offside as the car rounds a curve. Although those pressures are of small magnitude, if the containers are out of alignment, subsequent lengthwise forces can cause damage because of uneven distribution of pressure.

(c) Lengthwise forces on the load result from cars accelerating or decelerating at a rate different from that of the whole train because of coupler slack. The impact of lengthwise force is normally negligible, since Title 49 CFR regulates coupling impact. Couple hazardous materials in railcars with no more force than is necessary to complete the coupling. Additionally, Title 49 CFR, section 174.83, states that no railcar moving under its own momentum may strike a flatcar carrying a placarded trailer or freight container (humping). Other forces affecting rail transport include suspension system and track dynamic vibration, and sway, a side-to-side motion resulting from curves or uneven track.

(6) The loading of aircraft may not be an installation responsibility; however, personnel will be aware of some of the complexities involved and that only properly trained and designated individuals can certify proper packaging and marking of hazardous materials on the Shippers Declaration for Dangerous Goods form. Characteristics vary by aircraft type. Each cargo compartment floor is limited as to the weight it can carry per square inch or square foot. Furthermore, know the dimensions of cargo to determine the size limits of cargo placing within

each compartment. The potential for movement of hazardous cargo aboard passenger aircraft is somewhat restrained because the cargo is stowed in compartments. In the case of both civilian and military cargo aircraft, however, movement pressures are of more concern. Side-wards movement of loads caused by aircraft banking or turning maneuvers will be considered while aircraft are loaded. A sudden, abrupt ascent or descent might cause some vertical movement of unsecured cargo; however, lengthwise movement is a primary consideration. On takeoff, improperly secured cargo is subject to rearward movement. On landing, however, cargo may be initially subject to forward movement during descent, rearward movement during the landing roll, and sudden forward movement again as the brakes are applied. For these and other reasons, classify many military supplies as restricted cargoes for air transport purposes, and impose Federal and DoD restrictions on them. Strong magnetic materials, for example, are legally restricted because a sufficiently strong magnetic field strength could cause false readings on the compass sensing devices of the aircraft.

c. Installation Loading Responsibilities:

(1) In view of the transportation environments described in the preceding paragraphs, it will be obvious that hazardous materials will be loaded to withstand the normal hazards of transportation. Installations and all other shippers are required to load freight carried at carload rates, unless otherwise required by tariff. They are also required to load heavy or bulky freight carried as LCL rates, but that cannot be handled at stations where the carrier's facilities are not sufficient for handling. In addition, installations will observe the rules of both the carrier and Title 49 CFR for safe loading of material and protection of equipment.

(2) In addition to selecting the proper type of conveyance, take the following precautions to preclude the use of defective or unclean conveyances.

(a) The interior of the vehicle or conveyance will be examined for evidence of defective sides, roof, or floor that might cause snagging, tearing, scarring, or rupture of the container, or permit entry of rain, dirt, or other matter likely to damage the cargo.

(b) Remove protruding nails or other obstructions not part of the conveyance.

(c) Inspect weather seals of doors for damage or distortion.

(d) Check the doors for evidence of loose, worn, or damaged hinges, latches, levers, bolts, nuts, and pins.

(e) Determine the general condition of mechanical bracing systems by inspection. All cross-members will be present and inspect bolt rails to ensure firm attachment to sidewalls.

(f) The above are not a comprehensive checklist of inspection items, since inspection items will vary by conveyance type. The important point is do not load hazardous materials in vehicles or containers that are clearly not suitable for this purpose. The installation will reject

conveyances not suitably conditioned for the transportation of hazardous materials, without mechanical or extensive repairs.

(3) The Defense Transportation Regulation, DoD 4500.9-R, Part ii, Cargo Movement, requires that all motor vehicles (commercial or government/MOV) used for the transportation of ammunition, explosives, poisons, and the high-hazard items listed in table 1, section 172.504, Title 49 CFR, be inspected by the shipping activity. DD Form 626, Motor Vehicle Inspection (Transporting Hazardous Material) will be used for this purpose. Do not accept vehicles for which unsatisfactory conditions are noted on DD Form 626 for loading. Correct deficiencies before loading and vehicles will not be rejected. The distribution of the completed DD Form 626 will be as follows:

(a) The installation performing the inspection (for commercial vehicles only) will keep one copy with a copy of the appropriate GBL attached.

(b) On truckload or LTL shipments, give the original to the driver at origin and the driver will be surrendered it to the consignee.

(c). When a commercial vehicle tendered for loading is rejected or the driver of the vehicle is found to be unsatisfactory, a copy of the completed form will be sent to each of the following:

1. Nearest field office of the US DOT.
2. Home office of the carrier concerned.
3. Surface Deployment and Distribution Command (SDDC), ATTN: MTOP-OS, Ft. Eustis, VA 23604-1644.

d. Loading Rules for Rail Carriers: Personnel engaged in or responsible for loading, blocking, and bracing hazardous materials should have available and be familiar with the general rules for proper loading and securing of shipments. By complying with the applicable rules, procedures, and methods, the installation has accomplished the first step in assuring safe and economical car loading. Installations should have the following publications available:

(1) Mandatory Requirements. Rule 27 of the Uniform and Consolidated Freight Classifications requires a shipper to observe carriers' rules regulating the safe loading of freight and the protection of equipment. Mandatory rules are contained in the Association of American Railroads (AAR) Circular No. 42-E, General Rules Concerning Loading of Carload Shipments of Commodities in Closed Cars, and all AAR pamphlets covering the loading and securing of shipments on open top cars.

(2) Minimum Requirements. Observe the various methods and specifications contained in all AAR car-loading pamphlets as minimum requirements for the proper loading, blocking, and bracing of shipments for movement of rail freight on or in open top and closed cars.

(3) **Loading Methods Not Specified.** When freight is to be loaded on or in open top or closed cars, and no loading or securing methods provided, the cars will be blocked and braced according to the best procedures from AAR pamphlets or other sources covering similar methods.

e. Loading Rules for MILVAN/SEAVAN Containers: MILVAN containers are reusable, steel cargo containers 8 feet wide, 8 feet high, and 20 feet long with a capacity of 39,100 pounds. Use MILVANs for transporting materials in highway, mil-air, rail, and vessel modes. Detailed instructions for loading, blocking, and bracing of MILVAN/SEAVAN containers are contained in MIL-STD-1386 (Navy); Loading of Hazardous Materials in MILVAN Containers as well as 29 CFR 1910.1200 has specific labeling requirements for container storage and shipment.

7. LOADING HAZARDOUS MATERIALS FOR SHIPMENT:

a. Purpose: The purpose of this section is to provide information on the fundamental principles and approved methods and techniques used when loading hazardous materials for shipment. The objective is to achieve waste minimization goals by reducing the loss and damage to shipments caused by improper loading. To this end, the chapter provides information on blocking, bracing, and anchoring of shipments. Included are the basic requirements to load hazardous materials for shipment via highway, rail, air, and vessel. Not intended to supersede the Defense Transportation Regulation, individual service regulations or Title 49 CFR. Presented under the concept that storage and warehousing personnel need to have a basic understanding of the procedures and regulations affecting the shipment of products in order to assure the smooth processing of hazardous materials to the ultimate customer.

b. Applicability: The provisions of this section do not apply to the shipment of explosives. The contents of this section are general guidance to personnel whose duties may affect the loading of hazardous materials for shipment.

c. Impact of Federal Regulations on Loading Hazardous Materials for Shipment: Personnel will be knowledgeable of Federal regulations governing the loading of hazardous materials for shipment. Each mode of transport has specific requirements for loading and segregation as defined in the modal regulations.

d. Maximum Penalties:

(1) Personnel knowingly violate the requirements, of the HAZARDOUS MATERIALS TRANSPORTATION ACT and Title 49 CFR, are subject to disciplinary action based on the seriousness of the offense according to the Uniform Code of Military Justice, the Federal Personnel Manual (FPM) supplement 751, and Agency Code of Penalties (AFI 36-704/AR CPRS1/NAV CMMI 751.1/MC NCPI 750/DLAR FPM Chapter 751). DOT imposed fines may be up to \$75, 000 for each violation each day. This applies to any person who manufactures, fabricates marks, maintains, reconditions, repairs, tests, prepares, or otherwise causes shipment of the material.

(2) Before reviewing specific loading and securing regulations, for each mode of transportation, consider Title 49 CFR, section 173.1(b), the key regulation under which installations and other shippers in the United States will operate: "A shipment of hazardous materials that is not prepared IAW this subchapter may not be offered for transportation by air, highway, rail, or vessel. Each responsible HAZMAT employer is subject to the requirements of this subchapter to ensure that each HAZMAT employee is trained IAW the requirements prescribed in this subchapter. It is the duty of each person who offers hazardous materials for transportation to instruct each of his officers, agents, and employees having any responsibility for preparing hazardous materials for shipment as to applicable regulations in this subchapter."

e. Criminal Penalties: A person knowingly violating Title 49 CFR, section 171.2(g) or willfully violates a provision of the Act or an order or regulation issued under the Act will be fined under Title 18, United States Code, or imprisoned for not more than 5 years, or both.

f. Hazardous Waste Minimization Responsibilities: The general hazardous waste minimization responsibilities outlined in chapter 3 are applicable to the functions addressed in this section.

8. REGULATORY REQUIREMENTS BY SHIPMENT MODE:

a. Rail Shipments:

(1) Load, block, and brace IAW Title 49 CFR, section 174.55 each package of hazardous materials transported by railcar. The purpose of blocking and bracing is to prevent the packages from changing position, falling to the floor, or sliding into each other under shocks normally incident to transportation. Bureau of Explosives (BOE) pamphlet No. 6 and the Intermodal Loading Guide for Products in Closed Trailers and Containers contains recommended methods of blocking and bracing in railcars.

(2) Title 49 CFR, section 174.55, allows for mechanical handling of hazardous materials, but take care to prevent dropping. A heavy package or container of hazardous materials may be trucked, rolled on pallet rollers, or moved by skid, forklift, or other handling devices. Planks for rolling trucks from platforms to cars will have beveled edges.

(3) Each package of hazardous materials bearing the package orientation marking (up arrows) will be handled, loaded, blocked, and braced in the car to remain in the position indicated by the markings during transportation.

(4) Hazardous materials may not be loaded or transported except as specified in Title 49 CFR, section 174.81. Appendix C contains the reprinted segregation chart.

(5) Title 49 CFR, section 174.61 regulates the loading of trucks, trailers, or freight containers holding hazardous materials. These conveyances will be loaded so that the hazardous materials will not rupture under normal transportation.

b. Highway Shipments:

(1) Title 49 CFR, section 177.834 outlines general requirements for the transport of hazardous materials by highway. Secure any tank, barrel, drum, cylinder, or other packaging not permanently attached to the vehicle, containing any flammable liquid, compressed gas, corrosive material, poisonous material, or radioactive material, against movement within the vehicle. In addition, brace such materials to prevent movement relative to the vehicle while in motion.

(a) Prevent forward movement by positioning the load firmly against the front bulkhead of the vehicle. The front bulkhead serves to square the load and equalize forces across the frontal area of the vehicle.

(b) Prevent movement of the cargo to the rear by use of a rear bulkhead or gate. Brace the rear bulkhead or gate to the doorposts of the vehicle with diagonal supports, or against the doorposts and the bulkhead or gate by secured risers. Drive backup blocks into place and nail to the risers and gate to eliminate slack.

(c) Eliminate sideward movement by the use of lengthwise separators, steel strapping, and rigid block and bracing devices. DOT has approved some restraint systems specifically designed for highway transport. Those include steel strap and self-locking skid systems.

(d) Flammable solids, oxidizing materials, or corrosive liquids, when transported on a motor vehicle with other authorized lading, will be loaded in a manner that provides ready access for shifting or removal.

(2) Appendix F illustrates various blocking and bracing techniques.

(3) Maintain segregation of hazardous materials IAW the segregation and separation chart shown in Title 49 CFR, section 177.848 and reprinted in Appendix C.

c. Vessel Shipments:

(1) Title 49 CFR, section 176.76 regulates the loading of hazardous materials by vessel. Except, as provided in paragraphs (b) through (f) of section 176.76, authorized hazardous materials transported by vessel may be carried on board a vessel in a transport vehicle or freight container subject to the following conditions:

(a) The material will be in proper condition for transportation according to the requirements of Title 49 CFR Section 176.76.

(b) Secure all packages in the transport vehicle or freight container to prevent movement in any direction. If the shapes of the packages and the stuffing pattern preclude shifting of the load, vertical restraint is not required.

(c) Provide bulkheads made of dunnage that extend to the level of the cargo unless the packages are stowed flush with the sides or ends.

(d) Secure dunnage to the floor when the cargo consists of dense materials or heavy packages.

(e) Each package marked with the orientation marking will be so stored.

(f) Fill any slack spaces between packages with dunnage.

(g). Distribute the weight of a container as evenly as possible throughout, and do not exceed the maximum permissible weight.

(h) Adjacent levels of bagged and baled cargo will be stored in alternate directions so that each tier binds the tier above and below it.

(i) The cargo or lading will be contained entirely within the freight container or vehicle body without overhang or projection; however, oversized machinery such as tractors or vehicles with batteries attached may overhang or project outside the intermodal container, provided all of the portion of lading consisting of hazardous material is contained entirely within the freight container. Do not permit open bed container or vehicle to carry hazardous materials unless it is equipped with a means of properly securing the lading.

(2) Segregation requirements for hazardous materials transported by vessel are in Title 49, Section 176.83 and reprinted in Appendix C.

(3) Maintain segregation requirements aboard ship IAW the IMDG Code, Section 15.

d. Military Air Shipments:

(1) Involve DoD personnel in the preparation of unitized and palletized loads for transportation by military air. The following general guidelines apply to such loads:

(a) Loads will stable and secure, consistent with the type of aircraft, pallets, and handling equipment utilized. Installations offering materials for air shipment assure loads are capable of being handled at aerial ports.

(b) Configure unitized loads to be as stable as single containers.

(c) Configure unitized loads to provide easy accessibility to individual packages in case of inflight emergency. Use of fiberboard or plywood side boards is not permitted unless specifically required by the governing joint regulation, AFMAN 24-204/TM 38-250/ NAVSUP PUB 505/MCO P4030.19/DLAM 4145.3, Preparing Hazardous Materials for Military Air Shipments.

(d) Containerized loads (CONEX, MILVAN, etc.) are not to be stowed on aircraft unless they are accessible during flight in case of an in-flight incident.

(e) Accompany all hazardous materials with a Shippers Declaration for Dangerous Goods form signed by an individual properly trained and designated to certify hazardous materials shipments.

(2) Attachment 18 of AFMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19F/DLAI 4145.3 and reprinted in Appendix C contains Loading and Storage Segregation requirements.

e. Domestic and International Air Shipments:

(1) General requirements for loading and unloading of hazardous materials by domestic air are in Title 49 CFR, section 175.75 and by international air are in ICAO. DoD personnel that load domestic and international aircraft at DoD aerial ports and activities shall comply with these modal regulations. All domestic and international air shipments will include a Shipper's Dangerous Goods Declaration with each shipment. Use ICAO TIs to prepare shipping papers for international air transport as authorized by Title 49 CFR, section 175.33; however, most commercial air carriers use IATA Dangerous Goods Regulations to prepare international air shipping papers.

(a) Follow stowage compatibility of cargo IAW the segregation tables in both Title 49 CFR and IATA.

(b) Secure dangerous goods in the aircraft in a manner to prevent any movement in flight changing the orientation of the packages. Use orientation labels and store aboard IAW the label configuration. Apply the "Cargo Aircraft Only" to packages IAW IATA.

(c) Remove damaged or leaking packages of dangerous goods from the aircraft when identified and safety dispose of by an appropriate authority.

(d) Airline staff will replace labels and markings that become lost, damaged or illegible.

(e) Maintain the tolerances prescribed by the applicable aircraft airworthiness requirements for stowage of magnetized material to ensure the headings of the aircraft compasses are unaffected.

9. DOCUMENTATION OF HAZARDOUS MATERIALS SHIPMENTS:

a. DOT Requirements:

(1) Except as otherwise provided in Title 49 CFR, subpart C, each person who offers hazardous materials for transportation will describe the materials on the shipping paper in the

manner required in Title 49 CFR, subpart C. For purposes of this section, the shipping paper is the Government Bill of Lading (GBL), SF 1103. The GBL will be prepared as follows:

(a) Hazardous materials entries will be entered first on the GBL or in a color that clearly contrasts with any description of nonhazardous materials appearing on the GBL or.

(b) The material will be identified as hazardous by entry of an "X" placed before the proper shipping name in the column of the GBL captioned "HM" (block 17). Replace the "X" with "RQ" when appropriate.

(c) The description of hazardous materials on shipping papers will conform in all respects with the applicable requirements of Title 49 CFR, Subpart C, Sections 172.202 and 172.203.

Unless specifically provided for in Title 49 CFR, a shipper's certification statement conforming to one of those delineated in Title 49 CFR, Section 172.204, will be entered on the face of the GBL.

b. DoD Documentation Requirements: For shipments of hazardous materials by commercial or military airlift, the Shippers Declaration for Dangerous Goods is required to accompany the material. Instructions for completion and distribution of the shipper's certification are contained in the DTR 4500-19R when multimodal shipments, shippers will use DD Form 2890 as defined in the DTR. Certain multi-modal shipments require shippers provide both the Shipper's Declaration for dangerous Goods (for air movement) and the DD Form 2890 (for surface movement).

c. Commercial Air Documentation: The Shipper's Declaration for Dangerous Goods is the shipping paper used for commercial air transport. Use ICAO TIs to prepare shipping papers for air transport as authorized by Title 49 CFR, section 175.33; however, most commercial air carriers use IATA Dangerous Goods Regulations to prepare commercial air shipping papers. The US Government, specifically DOT, does not recognize IATA as an official regulatory body. Shippers using IATA will verify the latest edition of the IATA Dangerous Goods Regulations is used to prepare hazardous materials for commercial air shipment.

d. Commercial Vessel Shipping Papers: International. Shipping papers for hazardous materials transportation by vessel are prepared as described in the IMDG Code as authorized by Title 49 CFR, sections 171.12, and 176.24. In addition, IMDG requires a certification that containers and vehicles have been properly packed and secured as specified in sections 12.3.7 and 17.7.7 of that regulation.

e. Placarding Requirements:

(1) Placards are required on motor vehicles or freight containers shipped domestically by highway or rail as specified by Title 49, Section 172.504 and 172.505.

(2) Installations will provide the motor carrier with the required placards for the material shipment prior to shipment or at the same time, offering the material for transportation as required by section 172.506 of Title 49 CFR. Installations will obtain written acknowledgment from the motor carrier that placards were provided.

(3) Title 49, CFR, Section 172.519 contains general specifications for placards.

(4) Instructions for placarding areas where parked aircraft are contained in AFMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19/DLAM 4145.3, Preparing Hazardous Materials for Military Air Shipments.

10. REPORTS OF HAZARDOUS MATERIALS INCIDENTS:

a. Notification of Incidents: Notification of incidents occurring during preparation and loading of hazardous materials involving personnel exposure to ionizing radiation, property damage, death, or injury necessitating hospitalization will be reported IAW Enclosure 7, Section II, paragraph 5.11 of this document. Additionally, Title 49 CFR, Section 172.604 specifies that any person who offers a hazardous material for transportation will provide a 24-hour emergency response telephone number (including the area code or international access code) for use in the event of an emergency involving the hazardous material.

b. Reportable Quantities: Take the following action if a package, drum, or other container marked with the letters "RQ" is ruptured during loading operations and a release of a hazardous substance occurs:

(1) The employee first having knowledge of the incident will evacuate the area and immediately notify first responders and comply with their Installation Spill Contingency Plan (ISCP).

(2) Exclude personnel not equipped with proper protective clothing and equipment from the spill area.

(3) Activate the Spill Contingency Plan outlined in Enclosure 9.

(4) Make reports of the release IAW locally established procedures.

ENCLOSURE 9: ENVIRONMENTAL PROTECTION

1. GENERAL:

a. **Purpose:** The purpose of this enclosure is to provide basic outline requirements for spill prevention management, contingency planning requirements, and basic emergency response procedures. Each agency, organization or site will follow the approved installation plan(s). More stringent Military Service or Agency policy and procedures will be followed as appropriate as directed by DoDi 4715.05, "Compliance at Installations Outside the United States", and DoDi 4715.06, "Environmental Compliance in the United States".

b. **Applicability:** The provisions of this enclosure are applicable to all personnel involved in planning, development, coordination, and execution of plans to prevent accidental releases, minimize risk, and control damage resulting from hazardous materials incidents.

c. Federal Regulatory Requirements:

(1) A significant Federal law affecting oil and hazardous substances is the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA). Important elements of CERCLA and SARA are in Title 40 CFR, part 300.

(a) SARA requires installations to report releases of reportable quantities (RQ) of CERCLA hazardous substances to the National Response Center.

(b) The establishment of the National Contingency Plan (NCP). The NCP accomplishes the following:

1. Assigns and divides responsibilities for oil and hazardous substance spill response actions among Federal, State, and local governments.
2. Requires Federal, Regional, and local oil and hazardous substance spill contingency plans.
3. Requires oil and hazardous substance spill contingency plans at installations which have the capacity for spilling a reportable quantity of a hazardous substance or for harming the environment.
4. Establishes procedures for responding to oil and hazardous substance spills.

(2) The Toxic Substances Control Act (TSCA) requires facilities storing transformers or other equipment containing PCBs to report to the EPA regional office releases of more than 1 pound of oil or fluid containing over 50 ppm of PCBs. TSCA also requires the reporting of any release of materials containing 50 ppm PCBs that directly contaminates surface or drinking water, sewers, grazing land, or vegetable gardens. Consult the installation concerning other toxic

substances regulated by TSCA and how to appropriately manage such items. Local agencies may have requirements that are more stringent.

(3) Title 29 CFR requires that the OSHA area director be informed, within 24 hours, when any employee is exposed to suspect carcinogens listed in part 1910, subpart Z, of the Title.

(4) The, Resource Conservation and Recovery Act (RCRA) defines hazardous wastes in Title 40 CFR, part 261. When a hazardous materials release occurs, handle the spilled material as a hazardous waste. RCRA includes requirements for inspections, housekeeping, and personnel training for hazardous waste operations in Title 40 CFR, parts 260 through 265. (See enclosure 11).

(5) The, Clean Water Act (CWA) contains provisions for a Spill Prevention Control and Countermeasures (SPCC) Plan in Title 40 CFR, part 112. Facilities storing oil in quantities large enough to potentially harm the environment or spill in reportable quantities will be included in an installation's SPCC plan. In addition, these facilities will have spill prevention equipment and practice spill prevention measures so that the facility will prevent an oil spill from occurring.

(6) Clean Air Act (CAA) and CAA amendments

(7) Emergency Planning and Community Right-to-Know Act (EPCRA)

d. Title 40 CFR, section 300.105, requires Federal agencies to coordinate their planning and response mechanisms with affected State and local governments and private entities. Federal agencies with facilities or other resources that may be useful in a Federal response situation are required to make those facilities or resources available within agency capabilities and authority. The DoD directive requires each facility or activity with oil or hazardous materials to have both an SPCC plan and an Installation Spill Contingency Plan (ISCP).

2. SPILL PREVENTION MANAGEMENT:

a. General: DoD installations with facilities that may discharge oil, hazardous materials, hazardous wastes, or hazardous substances in RQs may be required by statute to prepare an SPCC plan. The SPCC plan is oriented toward prevention of spills and releases of hazardous materials. The effects of a spill or release can range from superficial damage with few or no injuries to a mishap of catastrophic proportions involving loss of life, widespread damage, and major environmental damage. Regardless of the extent of the damage, productive time is nearly always lost as personnel and facilities are evacuated, damage is assessed, and the release is cleaned up. In more severe cases, the facility's ability to perform its assigned mission may be impaired either temporarily or for a prolonged period if it becomes necessary to suspend operations. When the total cost of a hazardous materials mishap is considered, including lost productivity, cleanup and restoration, and replenishment of lost Government-owned stocks, the appropriateness of the expression "an ounce of prevention is worth a pound of cure" is obvious in the case of hazardous materials management.

b. SPCC Plan Requirements:

(1) Facility SPCC plans will; at a minimum specifically address the following areas per Title 40 CFR, part 112:

(a) Maintenance of complete record of all spills or releases, federally reportable or not, occurring at the facility. Identify the spills occurring during the past 12 months and listed together with corrective actions taken in each case. List and implement specific plans to prevent recurrences in each case.

(b) Predictions of the direction of flow, rate, and maximum quantities of oil or hazardous substances that might be spilled or released for each storage location or handling site.

(c) Containment provisions and diversion structures or equipment in place or planned for use to prevent the discharge from reaching surface waters or other sensitive resources. Preventive systems may include dikes, berms, curbs, gutters or other drainage systems, booms, diversion or retention ponds, or absorbent materials.

(d) Conformance to EPA guidelines published in Title 40 CFR pertaining, where applicable, to drainage, bulk storage tanks, transfer operations, pumping, in-plant processes such as recouplement, or tank car or truck loading and unloading.

(e) Conformance to EPCRA requirements

(f) Conduct regular SPCC inspections. Retain signed records of inspections as part of the SPCC plan for 3 years.

(g) Security procedures and precautions.

(h) Requirements for personnel training and spill prevention procedures briefings.

(i) Develop separately or include in the listing above any of the following information.

1. Identification of populations at risk. In addition to considering nearby civilian population centers, consider on-base populations in administrative offices, family housing, and unaccompanied housing (Bachelors Officers Quarters (BOQ), Bachelors Enlisted Quarters (BEQ)) etc.

2. Identification of environmentally sensitive areas, probable need for waterfowl conservation efforts, and the presence of endangered species and other protected resources.

3. Consideration of local geography, hydrology, and climate.

4. Most probable locations for pollution incidents.

(2) Update SPCC plans every 3 years and approval by a registered professional engineer. In addition, the SPCC plan will be amended and recertified whenever there is a change to a facility that would affect the facility's potential for an oil or hazardous substance spill (e.g., a new tank is installed, berms are modified, etc.).

(3) Personnel will consult the installation regarding SPCC content and applicability. If HAZMAT storage is not identified in the installation's SPCC, immediately notify the installation.

3. SPCC MANAGEMENT PRACTICES:

a. General: An effective spill prevention management program and SPCC for warehousing activities will anticipate possible interactions between the hazardous material, people, and the equipment involved in its handling from receipt until shipment. Once interactions are identified, develop measures and implement to eliminate or reduce the probability of spills or chemical releases.

b. The Human Factor:

(1) Supervisors are responsible for ensuring employee compliance with safety and health standards. The supervisors, with environmental personnel, are responsible for identifying hazards in the workplace and initiating action to eliminate such hazards. Consider them a principal participant in SPCC development.

(2) Human factors are the leading cause of DoD mishaps, including spills and releases of hazardous substances. The role of human factors in contributing to spills can be positively influenced by identifying possible acts or in actions of individuals, and pre-existing conditions affecting individuals and/or the organization, that might cause or contribute to spills, then working to proactively-optimize these factors. Supervisors have a responsibility to ensure worker awareness of the hazards associated with the chemicals they handle. Mishaps can be prevented through an understanding of what factors, singly or in combination, can lead to a mishap, then proactively working to mitigate these risk factors prior to a mishap occurring. Acquire such an understanding by looking closely at where an individual or organizational failure can predispose to, or directly cause, a mishap. Ensuring worker awareness of the hazards of the chemicals they handle through effective HAZMAT training can emphasize the importance of their roles in spill prevention, and ensure they understand how their present duties and responsibilities relate to the overall facility and national objectives of spill prevention programs. Leaders and supervisors should look beyond individual acts, errors and omissions that can directly result in mishaps. In addition, be alert to preconditions (e.g., fatigue or complacency) that can make mistakes more likely, as well as at potential failures of supervision (e.g., tolerance of rules violation, or training deficiencies) or of the organization (e.g., flawed policy or inadequate publications) that could predispose to mishaps. Using this greater understanding of human error in mishap causation is essential to an effective spill prevention program. Therefore, everyone who is present should be vigilant to ensure all are being safe.

(3) Required internal controls will be in effect to reduce the probability of accidental spills and releases in the warehouse. Such controls include limiting the speed of materials handling equipment (MHE), restricting forklifts carrying hazardous materials to specific aisles, and using personal protective clothing and equipment. Continually observe individual work habits to ensure they conform to accepted standards. Supervisors are encouraged to consider spill prevention goals when developing employee written performance standards. Do this in consultation with the local personnel office.

c. Physical Security: Define physical security as those measures designed to safeguard personnel; prevent unauthorized access to equipment, facilities, materials, and documents; and safeguard them against sabotage, espionage, damage, and theft. Facility coordinators will ensure that command security plans specifically include hazardous materials. SPCC security provisions will provide for effective and efficient utilization of personnel and equipment and will be flexible enough to permit timely changes to meet emergencies.

d. Equipment:

(1) MHE, both mechanized and non-mechanized, will be considered a key factor in developing SPCCs. Thoroughly train operators in MHE operation. Keep movement of hazardous materials within the warehouse to a minimum. Study movement paths continuously for the possibility of reducing "back-tracking" and length of moves. Never exceed equipment capabilities. Overloading causes excessive equipment to wear and creates greater accident potential. Proper loading and unloading of hazardous materials will prevent damage. In most cases, loose material is subjected to more damage than properly packed material. Adequate planning will precede any loading operation, including factors such as the carrier's center of gravity, the placement of heavy material on the bottom, the carrier's rated capacity, and the possibility of packaging, container, and product damage while the material is in transit.

(2) Perform required daily inspections to identify deficiencies that, if not corrected, might result in a malfunction or failure and, in turn, a mishap resulting in a spill or chemical release. Perform required periodic and regular servicing and document to provide a maintenance history.

(3) Carefully consider manual handling of hazardous materials. Use mechanized equipment to help prevent accidents and injuries arising from employee attempts to manually handle material. Actions will be compatible with human strength, speed, accuracy, and reach limitations.

(4) MHE will conform to the requirements of 29 CFR 1910.176(a) and 1910.178.

e. Housekeeping: The immediate supervisor will inspect the workplace daily to identify housekeeping and safety deficiencies. Housekeeping rules will be established and explained. Provide adequate lighting at all times. Machines, equipment, and working spaces will be kept clean and orderly. Clean up scrap and waste as soon as work is completed. Remove broken straps, exposed nails, or wire from containers or unit loads. Immediately clean up any spilled

flammable liquids, greases, or other dangerous or slippery substances. Provide ample space in aisles and work areas to avoid congestion.

f. Condition of Stored Material:

(1) Preceding chapters have addressed the requirement that hazardous materials be subject to a thorough inspection upon receipt and prior to placing in storage. Significantly reduce the potential for spills and chemical releases by early detection of unsatisfactory conditions or deficiencies caused by improper storage, extended periods of storage, or the inherent deterioration characteristics of the material. The SPCC will provide for an effective cyclic inspection program. Effective and efficient execution of inspections ensures stored materials are inspected at intervals indicated by the assigned shelf-life code, inspection frequency code, or type of storage afforded the material. Inspections should also be oriented toward detection of improper segregation of hazardous materials.

(2) The importance of an effective shelf-life program for hazardous materials cannot be overemphasized. Certain products can become increasingly hazardous under prolonged and unfavorable storage conditions. Calcium hypochlorite, for example, is unstable and has a very limited shelf life, even under optimum storage conditions. Allowing the decomposition process to continue unchecked, will allow the material, under the right circumstances, to present a fire and/or explosion risk.

4. SPILL CONTINGENCY PLANNING:

a. General: Under the National Contingency Plan, Title 40 CFR, part 300, Federal installations are to respond to their own oil and hazardous substance spills. Thorough preplanning of oil and hazardous substance spill response is necessary so that when a spill occurs, facility personnel can respond quickly and effectively, minimizing damage to human health and the environment. Contingency planning takes into consideration the following phases of spill response: discovery, notification, assessment, containment, cleanup, and disposal.

b. Installation Spill Contingency Plan (ISCP) Development and Content:

(1) To prepare an ISCP, assign the various tasks to local fire and police teams who may already have considerable information about accidents within the facility and the nearby community. Planning will routinely include the participation of the Environmental Office, Safety Office, Command Security Office, Public Affairs Office, Radioactive Control Officer, On-Scene Commander designated in the Facility Contingency Plan, and other appropriate individuals who might have specific responsibility in the event of a spill. If the required information cannot be obtained and developed by installation personnel, contact local industry sources or consultants. In addition, advise the Local Emergency Planning Commission as appropriate.

(2) In general, spill contingency plans contain certain types of advanced preparedness information, including amounts and locations of response equipment and materials, but are

primarily oriented toward providing specific procedures to follow in the event of a spill or release of oil or hazardous chemicals. More specifically, ISCPs will contain:

(a) Names, addresses, and 24-hour phone numbers of the On-Scene Commander and alternates.

(b) Emergency equipment and response materials, location(s), and capabilities.

(c) An evacuation plan, including signals, evacuation routes, and alternate routes.

(d) A description of arrangements with local fire and police departments, hospitals, contractors, and State and local emergency response teams for response or coordination of services.

(e) A description of personnel actions and responsibilities required in response to known or suspected personnel exposures, fires, explosions, or any unplanned sudden or gradual release of oil, hazardous materials, hazardous substances, or hazardous wastes to air, soil, or surface water at the facility or nearby community. This response is generally described in the following sequence:

1. Phase I: discovery and notification (including both internal reporting and notification of participating outside organizations).

2. Phase II: containment and countermeasures (such as public health protection, source control, barrier placement, etc.).

3. Phase III: cleanup, mitigation, and disposal.

4. Phase IV: documentation (including external reporting and follow-up written reports).

(3) In addition, a good ISCP will contain the following:

(a) Designation of duties and responsibilities for specific organizations and the On-Scene Commander.

(b) Facility response team composition and training, and operations center location procedures.

(c) Facility response team alert and mobilization procedures, including use of communications systems for timely response.

(d) Surveillance procedures for early detection.

(e) Notify key installation personnel and community officials in the event of a release.

(4) Review and update the ISCP every 3 years. It will also be tested at least once a year and amended as needed. An actual spill may be used as a test situation.

(5) A suggested document for developing a spill contingency plan is FEMA-10 (Federal Emergency Management Agency Planning Guide and Checklist for Hazardous Materials Contingency Plans and Hazardous Materials Planning Guide).

(6) Personnel will consult the installation regarding the Contingency Plan, applicable procedures, and response actions. If a Contingency Plan is not available, immediately notify the installation.

c. Contingency Plan Implementation:

(1) Hazardous Materials Defined: The first requirement in ISCP development is that the planners identify the hazardous materials on the facility and have a clear understanding of the materials to which the ISCP applies. For the purpose of emergency response planning, the term "hazardous materials" includes hazardous materials, dangerous goods, hazardous substances, and hazardous wastes. For purposes of this section, collectively refer to these terms as HAZMAT. Note: These terms are defined for different purposes by different agencies. The regulatory sources of the definitions are as follows:

(a) DOT defines hazardous materials in Title 49 CFR, paragraph 171.8.

(b) The United Nations Recommendations of the Committee of Experts on the Transport of Dangerous Goods defines dangerous goods and are contained in the UN publication "Transport of Dangerous Goods." Commonly referred to as the "Orange Book."

(c) The EPA defines hazardous substances and lists in Title 40 CFR, part 302 and DOT in Title 49 CFR, paragraph 171.8.

(d) The EPA defines hazardous waste and lists in Title 40 CFR, paragraph 261.3 to 262 and DOT in Title 49 CFR, paragraph 171.8.

(2) Emergency Response Teams:

(a) Title 29 CFR, section 1910.120, outlines the legal requirements for ensuring that reasonably comprehensive protection is provided for all employees engaged in hazardous waste operations and emergency response. Title 29 CFR further states that HAZMAT teams will be employed to plug, patch, or otherwise temporarily control or stop leaks from containers holding hazardous substances or health hazards. This section will use the term "HAZMAT team" to describe the organizational unit designated to respond to spill emergencies; however, the terms "emergency response team" or "spill response team" are equally acceptable designations.

(b). The requirement that a HAZMAT team be available to respond to accidental spills or releases of hazardous materials may be satisfied either by designating and training

employees or by arranging for the services of HAZMAT teams established and maintained by other agencies. If the team is composed of facility employees, the Commander is responsible for team member's physical examination, providing personal protective equipment, and training IAW the specific requirements of Title 29 CFR, section 1910.120. Employees assigned to the HAZMAT team should be those who, through their experience and regularly assigned duties, are best qualified, equipped, and trained to respond to emergencies involving hazardous materials.

(c) If local circumstances preclude the use of employees as HAZMAT team members, satisfy team requirements by any of the following:

1. Formal, written agreements with state and local governments to provide HAZMAT teams on an "as required" basis.
2. Interagency or Inter-service Support Agreements with Federal agencies or military departments.
3. Local contract arrangements to retain the services of qualified and licensed commercial HAZMAT teams.
4. Emergency response personnel representing the manufacturer or supplier of the hazardous materials involved in the incident.
5. Industry emergency response mutual-aid representatives that respond to emergencies involving specific materials (e.g., CHLOREP of the Chlorine Institute for emergencies involving chlorine).

3. Dissemination of the Facility Contingency Plan:

(a) The appropriateness of the initial response to an emergency will depend, in large part, on the work force's degree of awareness. Title 29 CFR requires the commander to ensure that employees are informed of hazards that may be present in the workplace. This requirement is addressed in detail in Enclosure 10 of this publication. It is, therefore, equally essential that employees be aware of the actions to be taken in the event of an accidental spill or release of a hazardous material.

(b) To instill and sustain employee awareness of emergency response requirements, commanders should, as a minimum, take the following actions:

1. Ensure employees assigned to duties involving hazardous materials are formally briefed, regarding purpose of the ISCP, response requirements, and individual responsibilities under the plan.
2. Prominently display signs at strategic locations throughout the workplace, clearly indicating the individual and telephone number to notify in the event of a spill or release of a hazardous material.

3. Display appropriate posters in the workplace, rest and dining facilities, and locker rooms, emphasizing safety in the hazardous materials work environment.

4. Periodically provide refresher training to all employees assigned to hazardous materials storage and handling areas.

5. Ensure that facility newspapers or periodicals regularly include articles designed to stimulate employee awareness of hazards and emergency response actions.

(c) Deployment of the HAZMAT Team: A critical but often difficult consideration in ISCP development and execution is determining, in advance, the circumstances for the HAZMAT team deployment. In the case of a stack of acid carboys toppling by a forklift operator cutting a corner too closely, or the ignition of vapors near cans of degreasers caused by a carelessly tossed lit cigarette, the "trigger" event is clear. In numerous other instances, the requirement for a response by the HAZMAT team will be less clear and on-scene decisions made. Since there are no definitive rules for determining the "trigger" event in advance, it becomes the responsibility of each facility to determine and publish criteria for HAZMAT team deployment based on a thorough evaluation of the type of hazardous materials, prevailing risk factors, and resource availability. Circumstances at some facilities may favor deployment of the HAZMAT team for all spills and releases regardless of the degree of hazard involved. In other cases, make development of ISCPs around flexible criteria for deployment. The objective will be to achieve a balance between achieving production goals and simultaneously ensuring that the response to any given emergency is the most appropriate one. Protection of personnel, facilities, and the environment will be the overriding consideration.

(d) Emergency Response Operations:

1. The number of discernible emergency response operations will vary according to the format and type of ISCP developed. The Federal Emergency Management Agency (FEMA), for example, breaks response operations into 11 phases. For purposes of this section, however, discussion will be limited to the discovery, notification, containment, collection, and recovery phases.

2. In the discovery phase, the behavior of the individual discovering the emergency is an important factor in determining the most appropriate level of response. The employee first becoming aware of the actual or suspected emergency shares, in a large measure, the responsibility for the correctness of the initial response. The credibility of assessment is directly relating to experience and the quality of training provided by the command. The ISCP should clearly delineate the responsibilities assigned to the individual that first discovers the emergency. That individual, if not injured, may simply be required to report the situation to their immediate supervisor or a designated emergency response center. The employee may be responsible for making a tentative assessment of whom and what is at risk prior to any notification. Planners based on their evaluation of all pertinent factors will determine whether the discovering employee notifies the HAZMAT team directly or notifies their supervisor. The important consideration is that the ISCP clearly outlines both circumstances and responsibilities

for notification, scope of initial assessment, activation of alarms, rescue of injured personnel, etc. Define specific requirements for both normal working hours and emergency incidents that may occur outside normal working hours.

3. In the notification phase, one of the primary requirements is to notify the immediate supervisor of the incident as soon as possible. If the emergency incident occurs during normal working hours, the supervisor's assessment of the situation may determine the sequence and scope of response actions. If the ISCP does not specify immediate activation of a HAZMAT team, it will be the supervisor's responsibility to determine the presence of poisonous, flammable, or corrosive materials; the structural integrity of containers; and the behavior of personnel. It is in this phase that the ISCP should clearly define requirements for notifying higher headquarters, Federal agencies, and LEPCs if the accident is determined to pose a risk to members of the local community outside facility boundaries.

4. The containment phase will address controlling the immediate spread of the material. For purposes of this publication, containment is defined as the employment of fixed resources and deployment of temporary resources to stop and prevent, after accidental release from their primary storage locations or containers, the further discharge of the hazardous material into the external environment where contamination of ground, water, or atmosphere may occur. During this phase, the first priority will be to stop the further discharge of the solid, liquid, or gaseous material involved. The ISCP or locally developed SOPs should outline procedures for containment, including shutting off the source, predicting movement, contacting representatives of the manufacturer, etc. Clearly specify the types of equipment and materials to be used.

5. During the collection or cleanup phase, remove hazardous materials from the spill area using approved techniques. Note, for spills or releases occurring at a facility, the facility is, by law, responsible for cleaning up the spill. Whether the facility elects to clean up the material using its resources or by calling in a commercial firm, the facility remains fully responsible. With regard to cleanup by personnel, exercise caution in determining the items to safely clean up by employees and those that will be cleaned up by the more specialized and better-equipped HAZMAT team. If employees other than those assigned to the HAZMAT team are permitted to clean up the material, clearly define the items to clean up and exact procedures of techniques. Unless circumstances dictate otherwise, the supervisor will have maximum flexibility to use employees in cleaning up materials that, based on guidelines and professional judgment, do not warrant deployment of the HAZMAT team. Examples of materials that may be safely cleaned up by employees include low risk materials such as lubricating oils, antifreeze, or household cleaning materials. Train and equip employees to routinely cleanup certain corrosives, and to shut off leaks from certain compressed gas cylinders under the conditions outlined in, Storage and Handling of Compressed Gases and Liquids in Cylinders (DLAR 4145.25/AR-700-68/NAVSUPINST 4440.128/MCO 10330.2). Establish criteria for cleanup by warehouse personnel based on DOT transportation labels and hazard characteristic codes (HCCs).

6. Released materials may be recovered (e.g., sodium hydroxide flakes), may become hazardous wastes (e.g., pesticides), or waste hazardous substances (e.g., 1-1-1-trichloroethane), or may be insignificant (e.g., nitrogen released from a leaking cylinder). Properly label, package or over-pack, and store while awaiting final disposition, materials to be recovered (repackaged) or to be disposed of.

7. Forward reclaimed or recycled materials to the recoupment facility for processing IAW the procedures outlined in Section IV, Enclosure 6 of this regulation.

(e) Packaging of Spilled Material: Packaging, packs, or salvage drums used by personnel in connection with cleanup operations will meet or exceed UN specifications for the material being packaged as required by Title 49 CFR, parts 171 through 178. A person qualified (trained) in HAZMAT packaging will inspect all packaging to ensure that the package is:

1. Compatible with the material being packaged.
2. Of UN approved/tested specification construction for the material being packaged.
3. Marked, labeled, and properly prepared for transportation IAW Title 49 CFR, parts 171 through 178 and MIL-STD-129.

(f) Suggested References: Reference the following for developing emergency responses to hazardous materials:

1. National Pest Control Association, 1976, Managing Pesticide Spills.
2. Armed Forces Pest Management Board, 2009, Technical Information Memorandum Number 15: Pesticide Spill Prevention and Management.
3. Environment Canada, 1986, Report EPS 9/SP/2: A Survey of Chemical Spill Countermeasures.
4. US EPA, 1979, EPA-600/9-79-045: National Pollutant Discharge Elimination System Best Management Practices Guidance Document.
5. North American Emergency Response Guidebook.
6. US Federal Emergency Management Agency, 1981, FEMA-10: Planning Guide and Checklist for Hazardous Materials Contingency Guides. ((Replaced by Hazardous Materials Planning Guide (National Response Team) (NRT-1) dated JUL 2001))).
7. National Fire Protection Association, FPH1686: Fire Protection Handbook.

8. Hazardous Materials Planning Guide (National Response Team) (NRT-1) dated JUL 2001.

5. OTHER CONTINGENCY PLAN REQUIREMENTS:

a. General: In addition to the plans described above, facilities are required to have other contingency plans in effect to help Federal, state, and local governments when necessary. The problem is that EPA, OSHA, DOT and other agencies, has promulgated federal regulations addressing emergency planning and response and the requirements are often duplicative. It is likely that methodologies have been developed to prepare a single plan to meet all federal requirements for hazardous materials emergency planning and response. A word of caution is appropriate about such an approach: such plans are a relatively new concept to both installations and regulators. Hence, installations may experience varying degrees of resistance from their state and federal regulators when attempting to implement a single plan approach to hazardous materials emergency planning and response. Regardless of the number of plans that might be necessary, it is essential that there be a clearly defined command structure, notification procedure, and set of assigned personnel roles.

b. Emergency Planning and Community Right-to-Know Act of 1986:

(1) SARA's Title III of 1986, also known as, "The Emergency Planning and Community Right-to-Know Act" is intended to encourage and support emergency planning efforts at the State and local government levels. Its purpose is to protect communities living near commercial industrial facilities from catastrophic releases of toxic substances such as the tragic releases in Bhopal, India, in 1984. Title III mandates the type of program advocated by the EPA's Community Emergency Preparedness Program (CEPP); a voluntary program designed to aid in planning for emergency response in the event of a hazardous release. The emergency planning requirements of the act recognize the need to establish and maintain contingency plans for responding to chemical accidents that can inflict health and environmental damage as well as cause significant disruption within a community.

(2) The following is a summary of the key statutory provisions of the act:

(a) Section 301 of SARA required each State to establish an Emergency Response Commission by April 17, 1987. These commissions were responsible for establishing emergency planning districts and for appointing, supervising, and coordinating LEPCs.

(b) Under section 302, EPA is required to publish a list of extremely hazardous substances and threshold planning quantities (TPQ) for such substances. This list is in Title 40 CFR, part 355, Appendix A. Since this list will be subject to periodic change, it has not been included in this publication. Consult the facility's Environmental Officer for assistance in determining items applicable to a particular facility. This list is to help communities focus on the substances and facilities of the most immediate concern for emergency planning and response. The act requires any facility that has an extremely hazardous substance in an amount exceeding the TPQ limit to notify the State commission, SERC and LEPC.

(c) Section 303 of the Act governs the development of comprehensive emergency response plans by LEPCs and provision of information to the committee. The LEPC was responsible for completing an emergency plan meeting the requirements of section 303 by October 17, 1988. Under section 303(d), facilities subject to emergency planning will designate a representative who will participate in the local emergency planning effort as an emergency response coordinator. Statute requires facilities to provide the committee with information relevant to development or implementation of the local response plan. This information includes inventories of extremely hazardous substances and SDSs.

(d) Section 304 establishes requirements for the immediate reporting of certain releases of hazardous substances to the LEPC and the State Emergency Response Commission; the requirements are similar to the release reporting provisions of CERCLA. Follow-up reports are also required, including the effects of the release and the response action taken. Refer to 40 CFR 355, Appendix A for the reportable quantities of extremely hazardous substances.

(e) Sections 311/312 establish the requirement for community right-to-know provisions, which provides for public access to information submitted under these sections. Specifically, section 311 is the one-time submission of either the SDSs or a listing of the SDSs for all hazardous chemicals present at the facility at any one time, in amounts equal to or greater than 10,000 pounds, and for all extremely hazardous substances at the facility in an amount greater than 500 pounds or the Threshold Planning Quantity, whichever is lower. Revise this submission within three months after discovery of significant new information concerning the hazardous chemical or if new hazardous chemicals arrive on the facility. Section 312 provides for the annual submission by 1 March of the Tier I or Tier II hazardous chemical inventory reports. This information identifies the location, amounts, and methods of storage of hazardous chemicals stored on a facility and supplements the data provided under section 311.

(f) Section 313 establishes a procedure for the collection of information on releases of hazardous materials to all environmental media. This supports state and local planning efforts and identifies environmental "hot spots" or areas of greater pollution. The section applies to facilities, with the equivalent of 10 or more full time employees, that manufacture (including import), or process 25,000 pounds or more per year or otherwise use 10,000 or more pounds per year of any of the toxic chemicals listed in 40 CFR 372.65. Exceeding one of these thresholds requires the facility to submit an EPA Form R for that toxic chemical.

(g) One of the purposes of EPCRA is to provide information about potential chemical hazards to the public.

(3) Applicable Guidance of SARA Title III to DoD:

(a) On August 3, 1993, the President signed Executive Order 12856 directing all Federal agencies to comply with the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and the Pollution Prevention Act of 1990 (PPA). Each new successive Presidential administration updated and/or replaced the previous EO, and the current version addressing EPCRA is EO 13693. The Executive Order emphasizes two goals. First, it directs

Federal agencies to become leaders in providing communities and emergency planners with appropriate information on hazardous substances and toxic chemicals stored at government facilities. Second, the Federal government will demonstrate pollution prevention leadership by improving facility management, incorporating environmental principles in acquisition practices, establishing comprehensive pollution prevention plans, and developing innovative technologies. This section will concentrate on the first objective.

(b) Federal facilities are required to comply with the EPCRA as directed by the President in E.O. 13693, and EO 13650 directing the federal government to: improve operational coordination with state and local partners, enhance Federal agency coordination and information sharing, modernize policies, regulations and standards, and work with stakeholders to identify best practices. Take the following actions to the extent the individual service components determine doing so is consistent with the presidential directive in the executive order and do not otherwise violate Anti-Deficiency Act fiscal restrictions. Recognize federal facilities as leaders in the environmental arena and they are committed to the protection of the environment. To this end, take the following actions:

1. Expand existing contingency plans to cover releases during catastrophic events such as a major warehouse fire.
2. Appoint representatives to LEPCs where appropriate.
3. Fully, notify LEPCs in the event of a release that might result in exposure to persons outside the facility boundary.
4. Enter into cooperative agreements with local fire and hazardous materials spill response agencies.
5. Include outside response facilities will be included where appropriate.

(c) The development of EPCRA required reports and the technical data to back up those reports can be time consuming and labor intensive. Save significant resources by relying on Automated Information Systems (AIS) to track inventory, calculate threshold levels, etc. DoD systems (such as HMIRS) and those Service and Agency operational systems developed to facilitate reporting should be used to the maximum extent possible. Use these systems to provide reports as well as to document why a report is not required.

c. Planning for Accidents Involving Radioactive Materials:

(1) DoD components are required to provide radiological assistance to Federal, state, and local agencies, as available, in the event of a nuclear weapon significant incident or a radiological accident. Define radiological accidents as a loss of control over radiation or radioactive materials that presents a hazard to life, health, or property.

(2) Installations will, when requested by FEMA, and within the constraints of national security, cooperate with FEMA in developing radiological emergency plans with State and local authorities. This requirement applies only to installations where the potential for an accident involving radioactive materials exists. Transmit factors to be included in emergency response planning to state and local authorities include:

- (a) Environment where the release is possible (atmosphere, geologic, or hydrologic).
- (b) Type of material that may be released (isotopes and chemical and physical characteristics).
- (c) General characteristics of accidents (e.g., fire, impact, loss of cooling, explosion, etc.).
- (d) Pertinent timing (duration of release and delay before significant off-site exposures are expected).
- (e) Use radiologic levels for protective actions.
- (f) Take specific response actions by the facility and possible response actions by State and local authorities.
- (g) Take specific response actions in the event of a release, including:
 1. Prompt notification of state and/or local authorities.
 2. Augmentation of resources and activation of emergency response organizations to the extent feasible.
 3. Detailed guidance is contained in DoD Instruction 5100.52, Radiological Assistance in the Event of an Accident Involving Radioactive Materials.

d. Transportation Accident Contingency Planning:

(1) Local civilian authorities frequently request military installations to render assistance in a variety of mishaps occurring outside installations boundaries. These mishaps may or may not involve DoD materials. When requested by local authorities, Federal agencies are required by Title 40 CFR, part 300, to render assistance following or in prevention of a discharge or release of a hazardous substance.

(2) While no formal requirement exists for DoD installations to help outside the fence line, it is recommended they develop a basic contingency plan for the following purposes:

- (a) To serve as the DoD component receiving first notification of a transportation accident involving DoD hazardous materials.

(b) To be prepared to dispatch a representative directly to the scene of a hazardous materials accident, if requested by local civilian authorities. That individual will serve as the DoD representative to the civilian On-Scene Emergency Coordinator until relieved by a competent authority.

(c) To be prepared to provide communications support as part of the DoD response to the accident.

(d) To be prepared to provide specific hazard and precautionary information for shipments that may have originated at the facility (e.g., public evacuation distance, toxicity, fire hazard, personal protective equipment requirements, etc.).

(e) To be prepared to temporarily receive and hold hazardous materials until proper reloading and onward transportation arranged.

(f) To report to the Staff Duty Officer the occurrence of a transportation accident and alerting response forces.

(3) Any DoD activity which receives a notice of a transportation mishap involving DoD munitions or explosives is required to contact the Army Operations Center (AOC) located in the Pentagon (703) 697-0218 or DSN 227-0218.

e. Environmental Compliance Assessments:

(1) DoD facilities engage in many operations and activities that can cause environmental impacts on public health and the environment if not properly managed. Many of these activities are regulated by applicable Federal, state, and local regulations and by DoD component regulations and policies. Recommend assistance in identifying areas that need correction, an environmental assessment checklist approach (self-assessment), as required by DoDi 4715.6. This approach provides a systematic procedure for identifying all of the processes on an installation that may present a potential environmental impact and it provides a method of program assessment by higher headquarters during environmental compliance audits.

(2) The US Army Corps of Engineers Construction Engineering Research Lab, Champaign, IL, in cooperation with DoD components has developed The Environmental Assessment and Management (TEAM) Guide. This publication combines Code of Federal Regulations and management practices into checklists that show legal requirements and the specific operations or items to review. This publication can serve as a guide to facilities developing environmental assessment checklists (self-assessments) as required by DoDi 4715.6. The guide contains 13 sections that correspond to major compliance categories.

(a) Air Emissions Management

(b) Cultural Resources Management

- (c) Hazardous Materials Management
 - (d) Hazardous Waste Management
 - (e) Natural Resource Management
 - (f) Other Environmental Issues
 - (g) Pesticide Management
 - (h) Petroleum, Oil, and Lubricant (POL) Management
 - (i) Solid Waste Management
 - (j) Storage Tanks Management
 - (k) Toxic Substances Management
 - (l) Wastewater Management
 - (m) Water Quality Management (potable water)
- (3) Obtain copies of the guide from the National Technical Information Service,
5301 Shawnee Rd. Alexandria, VA 22312
Phone: 1-888-584-8332, (703)605-6050
Email: info@ntis.gov .

(4) DLA: DLAI 4715.06, Environmental Compliance, requires tenants to participate in the host installation, Major Subordinate Command (MSC), and DLA Compliance assessment programs on environmental matters. TEAM Guides are available at: <https://www.fedcenter.gov/>

ENCLOSURE 10: SAFETY AND HEALTH1. GENERAL:

a. Purpose: The preceding enclosures of this publication emphasized the dangers associated with the receipt, storage, and handling of hazardous materials. Personnel accidents associated with any industrial-type warehousing operation can have an adverse effect on productive person-hours and planned production schedules. In the case of hazardous materials, the potential for injuries and lost production time is significantly increased. The purpose of this enclosure is to outline safety and occupational health requirements and to provide general guidance for compliance with Federal and DoD programs. DoD services/activities will follow specific guidelines and policy set forth by their respective headquarters.

b. Applicability: The provisions of this enclosure are applicable to all personnel involved in the planning and execution of activity safety and health programs.

c. Federal Regulatory Requirements:

(1) National Occupational Safety and Health requirements are contained in Public Law 91-596, Occupational Safety and Health Act, published in Title 29 CFR, the Occupational Safety and Health Standards. Presidential Executive Order 12196, 26 February 1980, Occupational Safety and Health Programs for Federal Employees made the provisions of this Act mandatory for Federal agencies. This Executive Order provides the heads of Federal agencies with the flexibility to implement their programs in a manner that is consistent with their not only respective missions, sizes, and organizations, but also with the standards published in Title 29.

(2) Both Title 29 CFR and Executive Order 12196 specifically require each Federal agency to:

(a) Publish an agency Occupational Safety and Health Program to carry out the provisions of the Act.

(b) Develop a set of procedures to ensure effective implementation of the general policy and of the program.

(c) Establish goals and objectives to reduce and eliminate occupational accidents, injuries, and illnesses.

(d) Designate at the appropriate level and give the Safety and Health Office at each agency sufficient authority to represent the interest and support of the agency head responsible for the management and administration of the program.

(3) All activities will have a written Hazard Communication Program (Title 29 CFR, section 1910.1200). This plan is to ensure the evaluation of all chemicals in the workplace, and transmit that information concerning their hazards to employers and employees. Transmit this

information through comprehensive communications programs, container labeling or other forms of warning, SDSs, and employee training.

(4) Title 29 CFR, section 1910.119, Chemical Process Safety Management (PSM) Standard, establishes OSHA requirements for preventing or reducing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. Further discussion is contained in section 8.23.

d. DoD Policy Guidance:

(1) DoDi 6055.01, Department of Defense Occupational Safety and Health Program, establishes safety and health goals for DoD and incorporates the general requirements of Title 29 CFR and Executive Order 12196.

(2) DoDi 6055.08, Occupational Radiation Protection Program, supplements DoDD 1000.3, Safety and Occupational Health Policy for the Department of Defense, and updates procedures for the Occupational Radiation Protection Program for DoD. It provides Radiation Protection Program requirements and DOD occupational exposure guides.

(3) DoDi 6050.05, DoD Hazard Communication Program, establishes the DoD's hazard communication program as required by 29 CFR 1910.1200, updates policy responsibilities, requires compliance with OSHA standards, specifies training, /Safety Data Sheet (SDS), and labeling procedures, and establishes the Hazardous Materials Information System (now, HMIRS).

e. Air Force Policy Guidance:

(1) AFI 91-203 establishes safety requirements for the Air Force and implements the requirements of 29 CFR 1910 and DoDi 6055.01.

(2) AFI 48-148 provides Air Force radiation protection requirements and responsibilities as set forth in DoDi 6055.08.

(3) AFI 90-821 provides requirements for the Air Force Hazard Communication Program as set forth in DoD 6050.05.

2. SAFETY AND HEALTH RESPONSIBILITIES:

a. Commanders: Title 29 CFR, section 1960.8, requires Commanders to provide employees with a place of employment free from recognized hazards causing, or are likely to cause, death or serious physical harm. Commanders are solely responsible for this function and cannot delegate it. They are required to display the same aggressive leadership which they display for other elements of command.

b. Supervisory Personnel: Title 29 CFR, section 1960.9, requires supervisors to comply with the occupational safety and health standards applicable to DoD, including applicable OSHA standards. Mishap prevention is an operating function that is non-transferrable to a staff organization. To accomplish this responsibility, supervisors will ensure that personnel are trained to work safely, enforce safety and health rules, and correct unsafe/unhealthful acts and unsafe/unhealthful mechanical or physical conditions. Supervisors will also investigate mishaps and promptly report hazardous conditions to the Safety and Health Manager or another designated superior.

c. Employee Responsibilities and Rights:

(1) Title 29 CFR, section 1960.10, requires employees to comply with the DoD standards, rules, regulations, and orders applicable to their actions and conduct. The Act also requires employees to use safety equipment, PPE, and other devices and procedures provided or directed by the Act, DoD, or the commander as necessary for their protection.

(2) Under Title 29 CFR, section 1960.10, and Executive Order 12196, Occupational Safety and Health Programs for Federal Employees, have the right to report unsafe and unhealthful working conditions to appropriate officials including the members of safety and health councils. The purpose of these councils is to foster cooperation and open channels of communication, to make recommendations to the commander, and to perform such additional safety and health duties as the commander or council chairperson may direct. Employees also have the right to information relevant to their duties, including information on the nature and hazards of substances in workplaces. Executive Order 12196 also states that employees will not be subject to restraint, interference, coercion, discrimination, or reprisal for filing a report on an unsafe or unhealthy working condition, or for other participation in Occupational Safety and Health Program activities.

3. WRITTEN HAZARD COMMUNICATION PROGRAM:

a. Program Requirements:

(1) Title 29 CFR, section 1910.1200, requires DoD components to establish and maintain a written Hazard Communication Program IAW DoDi 6050.05. This program is to ensure employees are apprised of and protected from workplace chemical hazards to help prevent occupational illnesses and injuries. This program requires evaluation of potential hazards of chemicals in the workplace, inform employees of hazards and appropriate protective measures, and that hazard awareness training be provided and documented.

(2) The HCS requires a comprehensive hazard evaluation and communication process, aimed at ensuring that the hazards of all chemicals are evaluated, and requires that the information concerning chemical hazards and necessary protective measures be properly transmitted to employees.

(a) OSHA is replacing the phrase “new physical or health hazard” with the broader term “chemical hazard.” Final paragraph (h)(1) requires that employers provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new chemical hazard the employees have not previously been trained about is introduced into their work area. Design information and training to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information will always be available through labels and safety data sheets.

(b) In order to minimize confusion, OSHA has renamed unclassified hazards, “hazards not otherwise classified.”

(c) Definition of “unclassified hazard, ”: “Hazard not otherwise classified (HNOC) means an adverse physical or health effect identified through evaluation of scientific evidence during the classification process that does not meet the specified criteria for the physical or health hazard classes addressed in this section. This does not extend coverage to adverse physical and health effects for which there is a hazard class addressed in this section, but the effect either falls below the cut-off value/concentration limit of the hazard class or is under a GHS hazard category that has not been adopted by OSHA (e.g., acute toxicity Category 5).”

(3) The written Hazard Communication Program will include, as a minimum, procedures for accomplishing the following:

(a) Providing labeling or other forms of warning to employees regarding the hazards of chemicals in workplaces.

(b) Making an SDS accessible at all times to employees in the workplace.

(c) Training employees about the hazards of chemicals present in the workplace.

(d) Providing employees with a list of chemicals known to be present in the workplace, using an identity that is referenced on the appropriate SDS.

(e) Informing employees of the hazards of non-routine tasks and of the hazards associated with chemicals contained in unlabeled pipes in their work areas.

(f) Informing other than regularly assigned employees of chemical hazards that may be present in the workplace (e.g., employees of a construction firm working onsite, employees performing routine maintenance and repair work, or members of the inventory team). This includes providing these employees with copies of SDS, or making them available at a central location, for each hazardous chemical the employees may be exposed to while working. In addition, Commanders will ensure that the program informs these employees of the measures necessary to protect themselves under normal operating conditions and in foreseeable emergencies. The installation program will also provide methods for informing these employees of the labeling system.

(4) The written Hazard Communication Program will be made available, upon request, to employees, their designated representatives, the Secretary of Labor, or the Director, National Institute for Occupational Safety and Health, US Department of Health and Human Services, IAW the requirements of Title 29 CFR, section 1910.1200.

b. Determination of Chemical Hazards: Title 29 CFR requires chemical manufacturers or importers to assess the hazards of chemicals that they produce or import. Since they are required to provide this information to DoD in the form of SDS, labels, and other forms of warning, the evaluation and determination of chemical hazards in the case of mission stocks is not an installation responsibility. In the case of locally purchased hazardous chemicals (either standard or nonstandard stock), SDS will be required and obtained prior to contract award by the Purchasing or Contracting Office. The SDSs will, be forwarded to the DoD HMIRS focal point for the service or agency under which the installation operates for inclusion in the DoD HMIRS database. Do not award contracts if the SDSs are not provided. Since the SDSs are required prior to contract award, an SDS is not required with the shipment although some companies routinely provide the document along with the shipment.

c. Labeling of Containers of Chemicals in the Workplace:

(1) Title 29 CFR, section 1910.1200, requires that all chemicals in the workplace be labeled, tagged, or marked with the identity of the hazardous chemical, the appropriate hazard warnings (including target organs), and the name and address of the chemical manufacturer or other responsible party. The Act further provides that in work operations where employees handle only chemicals sealed in unopened containers under normal conditions such as those found in a warehouse, employers need only ensure that labels on incoming containers are not removed or defaced. Consequently, mission stocks will not require additional labeling as long as the integrity of the original label is maintained, and the label meets the requirements of the standard.

(2) A warning label is required on containers of chemicals used in other workplaces such as industrial operations. This requirement also applies to chemicals in tanks and pipes. For this purpose, permit the installation to use signs, placards, process sheets, batch tickets, operating procedures, or other written materials in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers to which it applies and conveys the information shown in subparagraph a above. The written materials will be available to the employees in their work area throughout each work shift. The following additional requirements apply to the labeling of chemicals in the workplace:

(a) The commander is not required to label portable containers into which hazardous containers are transferred from labeled containers, and which are for the use of the employee who performs the transfer within that shift.

(b) Write labels or other forms of warning legibly and in English, and prominently display on the container or readily available in the work area throughout each shift. Facilities

located in a region where another language is prominent may present the information in the other language and in English.

(3) For the DoD hazardous chemical warning label, DLA has developed a file of labeling information for all hazardous chemicals used by DoD. Disseminate this information via HMIRS, established under DoDi 6050.05. Activities are not required to re-label existing stocks with the DoD label if the manufacturer's supplied label meets the requirements of 29 CFR 1910.1200. HMIRS may also be used to generate a GHS warning label if a copy of the manufacturer's warning label is not available in the system. The label provided in the HMIRS is available if the manufacturer's label has been removed or obliterated.

d. Safety Data Sheets:

(1) Title 29 CFR and the Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide their customers with an appropriate Safety Data Sheet (SDS) with each initial shipment of a hazardous chemical and again when a change of formulation has occurred. Employers will ensure the SDSs are readily available and accessible to employees during each work shift when in the work area. See Appendix D of 29 CFR 1910.1200 for a detailed description of SDS comments. Use the HMIRS or equivalent database to meet this requirement. Understand that because of an interpretation by the Solicitor General of OSHA, manufacturers are not required to automatically provide updated copies of their SDSs to the Federal Government. Instead, the Government will require the SDS through its contractual process. Thus, the Government will not likely receive updated SDSs until it buys the product from the manufacturer again. The HCS requires SDSs to be in a uniform format, and include the section numbers, the headings, and associated information under the headings below. There are 16 sections to the SDS, but only 12 are mandatory (1-11 and 16).

Section 1, Identification: This section includes the product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

Section 2, Hazard(s) Identification: This section includes all hazards regarding the chemical; required label elements.

Section 3, Composition/information on ingredients: This section includes information on chemical ingredients; trade secret claims.

Section 4, First-aid measures: This section includes important symptoms/effects, acute, delayed; required treatment.

Section 5, Fire-fighting measures: This section lists suitable extinguishing techniques, equipment; chemical hazards from fire.

Section 6, Accidental release measures: This section lists emergency procedures, protective equipment, proper methods of containment and cleanup.

Section 7, Handling and storage: This section lists precautions for safe handling and storage, including incompatibilities.

Section 8, Exposure controls/personal protection: This section lists OSHA's Permissible Exposure Limits (PELs); ACGIH Threshold Limit Values (TLVs); and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the SDS where available as well as appropriate engineering controls; personal protective equipment (PPE).

Section 9, Physical and chemical properties: This section lists the chemical's characteristics.

Section 10, Stability and reactivity: This section lists chemical stability and possibility of hazardous reactions.

Section 11, Toxicological information: This section includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

Section 12, Ecological information. *

Section 13, Disposal consideration. *

Section 14, Transport information. *

Section 15, Regulatory information. *

*Note: Since other Agencies regulate this information, OSHA will not be enforcing Sections 12 through 15 (29CFR 1910.1200(g) (2)).

Section 16, Other information: This section includes the date of preparation or last revision. Employers will ensure that SDSs are readily accessible to employees. See Appendix D of 29 CFR 1910.1200 for a detailed description of SDS comments. Appendix I contains an example of an SDS.

(2) When employees will travel between workplaces during a work shift (e.g., work is carried out in different warehouses or geographical locations), SDSs may be kept in a central location at the primary workplace as long as the information is available to employees immediately in the event of an emergency. Keep in mind, the key concept here is ready access.

(3) Keep SDSs in any form, including operating procedures or electronic format, and may be designed to cover groups of hazardous materials in a work area where it may be appropriate to address the hazards of a process rather than of individual hazardous chemicals. However, the commander will ensure that, in all cases, to provide the required information for each chemical and is readily accessible to employees during each work shift.

(4) New SDS and hazard determinations are not required for hazardous chemicals that are redistilled or recycled by personnel based on the result of the recoupment process described in Enclosure 6 of this regulation.

e. Employee Information and Training:

(1) Title 29 CFR, section 1910.1200, requires commanders to provide employees with information and training on hazardous chemicals in their work area at the time of their initial assignment and whenever a new hazard is introduced into their work area. Specifically, employees will be informed of:

(a) The requirements of the Hazard Communication Program as prescribed by Title 29 CFR, section 1910.1200.

(b) Any operations involving hazardous chemicals in their work area.

(c) The location and availability of the written Hazard Communication Program, including the list(s) of hazardous chemicals and the SDS required by Title 29 CFR, section 1910.1200.

(d) Address specific training required by Title 29 CFR, section 1910.1200, in Enclosure 11 of this document.

(e) Training: Along with labels on containers and SDSs, employee training is one of three core components of a comprehensive hazard communication program. Training is needed to explain and reinforce the information presented on labels and SDSs, to ensure that employees understand the chemical hazards in their workplace and are aware of the protective measures they need to follow.

(f) The OSH Act requires that the training include the physical, health, simple asphyxiation, combustible dust, and pyrophoric gas hazards, as well as hazards not otherwise classified, of the chemicals in the work area.

4. INSPECTIONS AND OPERATIONAL PROCEDURES:

a. General:

(1) Mishap prevention surveys, inspections and sound operating procedures are among the principal elements of a total safety and health program. In addition to these inspections, installations are subject to both announced and unannounced inspections conducted by OSHA under authority of Title 29 CFR.

(2) Inspections of workplaces in which hazardous materials are stored and handled are the responsibility of each employee assigned to work in these areas. Although the Commander and supervisory personnel are ultimately responsible, each employee, from the beginning to the

end of the work shift, will be alert to conditions that, if not corrected, might later pose a more serious risk to all employees. These conditions include, but are not limited to, damaged or leaking containers, overturned drums, fallen stacks of material, or employee smoking in prohibited areas. The purpose of this section is to provide general guidance concerning inspections, operating procedures, and physical examination requirements. Follow specific guidelines and policy set forth by services and agencies as appropriate.

b. Inspections and Maintenance:

(1) Buildings designated for the storage of hazardous materials will generally have certain engineering features incorporated into their design for the specific purpose of controlling or minimizing the hazards of the stored materials. The unexpected sudden or gradual failure of these systems is, therefore, probably of greater concern than it would be in a nonhazardous storage facility. For this reason, periodic inspections and required servicing at prescribed intervals are key elements in ensuring that these systems serve their purpose reliably.

(2) Since facilities vary by type, purpose, year of construction, and design features, establishment of specific inspection and maintenance intervals is beyond the scope of this publication. The Facility Engineer, in consultation with the Environmental Protection Office and with an Industrial Hygienist, will develop detailed requirements. Base inspection and maintenance intervals upon manufacturer's recommendations or I.G. established periods unless local maintenance history files suggest the need for more stringent requirements. The Installation Inspection and Maintenance Program will address, as a minimum, the following systems or component:

- (a) Roofs, ceilings, walls, and floors of hazardous materials storage areas.
- (b) Ventilation systems, including ventilation rates for each storage area.
- (c) Heating and air-conditioning systems.
- (d) Electrical, lighting, and plumbing systems.
- (e) Emergency exits and cargo openings, including emergency lights and exit signs.
- (f) Facility alarm systems.
- (g) Fire suppression systems.
- (h) Spill control and containment features.

c. Standard Operating Procedures:

(1) Although many hazards in the workplace will be eliminated or controlled through engineering controls, isolation of hazardous operations, and substitution of safer procedures,

additional procedural controls may be required to achieve overall hazard abatement objectives. From a mishap prevention viewpoint, unsafe or unhealthy acts or conditions are the result of one or more basic causes. One frequent cause is the absence of command emphasis for sound operating procedures tailored to suit the local operating environment.

(2) Defense installations will develop and publish local guidance for employees not otherwise provided in official manuals or authoritative publications. Such procedures may be available in the Operating and Support Hazard Analysis of the System Safety Analysis, if such an analysis has been performed on the specific warehouse or facility. Suggested areas to be covered include the following:

(a) Procedures for an inspection of the workplace prior to the entry of employees at the beginning of the workday or shift for the purpose of detecting and correcting unsafe or unhealthy conditions that may have developed while the building was unmanned.

(b) Means of informing visitors and other personnel not regularly assigned to the workplace of the chemicals and hazards present, the precautions, and the location of SDS, as required by Title 29 CFR, section 1910.1200.

(c) Controls or measures for logging employees and visitors in and out of hazardous materials storage or working areas (for emergency purposes).

(d) Procedures and responsibilities for periodic inspections of ventilation, lighting, alarm, fire suppression systems, and emergency eyewash and shower facilities.

(e) Assignment of responsibility for a periodic determination of the adequacy of first-aid supplies and equipment.

(f) Plans for daily employee orientation briefings concerning planned events such as processing receipts and issues, re-warehousing actions, inventory, and presence of employees in the workplace who are not normally assigned and anticipated requirements for personal protective clothing.

(g) Designation of “no smoking” or “outside smoking” areas.

(h) Designation of dining areas.

(i) Procedures for inspections to ensure that hazardous materials are stored away from heat and ignition sources.

(j) Local operating principles and safety instructions governing the operation of power and manually operated MHE including safe operating speeds for forklifts handling hazardous materials, truck loading and unloading operations, and intra-installation movement of hazardous materials.

5. PERSONAL PROTECTIVE EQUIPMENT:

a. General: Title 29 CFR, Subpart I require the employer to assess hazards, select and provide PPE, and train the employees to use them where hazards might be present. Each service/agency will have a written Occupational Safety and Health (OSH) program covering the selection, use, and training of PPE. This section describes the general requirements described in Subpart I. DoD services/activities with established OSH programs will follow guidelines and policy set forth by their respective headquarters.

b. Eye and Face Protection: Eye and face protection is required by section 1910.133. Use approved eye and face protection when employee's exposure to eye and face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.

c. Respiratory Protection Program: Section 1910.134, states that, in controlling occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective will be to prevent atmospheric contamination. Accomplish this as far as feasible by accepting engineering control measures such as enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials. When this is not feasible, use respirators.

d. Occupational Head Protection: Section 1910.135 specifies that employees will wear protective helmets when working in areas where there is a potential for injury to the head from falling objects. Each affected employee when near exposed electrical conductors which could contact the head will wear protective helmets designed to reduce electrical shock hazard.

e. Occupational Foot Protection: Safety-toe footwear is required by section 1910.136. Employees will wear protective footwear when working in areas where there is a danger of foot injuries due to falling and rolling objects, or objects piercing the sole, and where exposure to electrical hazards.

f. Hand Protection: Section 1910.138 specifies that employers will select and require employees to use appropriate hand protection when employees' hands exposure to hazards such as those from skin absorption of harmful substances, severe cuts or lacerations, severe abrasions, punctures, chemical burns, thermal burns, and harmful temperature extremes.

6. OTHER REQUIREMENTS:

a. Medical Surveillance Program: Title 29, Section 1910.120f specifies the requirement that employers institute a medical surveillance program when its employees are engaged in certain hazardous waste operations or emergency response operations. When applicable, installations will institute such programs that are at least as stringent as the OSHA requirements described in DoDi 6055.05 (Occupational and Environmental Health) and DoD 6055.05-M (Occupational Medical Examinations and Surveillance Manual). Follow the specific policy and guidance

provided in service/agency programs by the installations. Employees should contact the installation OSH officer for specifics regarding the medical surveillance program.

b. Occupational Radiation Protection Program: DoDi 6055.08, Occupational Radiation Protection Program, requires that DoD installations conducting operations involving occupational radiation exposure establish and maintain radiation protection programs to reduce occupational exposures to radiation to a level as low as reasonably achievable (ALARA). Detailed requirements and exempted installations are contained in DoDi 6055.08. Additionally, each component has specific regulations for control of licensed radioactive materials, which implement the US Nuclear Regulatory Commission's rules, and regulations. Consult these regulations.

c. Process Safety Management: Process Safety Management prevents or minimizes the consequences of a catastrophic release of toxic, reactive, flammable, or explosive materials from a process into the workplace, and possibility into the surrounding community. This is a systematic approach to the management of process hazards in evaluating the process design, technology, changes, operational and maintenance procedures, non-routine procedures, emergency preparedness plans and procedures, training programs, and other elements.

(1) PSM requires for certain chemicals that:

(a) Information is gathered for highly hazardous chemical operations, or chemical process hazard analysis be performed.

(b) An appropriate PSM program is in place where the standard applies.

(2) This standard applies to all activities with operations at or above listed threshold quantities of highly hazardous chemicals outlined in 29 CFR 1910.119. This standard pertains to all of the chemicals listed in 29 CFR 1910.119, Appendix A, List of Highly Hazardous Chemicals, Toxics, and Reactive (Mandatory). It also applies to explosives and pyrotechnics as defined in 29 CFR 1910.109, Explosives and Blasting Agents, paragraphs (a)(3) and (10) respectively, and as discussed in 29 CFR 1910.109(k) and it requires compliance with the Risk Management Program, 40 CFR 68. The PSM standard applies only to individual or physically connected chemical processes. It does not apply where the separation distance is sufficient to prevent interaction and where the processes are not physically interconnected. Certain functions such as fuel storage or fuel dispensing are excepted from the standard's requirements.

(3) DoD Military Services and Agencies will ensure system support, and Safety management will provide program supplements and program oversight as necessary. DoD elements will follow their Service or Agency policies concerning PSM and ensure that their operations and storage practices are consistent with the spirit and intent of the PSM standard.

ENCLOSURE 11: HAZARDOUS MATERIALS TRAINING

1. GENERAL:

a. Purpose: The purpose of this enclosure is to summarize training requirements relating to the management of hazardous wastes and materials as published in various Federal and DoD regulations and, in addition, to provide general guidelines for developing local training programs. The design and conduct of personnel training programs can reduce serious injury and provide for environmental protection. Less obvious is the fact that such a program reflects a concern for the welfare of the individuals and their working environment. A visible and active training program, therefore, complements other morale-promoting activities.

b. Applicability: The preceding enclosures of this regulation outlined procedural requirements unique to the identification, receipt, storage, and handling of hazardous materials. It should be readily apparent that the presence of these materials in the workplace significantly increases the responsibilities of the activity Commander and the senior managers. The command responsibility to protect employees and the environment has been expanded and redefined, to some extent, by recent domestic legislation and rule changes by international regulatory agencies. Consequently, some operations previously governed largely by DoD policies and regulations are now being regulated by Federal statute and international regulations and rules. Some of these new procedural requirements may seem more complex and demanding, but in each case, their common objective is the safe handling and transportation of goods and materials defined as dangerous or hazardous. The requirements' collective impact on operations is an increased requirement for sound and effective training programs to ensure full compliance with national and international regulations to protect personnel and the environment.

c. Use the provisions of this enclosure to supplement existing service/agency training programs.

2. FEDERAL REQUIREMENTS FOR HAZARDOUS MATERIALS TRAINING:

a. General: Training requirements have been established by DOT, EPA, OSHA, and NRC. Various parts of the CFR contain these requirements and are summarized in the following paragraphs. Specific requirements are contained in the regulations. These regulatory training requirements each address their own specific areas of responsibility and are not intended to supersede one or another. In addition, military service and agency training requirements may be more stringent than regulatory training requirements and followed where directed by service and agency policy.

(1) INITIAL TRAINING: A new HAZMAT employee who changes job functions may perform those functions prior to completion of training, provided the employee performs those functions under the direct supervision of a properly trained and knowledgeable HAZMAT employee; and completes the training within 90 days after employment or job function.

(2) RECURRENT TRAINING: All HAZMAT personnel will receive refresher training at 24-month intervals IAW Service/Agency policy. DTR 4500.9-R, Part II, Chapter 204, requires training for transportation functions every two years unless otherwise defined for specific functions.

(3) RECORDKEEPING REQUIREMENTS: Document a record of all training, to include testing, in personnel training records. Maintain records for as long as a person works for the DoD and for 90 days after separation from DoD. The record will include: (1) The HAZMAT employee's name; (2) The most recent training completion date of the HAZMAT employee's training; (3) A description, copy or the location of the training materials used to meet the requirements; (4) The name and address of the person providing training; and (5) Certification that the HAZMAT employee has been trained and tested as required by this enclosure.

Produce the records required by this rule upon reasonable demand by an authorized employee of the Department of Transportation. Records may be in any format such as paper or electronic files as long as they contain the required information and are readily available. Compliance with the current requirements for a Commercial Driver's License (CDL) with a tank vehicle or hazardous materials endorsement provides a driver with the general knowledge and skills necessary for safe operation of a commercial motor vehicle with hazardous materials cargo. This may satisfy the hazardous materials training requirements. As a HAZMAT employee, additional specialized training may be required based on the job function and material-specific requirements related to the handling of hazardous materials. The HAZMAT employer will determine the extent to which the CDL endorsement satisfies all training requirements.

(4) HAZMAT EMPLOYER: A person who uses one or more of its employees in connection with: transporting hazardous materials in commerce; causing hazardous materials to be transported or shipped in commerce; or representing, marking, certifying, selling, offering, manufacturing, reconditioning, testing, repairing or modifying containers, drums, or packaging as qualified in the transportation of hazardous materials. This term includes an owner-operator of a motor vehicle, which transports hazardous materials in commerce. This term includes any department, agency, or instrumentality of the United States, a State, a political subdivision of a State, or an Indian tribe described in the first sentence of this definition.

(5) HAZMAT EMPLOYEE: A person employed by a HAZMAT employer and who in the course of employment directly affects hazardous materials transportation safety. This term includes an owner operator of a motor vehicle, which transports a hazardous material in commerce. This term includes an individual, including a self-employed individual, employed by a HAZMAT employer who, in the course of employment: (1) Loads, unloads, or handles hazardous materials. (2) Manufactures, tests, reconditions, or repairs, modifies, marks, or otherwise represents containers, drums, or packages as qualified for use in the transportation of hazardous materials. (3) Prepares hazardous materials for transportation. (4) Is responsible for safety of transporting hazardous materials. (5) Operates a vehicle used to transport hazardous materials.

b. Training requirements: OSHA's goal is to reduce worker injury and illness. The following are OSHA's major training statutes related to the shipping of hazardous materials: CFR 29.

- 1910.38, Emergency action plans. OSHA Standard. The training requirements of 1910.38(e) cover the designation and training of employees to assist in a safe and orderly evacuation of other employees.

- 1910.178, Powered industrial trucks. OSHA Standard. Includes specific training requirements for the use of forklifts in hazardous locations.

- 1910.120, Hazardous waste operations and emergency response. OSHA Standard. The training requirements of 1910.120(e) cover the requirements for different worker populations and determining if a release is covered by the standard.

- 1910.134, Respiratory protection. OSHA Standard. The training requirements of 1910.134(k) cover respiratory hazards, type of respirators, respirator selection, fitting and maintenance, medical surveillance, and respirator training and administration.

- 1910.145, Specifications for accident prevention signs and tags. OSHA Standard. Includes specific training requirements for the identification of signs and tags, hazard determination and precautions to take for personal protection as indicated by signs.

1910.157, Portable fire extinguishers. OSHA Standard.

- 1910.165, Employee alarm systems. OSHA Standard. The training requirements of 1910.165(b) (4) covers how to explain to employees the preferred means of reporting emergencies.

- 1910.1200, Hazard communication. OSHA Standard.

- 1910.1201, Retention of DOT markings, placards and labels. OSHA Standard.
General Hazard References

- Evacuation Plans and Procedures. OSHA eTool. Assists small, low-hazard service or retail businesses to implement an emergency action plan and to comply with OSHA's emergency standards.

- For additional information, see OSHA's Safety and Health Topics Pages on:
Confined Spaces
Compressed Gas and Equipment Emergency Preparedness and Response Hazardous and Toxic Substances
Hazard Communication
Hazardous Waste
Medical and First Aid

Personal Protective Equipment (PPE)
Respiratory Protection

c. DOT Requirements:

(1) Training requirements: EPA, OSHA, and DOT each have separate training rules, but there is often overlap among the various requirements. DOT requires all employees who handle or transport hazardous materials to receive general awareness, function-specific, security and safety training.

(2) General awareness/familiarization: General awareness and familiarization training is intended to raise the HAZMAT employees' awareness of the HMR and the purpose and meaning of the hazard communication requirements. All HAZMAT employees will have this training.

(3) Function-specific training: Function specific training is to teach the necessary knowledge, skills and abilities for an individual's job function.

(4) Safety training: This training provides information concerning the hazards posed by materials in the workplace and personal protection measures. The training may include basic emergency response procedures, but not intended to satisfy the requirements of 29 CFR 1910.120.

(5) Security Training: Each HAZMAT employee will receive security awareness training. This training will include an awareness of security risks associated with hazardous materials transportation and methods designed to enhance transportation security. New HAZMAT employees will receive this training within 90 days of employment. In addition to the above security awareness training, HAZMAT employees of employers that are required to have a security plan will receive in-depth security training on the security plan and its implementation.

(6) Modal specific requirements: Any additional training required by 49 CFR PARTS 174, 175, 176, or 177.

The US Department of Transportation does not designate sources of training nor certify training courses, instructors and/or schools. It is the HAZMAT employer's responsibility to determine the adequacy of the training presented. Training may be in any appropriate format including lecture, conference, self-paced instruction, interactive video, etc. DTR 4500.9-R, Part II, Chapter 204 requires specific training courses for some transportation functions.

(7) A HAZMAT employer will ensure that each of its' HAZMAT employees is trained IAW the requirements of 49 CFR, Subpart H, of Part 172. A HAZMAT employee who performs any function regulated by the hazardous materials regulations (HMR) may not perform that function unless he or she has received training as described in Subpart H of Part 172. Each HAZMAT employer has a duty to comply with the applicable requirements of the hazardous

materials regulations and to thoroughly instruct each HAZMAT employee on how to comply with the regulations.

(8) Provide the required training by the HAZMAT employer or other public or private sources. Every HAZMAT employee will receive both initial and recurrent training that includes:

- * General awareness/familiarization training
- * Function-specific training
- * Safety training
- * Testing

(9) Each HAZMAT employer is responsible for compliance with the DOT regulations for shippers, transporters, and manufacturers of HAZMAT, regardless of completion of the training required by the DOT HAZMAT training regulations. Compliance with the substantive rules cannot be put off until training is completed and providing training does not excuse violations of the rules. The employer will provide both initial and recurrent training as specified in 49 CFR subpart H. Adequately indoctrinate employees before entering the work area where hazardous materials are handled and provide periodic refresher briefings.

(10) Driver Training: In addition to other training requirements of the hazardous materials regulations, 49 CFR 177.816 requires that no carrier may transport, or cause to be transported, a hazardous material unless each HAZMAT employee who will operate a motor vehicle has been trained in the applicable requirements of 49 CFR parts 390-397, and the procedures necessary for the safe operation of that motor vehicle.

(11) Department of Transportation (DOT) DOT Hazardous materials regulations are subdivided by function into four basic areas:

- Procedures and/or Policies (49 CFR Parts 101, 106, and 107).
- Material Designations (49 CFR Part 172).
- Packaging Requirements (49 CFR Parts 173, 178, 179, and 180).
- Operational Rules (49 CFR Parts 171, 173, 174, 175, 176, and 177).

d. EPA Requirements: EPA training focuses on eliminating the release of pollutants and wastes, both on and off site. Title 40 CFR, section 264.16 (permanent TSD permit) and 40 CFR 265.16 (Interim TSD permit) requires employees assigned duties at a hazardous waste storage facility to successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures a facility's compliance with the requirements of 40 CFR Part 264 or Part 265 as appropriate. A person trained in hazardous

waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed will direct this program. As a minimum, the training program will ensure that facility employees are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems. Personnel will complete the training within six months of employment and take part in annual refresher training. For each employee, the owner or operator will maintain documentation of the job titles, employee names, job description, and the type and amount of training provided. Generally, RCRA training requirements for Part 264 or Part 265 facility personnel will include:

- Elements of the RCRA Contingency Plan.
- Communications or alarm systems.
- Standard operating procedures for using, inspecting, repairing and replacing facility emergency and monitoring equipment
- Key parameters for automatic waste feed cut-off systems.
- Use and limitations of personal protective equipment.
- Response to fires, explosions, groundwater contamination incidents and shutdown of operations.

e. OSHA Requirements:

(1) Levels of training:

OSHA recognizes several levels of training, based on the work the employee will be performing and the level of hazard they will be facing. Each level requires a different training program, and OSHA specifies topics and minimum training times.

(a) General site workers initially require 40 hours of instruction, 3 days of supervised hands on training, and 8 hours of refresher training annually.

(b) Workers limited to a specific task or workers on fully characterized sites with no hazards above acceptable levels require 24 hours of initial training, 1-day supervised hands on training, and 8 hours of refresher training annually.

(c) Managers and supervisors require the same level of training as the people they supervise, plus eight additional hours of training.

(d) Workers who are working at a Treatment, Storage, or Disposal facility that handles RCRA wastes require 24 hours of initial HAZWOPER training and 8 hours of refresher HAZWOPER training annually.

(e) First Responder Awareness level require sufficient training to demonstrate competency in their assigned duties.

(f) First Responder Operations level Awareness level training plus 8 hours training.

(g) Hazardous Materials Technician 24 hours training plus additional training to achieve competency in several areas

(h) Hazardous Materials Specialist 24 hours training at the technician level, plus additional training to achieve competency in several areas.

(i) On Scene Incident Commander, 24 hours training plus additional training to achieve competency in several areas.

(j) In all, there are 18 different points to training. The basic premise is for preventing exposure or mitigating dangerous situations fire, explosion or chemical exposure. In some instances, the training levels may or may not overlap in other cases these are prohibited by OSHA because workers without specific training may not be able to characterize waste unless trained to do that task. Consult the Site Safety Supervisor or Officer and a competent industrial hygienist or other technically qualified person who is HAZWOPER trained.

(3) Training and certification sources:

There are many sources for OSHA-compliant HAZWOPER training. Community colleges, labor unions, employers, and training companies are all good sources for training. The employer will ensure the training provider covers the areas of knowledge required by the standard and provides certification to the students that they have passed the training. The certification attaches to the student, not the employer, so it is imperative that the trainer cover all aspects of HAZWOPER operations, not just those expected at the current worksite (EPA's formerly comprehensive approach). However, OSHA's interpretations now require clean-up workers (to have focus on PPE) separated from emergency response (to deal with hazardous materials unknowns).

(a) Advanced HAZMAT Life Support

(b) Firefighter

(4) Occupational Safety and Health (General): With all training, OSHA requires employers to present information in a manner and language that their employees can understand. If employers customarily need to communicate work instructions or other workplace information to employees in a language other than English, they will also need to provide safety and health training to employees in the same manner. Similarly, if the employee's vocabulary is limited, the training will account for that limitation. For the same reason, if employees are not literate, telling them to read training materials will not satisfy the employer's training obligation.

OSHA's Hazard Communication website (<http://www.osha.gov/dsg/hazcom/index.html>) has the following "Quick Cards" and "OSHA Briefs" available to assist employers with the required training:

- Label Quick Card (English/Spanish)
- Pictogram Quick Card (English/Spanish)
- Safety Data Sheet Quick Card (English/Spanish)
- Safety Data Sheet OSHA Brief
- Label/Pictogram OSHA Brief (to come)

The OSH Act changes provide substantial benefits to users, including:

- Fewer worker illnesses, injuries, fatalities, and accidents due to a more consistent and comprehensible system that does not require English literacy to obtain some minimal hazard information.
- Greater ease of use of SDSs; and
- Less time needed to train workers due to a clearer and more uniform system.

The OSH Act requires that the training include the physical, health, simple asphyxiation, combustible dust, and pyrophoric gas hazards, as well as hazards not otherwise classified, of the chemicals in the work area.

OSHA is replacing the phrase "new physical or health hazard" with the broader term "chemical hazard." Final paragraph (h)(1) requires that employers provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new chemical hazard the employees have not previously been trained about is introduced into their work area. Design information and training to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information will always be available through labels and safety data sheets. There are three information communication components in this system—labels, SDSs, and employee training, all of which are essential to the effective functioning of the program.

(a) Labels provide a brief, but immediate and conspicuous, summary of hazard information at the site where the chemical is used.

1. Training on label elements will include information on type of information the employee would expect to see on the new labels, including the:

a. Product identifier: how the hazardous chemical is identified. This can be (but not limited to) the chemical name, code number or batch number. The manufacturer, importer or distributor can decide the appropriate identifier. The same product identifier will be both on the label and in Section 1 of the SDS (Identification).

b. Signal word: used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. There are only two signal words, “danger” and “Warning”. Within a specific hazard class, use, “danger” for the more severe hazards and use “Warning” for the less severe hazards. There will only be one signal word on the label no matter how many hazards a chemical may have. If one of the hazards warrants a “danger” signal word and another warrants the signal word “Warning,” then only “danger” should appear on the label.

c. Pictogram: OSHA’s required pictograms will be in the shape of a square set at a point and include a black hazard symbol on a white background with a red frame sufficiently wide enough to be clearly visible. A square red frame set at a point without a hazard symbol is not a pictogram and is not permitted on the label. OSHA has designated eight pictograms under this standard for application to a hazard category.

d. Hazards statements: describe the nature of the hazard(s) of a chemical, including, where appropriate, the degree of the hazard. For example, “Causes damage to kidneys through prolonged or repeated exposure when absorbed through the skin.” All of the applicable hazard statements will appear on the label. Combine hazard statements where appropriate to reduce redundancies and improve readability. The hazard statements are specific to the hazard classification categories, and chemical users should always see the same statement for the same hazards, no matter what the chemical is or who produces it.

e. Precautionary statement(s): means a phrase that describes recommended measures to take to minimize or prevent adverse effects resulting from exposure to a hazardous chemical or improper storage or handling.

f. Name, address and phone number of the chemical manufacturer, distributor, or importer: How an employee might use the labels in the workplace:

1. Explain how information on the label can be used to ensure proper storage of hazardous chemicals.

2. Explain how information on the label might be used to quickly locate information on first aid when needed by employees or emergency personnel.

g. General understanding of how the elements work together on a label:

1. Explain where a chemical having multiple hazards, uses different pictograms to identify the various hazards. The employee should expect to see the appropriate pictogram for the corresponding hazard class.

2. Explain where there are similar precautionary statements, the one providing the most protective information will be included on the label.

h. Training on the format of the SDS will include information on:

1. Standardized 16-section format, including the type of information found in the various sections. For example, instruct the employee with the new format, Section 8 (Exposure Controls/Personal Protection) will always contain information about exposure limits, engineering controls and ways to protect yourself, including personal protective equipment.

2. How the information on the label is related to the SDS. For example, explain that the precautionary statements would be the same on the label and on the SDS.

(b) SDSs provide detailed technical information and serve as a reference source for exposed employees, industrial hygienists, safety professionals, emergency responders, health care professionals, and other interested parties.

(c) Design training to ensure employees understand the chemical hazards in their workplace and are aware of protective measures to follow. Labels, SDSs, and training are complementary parts of a comprehensive hazard communication program where each element reinforces the knowledge necessary for effective protection of employees.

(4) Information required by the HCS reduces the incidence of chemical-related illnesses and injuries by enabling employers and employees to implement protective measures in the workplace.

(5) Employers can select less hazardous chemical alternatives and ensure that appropriate engineering controls, work practices, and personal protective equipment are in place. (DoD Green Procurement Program Guide, February 2009 v2. Improved understanding of chemical hazards by supervisory personnel results in safer handling of hazardous substances, as well as proper storage and housekeeping measures.

(6) Employees provided with information and training on chemical hazards are able to fully participate in the protective measures instituted in their workplaces. Knowledgeable employees can take the steps required to work safely with chemicals and are able to determine what actions are necessary if an emergency occurs. Information on chronic effects of exposure to hazardous chemicals helps employees recognize signs and symptoms of chronic disease and seek early treatment.

(7) Information provided under the HCS also enables health and safety professionals to provide better services to exposed employees. Medical surveillance, exposure monitoring, and other services are enhanced by the ready availability of health and safety information.

(8) Effective Dates: covered employers will complete all training regarding the new label elements and SDS.

(9) Training of Management Officials: Title 29 CFR, section 1960.54, requires the training of top management officials. Each agency will provide top management officials with orientation and other learning experiences that will enable them to manage their agency's Occupational Safety and Health Programs.

(10) Training of Supervisors: Title 29 CFR, section 1960.55, requires the provision of occupational safety and health training that covers the supervisors' responsibility to provide and maintain safe and healthful working conditions for employees, the agency Safety and Health Program, Title 29 CFR, section 19, Executive Order 19126, and the occupational safety and health standards applicable to the assigned workplace.

(11) Training of Safety and Health Personnel: Title 29 CFR, sections 1960.56, 1960.57, and 1960.58, respectively covers training requirements for Safety and Health Specialists, Safety and Health Inspectors, and employees assigned collateral Safety and Health Committee responsibilities.

(12) Training of Employees and Employee Representatives:

(a) Title 29 CFR, section 1960.59, requires that each agency provide appropriate safety and health training for employees, including specialized job safety and health training appropriate to the work performed by the employee. Training will also inform employees of the agencies' Occupational Safety and Health Program and will emphasize employee rights and responsibilities.

(b) Agencies will provide appropriate occupational safety and health training for agency employees who are representatives of recognized employee groups (e.g., labor organizations). This will enable the group to function appropriately in ensuring safe and healthful working conditions and practices in the workplace and enable them to assist in conducting workplace inspections.

(13) Hazard Communication Standard: Title 29 CFR, section 1910.1200, requires that employers provide employees with information and training on hazardous chemicals in their work area at the time of their initial assignment and upon the introduction of a new hazard into their work areas. This employee training will include at least:

(a) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (e.g., monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released).

(b) The physical and health hazards of all chemicals in the work area.

(c) The measures employees can take to protect themselves from these hazards, including specific measures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and PPE to be used.

(d) The details of the Hazard Communication Program developed by the employer, including an explanation of the labeling system and the SDS, and how the employees can obtain and use the appropriate hazard information.

f. Hazardous Waste and Emergency Response:

(1) Title 29 CFR, section 1910.120, requires that employers develop and implement a written safety and health program. As part of this program, employers are required to inform and train employees. Training will make workers aware of the potential hazards they may encounter and provide the necessary knowledge and skills to perform their work with minimal risk to their safety and health. Training will also inform workers of the procedures to follow in case of an emergency. The standard covers three primary groups of workers:

(a) Employees engaged in mandatory or voluntary clean-ups at uncontrolled hazardous waste sites, including corrective actions at Resource Conservation and Recovery Act (RCRA) treatment, storage, and disposal (TSD) facilities.

(b) Employees engaged in routine and emergency hazardous waste operations at TSD facilities regulated under RCRA.

(c) Employees engaged in emergency response operations for releases of, or substantial threats of releases of, hazardous substances without regard to location.

(2) Complete training before permitting an employee to take part in an actual emergency operation or incident. Only appropriately, trained employees may perform hazardous waste operations or emergency response.

(3) Training areas covered on 29 CFR 1910.120 are very detailed covering such areas as what the training should include, initial training, management and supervisor training, trainer qualifications, certification required, emergency response requirements, refresher training, and equivalent training. As a minimum, DoD activities will comply with the requirements of this section. Follow more stringent Service/Agency training requirements as directed by policy.

(4) Direct specific attention to the training requirement for employees engaged in emergency response operations for releases of, or substantial threats of releases of, hazardous substances without regard to location. Base training on the duties and function performed by each responder of an emergency response organization. Train employees who participate, or are expected to participate, in emergency response, IAW requirements in 29 CFR 1910.120 under one of the following levels:

(a) First Responder, awareness level.

(b) First Responder, operation level

(c) Hazardous materials technician

(d) Hazardous materials specialist

(e) On scene incident commander

(5). Other OSHA Training: 29 CFR 1910.1003 addresses occupational safety and health standards established for 13 carcinogens and will be complied with as appropriate.

g. Nuclear Regulatory Requirements:

(1) Title 10 CFR, section 19.12, requires that all individuals working in or frequenting any portion of a restricted area containing licensed radioactive material will be kept informed of the storage, transfer, or use of these materials or of radiation in such portions of the restricted area. The extent of information provided will be commensurate with potential radiological health problems in the restricted area.

(2) In addition, instruct employees assigned to work in areas where radioactive materials are stored in the following:

(a) Precautions to take or procedures to follow to minimize exposure.

(b) The purposes and functions of protective devices employed.

(c) Observing to the extent within the worker's control, the applicable provisions of Commission regulations and licenses for the protection of personnel from exposures to radiation or radioactive materials occurring in such areas.

(d) Their responsibility to report promptly to the licensee any condition that may lead to or cause a violation of Commission regulations and licenses or unnecessary exposure to radiation or radioactive material. At DoD installations, the licensee is the Installation Environmental Officer.

(e) The appropriate response to warnings made in the event of any unusual occurrence or malfunction that may involve exposure to radiation or radioactive material.

(f) Radiation exposure reports that workers may request of employers IAW the provisions of Title 10 CFR, section 19.13.

f. Locations Outside the United States Requirements:

(1) The, Technical Instructions for the Safe Transport of Dangerous Goods by Air published by the ICAO and the Dangerous Goods Regulations published by IATA require that initial and recurrent Dangerous Goods Training programs be established and maintained by regular shippers of dangerous goods and will be complied with by ALL DoD components..

(2) To assist with the planning of training courses, the minimum required by subject matter relating to the transport of dangerous goods by air, for various categories of personnel, is below:

(a) Train personnel engaged in the ground handling, storage, and loading of dangerous goods in general philosophy, labeling and marking, handling and loading procedures, compatibility, and emergency procedures.

(b) Train packers in the classes of dangerous goods, list of dangerous goods, general packaging requirements, equivalents, specific packaging instructions, and labeling and marking.

(c) Shippers will be trained in the classification of dangerous goods, list of dangerous goods, prohibitions, packaging instructions, labeling and marking, shipper's responsibilities, and dangerous goods transport documents.

h. DoD Hazardous Material Training Requirements: In addition to the above regulatory training requirements, training requirements as defined in Appendix G should be considered in correlation with the below requirements.

(1) Preparing Hazardous Materials for Military Air Shipment: Training for military airlift will be IAW AFMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19/DLAM 4145.3. This regulation specifies that commanders assign hazardous material workers into one of four functional groups and determine the level of training required. This method forms a building block approach, which provides basic hazardous materials training applicable to all personnel at the first level. Trainers then provide more detailed training to supplement the basic level of training (additional levels added) based on specific job responsibilities. Attachment 25 of AFMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19/DLAM 4145.3 specifies that personnel will receive initial training and subsequent refresher training at 24-month intervals and additionally specifies documentation of training records.

(2) DoD 4500.9R, Defense Transportation Regulation (DTR), requires that all personnel involved with the preparation and shipment of hazardous materials by commercial carriers or by military vehicles will be trained. The specifics of this training are found in the DTR, Chapter 204, Hazardous Materials, paragraph D, Training. The DTR chapter provides information regarding mandatory training requirements, refresher training, training records, and a listing of DoD schools. Services may designate technical specialists per DTR 4500.9R, Chapter 204, Section D, paragraph (c). The services shall be responsible for the training standards and training for technical specialists, they designate. The services shall specify the specific HAZMAT and modes of transportation that HAZMAT may use.

3. THE TRAINING PLAN:

a. General: Training's primary purpose and goal will be trained and competent personnel, adequate and properly maintained equipment, intelligent job planning, alert supervision, and satisfactory organization morale. Attainment of this goal in today's complex storage and

materials operations, further complicated by numerous Federal laws and regulations, is very difficult. It is, however, a goal that installations will constantly strive to attain if they are to have efficient and safe storage and materials handling. Training is also the best preparation for emergencies. Training for emergencies will produce fast action and authoritative, decision-oriented operational responses across all levels. Training will also begin with the premise that, whatever the emergency might be, trained individuals can minimize the impact of emergencies on life, property, and the environment. Lastly, training courses will train managers, supervisors, and employees to manage emergencies, not just to talk about emergency management.

b. Responsibility for Training: Installation Commanders will assume direct responsibility for initiating, directing, supervising, and conducting all training pertaining to storage and hazardous materials handling activity. Training is more effective when made a part of operations and not considered to be disconnected from the job. Operations personnel will have a thorough knowledge of their work and will have the confidence of their associates and subordinates. Operating supervisors will consider training an integral part of the daily workload.

c. Support by Storage Managers: Since training is part of the daily workload, storage managers will strongly support and participate in the program. Such support and participation will ensure the necessary balance between operations and training, with the training program receiving proper emphasis. It is important that this be a continuous program and not an isolated, temporary interest.

d. Training Plan Content: The first step in installing a training program is to institute an overall survey determining areas in which training is needed. Appendix G to this regulation was developed as a suggested means of determining areas in which training may be needed and groups of personnel that might need the various types of training shown. Although its emphasis is on depot personnel, the concepts may apply to other personnel as well. Since it is possible that training could be needed in many or all of the areas indicated in Appendix G, priorities will be assigned so needs are met based on urgency. An important point to remember is that attempting too much training at one time will interfere with operations and decrease training benefits. Thus, a well thought out and balanced plan, increasing or decreasing in intensity and scope as conditions require, is essential to the success of a training program.

e. Kinds and Methods of Training:

(1) All key personnel will receive general training in all hazardous materials procedures and standard practices; in addition, they will receive detailed instructions in those procedures with which they are specifically concerned. Determine the amount of time devoted to training in each functional item as well as in operational procedures based on the complexity of the job and the level of detail required.

(2) Use a modified conference method of training with group participation and discussion, within the bounds of the training objective and under the control and guidance of the leader, to present material related to principles of hazardous materials operations and detailed operating procedures.

(3) The last phase of the training program will concentrate on actual job instruction for supervisors and non-supervisors based upon Skills Codes assigned in the Position Description. Included in this phase (but not confined to it) will be on-the-job instruction and step-by-step demonstrations using working models of packaged hazardous materials, labels, shipping papers, films, charts, diagrams, etc. Activities such as equipment operation, receipt inspection and processing, segregation of incompatible materials, spill cleanup, and all other phases of hazardous materials storage and handling will be covered in this phase. Training in safety practices will be inherent in this type of training.

f. Coordination with Other Installation Activities: Coordination should be maintained between the storage and material handling or warehousing division and other affected elements of the installation (e.g., the Command Security Office, the Safety and Health Manager, the Industrial Hygiene Officer, and the Environmental Protection Office). In this manner, the installation's overall policies and objectives can be incorporated into the specific training programs of the separate activities or operations being trained. In addition, specific training policies and procedures mandated by service/agencies can be incorporated.

g. Sources of Training Information: Recommend the following publications as source documents for the development of an installation Hazardous Materials Training Program and curriculum outline:

(1) Federal Regulations:

- (a) Title 10 CFR, Energy.
- (b) Title 29 CFR, Labor.
- (c) Title 40 CFR, Protection of Environment.
- (d) Title 42 CFR, Transportation.
- (e) Title 49 CFR, Department of Transportation.

(2) Codes, Publications, and Standards:

- (a) American Conference of Governmental Industrial Hygienists (ACGIH).
 - 1. Guidelines for the Selection of Chemical Protective Clothing.
 - 2. Industrial Ventilation.
 - 3. TLV Handbook.
- (b) ANSI standards pertaining to procedures, equipment, and materials.

- (c) Association of American Railroads (AAR), Bureau of Explosives (BOE).
 - 1. Emergency Handling of Hazardous Materials in Surface Transportation.
 - (d) ASTM Manual 10, Hazardous Materials Accidents
 - (e) NFPA:
 - 1. Fire Protection Guide on Hazardous Materials.
 - 2. Fire Protection Handbook.
 - 3. Manual of Hazardous Chemical Reactions.
 - 4. National Electrical Codes.
 - 5. National Fire Codes.
 - 6. Hazardous Materials Response Handbook (NFPA 471/472).
 - (f) NIOSH:
 - 1. Occupational Diseases, A Guide to Their Recognition.
 - 2. Occupational Health Guidelines for Chemical Hazards.
 - 3. NIOSH Pocket Guide to Chemical Hazards.
 - 4. Registry of Toxic Effects of Chemical Substances (RTECS).
 - 5. The Industrial Environment, Its Evaluation and Control.
 - (g) National Safety Council, Accident Prevention Manual.
- (3) DoD.
- (a) DoDi 6050.05, DoD Hazard Communication (HAZCOM) Program
 - (b) DoD 6055.09-M, Ammunition and Explosives Standards.
 - (c) AR 700-64/DLAM 4145.8/NAVSUPINST 4000.34/AFJI 23-504/MCO P4400.105, Radioactive Commodities in the DoD Supply System.

(d) DLAR 4145.25/AR-700-68/NAVSUPINST 4440.128-/MCO 10330.2-/AFJMAN 23-227, Storage and Handling of Liquefied and Gaseous Compressed Gasses and Their Full and Empty Cylinders.

(4) Miscellaneous Publications:

- (a) A Method for Determining the Compatibility of Hazardous Wastes, EPA.
- (b) RCRA Inspection Manual, EPA.
- (c) Condensed Chemical Dictionary, Van Nostrand Reinhold Company.
- (d) Emergency Response Guidebook, DOT P 5800.3.
- (e) Handbook of Compressed Gases, Compressed Gas Association, Inc.
- (f) Fisher Scientific Company Handling, Storage, and Disposal Guide for Toxic and Hazardous Chemicals, Fisher Chemical Index 83C.
- (g) The Merck Index, Merck and Co., Inc.
- (h) Dangerous Properties of Industrial Materials, by Irving Sax.

h. Hazardous Material Training Programs: Supplement installation's hazardous materials training programs by various programs conducted by industry or Government agencies. Major chemical companies offer a wide variety of seminars and conferences designed to satisfy Federal training requirements as outlined in the CFR. These courses or seminars may be particularly useful in qualifying activity-training specialists.

i. Suggested Training Program: Appendix G presents a suggested training program that has been developed by the Defense Logistics Agency and is available for use by DoD activities. It describes a curriculum of courses that installation personnel can take and addresses both, basic and refresher courses as well as courses that are implied/required by various regulations.

ENCLOSURE 12: AMMUNITION AND EXPLOSIVES

1. PURPOSE: The purpose of this section is to establish standard policies and principles governing the receipt, storage and issue, and care and preservation of ammunition and explosives at DoD establishments.

2. GENERAL:

a. General: These policies and principles are general in nature. Contingencies not covered will require the exercise of discretion and judgment in complying with the requirements of this section. Detailed operational procedures are not included but are found in the publications of the military services. The Department of Defense Explosives Safety Board also publishes information concerning ammunition and explosives. Military ammunition and explosives are products of war and as such are manufactured primarily to kill and destroy. Such products have inherent hazards that affect all handling operations from time of manufacture until expended or disposition actions are completed. With a knowledge of the hazards involved, the first and foremost principle that should be considered in any discussion of ammunition storage is that ammunition and explosives will be handled, stored, and shipped in a manner that will afford optimum protection against deterioration, accidental ignition, and detonation. The basic principle to apply is to limit the exposure to a minimum number of persons, for a minimum amount of time, to the minimum amount of ammunition and explosives consistent with requirements of DoD 6055.9, Department of Defense Explosive Safety Standards. Additional guidance on Ammunition and Explosives handling is located in DoD 6055.9 latest version and DoD-M 5100.76 latest version.

b. Establishment of Safety Organizations: Establish safety organizations for supervising a single coordinated safety program including safety committee activities, accident prevention inspection, correction of day-to-day unsafe conditions and practices, employee training programs, publicity, accident cause investigation, and first aid training. Make diligent and vigorous efforts to prevent and eliminate hazards and unsafe practices. Perform the planning of the handling of ammunition for any reason carefully, and by competent, experienced personnel, to ensure that all hazards have been recognized and provide adequate safeguards.

3. TYPES OF FACILITIES:

a. Magazine: Any building or structure, except an operating building, used for the storage of explosives, ammunition, or loaded ammunition components (see TM 38-400/DLAM 4145.12/NAVSUP PUB 572/AFJMAN 23-210/MCO P4450.14, Joint Service Manual (JSM) for Storage and Materials Handling).

(1) Igloo Magazine or Arch-type Magazine: An arch-type earth covered magazine constructed of concrete or metal.

(2) Earth-Covered Magazines: (barricaded): Earth-covered magazines, which are so located that the earth-covered sides or backs are toward each other, or the front of one magazine

with a door barricade is toward an earth-covered side, back, or barricaded front of another magazine.

(3) Earth-Covered Magazines: (un-barricaded): Earth-covered magazines, which are so, located that the front of one magazine without a door barricade is toward an earth-covered side or back of another magazine.

(4) Standard Igloo Magazine: An earth-covered, reinforced concrete, arch-type magazine, with or without a separate door barricade, constructed according to approved standard service drawings.

(5) Special-Type Magazines: Includes but are not limited to:

(a) Magazines with steel (instead of concrete) arches and steel, wood, or concrete end walls.

(b) Earth-covered, reinforced concrete magazines such as Corbetta, dome, or box type.

(6) Aboveground Magazines: Any type of approved magazine does not earth covered. They may be either barricaded or un-barricaded.

b. Open Storage: This type of storage is undesirable and should be only an emergency expedient when authorized by the controlling authority.

4. STORAGE PLAN: Preparation and Maintenance: A storage plan will be prepared and maintained on a current basis by each establishment storing ammunition. The storage plan should include as a minimum the following:

The quantity and kinds of buildings in which ammunition and explosives are stored.

The quantity distance restrictions on each storage building and storage site, loading dock, holding yards and areas, installation rail classification yards, and ammunition work-shops and operating sites.

5. WAREHOUSING:

a. General: Commence preparation for receipt of ammunition and explosives upon knowledge that ammunition will be received. Check storage compatibility charts or tables, explosive weight content of the item, and other characteristics of the item being received prior to determining the storage location for the item. Select within the restrictions mentioned above, a storage building to effectively maximum utilization of space. When dunnage is required, select a type of dunnage that will assure stack stability, proper ventilation, and ease in handling and subsequent re-handling of the item.

b. Quantity-Distance Tables: Quantity-distance tables established by the appropriate military service will govern quantities of ammunition or explosives that may be stored in a single location

based on the distance the storage site is located from other storage sites, public highways and railroads, inhabited buildings, air fields, runways and boundary lines, and utilities and utility lines.

c. Storage Compatibility Charts or Tables: The factors, which determine grouping, are effects of explosion of the item, rate of deterioration, sensitivity to initiation, type of packing, effects of fire involving the item, and quantity of explosive per unit. Do not confuse storage compatibility groupings with hazard classifications established for quantity-distance requirements. The appropriate military service will issue detailed storage compatibility groupings.

d. Aisles:

(1) Do not maintain inspection aisles except when specific instructions to the contrary are issued by the controlling authority.

(2) Adjust the widths of operation aisles in magazines to conform to widths required for specific types of available material handling equipment (MHE) and/or other operational needs.

(3) Provide aisles for use of MHE, inventory, surveillance, or as necessary to distribute the load within the floor capacity, provide adequate ventilation, etc., as prescribed by the appropriate military service. Do not maintain aisles solely for inventory purposes if storage density is a factor, arrange storage patterns to facilitate material inventory whenever possible.

e. Space Layout and Utilization:

(1) The military services are responsible for publishing instructions in the form of drawings, sketches, narratives, or combinations of these media on the approved methods of storage of all types of ammunition.

(2) Having given due consideration to safety and preferred magazine usage, the managing authorities should establish controls to assure the most effective use of existing storage space.

(f) Preferred Storage for Certain Ammunition and Explosive Items: This list is not complete. Obtain more details from publications of the appropriate military service.

(1) General: Ammunition will be stored IAW published storage compatibility charts or tables.

(2) Storage of small arms ammunition. Small arms ammunition may be stored in aboveground magazines, providing service security requirements are satisfied. When there is more than one type of structure available, select the type offering the most protection against fire and pilferage.

(3) Storage of bombs with high explosive (HE) components. Bombs should be stored in approved earth-covered magazines where possible.

(4) Storage of separate-loading shells or projectiles. Separate-loading shells or projectiles should be stored in earth-covered magazines where possible.

(5) Storage of pyrotechnic items. Give pyrotechnic items preferential storage in magazines, which are well ventilated, dry, and in good repair.

g. Storage Aids:

(1) General: Ammunition should be stored and shipped palletized to affect a reduction in handling time. For proper grounding of ammunition and explosives while in storage, refer to applicable publications of the appropriate military service. Permit the following methods of palletization when authorized by the appropriate military service in the handling, storage, and shipping of ammunition:

(a) Unstrapped pallets: Conventional double-faced pallets.

(b) Short dunnage: Short dunnage of varying lengths used as horizontal dunnage in lieu of pallets and where authorized by the appropriate military service drawings.

(c) Palletized unit loads. Applies to an assemblage of a particular commodity, packaged or unpackaged, or strapped or tied together in a bundle. A unit load strapped or fastened to a pallet, becomes a "palletized unit load." This method is commonly employed for the storage and shipment of separate-loading shells or projectiles and should be used to the maximum extent possible for storage and shipment of other items.

(2) Box Pallets:

(a) Retain small quantities of ammunition in box pallet storage to meet current issue demands.

(b) Use box pallets for storage of irregular-shaped, hard to stack and crushable items such as container packed items, fiber containers, bagged goods, loose small items, etc.

(3) Dunnage:

(a) Place dunnage beneath the first layer of ammunition or explosives to keep the ammunition or explosives from coming in contact with the floor or ground. Specify the type dunnage on agency storage drawings, sketches, and/or narratives.

(b) Use grounded steel racks for storage of separate-loading shells, bombs, and other cylindrical objects of ammunition.

h. Storage of Pilferable Ammunition: Appropriate security procedures as set forth in military department/agency regulations will be applied for all small arms ammunition, demolitions, and explosives such as blasting caps, igniters, detonators, fuses, and related items. The use of special

locks and keys is required as directed by the controlling authority. Apply key and lock control procedures as set forth in appropriate military department/agency regulations.

i. Storage of Ammunition Bearing Security Classification of Confidential or Higher:

The responsibility for taking the proper security measures involving the receipt, storage, and issue of classified material will rest with the commander of the installation involved. Structural standards, key and lock control, and applicable security procedures should conform to standards set forth in DoD 5200.1-R, DoD 5100.76-M for physical Security requirements for AA&E as well as appropriate military department/agency regulations.

j. Storing and Stacking of Dunnage: The storage of dunnage in a permanent open storage site should conform to the provisions of TM 38-400/NAVSUP PUB 572/AFJMAN 23-210/MCO 450.14/DLAM 4145.12, chapter V, section I, Lumber, as far as conditions permit. Govern the location of dunnage yards by regulations published by the appropriate military service.

k. Fusible Links on Magazines: List fusible links on the current approved list published by Underwriters Laboratories, Inc. or other recognized testing laboratories. The melting point will be between 155° F and 165° F with a minimum rated breaking strength of 20 pounds for the door ventilator link and 8 pounds for the rear-stack ventilator link. Do not paint fusible links.

l. Re-warehousing: Keep re-warehousing of ammunition to the minimum consistent with safety and operational needs.

m. Termite Control:

(1) One method of controlling subterranean termites in ammunition magazines is to provide a layer of poison soil under the slabs or around footing during construction. Apply this principle to structures already in place.

(2) Treat earth-covered magazines only when vacant. If necessary, one section at a time may be treated.

n. Protection against Moisture Damage: Make every effort to protect wood boxes from excessive moisture. As moisture content increases, the possibility of attack by various types of fungi, particularly mildew, also increases. Wood boxes of ammunition exhibiting fungi should be stacked on a pallet in a manner that will provide for air circulation around the boxes. Use of dunnage between layers is a method of allowing for air circulation.

6. RECEIVING RAILCARS AND MOTOR VEHICLES:

General: When receiving railcars and motor vehicles containing ammunition and explosives at military establishments, inspect for sabotage, mechanical defects, and condition of the loading at an established inspection point. All shipments received in damaged or otherwise unsatisfactory condition because of deficiencies such as improper preservation, packing, or marking will be

reported on SF 364 (Report of Discrepancy) IAW AR 735-11-2/DLAR 4140.55/SECNAVINST 4355.18/AFMAN 23-122/DLM4000.25, Volume 2, Chapter 17 or DD Form 361 IAW AR 55-38 (RCS SDDC-54-R1)/NAVSUPINST 4610-33/AFI 24-203/MCO P4610-19/DLAR 4500.15.

7. CARE OF AMMUNITION IN STORAGE:

a. Responsibility: It is the responsibility of the commander of an installation to maintain stocks of ammunition in an issuable condition. When known that stocks of ammunition need preservation maintenance, the commander should schedule the operation per applicable military service policies, assure and accomplish the required maintenance with minimal delay.

b. Storage Selection: Proper storage for ammunition to afford adequate protection should be selected IAW policies and regulations of the appropriate military service.

c. Inspection of Incoming Ammunition: Inspect incoming ammunition to determine condition and application of adequate preservative protection. Cautiously check those packages of ammunition which have been opened and are being returned to the installation as excess. The examination should verify the materials serviceability/condition code and identify any preservation and/or packaging requirements.

d. Inspection of Ammunition in Storage: Conduct inspections of ammunition in storage to determine if the preservation and packaging protective measures are still adequate. A definitive inspection schedule should be established and followed.

e. Preservation and Cleaning Methods: The primary inventory control activity's packaging office will establish proper cleaning procedures, methods of preservation, packaging, and marking requirements.

8. SHIPPING:

a. General: Package ammunition in the containers prescribed by the drawings and specifications for the specific stock number involved. In addition, the individual military services publish standard car-loading and truck-loading drawings, sketches, and narratives in compliance with DOT and US Coast Guard regulations. Additional transportation requirements are specified by DoD 4500.9-R, Defense Transportation Regulation., Part II, Cargo Movement.

b. Preparation for Delivery:

(1) Shipping activities will comply with DOT and departmental regulations, whichever apply to the most restrictive anticipated mode of transportation.

(2) All ammunition will be loaded IAW the applicable out-loading drawings and standards. Where such a drawing or standard does not exist, obtain guidance from the US Army Defense Ammunition Center and School (USADACS), Savanna, IL, or the Navy Packaging, Handling, Storage and Transportation Center, Picatinny Arsenal, NJ. In addition, follow general

guidance contained in BOE Pamphlet Nos. 6, 6A, and 6C where applicable. Obtain these pamphlets from Bureau of Explosives, Association of American Railroads, 1920 L Street NW, Washington, DC 20036.

(3) Document all shipments and mark IAW DoD regulation 4500.32-R, Military Standard Transportation and Movement Procedures, MIL-STD-129, Marking for Shipment and Storage, and applicable modal regulations.

(4) Make certification for shipment by military air IAW AFMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19/DLAI 4145.3. For shipment by commercial aircraft, DOT or ICAO/IATA regulations are applicable.

(5) Maintain ammunition lot integrity in storage and shipment from the time of manufacture and assembly through the supply action to troops. Do not mix lots in storage and shipment.

(6) Place placards on the outside of both railcar doors, indicating on which side of the railcar the documents are located.

(7) Components of DoD will give technical aid and assistance to rail and motor carriers in the event of an incident involving explosives and ammunition. Report all such incidents in conformance with regulations of the appropriate military department.

(8) Lumber and nails used for blocking and bracing of shipments will be of the size, variety, and grade specified and approved by DOT, BOE, the PICA and/or individual military service drawings, sketches, or narratives.

(9) Take adequate safeguards to ensure the ammunition shipped agrees with the item and condition specified on the shipping directives.

(10) Preparation for in-transit security should conform to standards as set forth in appropriate military service/agency regulations for shipment of classified and/or sensitive material.

9. LOCATOR SYSTEM:

Locator Records: Locator records will be established at all military facilities where ammunition and explosives are stored. There should be two records established which can be cross-referenced. One should be a record of each lot of ammunition or explosives and the locations in which it is stored (the ammunition/explosives lot record cards may be used as this part of the locator system) and the second record should be a planograph for each storage building or a loose-leaf book by magazine number with contents listed. Use automated products as long as they convey the appropriate information.

10. INVENTORY:

Procedures: Prescribe detailed inventory procedures by the individual DoD Components.

11. SAFETY:

a. General: An integral part of all ammunition/explosives handling operations is consideration for the safety of personnel, property, ammunition, and explosives. It is the policy of DoD that its' agencies establish adequate controls consistent with a safe and efficient operation. The controlling authority is responsible for observation and ensuring safe practices in all operations of handing of ammunition and explosives. That line of responsibility remains unbroken until it reaches that person who handles the item.

b. Safety Rules: Each military service is responsible for the publication of safety rules, regulations, and procedures used in the handling of ammunition/explosives.

c. Posting Instructions: General instructions governing the storage and care of explosives should be posted in each magazine and building where ammunition and explosives are stored. These general instructions will include as a minimum the following:

- (1) Always, handle explosives and ammunition carefully.
- (2) Remove dirt, grit, and foreign materials from containers and ammunition before placing in storage.
- (3) Do not store explosives and ammunition in damaged containers.
- (4) Keep all containers in magazine effectively closed.
- (5) Store all material lot numbers separately. The location configuration will be stable and designed to allow free circulation of air to all parts of the stack. Where dunnage is required to keep containers and ammunition off the floor, metal dunnage is preferred.
- (6) Do not open, repair, pack, or repack containers in or within 100 feet of a magazine, except as specifically authorized by the controlling authority.
- (7) Do not keep empty containers, tools, or other materials in magazine containing ammunition or explosives except as specifically authorized by the controlling authority.
- (8) Maintain good housekeeping practices such as cleanliness and order.
- (9) Use only electric lights approved for use in magazines.
- (10) Do not smoke or bring matches or other flame or spark producing devices into the ammunition area.

(11) Do not allow unauthorized persons in the controlled ammunition area.

(12) Keep magazine spark tight, with ventilators well screened and no openings around doors or foundations.

(13) Keep doors locked when magazine is unattended. Close doors when vehicle is approaching platform unless vehicle is equipped with spark arrestor on exhaust.

(14) Keep the 50-foot cleared space around aboveground magazines free from combustible materials and keep adequate cleared space around igloo magazine ventilators.

(15) Two or more doors, when available, will be open when personnel are working in a magazine containing explosives or ammunition.

d. Standard Handling Methods: Establish standard handling methods, consistent with the safety rules and regulations of each military service, for handling all ammunition packed IAW approved drawings and specifications. For all items, not packed IAW approved drawings and specifications, or an item is considered extremely hazardous; develop an SOP and approval by the Commander of the installation prior to starting the operation. As a minimum, prepare SOPs for all preservation, renovation, and modification operations.

e. Educational Program:

(1) Institute an educational program in each installation to develop and maintain employees' interest in the safety program and to train employees in safe practices and safe procedures. Some of the mediums available for employee education are posters, bulletin boards, scoreboards, special exhibits, safety contests, articles in establishment publications, safety rules, hand-out-cards, pamphlets, and warning signs for specific hazards, suggestion system, essay contests, or sound slide films of motion pictures for groups.

(2) Appropriate "off-the-job" accident presentation features should be included in the program, and the safety organization should stimulate the interest of and cooperate with outside agencies concerned with this phase of the accident prevention program.

ENCLOSURE 13: HAZARDOUS PROPERTY DISPOSAL

1. PURPOSE: This Enclosure provides general information on disposing of hazardous materials and hazardous wastes.

2. DEPARTMENT OF DEFENSE POLICY: DoD policy is to store and dispose of hazardous property in an environmentally acceptable manner IAW applicable environmental laws and regulations, including state and local laws. Various implementing regulations and guidance manuals have been published by the individual components of the Department as well as joint publications. Users consult with installation environmental counsel or designated legal advisor, regarding the various legal requirements, to ensure that a particular action/plan/approach is legally sound.

3. HAZARDOUS WASTE DISPOSAL RESPONSIBILITIES:

a. DLA Disposition Service: DLA, through the Defense Logistics Disposition Services, has the mission responsibility for centralized disposal management of certain categories of DoD generated hazardous property. DLA Disposition Services (DLA DISPO) administers contracts with commercial hazardous waste disposal firms for the removal and ultimate disposal of these wastes. Also, use these contracts for disposing of excess hazardous material for which there is no reutilization, transfer, donation, or sales potential. Before accessing the DLA disposition service, Air Force personnel shall follow procedures established in AFI 32-7086 for the management of hazardous materials and procedures set forth in AFI 32-7042 for the management of hazardous waste if applicable.

(1) Guidance for turning in hazardous property to DLA Disposition Services is contained in DoDM 4160.21 VOL 4, Defense Materiel Disposition Manual. Contact the local DLA DISPO office to receive a handout that contains hours of operation, points of contact, and sample documentation. Prior to turning in property, customers need to coordinate with the DLA DISPO office. This will enable the DLA DISPO office to schedule the turn in and will provide customers with an opportunity to obtain information regarding any recent changes to existing turn-in requirements.

(2) Accurate identification of hazardous waste is essential for proper disposal. Misidentified or unknown hazardous wastes present special problems, which may result in unusually excessive lab analysis testing costs and cause delays in disposal action. As a rule, do not combine different types of wastes, commingle, or mix. Collecting different types of wastes in the same container makes the identification process more difficult, may increase liabilities, and could cause hazardous conditions if incompatible chemicals are combined. Combining different wastes may also result in a mixture that requires a more complex method of treatment or disposal, resulting in increased costs to the generator. Some wastes have a sales potential for recycling, use as a fuel, or for use in an industrial process. However, if such wastes are contaminated with other products, the marketability may be destroyed, and the generator will be required to pay for disposal on a commercial service contract. DoD generators are required to provide DOT approved containers for turn-in of hazardous wastes to DLA DISPO offices IAW

DoDM 4160.21 VOL 4. Users consult with installation environmental counsel or designated legal advisor, regarding the various legal requirements, to ensure a particular action/plan/approach is legally sound.

(3) In many instances disposition of hazardous material or waste will be handled by the individual services. Installations and tenants should always consult the installation's service procedures when handling final disposition of hazardous material or waste.

b. DoD Components: DoD components are individually responsible for disposal of those categories of waste (e.g., municipal trash, radioactive waste, infectious medical items, munitions, etc.) which, for practical and economic reasons, not assigned to DLA. Specific categories are provided in DoDM 4160.21 VOL 4.

(1) Vehicle/Equipment Shipment:

(a) Military Combat and Tactical vehicles and equipment will be shipped and turned in, IAW DoD 4160.21-M, DLA Disposition Services Manual, Chapter 10.

(2) Military Combat and Tactical vehicles and equipment whether OCONUS or CONUS, Active or Reserve Units, will be inspected for ammunition or explosive prior to any shipment, or to DLA Dispositions Services and be IAW DoDi 4140.62 Material Possibly Presenting an Explosive Hazard (MPPEH), and DoDM 4160.28 Vol 3. MPPEH cannot be transferred to a DLA Disposition Services site until it has been inspected IAW DoDi 4140.62 and certified via inert form (Appendix K).

(3) The regulations and requirements are very specific and detailed, and failure to comply with the regulations may result in punishment under UCMJ as well as Criminal and Civil Laws.

(4) It is recommended the documents (inert form and other required paperwork) be attached to the inside lower right corner of the windshield (in a waterproof sealed packing device and marked "do not remove". This can be seen by an inspector prior to the vehicle being loaded aboard a vessel and can trigger immediate action to locate necessary documentation if required. It is also recommended to contact the contractor to have their employees notified (in their own language, if foreign) that the paperwork that is attached to the windshield not be removed as it is required documentation. It is further recommended that the required documentation (e.g. inert form, serial #, etc.) for each vehicle/piece of equipment be placed on a spreadsheet and be emailed or placed on a cd and be mailed to the receiving officials.

(5) Additional items requiring clearance of vehicle/equipment turn in, in addition to the inert form:

(a) Hazardous Material

(b) Biohazard or Human Remains

(c) NBC Contaminants

(d) Ammunition and/or explosives

4. RELATED TOPICS:

a. Hazardous Waste Minimization: Enclosure 5 covers hazardous waste minimization issues applicable to receiving.

b. Storage: Enclosure 6 addresses hazardous waste storage responsibilities.

c. Packing, Marking and Labeling: Enclosure 8 addresses packing, marking, and labeling of hazardous waste.

d. Hazardous Waste and Emergency Response Operations: Enclosure 9 addresses hazardous waste and emergency response operations.

e. Training: Enclosure 11 addresses training requirements for employees handling hazardous waste.

APPENDIX A: MISCELLANEOUS ADDRESSES

CDC	Centers for Disease Control 1600 Clifton Road NE Atlanta, GA 30333 (404) 633-5313, 24 hours
CGNRC	Coast Guard National Response Center US Coast Guard Headquarters 2100 Second St. SW Room 2611 Washington, DC 20593 (800) 424-8802
CHEMTREC	Chemical Transportation Emergency Center Chemical Manufacturers Association 2501 M St. NW Washington, DC 20037 (800) 424-9300 or (202) 483-7616, 24 hours

Use a 24-hour emergency contact point to obtain guidance and advice relating to chemical spills that occur on public highways and railroads.

DoD	National Response Center (NRC) and Terrorist HOTLINE (800) 424-8802 (Day or Night) At SEA: (202) 267-2675 (Collect)
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Hazard Class 1 Hotline:

(explosives only): (703) 697-0218/0219

Non-explosive Hazardous materials only: (800) 851-8061

Surface Deployment Distribution Command (SDDC)

From a ship at sea, call: (618)220-4262/ (804) 279-3131

Hotline information: (804) 279-3630

Radioactive Material: NRC (800) 424-8802 (day or Night)

For Hazardous Substance Spills Only:
Hazardous Materials/Packaging questions:
HMIRS Help Line: (800) 848-4847
Or this website:

<http://www.dla.mil/HQ/InformationOperations/Offers/Products/LogisticsApplications/HMIRS.aspx>

EPA Environmental Protection Agency

Tenants will not directly contact regulatory agencies without host installation approval.

Per DLAI 4715.06, all regulatory notifications will be made by the host installation.

Regional Administrators:

Region 1: (CT, MA, ME, NH, RI, VT)
Environmental Protection Agency
5 Post Office Square-Suite 100
Boston, MA 02109-3912
Phone: (617) 918-1111
Fax: (617) 918-1809
Toll free within Region 1: (888) 372-7341

Region 2: (NJ, NY, PR, VI)
Environmental Protection Agency
290 Broadway
New York, NY 10007-1866
Phone: (212) 637-3000
Fax: (212) 637-3526

Region 3: (DC, DE, MD, PA, VA, WV)
Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103-2029
Phone: (215) 814-5000
Fax: (215) 814-5103
Toll free: (800) 438-2474
Email: r3public@epa.gov

Region 4: (AL, FL, GA, KY, MS, NC, SC, TN)
Environmental Protection Agency
Atlanta Federal Center
61 Forsyth Street, SW

Atlanta, GA 30303-3104
Phone: (404) 562-9900
Fax: (404) 562-8174
Toll free: (800) 241-1754

Region 5: (IL, IN, MI, MN, OH, WI)
Environmental Protection Agency
77 West Jackson Boulevard
Chicago, Il 60604-3507
Phone: (312) 353-2000
Fax: (312) 353-4135
Toll free within Region 5: (800) 621-8431

Region 6: (AR, LA, NM, OK, TX)
Environmental protection Agency
Fountain Place 12th Floor, Suite 1200
1445 Ross Avenue
Dallas, TX 75202-2733
Phone; (214) 665-2200
Toll free within Region 6: (800) 887-6063

Region 7: (IA, KS, MO, NE)
Environmental Protection Agency
11201 Renner Blvd.
Lenexa, KS 66219
Phone: (913) 551-7003
Toll free: (800) 223-0425

Region 8: (CO, MT, ND, SD, UT, WY)
Environmental Protection Agency
1595 Wynkoop St.
Denver, CO 80202-1129
Phone: (303) 312-6312
Fax: (303) 312-6339
Toll free: (800) 227-8917
24 Hour Hotline (Spills) (303)-293-1788
Email: r8eisc@epa.gov

Region 9: (AZ, CA, HI, NV)
Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
Phone: (415) 947-8000
Fax: (415) 947-3553
Toll free within Region 9: (866) EPA WEST/ (866) 372-9378
Email: r9.info@epa.gov

Region 10: (AK, ID, OR, WA)
Environmental Protection Agency
1200 Sixth Avenue, Suite 900
Seattle, WA 98101
Phone: (206) 553-1200
Fax: (206) 553-2955
Toll free: (800) 424-4372

APPENDIX B: HAZARD CHARACTERISTIC CODES AND DEFINITIONS

1. Number of Characters: Two

2. Type of Code: Alpha/Numeric

3. The Hazard Characteristic Code (HCC): A two-digit alphanumeric code used to provide a means of categorizing hazardous materials (HM). It is an identification and tracking mechanism, which links the stock number with details of the product hazards. Trained scientific or engineering personnel using the data provided on the Safety Data Sheet (SDS) assign HCCs, thereby, uniformly identifying hazardous materials managed by all Government activities. This information is captured in the DoD Hazardous Materials Information System (HMIS) and it allows the systemic tracking and identification for any regulatory purpose. HCCs allow relatively untrained personnel to properly receive, handle, store, process and manage, hazardous materials at a high level, and are most effective when used in conjunction with the detailed regulations of Title 10, 29, 40, and 49 of the Code of Federal Regulations. The HCC also serves as an identifier for automated processing of hazardous materials transactions, space utilization management, and compatible storage.

4. Every effort has been made to associate the HCC definitions with a specific regulatory definition, principally Title 29, but with references to Titles 49, 40 and 10 of the Code of Federal Regulations. Most of the HCC definitions were developed to identify items that have physical or chemical properties that satisfy specific hazard criteria. However, other definitions include more ambiguous criteria that relies heavily on language contained in the SDS, product literature, labels, and other technical literature and may be subject to interpretation by qualified technical personnel. Address questions regarding the assignment of these and the other more regulatory based HCCs to the appropriate HMIRS Focal Point personnel.

5. Two HCCs, H1 and X1, are defined in this appendix, and are only visible in certain data systems, but are not used for physical storage, and are not assigned in HMIRS based on specific data from an SDS.

6. There are three tables presented in this appendix. Table B-1 is a summarization of the HCCs with abbreviated definitions. Table B-2 contains the complete technical definitions. Table B-3 is a listing of the HCCs in order of preference of assignment. This table lends itself to development of hierarchical assignment programs and decision matrices for assignment of products at storage depots. The order of ranking was developed with consideration being given to the relative risks presented by materials with that HCC during normal conditions of storage, and to the order of preference for hazard class assignment specified in 49 CFR 173.2a."

Table B-1. Hazard Characteristic Codes

Code	Hazard Group	Abbreviated Definition
A1	Radioactive, Licensed	RADIOACTIVE, LICENSED
A2	Radioactive, License Exempt	RADIOACTIVE, EXEMPT
A3	Radioactive, License Exempt, Authorized	RADIOACTIVE, EXEMPT AUTHORIZED
B1	Alkali, Corrosive, Inorganic	ALKALI, CORR, INORGANIC
B2	Alkali, Corrosive, Organic	ALKALI, CORR, ORGANIC
B3	Alkali, Low Risk	ALKALI, LOW RISK
C1	Acid, Corrosive, Inorganic	ACID, CORR, INORGANIC
C2	Acid, Corrosive, Organic	ACID, CORR, ORGANIC
C3	Acid, Low Risk	ACID, LOW RISK
C4	Acid, Corrosive and Oxidizer, Inorganic	ACID, CORR/OXID, INORGANIC
C5	Acid, Corrosive and Oxidizer, Organic	ACID, CORR/OXID, ORGANIC
D1	Oxidizer	OXIDIZER
D2	Oxidizer and Poison	OXIDIZER, POISON
D3	Oxidizer and Corrosive, Acidic	OXIDIZER, CORR, ACIDIC
D4	Oxidizer and Corrosive, Alkali	OXIDIZER, CORR, ALKALI
E1	Explosive, Military	EXPLOSIVE, MILITARY
E2	Explosive, Low Risk	EXPLOSIVE, LOW RISK
F1	Flammable Liquid, GHS Category 1, DOT PG I	FLAM OSHA GHS 1, DOT PG I
F2	Flammable Liquid, GHS Category 2, DOT PG II	FLAM OSHA GHS 2, DOT PG II
F3	Flammable Liquid, GHS Category 3, DOT PG III (Flash Point < 38 C)	FLAM OSHA GHS 3, DOT PG III
F4	Flammable Liquid, GHS Category 3, DOT PG III (Flash Point ≥ 38 C)	FLAM OSHA GHS 3, DOT PG III
F5	Flammable Liquid and Poison	FLAM, POISON
F6	Flammable Liquid and Corrosive, Acidic	FLAMMABLE, CORR, ACIDIC
F7	Flammable Liquid and Corrosive, Alkali	FLAMMABLE, CORR, ALKALI
F8	Flammable Solid	FLAM SOLID
G1	Gas, Poison (Nonflammable)	GAS, POISON
G2	Gas, Flammable	GAS, FLAM
G3	Gas, Nonflammable	GAS, NON-FLAM
G4	Gas, Oxidizer (Nonflammable)	GAS, OXIDIZER
G5	Gas, Corrosive (Nonflammable)	GAS, CORROSIVE
G6	Gas, Poison, Corrosive (Nonflammable)	GAS, POISON, CORROSIVE
G7	Gas, Poison, Oxidizer (Nonflammable)	GAS, POISON, OXIDIZER
G8	Gas, Poison, Flammable	GAS, POISON, FLAM

G9	Gas, Poison, Corrosive, Oxidizer (Nonflammable)	GAS, POISON, CORR, OXIDIZER
H1	Hazard Characteristics Not Yet Determined *	HAZ CHAR NOT DETERMINED
K1	Infectious Substance	INFECTIOUS SUB
K2	Cytotoxic Drugs	CYTOTOXIC DRUG
M1	Magnetized Material	MAGNETIZED MATERIAL
N1	Not Regulated as Hazardous	NON-HAZARDOUS
P1	Peroxide, Organic, Types A-F	PEROXIDE, ORGANIC
P2	Peroxide, Organic, Type G (Low Risk)	PEROXIDE, ORGAN, LOW RISK
R1	Spontaneously Combustible Chemical	SPONTANEOUS COMB CHEM
R2	Water Reactive Chemical	WATER REACTIVE CHEMICAL
T1	Acute Toxin - Inhalation Hazard	TOXIC INHAL HAZARD
T2	Acute Toxin, GHS Category 1	TOXIC, GHS 1
T3	Acute Toxin, GHS Category 2	TOXIC, GHS 2
T4	Acute Toxin, GHS Category 3	TOXIC, GHS 3
T5	Pesticide, Low Risk	PESTICIDE LOW RISK
T6	Health Hazard	HEALTH HAZARD
T7	Carcinogen (OSHA, NTP, IARC)	CARCINOGEN
V1	Miscellaneous Class 9 Hazardous Materials	MISC HAZ MATL CLASS 9
V2	Aerosol, Nonflammable	AEROSOL, NONFLAMMABLE
V3	Aerosol, Flammable	AEROSOL, FLAMMABLE
V4	Combustible Liquid, GHS Category 4	COMBUSTIBLE, GHS 4
V5	High Flash Point Materials	HIGH FLASH LIQUID
V6	Petroleum Products	PETROLEUM PRODUCTS
V7	Environmental Hazard	ENVIRONMENTAL HAZARD
X1	Multiple Hazards Under One NSN *	MULTIPLE HAZARDS
Z1	Article Containing Asbestos	ARTICLE, ASBESTOS
Z2	Article Containing Mercury	ARTICLE, MERCURY
Z3	Article Containing Polychlorinated Biphenyl (PCB)	ARTICLE, PCB
Z4	Article, Battery, Lead Acid, Nonspillable	BATT, LEAD ACID, NONSPIL
Z5	Article, Battery, Nickel Cadmium, Nonspillable	BATT, NICAD, NONSPIL
Z6	Article, Battery, Lithium	BATTERY, LITHIUM
Z7	Article, Battery, Dry Cell	BATTERY, DRY CELL
Z8	Article, Battery, Lithium, Large Form	BATTERY, DRY CELL

* System derived HCC. Not directly assigned in HMIRS.

Table B-2. Hazard Characteristic Code Definitions

A1 - Radioactive Material, Licensed. Any radioactive material that requires the issuance of a specific or general license, according to Title 10, Code of Federal Regulations (CFR), to persons who manufacture, produce, transfer, receive, possess, acquire, own, or use by-product material.

A2 - Radioactive Material, License Exempt. Any radioactive material that does not require the issuance of a specific or general license according to Title 10, CFR, Parts 30 and 40.

A3 - Radioactive Material, License Exempt, Authorized. Radioactive material exempts from specific or general license requirements of Title 10, CFR, but for which the appropriate military services or agency representative has determined that an authorization or permit is required for the receipt, transfer, ownership, possession, or use. Included are electron tubes, smoke detectors, or other devices containing material not exceeding the Nuclear Regulatory Commission (NRC) license-exempt quantities listed in Title 10, CFR.

B1 - Alkali, Corrosive, Inorganic. An inorganic (not hydrocarbon based) alkaline corrosive material, either liquid or solid, that meets any one of the following criteria:

(a) The material is classified as corrosive transportation hazard (UN Class 8) IAW the DOT regulations in 49 CFR 173.136 (or with other dangerous goods transportation regulations); or

(b) The material meets the OSHA GHS criteria for a chemical which is corrosive to skin in Category 1 due to its ability to cause destruction or irreversible alteration in human skin tissue (based on animal testing where the structure of the tissue at the site of contact is destroyed or changed irreversibly after an exposure period of 4 hours or less (as described in 29 CFR 1910.1200 Appendix A.2); or

(c) The material meets the OSHA GHS criteria for a chemical which is corrosive to metal in Category 1 due to a metal corrosion rate that, at a test temperature of 55 °C (131 °F), exceeds 6.25 mm (0.246 inches) per year on steel or aluminum (as described in 29 CFR 1910.1200 Appendix B.16); or

(d) The material is aqueous solution and has a pH greater than or equal to 12.5 (as determined by the test method specified by the EPA in 40 CFR, Section 261.22); or

(e) The material is a vented alkaline battery (spillable or non-spillable) that meets the definition of a Class 8 transportation hazard and contain unabsorbed liquid electrolyte when tested according to 49 CFR 173.159a (d); or

(f) The material meets the OSHA GHS criteria for a chemical which is damaging to eyes in Category 1 because the alkaline nature of the material causes irreversible eye damage (based on animal testing) where it causes effects on the cornea, iris or conjunctiva that are not expected to reverse or have not fully reversed within an observation period of 21 days in at least one tested animal."

B2 - Alkali, Corrosive, Organic. An organic (hydrocarbon based) alkaline corrosive material, either liquid or solid, that also meets any one of the following criteria:

(a) The material is classified as corrosive transportation hazard (UN Class 8) IAW the DOT regulations in 49 CFR 173.136 (or with other dangerous goods transportation regulations); or

(b) The material meets the OSHA GHS criteria for a chemical which is corrosive to skin in Category 1 due to its ability to cause destruction or irreversible alteration in human skin tissue (based on animal testing) where the structure of the tissue at the site of contact is destroyed or changed irreversibly after an exposure period of 4 hours or less (as described in 29 CFR 1910.1200 Appendix A.2); or

(c) The material meets the OSHA GHS criteria for a chemical which is corrosive to metal in Category 1 due to a metal corrosion rate that, at a test temperature of 55 °C (131 °F), exceeds 6.25 mm (0.246 inches) per year on steel or aluminum (as described in 29 CFR 1910.1200 Appendix B.16); or

(d) The material is aqueous solution and has a pH greater than or equal to 12.5 (as determined by the test method specified by the EPA in 40 CFR, Section 261.22); or

(e) The material meets the OSHA GHS criteria for a chemical which is damaging to eyes in Category 1 because the alkaline nature of the material causes irreversible eye damage (based on animal testing) where it causes effects on the cornea, iris or conjunctiva that are not expected to reverse or have not fully reversed within an observation period of 21 days in at least one tested animal."

B3 - Alkali, Low Risk. A liquid or solid product that exhibits alkali (caustic/basic) properties and does not meet the definition of an OSHA GSH Corrosive in Category 1 (HCCs B1 or B2) but which through experience or through documentation on the SDS or product bulletin would cause severe skin or eye irritation, dermatitis, or allergic skin reaction. Any classification of a material into this category is a process, which relies heavily on the professional judgment of the evaluator recognizing that individuals react differently to exposure to chemicals. Factors to consider are the pH, the intended use of the product, the type of package, and the concentration of the active ingredient(s). Included in this definition are alkaline materials, not meeting the definition of any other HCC, that satisfy the criteria for an OSHA GHS Skin Irritant, Category 2 (as defined in 29 CFR 1910.1200 Appendix A.2) or Eye Irritant, Category 2 (as defined in 29 CFR 1010.1200 Appendix A3)."

C1 - Acid, Corrosive, Inorganic. An inorganic (not hydrocarbon based) acidic corrosive material, either liquid or solid, that also meets any one of the following criteria:

(a) The material is classified as corrosive transportation hazard (UN Class 8) IAW the DOT regulations in 49 CFR 173.136 (or with other dangerous goods transportation regulations).

(b) The material meets the OSHA GHS criteria for a chemical which is corrosive to skin in Category 1 due to its ability to cause destruction or irreversible alteration in human skin tissue (based on animal testing) where the structure of the tissue at the site of contact is destroyed or changed irreversibly after an exposure period of 4 hours or less (as described in 29 CFR 1910.1200 Appendix A.2); or

(c) The material meets the OSHA GHS criteria for a chemical which is corrosive to metal in Category 1 due to a metal corrosion rate that exceeds 6.25 mm (0.246 inches) per year (on steel or aluminum at a test temperature of 55 °C (131 °F) as described in 29 CFR 1910.1200 Appendix B.16); or

(d) The material is aqueous solution and has a pH less than or equal to two (as determined by the test method specified by the EPA in 40 CFR, Section 261.22); or

(e) The material is a vented lead acid battery (spillable or non-spillable) that meets the definition of a Class 8 transportation hazard and contain unabsorbed liquid electrolyte when tested according to 49 CFR 173.159a (d); or

(f) The material meets the OSHA GHS criteria for a chemical which is damaging to eyes in Category 1 because the acidic nature of the material causes irreversible eye damage (based on animal testing) where it causes effects on the cornea, iris or conjunctiva that are not expected to reverse or have not fully reversed within an observation period of 21 days in at least one tested animal.

C2 - Acid, Corrosive, Organic. An organic (hydrocarbon based) acidic corrosive material, either liquid or solid, that also meets any one of the following criteria:

(a) The material is classified as corrosive transportation hazard (UN Class 8) IAW the DOT regulations in 49 CFR 173.136 (or with other dangerous goods transportation regulations); or

(b) The material meets the OSHA GHS criteria for a chemical which is corrosive to skin in Category 1, due to its ability to cause destruction or irreversible alteration in human skin tissue (based on animal testing), where the structure of the tissue at the site of contact is destroyed or changed irreversibly after an exposure period of 4 hours or less (as described in 29 CFR 1910.1200 Appendix A.2); or

(c) The material meets the OSHA GHS criteria for a chemical which is corrosive to metal in Category 1 due to a metal corrosion rate that exceeds 6.25 mm (0.246 inches) per year (on steel or aluminum at a test temperature of 55 °C (131 °F) as described in 29 CFR 1910.1200 Appendix B.16); or

(d) The material is aqueous solution and has a pH less than or equal to two (as determined by the test method specified by the EPA in 40 CFR, Section 261.22); or

(e) The material meets the OSHA GHS criteria for a chemical which is damaging to eyes in Category 1 because the acidic nature of the material causes irreversible eye damage (based on animal testing) where it causes effects on the cornea, iris or conjunctiva that are not expected to reverse or have not fully reversed within an observation period of 21 days in at least one tested animal.

C3 - Acid, Low Risk. A liquid or solid product that exhibits acidic properties and does not meet the definition of HCCs C1 or C2 but which through experience or through documentation on the SDS or product bulletin would cause severe skin or eye irritation, dermatitis, or allergic skin reaction. Any classification of a material into this category is a process, which relies heavily on the professional judgment of the evaluator recognizing that individuals react differently to exposure to chemicals. Factors to consider are the pH, the intended use of the product, the type of package, and the concentration of the active ingredient(s).

Included in this definition are acidic materials, not meeting the definition of any other HCC, that satisfy the criteria for an OSHA GHS Skin Irritant, Category 2 (as defined in 29 CFR 1910.1200 Appendix A.2) or Eye Irritant, Category 2 (as defined in 29 CFR 1010.1200 Appendix A3).

Note: Eye damage/irritation, category 2.

C4 - Acid, Corrosive and Oxidizer, Inorganic. An 'Acid, Corrosive and Oxidizer, Inorganic' is a material, other than a compressed gas, that:

(a) Is an inorganic (not hydrocarbon based) acid (HCC C1) that satisfies the OSHA GHS criteria for a Corrosive solid or liquid in Category 1 (as defined in 29 CFR 1910.1200 Appendix A.2 or B.16); and

(b) Is an oxidizer (HCC D1) that satisfies the OSHA GHS criteria for an Oxidizing Liquid (IAW 29 CFR 1910.1200 Appendix B.13) or an Oxidizing Solid (IAW 29 CFR 1910.1200 Appendix B.14) since it may spontaneously ignite when in contact with other materials (except air or water) or can contribute to the combustion of other materials more than air does. Included in this definition are inorganic acid materials (liquid or solid) meeting the definitions of transportation hazard Class 8 (corrosive, as defined in 49 CFR 173.136) and Class 5.1 (oxidizer, as defined in 49 CFR 173.127).

Note: Materials that are primarily oxidizers but are also corrosive acids (as a subsidiary hazard) should be assigned the HCC D3 (Oxidizer and Corrosive, Acidic).

C5 - Acid, Corrosive and Oxidizer, Organic. An 'Acid, Corrosive and Oxidizer, Organic' is a material, other than a compressed gas, that:

(a) Is an organic (hydrocarbon based) acid (HCC C2) that satisfies the OSHA GHS criteria for a Corrosive solid or liquid in Category 1 (as defined in 29 CFR 1910.1200 Appendix A.2 or B.16); and

(b) Is an oxidizer (HCC D1) that satisfies the OSHA GHS criteria for an Oxidizing Liquid (IAW 29 CFR 1910.1200 Appendix B.13) or an Oxidizing Solid (IAW 29 CFR 1910.1200

Appendix B.14) since it may spontaneously ignite when in contact with other materials (except air or water) or can or contribute to the combustion of other materials more than air does. Included in this definition are organic acid materials (liquid or solid) meeting the definitions of transportation hazard Class 8 (corrosive, as defined in 49 CFR 173.136) and Class 5.1 (oxidizer, as defined in 49 CFR 173.127).

Note: Materials that are primarily oxidizers but are also corrosive acids (as a subsidiary hazard) should be assigned the HCC D3 (Oxidizer and Corrosive, Acidic).

D1 - Oxidizer. An oxidizing material, other than a compressed gas, that meets the OSHA GHS criteria for an Oxidizing Liquid (IAW 29 CFR 1910.1200 Appendix B.13) or an Oxidizing Solid (IAW 29 CFR 1910.1200 Appendix B.14). This definition includes solid or liquid materials that, while not necessarily being combustible, may:

(a) Undergo an explosive reaction or will undergo vigorous self-sustained decomposition when catalyzed or exposed to heat, shock, or friction; or

(b) Cause a moderate to severe increase in the burning rate of combustible material with which it comes in contact (exceeding that due to air); or

(c) Cause spontaneous ignition of combustible or flammable material with which it comes in contact. Included in this definition are materials, other than compressed gases, meeting the definition of transportation hazard Class 5.1 (oxidizer, as defined in CFR 173.127).

D2 - Oxidizer and Poison. An oxidizing material, other than a compressed gas (HCC G4), that:

(a) Is an oxidizer (HCC D1) that satisfies the OSHA GHS criteria for an oxidizing solid or liquid IAW 29 CFR 1910.1200 Appendix B.13 and B14); and

(b) Is a poison (HCCs T1, T2, T3 or T4) that satisfies the criteria for an OSHA GHS Acute Toxic hazard in Category 1, 2 or 3 (IAW 29 CFR 1910.1200 Appendix A.1).

Included in this definition are materials, other than compressed gases, meeting the definition of transportation hazard Class 5.1 (oxidizer, as defined in CFR 173.127) and Class 6.1 (poison, as defined in 49 CFR 173.132).

D3 - Oxidizer and Corrosive - Acidic. An oxidizing material, other than an oxidizing compressed gas (HCC G4), that:

(a) Is an oxidizer (HCC D1) that satisfies the OSHA GHS criteria for an oxidizing solid or liquid (IAW 29 CFR 1910.1200 Appendix B.13 and B14); and

(b) Is an acid (HCCs C1 or C2) that satisfies the OSHA GHS criteria for a Corrosive solid or liquid in Category 1 (as defined in 29 CFR 1910.1200 Appendix A.2 or B.16).

Included in this definition are acidic materials, other than compressed gases, meeting the definition of transportation hazard Class 5.1 (oxidizer, as defined in CFR 173.127) and Class 8 (corrosive, as defined in 49 CFR 173.136).

This HCC may also be assigned to oxidizing materials that satisfy the criteria for HCC D1 and are also acidic in nature, but considered a corrosive hazard by OSHA or DOT, if the evaluator concludes that the acidic nature of the material may be an issue for storage compatibility.

Note: Materials that are primarily corrosive acids that satisfy the criteria for the HCC C1 or C2 and are classified as oxidizers (as a subsidiary hazard) should be assigned either the HCC C4 (Acid, Corrosive and Oxidizer, Inorganic) or the HCC C5 (Acid, Corrosive and Oxidizer, Organic).

D4 - Oxidizer and Corrosive - Alkali. An oxidizing material, other than an oxidizing compressed gas (HCC G4), that:

(a) Is an oxidizer (HCC D1) that satisfies the OSHA GHS criteria for an oxidizing solid or liquid (IAW 29 CFR 1910.1200 Appendix B.13 and B14); and

(b) Is an alkaline material (HCCs B1 or B2) that satisfies the OSHA GHS criteria for a Corrosive solid or liquid in Category 1 (as defined in 29 CFR 1910.1200 Appendix A.2 or B.16). This HCC may also be assigned to oxidizing materials satisfying the criteria for the HCC D1 that are also alkaline in nature, but not considered a corrosive hazard by OSHA or DOT, if the evaluator concludes that the alkaline nature of the material may be an issue for storage compatibility.

E1 - Explosives, Military. Explosive materials meeting the criteria of OSHA GHS Explosive or a Class 1 transportation hazard assigned to Division 1.1, 1.2, 1.3, 1.4 (except 1.4S), and 1.5 (as defined in 29 CFR 1910.1200 Appendix B.1 and 49 CFR 173.50) and all Military Explosives identified by a Department of Defense Ammunition Code (DoDAC). This HCC generally includes explosives materials that have a mass explosion hazard or have explosive effects not confined to the package. (See DoD Standard DoD 6055.09-M, for hazard classification and compatibility groups).

E2 - Explosives, Low Risk. Explosive materials meeting the criteria of OSHA GHS Explosive or a Class 1 transportation hazard assigned to Division 1.4S and 1.6 (as defined in 29 CFR 1910.1200 Appendix B.1 and 49 CFR 173.50). Division 1.4S consists of explosives that present a minor explosion hazard where the explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. Division 1.6 consists of extremely insensitive items which do not have a mass explosion hazard, and which demonstrate a negligible probability of accidental initiation or propagation

Note: End items utilizing low risk explosives (such as small explosive actuators or squibs) meeting the criteria of this HCC, but also having one or more chemical or physical hazards from non-explosive materials may be assigned an HCC applicable to a different hazard if, in the

professional judgment of the evaluator, one of the other associated hazards presents a more significant risk of physical harm during storage, handling or use of the equipment.

F1 - Flammable Liquid, GHS Category 1, DOT PG I. A material satisfying the criteria for an OSHA GHS Category 1 Flammable Liquid (as defined in 29 CFR 1910.1200 Appendix B.6) with a flash point less than 23 °C (73.4 °F) and an initial boiling point less than or equal to 35 °C (95 °F).

This HCC includes liquids meeting the definition of transportation hazard Class 3 and assigned to Packing Group I (as defined in 49 CFR 173.121).

F2 - Flammable Liquid, GHS Category 2, DOT PG II. A material satisfying the criteria for an OSHA GHS Category 2 Flammable Liquid (as defined in 29 CFR 1910.1200 Appendix B.6) with a flash point less than 23 °C (73.4 °F) and an initial boiling point greater than 35 °C (95 °F). This HCC includes liquids meeting the definition of transportation hazard Class 3 and assigned to Packing Group II (as defined in 49 CFR 173.121).

F3 - Flammable Liquid, GHS Category 3, DOT PG III (Flash Point < 38 C). A material satisfying the criteria for those OSHA GHS Category 3 Flammable Liquids (as defined in 29 CFR 1910.1200 Appendix B.6) with a flash point greater than or equal to 23 °C (73.4 °F) but less than 38 °C (100.4 °F).

This HCC includes liquids meeting the definition of transportation hazard Class 3 and assigned to Packing Group III (as defined in 49 CFR 173.121) but with a flash point less than 38 °C (100.4 °F).

F4 - Flammable Liquid, GHS Category 3, DOT PG III (Flash Point ≥ 38 C). A material satisfying the criteria for those OSHA GHS Category 3 Flammable Liquids (as defined in 29 CFR 1910.1200 Appendix B.6) with a flash point greater than or equal to 38 °C (100.4 °F) but not exceeding 60°C (140 °F).

This HCC includes liquids meeting the definition of transportation hazard Class 3 and assigned to Packing Group III (as defined in 49 CFR 173.121) but with a flash point greater than or equal to 38 °C (100.4 °F). These materials may be reclassified as a 'combustible liquid' when transported in non-bulk quantities.

F5 - Flammable Liquid and Poison. A 'Flammable Liquid and Poison' is a material that:

(a) Is a flammable liquid (HCCs F1, F2, F3, or F4) that satisfies the criteria for an OSHA GHS Flammable Liquid in Categories 1, 2 or 3 (as defined in 29 CFR 1910.1200 Appendix B.6); and

(b) Is a poison (HCCs T1, T2, T3 or T4) that satisfies the criteria for an OSHA GHS Acute Toxin in Categories 1, 2 or 3 (as defined in 29 CFR 1910.1200 Appendix A.1).

This HCC includes liquids meeting the definition of transportation hazard Class 3 (flammable liquid assigned to Packing Group III or higher as defined in 49 CFR 173.121) and Class 6.1 (as defined in 49 CFR 173.132).

F6 - Flammable Liquid and Corrosive, Acidic. A 'Flammable Liquid and Corrosive, Acidic' is a material that:

(a) Is a flammable liquid (HCCs F1, F2, F3, or F4) that satisfies the criteria for an OSHA GHS Flammable Liquid in Categories 1, 2 or 3 (as defined in 29 CFR 1910.1200 Appendix B.6); and

(b) Is an acid (HCCs C1 or C2) that satisfies the OSHA GHS criteria for a Corrosive solid or liquid in Category 1 (as defined in 29 CFR 1910.1200 Appendix A.2 or B.16).

This HCC includes acidic liquids meeting the definition of transportation hazard Class 3 (flammable liquid assigned to Packing Group III or higher as defined in 49 CFR 173.121) and Class 8 (as defined in 49 CFR 173.136).

Note: This HCC may also be assigned to flammable liquids satisfying the criteria for the HCCs F1-F4 that are also acidic in nature, but not considered a corrosive hazard by OSHA or DOT, if the evaluator concludes that the acidic nature of the material may be an issue for storage compatibility.

F7 - Flammable Liquid and Corrosive, Alkali. A 'Flammable Liquid and Corrosive, Alkali' is a material that:

(a) Is a flammable liquid (HCCs F1, F2, F3, or F4) that satisfies the criteria for an OSHA GHS Flammable Liquid in Categories 1, 2 or 3 (as defined in 29 CFR 1910.1200 Appendix B.6); and

(b) Is an alkaline material (HCCs B1 or B2) that satisfies the OSHA GHS criteria for a Corrosive solid or liquid in Category 1 (as defined in 29 CFR 1910.1200 Appendix A.2 or B.16). This HCC includes alkaline liquids meeting the definition of transportation hazard Class 3 (flammable liquid assigned to Packing Group III or higher as defined in 49 CFR 173.121) and Class 8 (as defined in 49 CFR 173.136).

Note: This HCC may also be assigned to flammable liquids satisfying the criteria for the HCCs F1-F4 that are also alkaline in nature, but not considered a corrosive hazard by OSHA or DOT, if the evaluator concludes that the alkaline nature of the material may be an issue for storage compatibility.

F8 - Flammable Solid. A solid material that meets the criteria for an OSHA GHS Flammable Solid (as defined in 29 CFR 1910.1200 Appendix B.7). This HCC includes materials which, under conditions normally incident to transportation or storage, is likely to cause fires through friction, retained heat from manufacturing or processing, or which can be readily ignited and when ignited burns so vigorously and persistently as to create a serious hazard.

This HCC includes materials meeting the definition of transportation hazard Class 4.1 (flammable solid, as defined in 49 CFR 173.124).

G1 - Gas, Poison (Nonflammable). A 'Gas, Poison (Nonflammable)' is a gas (or gas mixture) which:

(a) Has a boiling point no higher than 20 °C (68 °F) at one atmosphere of pressure (101.3 kPa, 14.7 psia); and

(b) Satisfies the criteria for an OSHA GHS Acute Toxin (as defined in 29 CFR 1910.1200 Appendix A.1) since it is known to be so toxic to humans as to pose a hazard to health during storage or transportation or, in the absence of adequate data on human toxicity, is presumed to be toxic to humans because when tested on laboratory animals it has an LC50 less than or equal to 20,000 ml/m³ (ppmV); and

(c) Does not meet the definition of a flammable gas (HCC G2) since it does not have a flammable range while mixed in air.

Included in this definition are compressed gases meeting the definition of transportation hazard Class 2.3 (gas poisonous by inhalation, as defined in 49 CFR 173.115(c)).

G2 - Gas, Flammable. A 'Gas, Flammable' is a gas (or gas mixture), other than a flammable aerosol (HCC V3), which:

(a) Is a gas with a boiling point no higher than 20 °C (68 °F) at one atmosphere of pressure (101.3 kPa, 14.7 psia); and

(b) Satisfies the criteria for an OSHA GHS Flammable Gas (as defined in 29 CFR 1910.1200 Appendix B.2) since it has a flammable range while mixed in air; and

(c) Does not meet the definition of a Poison Gas (HCC G1) since it has an LC50 greater than 20,000 ml/m³ (ppmV).

Included in this definition are compressed gases meeting the definition of transportation hazard Class 2.3 (flammable gas, as defined in 49 CFR 173.115(a)), but also some gases assigned to Class 2.2 (nonflammable gas) since they have a flammable range that does not meet the criteria for Class 2.3.

G3 - Gas, Non-flammable. A gas (including liquefied gases, cryogenic liquefied gases, and dissolved gases), other than an aerosol, which satisfies the criteria for an OSHA GHS Gas under Pressure (as defined in 29 CFR 1910.1200 Appendix B.5), but does not meet the criteria for any other hazard classification or HCC. This HCC applies to a compressed gas (or gas mixture) which:

(a) Is a gas with a boiling point no higher than 20 °C (68 °F) at one atmosphere of pressure (101.3 kPa, 14.7 psia); and

(b) Exerts in the packaging a gauge pressure of 200 kPa (29.0 psig) or higher at 20 °C (68 °F); and

(c) Does not meet the definition of a Poison Gas (HCC G1) since it has an LC50 greater than 20,000 ml/m³ (ppmV); and

(d) Does not meet the definition of a Flammable Gas (HCC G2) since it does not have a flammable range while mixed in air.

Included in this definition are those gases meeting the definition of transportation hazard Class 2.2 (nonflammable gas, as defined in CFR 173.115(b)) that do not have a flammable range when mixed with air.

G4 - Gas, Oxidizer (Nonflammable). A 'Gas, Oxidizer (Nonflammable)' is a gas (or gas mixture) which:

(a) Has a boiling point no higher than 20 °C (68 °F) at one atmosphere of pressure (101.3 kPa, 14.7 psia); and

(b) Meets the criteria for an OSHA GHS Oxidizing Gas (as defined in 29 CFR 1910.1200 Appendix B.4) since it may cause or contribute to the combustion of other materials more than air does; and

(c) Does not meet the definition of a Poison Gas (HCC G1) since it has an LC50 greater than 20,000 ml/m³ (ppmV); and

(d) Does not meet the definition of a Flammable Gas (HCC G2) since it does not have a flammable range while mixed in air.

Included in this definition are materials meeting the definition of transportation hazard Class 2.2 (nonflammable gas, as defined in 49 CFR 173.115(b)) and Class 5.1 (oxidizer, as defined in 49 CFR 173.127).

G5 - Gas, Corrosive (Nonflammable). A 'Gas, Corrosive (Nonflammable)' is a gas (or gas mixture) which:

(a) Meets the definition of a Nonflammable Gas (HCC G3), except it is corrosive; and

(b) Meets the definition of an OSHA GHS Corrosive in Category 1 (as defined in 29 CFR 1910.1200 Appendix A.2 or Appendix B.16) due to its ability to cause permanent damage to skin or to corrode metal; and

(c) Does not meet the definition of a Poison Gas (HCC G1) since it has an LC50 greater than 20,000 ml/m³ (ppmV); and

(d) Does not meet the definition of a Flammable Gas (HCC G2) since it does not have a flammable range while mixed in air.

Included in this definition are materials meeting the definitions of transportation hazard Class 2.2 (nonflammable gas, as defined in 49 CFR 173.115(b)) and Class 8 (corrosive, as defined in 49 CFR 173.136).

G6 - Gas, Poison, Corrosive (Nonflammable). A 'Gas, Poison, Corrosive (Nonflammable)' is a gas (or gas mixture) which:

(a) Meets the definition of a Nonflammable Gas (HCC G3), except it is poisonous and corrosive; and

(b) Meets the definition of a Poison Gas (HCC G1) since it has an LC50 less than 20,000 ml/m³ (ppmV); and

(c) Meets the definition of an OSHA GHS Corrosive in Category 1 (as defined in 29 CFR 1910.1200 Appendix A.2 or Appendix B.16) due to its ability to cause permanent damage to skin or to corrode metal; and

(d) Does not meet the definition of a Flammable Gas (HCC G2) since it does not have a flammable range while mixed in air.

Included in this definition are materials meeting the definitions of transportation hazard Class 2.2 (nonflammable gas, as defined in 49 CFR 173.115(b)), Class 6.1 (poison, as defined in 49 CFR 173.123) and Class 8 (corrosive, as defined in 49 CFR 173.136).

G7 - Gas, Poison, Oxidizer (Nonflammable). A 'Gas, Poison, Oxidizer (Nonflammable)' is a gas (or gas mixture) which:

(a) Meets the definition of a Nonflammable Gas (HCC G3), except it is poisonous and corrosive; and

(b) Meets the definition of a Poison Gas (HCC G1) since it has an LC50 less than 20,000 ml/m³ (ppmV); and

(c) Meets the definition for an Oxidizing Gas (HCC G4) since it may cause or contribute to combustion of other materials more than air does; and

(d) Does not meet the definition of a Flammable Gas (HCC G2) since it does not have a flammable range while mixed in air.

Included in this definition are materials meeting the definitions of transportation hazard Class 2.2 (nonflammable gas, as defined in 49 CFR 173.115(b)), Class 6.1 poison, as defined in 49 CFR 173.123) and Class 5.1 (oxidizer, as defined in 49 CFR 173.127).

G8 - Gas, Poison, Flammable. A 'Gas, Poison, Flammable is a material (or mixture) which:

(a) Is a gas with a boiling point no higher than 20 °C (68 °F) at one atmosphere of pressure (101.3 kPa, 14.7 psia); and

(b) Meets the definition of an OSHA GHS Flammable Gas (HCC G2) since it has a flammable range while mixed in air; and

(c) Meets the definition of an OSHA GHS Poison Gas (HCC G1), since it has an LC50 less than 20,000 ml/m³ (ppmV).

Included in this definition are materials meeting the definitions of transportation hazard Class 2.1 (flammable gas, as defined in 49 CFR 173.115(a)) and Class 6.1 poison, as defined in 49 CFR 173.123).

G9 - Gas, Poison, Corrosive, Oxidizer (Nonflammable). A 'Gas, Poison, Corrosive, Oxidizer (Nonflammable)' is a gas (or gas mixture) which:

(a) Meets the definition of a Nonflammable Gas (HCC G3), except it is poisonous, corrosive and an oxidizer; and

(b) Meets the definition of an OSHA GHS Poison Gas (HCC G1) since it has an LC50 less than 20,000 ml/m³ (ppmV); and

(c) Meets the definition of an OSHA GHS Corrosive in Category 1 (as defined in 29 CFR 1910.1200 Appendix A.2 or Appendix B.16) due to its ability to cause permanent damage to skin or to corrode metal; and

(d) Meets the definition for an Oxidizing Gas (HCC G4) since it may cause or contribute to combustion of other materials more than air does; and

(e) Does not meet the definition of a Flammable Gas (HCC G2) since it does not have a flammable range while mixed in air.

Included in this definition are materials meeting the definitions of transportation hazard Class 2.2 (nonflammable gas, as defined in 49 CFR 173.115(b)), Class 6.1 (poison, as defined in 49 CFR 173.123), Class 8 (corrosive, as defined in 49 CFR 173.136) and Class 5.1 (oxidizer, as defined in 49 CFR 173.127).

H1 - Hazard Characteristics Not Yet Determined. Hazard characteristics are not yet determined. This code is automatically assigned by Federal Logistics Information System (FLIS) when no

other HCC has been assigned to an HMIRS record that it cites in the Total Item Record (TIR) for an NSN.

K1 - Infectious Substance. A viable microorganism or its toxin, which causes or may cause animal or human disease and meets the definition of a Class 6.2 hazard (infectious substance, as defined in 49 CFR 173.134). This includes materials classified as Infectious Substances Affecting Animals only (UN2900), Infectious Substances Affecting Humans (UN2814), Regulated Medical Waste (UN3291) and Biological Substances, Category B (UN3373).

K2 - Cytotoxic Drugs. Antineoplastic (Chemotherapy) drugs used in the treatment of cancer and determined and listed by the Medical Supply Chain Directorate, DLA Troop Support, Philadelphia, PA.

M1 - Magnetized Material. Any material meeting the definition of a magnetized material as defined in Air Force Manual 24-204 (Preparing Shipments for Military Air Shipments) Attachment 1. This HCC includes articles with a magnetic field strength of 0.002 gauss or more when measured at a distance of 7 ft. (2.1 m) from any surface of the item or its packaging. A method for determining magnetic properties is specified by the International Air Transport Association (IATA) regulations in Packing Instruction 953.

N1 - Not regulated as Hazardous. Any material not meeting the definition of any other HCC, not regulated as hazardous by any regulatory organization, and/or through technical evaluation regarded as nonhazardous for storage. An absence of the product from known listings of hazardous materials, while not conclusive of the lack of storage hazards, may be considered in the decision process and relies heavily on the professional judgment and experience of the evaluator.

Note: Hazards associated with the actual use of the item should be made by qualified Industrial Hygiene Personnel and do not necessarily determine the HCC that should be assigned to that item.

P1 - Peroxide, Organic, Types A-F. A product meeting the OSHA GHS criteria for an Organic Peroxide that meets the criteria for a Type A, B, C, D, E or F organic peroxide as defined in 29 CFR 1910.1200 Appendix B.15. This HCC includes organic peroxides that can detonate or deflagrate rapidly, can undergo a thermal explosion, have explosive properties but can't detonate or deflagrate rapidly, can detonate or deflagrate partially, show an effect when heated under confinement, or has any explosive power or is thermally unstable (the self-accelerating decomposition temperature for the material is 60 °C (140 °F) or higher). Included in this definition are materials classified as a Class 5.2 (Organic Peroxide) transportation hazard (as defined by 49 CFR 173.128).

P2 - Peroxide, Organic, Low Risk. A product that is an Organic Peroxide that is not regulated as a Class 5.2 hazard by the US DOT and meets the definition of an OSHA GHS Type G organic peroxide (as defined in 1910.1200 Appendix B.15) that will not detonate in a cavitated state, will not deflagrate, shows no effect when heated under confinement, shows no explosive power and

is thermally stable (the self-accelerating decomposition temperature for the material is 60 °C (140 °F) or higher).

R1 – Spontaneously Combustible Chemical. Any product that meets the OSHA GHS criteria for pyrophoric solids/liquids (materials that ignite spontaneously within 5 minutes of coming into contact with air) or self-heating chemicals (materials that react with air and self-heat without an external energy supply) as defined in 29 CFR 1910.1200 Appendix B9-B11.

This HCC includes materials meeting the definition of transportation hazard Class 4.2 (spontaneously combustible, as defined in 49 CFR 173.124(b)).

R2 - Water Reactive Chemical. Any material that meets the OSHA GHS criteria for a water-reactive chemical (a chemical that emit flammable gases in quantities of 1 liter or more per kilogram of chemical per hour when it comes in contact with water) as defined in 29 CFR 1910.1200 Appendix B.12.

This HCC includes materials that meet the definition of transportation hazard Class 4.3 (Dangerous when Wet) as defined in 49 CFR 173.124(c).

T1 - Acute Toxin - Inhalation Hazard. A material, other than a toxic gas (HCC G1), meeting the criteria of an OSHA GHS Acutely Toxic liquid assigned to Category 1 through 4 due to the generation of toxic vapors. Materials with this HCC have a vapor LC50 less than or equal to 20.0 mg/L.

This HCC includes materials meeting the definition of transportation hazard Class 6.1 (Poison, as defined in 49 CFR 173.132) that are also classified as a 'material poisonous by inhalation'.

T2 - Acute Toxin, GHS Category 1. A material, other than a poisonous gas (UN Class 2.3, HCC G1) or Poison-Inhalation Hazard (HCC T1), that is classified as an OSHA GHS Category 1 Acute Toxin (as defined in 29 CFR 1900.1200 Appendix A.1).

This HCC includes most materials classified as a Class 6.1 (Poison) transportation hazard and assigned to Packing Group I that are not classified as a 'material poisonous by inhalation' (HCC T1).

The toxicity ranges for a Category 1 Toxic Material are as specified below:
Toxicity Ranges for OSHA GHS Category 1 Toxic Materials

Route of Entry	Range	Test Animal
Oral LD50	≤ 5 mg/kg	Albino Rat
Dermal LD50	≤ 50 mg/kg	Albino Rabbit
Inhalation LD50 (Dusts & Mists)	≤ 0.05 mg/L	Albino Rat

T3 - Acute Toxin, GHS Category 2. A material, other than a poisonous gas (UN Class 2.3, HCC G1) or Poison-Inhalation Hazard (HCC T1), that is classified as an OSHA GHS Category 2 Acute Toxin (as defined in 29 CFR 1900.1200 Appendix A.1).

This HCC includes most materials classified as a Class 6.1 (Poison) transportation hazard assigned to Packing Group II that are not classified as a 'material poisonous by inhalation' (HCC T1).

The toxicity ranges for a Category 2 Toxic Material are as specified below:

Toxicity Ranges for OSHA GHS Category 2 Toxic Materials

Route of Entry	Range	Test Animal
Oral LD50	> 5 & ≤ 50 mg/kg	Albino Rat
Dermal LD50	> 50 & ≤ 200 mg/kg	Albino Rabbit
Inhalation LD50 (Dusts & Mists)	> 0.05 & ≤ 0.5 mg/L	Albino Rat

T4 - Acute Toxin, GHS Category 3. A material, other than a poisonous gas (HCC G1) or a Poison Inhalation Hazard (HCC T1), that is classified as an OSHA GHS Category 3 Acute Toxin (as defined in 29 CFR 1900.1200 Appendix A.1).

This HCC includes most materials classified as a Class 6.1 (Poison) transportation hazard assigned to Packing Group III that are not classified as a 'material poisonous by inhalation' (HCC T1).

The toxicity ranges for a Category 3 Toxic Material are as specified below:

Toxicity Ranges for OSHA GHS Category 3 Toxic Materials

Route of Entry	Range	Test Animal
Oral LD50	> 50 & ≤ 300 mg/kg	Albino Rat
Dermal LD50	> 200 & ≤ 1000 mg/kg	Albino Rabbit
Inhalation LD50 (Dusts & Mists)	> 0.5 & ≤ 1.0 mg/L	Albino Rat

T5 - Pesticide, Low Risk. Any product meeting the definition of a pesticide or pesticide product as defined by the EPA in 40 CFR 152.3 which is in Toxicity Categories II, III, or IV as specified for warning label purposes in 40 CFR 156.62 and not otherwise classed as a hazardous material under 49 CFR, and does not meet the definition of any other HCC. The toxicity categories are provided below:

Toxicity Ranges for Low Risk Pesticides

Hazard Indicator	I	II	III	IV
Oral LD50	≤ 50 mg/kg	> 50 & ≤ 500 mg/kg	> 500 & ≤ 5000 mg/kg	> 5000 mg/kg
Inhalation LD50	≤ 0.2 mg/L	> 0.2 & ≤ 2.0 mg/L	> 2.0 & ≤ 20 mg/L	> 20 mg/L
Dermal LD50	≤ 200 mg/kg	> 200 & ≤ 2000 mg/kg	> 2000 & ≤ 20,000 mg/kg	> 20,000 mg/kg
Eye Effects	Corrosive, corneal opacity not reversible within 7 days	Corneal opacity reversible in 7 days; irritation persisting for 7 days	No corneal opacity. irritation reversible	No irritation
Skin Effects	Corrosive	Severe irritation at 72 hours	Moderate irritation at 72 hours	Mild or slight irritation at 72 hours

T6 - Health Hazard. Any product defined as hazardous in 29 CFR 1910.1200, which cannot be assigned any other HCC, and which is supported by documentation such as an SDS or product bulletin, or through experience is a known health hazard. This HCC may be assigned to materials that:

(a) Meet the OSHA GHS criteria for a Category 4 Acute Toxin (as defined in 29 CFR 1900.1200 Appendix A.1) other than inhalation hazards (HCC T1) with an LD50 between 300 and 2000 mg/kg (oral) or 1000 and 2000 mg/kg (dermal), or an LC50 between 1.0 and 5.0 mg/L (dusts & mists); or

(b): Meet the OSHA GHS criteria for a non-corrosive eye irritant (as defined in 29 CFR 1910.1200 Appendix A.3); or

(c) Meet the OSHA GHS criteria for a respiratory or skin sensitizer (as defined in 29 CFR 1910.1200 Appendix A.4); or

(d) Meet the OSHA GHS criteria for a mutagen (as defined in 29 CFR 1910.1200 Appendix A.5) or a reproductive toxicant (as defined in 29 CFR 1910.1200 Appendix A.7)

Note: Any classification of a material into this category is a process, which relies heavily on the professional judgment of the evaluator, particularly in the area of potential chronic hazards. Consider such classification in light of the fact that although the primary purpose of the HCCs is to assure safe storage of products, there may be some application of the HCCs in screening products from a pollution prevention as well as safety and health standpoint. Hazards associated with the actual use of the item should be made by qualified Industrial Hygiene Personnel and do not necessarily determine the HCC that should be assigned to that item.

T7 - Carcinogen (OSHA, NTP, IARC). A material not meeting the definition of any other HCC and contains materials classified as a carcinogen under the OSHA GHS criteria (IAW 1910.1200 Appendix A.6) and is so specified on the SDS. This means that:

(a) It is listed by the International Agency for Research on Cancer (IARC) as a carcinogen or potential carcinogen in IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man (latest edition); or

(b) It is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or

(c) It is regulated and listed by the Occupational Safety and Health Administration (OSHA) as a carcinogen in 29 CFR 1910, subpart Z; and

(d) It is present in a form and quantity that presents a carcinogenic hazard from exposure during normal conditions of storage, handling or transportation.

V1 - Miscellaneous Class 9 Hazardous Materials. Except as noted below, materials meeting the definition of a United Nations Class 9 material. This category includes any material meeting the definition of a Class 9 transportation hazard (as defined in Title 49 CFR, Section 173.140(a)) which has anesthetic, noxious, or other similar properties that could cause extreme annoyance or discomfort to a flight crewmember to prevent the correct performance of assigned duties. Excluded from this HCC are:

(a) Lithium batteries required to be shipped as a Class 9 hazardous material since HCC Z6 (Article, Battery, Lithium) and Z8 (Article, Lithium Battery, Large Form) should be used.

(b) Environmentally hazardous materials subject to 49 CFR 173.140(b) including elevated temperature materials and materials designated as a hazardous substance with a reportable quantity (RQ) listed in Title 49 CFR, Section 172.101 Appendix A, a hazardous waste, or a marine pollutant. Assign such materials to HCC V7 (Environmental Hazard) even if they meet the definition of a Class 9 hazard.

Note: Items that are shipped as a Class 9 hazard but have hazardous components that meet the definition of an HCC for a more significant hazard (such as chemical kits or life-saving appliances). Assign such items this HCC or the HCC of the component presenting the most severe hazard if that HCC better represents the nature of the hazardous material. This decision is up to the professional judgment of the evaluator making the assignment.

V2 - Aerosol, Nonflammable. An aerosol product not exceeding 1 liter capacity which (1) does not meet the criteria for an OSHA GHS Category 1 or 2 flammable aerosol; and (2) can be transported using either the shipping name "Aerosols, Nonflammable" Hazard Class 2.2, UN1950 or the shipping name "Consumer Commodity", ID8000. Regard an aerosol as non-flammable if:

(a). The contents include 1% by mass or less flammable components and the chemical heat of combustion is less than 20 kJ/g as described in 49 CFR 173.115(l)(2); or

(b). It has been tested IAW the UN Manual of Tests and Criteria and the test results determined that it should be regarded as nonflammable as described in 49 CFR 173.115(l)(3).

V3 - Aerosol, Flammable. An aerosol product, not exceeding 1-liter capacity, which meets the criteria for an OSHA GHS Category 1 or Category 2 Flammable Aerosol (as defined in 29 CFR 1910.1200 Appendix B.3). This category includes aerosols that:

(a). Contain more than 1% by mass flammable contents or have a chemical heat of combustion greater than or equal to 20 kJ/g; and

(b) Have an ignition distance greater than or equal to 15 cm (for spray aerosols) or a flame height greater than or equal to 4 cm with a flame duration of 2 seconds or more (for foam aerosols).

Included in this definition are flammable aerosols that meet the criteria for an aerosol assigned to Hazard Class 2.1 (flammable gas) by 49 CFR 173.115(l) (1 or 3) and are transported using either the shipping name "Aerosols, Flammable" (UN1950, Class 2.1) or the shipping name "Consumer Commodity" (ID8000).

V4 - Combustible Liquid, OSHA GHS Category 4. A combustible liquid that does not meet the definition of any other hazard classification or HCC and has a flash point above 140 °F (60 °C) and at or below 200 °F (93 °C). OSHA GHS Category 4 flammable liquids items are included in this definition.

V5 - High Flash Point Materials. Materials, not meeting the definition of any other HCC, that have a flash point above 200 °F (93 °C) but not exceeding 350 °F (177 °C). Excluded from this definition are Petroleum Oils and Lubricants (POLs) as they have a separate HCC (V6).

V6 - Petroleum Products. Materials, not meeting the definition of any other HCC, containing petroleum products, which could cause an environmental hazard if spilled on water or land. This category includes oils, greases, and lubricants (conventional or synthetic) possible of being categorized in Federal Supply Class 9150 or 9160 as defined in the Federal Supply Classification Cataloging Handbook H2-1.

V7 - Environmental Hazard. Materials, not meeting the definition of any other HCC, which contain an Extremely Hazardous Substance listed in 40 CFR, Part 355, Appendix A or B, or a CERCLA Hazardous Substance listed in 40 CFR, Part 302.4, or a Toxic Chemical listed in 40 CFR, Part 372.65. Also included in this definition are materials meeting the definition of Class 9 transportation hazard (as defined in 49 CFR 173.140(b)) due to the presence environmentally hazardous materials such as elevated temperature materials or materials designated as a hazardous substance (with a reportable quantity (RQ) listed in 49 CFR 172.101 Appendix A), as a hazardous waste, or as a marine pollutant. In deciding whether or not a product falls into this

category, determine if the concentration of a chemical exceeds the established de minimus limits which compare to the requirement for reporting the existence of the chemical under 29 CFR 1910.1200 section (g)(2)(i)(C)(1).

X1 - Multiple Hazards Under One National Stock Number (NSN). System generated code assigned by FLIS to reflect the existence of more than one HCC for an NSN. This HCC is assigned to the NSN as a whole (rather than to a specific product) and reflects the fact that materials with the same NSN may have different hazards and consequently different HCCs.

Z1 - Article Containing Asbestos. An article IAW 29 CFR 1910.1200 which contains asbestos, or an item containing asbestos which under conditions of storage would not be expected to release hazardous materials and would not pose a physical hazard or health risk to employees. This category includes, but is not limited to, asbestos gaskets, brake shoes, or other products in which the asbestos is bound or otherwise immobilized to the point that exposure to personnel in a storage environment is minimal.

Z2 - Article Containing Mercury. An article IAW 29 CFR 1910.1200 which contains mercury, or an item containing mercury which under conditions of storage would not be expected to release hazardous materials and would not pose a physical hazard or health risk to employees. This category includes, but is not limited to, electron tubes, mercury switches and relays, mercury vapor lamps and tubes, fluorescent lamps, manometers, pumps, thermometers, or other devices in which the mercury is contained in such a fashion that exposure to personnel in a storage environment is minimal. For dry cell batteries containing mercury, use HCC Z7.

Z3 - Article Containing Polychlorinated Biphenyl (PCB). An article IAW 29 CFR 1910.1200 which contains Polychlorinated Biphenyls (PCB), or an item containing PCB which under conditions of storage would not be expected to release hazardous materials and would not pose a physical hazard or health risk to employees. This category includes, but is not limited to transformers, capacitors, or other devices in which the PCBs are contained in such a fashion that exposure to personnel in a storage environment is minimal.

Z4 - Article, Battery, Lead Acid, Non-spillable. A vented, non-spillable battery consisting of a lead anode, a lead dioxide cathode, and sulfuric acid electrolyte that meet the definition of a "Non-spillable Battery" as defined in 49 CFR, Section 173.159(f). Lead acid batteries with this HCC have no un-absorbed liquid electrolyte at 55°F (135°C) and are excepted from regulation as a Class 8 (corrosive) hazard by 49 CFR 173.159a (d).

Z5 - Article, Battery, Nickel Cadmium, Non-spillable. A vented, non-spillable battery consisting of a cadmium anode, a nickel oxyhydroxide cathode, and potassium hydroxide electrolyte that meet the definition of a "Non-spillable Battery" as defined in 49 CFR, Section 173.159(f). Nickel cadmium batteries with this HCC have no un-absorbed liquid electrolyte at 55°F (135°C) and are excepted from regulation as a Class 8 (corrosive) hazard by 49 CFR 173.159a (d).

Z6 - Article, Battery, Lithium. Lithium metal batteries or lithium-ion batteries (or equipment packed with or containing such batteries) other than coin/button cell batteries that may be

excepted from being classified as a Class 9 hazard when shipped IAW DOT regulations in 49 CFR 173.185. Lithium metal batteries consist of a lithium metal (or lithium compound) anode, a solid or liquid cathode, and an electrolyte. Lithium-ion batteries usually consist of a positive and negative electrode and have an electrolyte made of a lithium salt mixed with an organic solvent. Included in this definition are the following lithium batteries:

a. Lithium-ion batteries which have a watt-hour rating not exceeding 20 Wh per cell or 100 Wh per battery but exceeding 2.7 Wh per cell and/or battery; and

b. Lithium metal batteries with a lithium content not exceeding 1g per cell or 2 g per battery but exceeding 0.3 g per cell and/or battery. Excluded from this definition are button/coin cell lithium metal batteries (with a lithium content not exceeding 0.3 g per cell and/or battery) and lithium-ion batteries (with a Watt-hour rating not exceeding 2.7 Wh per cell and/or battery) which should be assigned the HCC Z7 (Article, Battery, Dry Cell).

Z7 – Article, Battery, Dry Cell. Sealed, non-vented batteries (or equipment packed with or containing such batteries) containing electrolyte immobilized in the form of a dry paste or a gel. Batteries with this HCC will generally not be classified as a hazard when transported (though packaging and incident reporting requirements may still apply), but some may need to be shipped as a Class 9 hazard if quantity limits are exceeded. Included in this definition are the following batteries:

a. Nickel metal hydride (NiMH) dry cell batteries.

b. Button/coin cell lithium-ion batteries which have a watt-hour rating not exceeding 2.7 Wh per cell and/or battery.

c. Button/coin cell lithium metal batteries which have a lithium not exceeding 0.3 g per cell and/or battery: and

d. Sealed, non-vented dry cell nickel cadmium batteries. Vented nickel cadmium batteries will be assigned either the HCC B1 (Corrosive, Alkaline, Inorganic) or the HCC Z5 (Article, Battery, Nickel Cadmium).

Other examples of typical dry cell batteries and their compositions are provided below:

TYPICAL DRY CELL BATTERIES

NAME	ANODE	CATHODE	ELECTROLYTE
Carbon-Zinc	Zinc	Manganese dioxide	Ammonium chloride or Zinc chloride
Alkaline-Manganese dioxide	Zinc	Manganese dioxide	Potassium hydroxide or sodium hydroxide
Mercury-Zinc	Zinc	Mercuric oxide	Potassium hydroxide or sodium hydroxide
Zinc-Air	Zinc	Oxygen/Catalyst	Potassium hydroxide or

			sodium hydroxide
Silver-Zinc	Zinc	Silver oxide	Potassium hydroxide
Mercury-Cadmium	Cadmium	Mercuric oxide	Potassium hydroxide
Magnesium-Manganese dioxide	Magnesium	Manganese dioxide	Magnesium perchlorate, lithium chlorate, and Barium chromate

Z8 – Article, Lithium Battery, Large Form. Lithium metal batteries or lithium-ion batteries (or equipment packed with or containing such batteries) other than those covered by the HCC Z6 or Z7 that will be shipped as a Class 9 hazard when shipped IAW DOT regulations in 49 CFR 173.185. Lithium metal batteries consist of a lithium metal (or lithium compound) anode, a solid or liquid cathode, and an electrolyte. Lithium-ion batteries usually consist of a positive and negative electrode and have an electrolyte made of a lithium salt mixed with an organic solvent. Included in this definition are the following lithium batteries:

- (a) Lithium-ion batteries which have a watt-hour rating exceeding 20 Wh per cell or 100 Wh per battery; and
- (b) Lithium metal batteries with a lithium content exceeding 1 g per cell or 2 g per battery.

Table B-3. Relationship between HCCs and Various Regulatory Categories
Shown in Order of Assignment Preference Using 49 CFR as a Basis

HCC	EPA 40 CFR 370.2	OSHA GHS 29 CFR 1910.1200	DOT 49 CFR
A1	NOT REGULATED	NOT REGULATED	CLASS 7
A2	NOT REGULATED	NOT REGULATED	CLASS 7 OR NOT REGULATED
A3	NOT REGULATED	NOT REGULATED	CLASS 7 OR NOT REGULATED
E1	SUDDEN RELEASE OF PRESSURE	EXPLOSIVE, DIVISION 1.1, 1.2, 1.3, 1.4 (EXCEPT 1.4S) & 1.5	CLASS 1 (EXCEPT DIVISION 1.4S & 1.6) (See note a)
G8	SUDDEN RELEASE OF PRESSURE + ACUTE/CHRONIC HEALTH + FIRE HAZARD	FLAMMABLE GAS + ACUTE TOXIN	CLASS 2.3 + CLASS 2.1 (See note b)
G9	SUDDEN RELEASE OF PRESSURE + ACUTE/CHRONIC HEALTH + FIRE HAZARD	COMPRESSED GAS + CORROSIVE, CATEGORY 1 + OXIDIZING GAS	CLASS 2.3 + CLASS 8 + CLASS 5.1
G7	SUDDEN RELEASE OF PRESSURE + ACUTE/CHRONIC HEALTH + FIRE HAZARD	COMPRESSED GAS + ACUTE TOXIN (GAS) + OXIDIZING GAS	CLASS 2.3 + CLASS 5.1
G6	SUDDEN RELEASE OF PRESSURE + ACUTE HAZARD	COMPRESSED GAS + ACUTE TOXIN (GAS) + CORROSIVE, CATEGORY 1	CLASS 2.3 + CLASS 8
G1	SUDDEN RELEASE OF PRESSURE + ACUTE/CHRONIC HEALTH	COMPRESSED GAS + ACUTE TOXIN (GAS)	CLASS 2.3

G2	SUDDEN RELEASE OF PRESSURE + FIRE HAZARD	FLAMMABLE GAS	CLASS 2.1 (See note b)
G4	SUDDEN RELEASE OF PRESSURE + OXIDIZER	OXIDIZING GAS	CLASS 2.2 + CLASS 5.1
G5	SUDDEN RELEASE OF PRESSURE + ACUTE HEALTH HAZARD	COMPRESSED GAS + CORROSIVE, CATEGORY 1	CLASS 2.2 + CLASS 8
G3	SUDDEN RELEASE OF PRESSURE	COMPRESSED GAS	CLASS 2.2
E2	SUDDEN RELEASE OF PRESSURE	EXPLOSIVE - DIVISION 1.4S & 1.6	CLASS 1, DIVISION 1.4S & 1.6 (See note a)
T1	ACUTE HEALTH HAZARD	ACUTE TOXIN (VAPORS)	CLASS 6.1 INHALATION HAZARD
F5	FIRE HAZARD + ACUTE/CHRONIC HEALTH HAZARD	FLAMMABLE LIQUID + ACUTE TOXIN	CLASS 3 + CLASS 6.1
F6	FIRE HAZARD + ACUTE HEALTH HAZARD	FLAMMABLE LIQUID + CORROSIVE, CATEGORY 1	CLASS 3 + CLASS 8
F7	FIRE HAZARD + ACUTE HEALTH HAZARD	FLAMMABLE LIQUID + CORROSIVE, CATEGORY 1	CLASS 3 + CLASS 8
F1	FIRE HAZARD	FLAMMABLE LIQUID, CATEGORY 1	CLASS 3 (PG I)
F2	FIRE HAZARD	FLAMMABLE LIQUID, CATEGORY 2	CLASS 3 (PG II)
F3	FIRE HAZARD	FLAMMABLE LIQUID, CATEGORY 3	CLASS 3 (PG III)
F4	FIRE HAZARD	FLAMMABLE LIQUID, CATEGORY 3	CLASS 3 (PG III), COMBUSTIBLE LIQUID
D2	FIRE HAZARD + ACUTE/CHRONIC HEALTH HAZARD	OXIDIZING SOLID/LIQUID + ACUTE TOXIN	CLASS 5.1 + CLASS 6.1
D3	FIRE HAZARD + ACUTE HEALTH HAZARD	OXIDIZING SOLID/LIQUID + CORROSIVE, CATEGORY 1	CLASS 5.1 + CLASS 8
D4	FIRE HAZARD + ACUTE HEALTH HAZARD	OXIDIZING SOLID/LIQUID + CORROSIVE, CATEGORY 1	CLASS 5.1 + CLASS 8
D1	FIRE HAZARD	OXIDIZING SOLID/LIQUID	CLASS 5.1
R2	REACTIVE	WATER REACTIVE - GENERATES FLAMMABLE GAS	CLASS 4.3
F8	FIRE HAZARD	FLAMMABLE SOLID	CLASS 4.1
R1	REACTIVE + FIRE HAZARD	PYROPHORIC SOLID/LIQUID, SELF-HEATING CHEMICALS	CLASS 4.2
P1	REACTIVE + FIRE HAZARD	ORGANIC PEROXIDE, TYPES A-F	CLASS 5.2
V3	SUDDEN RELEASE OF PRESSURE	FLAMMABLE AEROSOL	CLASS 2.1 (See note c)
HCC	EPA 40 CFR 370.2	OSHA GHS 29 CFR 1910.1200	DOT 49 CFR
V2	SUDDEN RELEASE OF PRESSURE	COMPRESSED GAS	CLASS 2.2 (See note c)
C4	ACUTE HEALTH HAZARD	CORROSIVE, CATEGORY 1 + OXIDIZING SOLID/LIQUID	CLASS 8 + CLASS 5.1

C5	ACUTE HEALTH HAZARD	CORROSIVE, CATEGORY 1 + OXIDIZING SOLID/LIQUID	CLASS 8 + CLASS 5.1
C1	ACUTE HEALTH HAZARD	CORROSIVE, CATEGORY 1	CLASS 8
C2	ACUTE HEALTH HAZARD	CORROSIVE, CATEGORY 1	CLASS 8
B1	ACUTE HEALTH HAZARD	CORROSIVE, CATEGORY 1	CLASS 8
B2	ACUTE HEALTH HAZARD	CORROSIVE, CATEGORY 1	CLASS 8
K1	ACUTE/CHRONIC HEALTH HAZARD	NOT REGULATED	CLASS 6.2
T2	ACUTE HEALTH HAZARD	ACUTE TOXIN, CATEGORY 1	CLASS 6.1, PG I
T3	ACUTE HEALTH HAZARD	ACUTE TOXIN, CATEGORY 2	CLASS 6.1, PG II
T4	ACUTE HEALTH HAZARD	ACUTE TOXIN, CATEGORY 3	CLASS 6.1, PG III
V4	FIRE HAZARD	FLAMMABLE LIQUID, CATEGORY 4	COMBUSTIBLE LIQUID
Z8	NOT REGULATED-ARTICLE	NOT REGULATED-ARTICLE	NOT REGULATED OR CLASS 9 OR CLASS 9 LARGE FORM LITHIUM BATTERY
Z6	NOT REGULATED - ARTICLE	NOT REGULATED - ARTICLE	NOT REGULATED OR CLASS 9 LITHIUM BATTERY
C3	NOT REGULATED	CORROSIVE IRRITANTS, CATEGORY 2	NOT REGULATED
B3	NOT REGULATED	CORROSIVE IRRITANTS, CATEGORY 2	NOT REGULATED
P2	REACTIVE	ORGANIC PEROXIDE, TYPE G	NOT REGULATED
Z2	NOT REGULATED - ARTICLE	NOT REGULATED - ARTICLE	NOT REGULATED OR CLASS 8
V1	ACUTE HEALTH HAZARD	SHORT TERM HEALTH HAZARD	CLASS 9
Z1	NOT REGULATED - ARTICLE	NOT REGULATED - ARTICLE	NOT REGULATED
Z3	NOT REGULATED - ARTICLE	NOT REGULATED - ARTICLE	NOT REGULATED
T7	CHRONIC HEALTH HAZARD	CARCINOGEN	NOT REGULATED
T5	ACUTE/CHRONIC HEALTH HAZARD	ACUTE TOXIN	NOT REGULATED
T6	ACUTE/CHRONIC HEALTH HAZARD	SHORT- OR LONG-TERM HEALTH HAZARDS (INCLUDES CATEGORY 4 ACUTE TOXINS, NONCORROSIVE IRRITANTS, SENSITIZERS)	NOT REGULATED
K2	ACUTE/CHRONIC HEALTH HAZARD	SHORT TERM HEALTH HAZARD	NOT REGULATED
V7	ACUTE/CHRONIC HEALTH HAZARD	NOT REGULATED	NOT REGULATED OR CLASS 9 ENVIRONMENTAL HAZARD
V5	NOT REGULATED	NOT REGULATED	NOT REGULATED
V6	NOT REGULATED	NOT REGULATED	NOT REGULATED
M1	NOT REGULATED	NOT REGULATED	CLASS 9 MAGNETIC
Z4	NOT REGULATED - ARTICLE	NOT REGULATED - ARTICLE	NOT REGULATED
Z5	NOT REGULATED - ARTICLE	NOT REGULATED - ARTICLE	NOT REGULATED

Z7	NOT REGULATED - ARTICLE	NOT REGULATED - ARTICLE	NOT REGULATED
N1	NOT REGULATED	NOT REGULATED	NOT REGULATED

Footnotes:

a - OSHA GHS does not include a Division 1.4S classification, but it is part of the international GHS standard.

b - OSHA GHS has two flammable gas categories, but only Category 1 is considered a flammable gas by DOT.

c - OSHA GHS has two flammable aerosol categories, but only Category 1 explicitly considered being a flammable aerosol by DOT.

APPENDIX C: STORAGE SEGREGATION MATRIX: HCCs TO STORAGE
SEGREGATION

1. The storage segregation matrix in this Appendix consists of four essential elements: (1) The Hazard Characteristic Code (HCC); (2) the HCC group name in the clear; (3) the primary segregation required by Hazard Storage Area Code (HSAC); and (4) the secondary storage required (if any) within the primary storage area.
2. The 63 HCCs are associated with one of the 10 HSACs in the matrix. Once a hazardous material has been assigned a permanent or temporary HCC, the primary storage site may be determined by using the matrix. Two HCCs, H1 and X1, which are defined in Appendix B are not included in this segregation matrix as they are system derived HCCs which are not actually used for physical storage.
3. The storing installation is further responsible for segregating hazardous materials within the primary area if secondary segregation is required. For instance, HCC F6, a multiple hazard material, which is both flammable and corrosive, acid will be assigned to primary segregation code "F", Flammable Storage Area. HCC F7, another multiple hazard material, which is a flammable and corrosive, alkali, will also be assigned to primary segregation code "F", Flammable Storage Area. These two HCCs are incompatible with each other, separate by at least one 4-foot aisle width horizontally. Vertical separation will assure that incompatible products cannot leak and contact one another.
4. To further assist in the secondary segregation of hazardous materials, a system of notes has been established. The purpose of this system is to highlight those products that offer truly unique and unusual problems in storage. These products may require secondary segregation within the primary storage area or may present such unusual problems, completely segregate from all other products.

PRIMARY SEGREGATION CODE

A Radioactive	G Gas, Compressed
C Corrosive	L Low Hazard (General Purpose)
D Oxidizer	P Peroxide, Organic
E Explosive	R Reactive
F Flammable	T Poison

Table C-1. Storage Segregation Matrix

	HAZARD CHARACTERISTICS CODE (HCC)	PRIMARY SEGREGATION										SECONDARY SEGREGATION
		A	C	D	E	F	G	L	P	R	T	
A1	Radioactive, Licensed	*										Note A
A2	Radioactive, License Exempt	*										Note A
A3	Radioactive, License Exempt, Authorized	*										Note A
B1	Alkali, Corrosive, Inorganic		*									Note B
B2	Alkali, Corrosive, Organic		*									Note C
B3	Alkali, Low Risk							*				Note F
C1	Acid, Corrosive, Inorganic		*									Note D
C2	Acid, Corrosive, Organic		*									Note E
C3	Acid, Low Risk							*				Note F
C4	Acid, Corrosive and Oxidizer, Inorganic		*									Note D
C5	Acid, Corrosive and Oxidizer, Organic		*									Note E
D1	Oxidizer			*								None
D2	Oxidizer and Poison			*								Note G
D3	Oxidizer and Corrosive, Acidic			*								Note G
D4	Oxidizer and Corrosive, Alkali			*								Note G
E1	Explosive, Military				*							Note H
E2	Explosive, Low Risk							*				Note A
F1	Flammable Liquid, GHS Category 1, DOT PG I					*						Note J
F2	Flammable Liquid, GHS Category 2, DOT PG II					*						Note J
F3	Flammable Liquid, GHS Category 3, DOT PG III (Flash Point < 38 C)					*						Note J
F4	Flammable Liquid, GHS Category 3, DOT PG III (Flash Point ≥ 38 C)					*						Note J
F5	Flammable Liquid and Poison					*						Note L
F6	Flammable Liquid & Corrosive, Acidic					*						Note L
F7	Flammable Liquid & Corrosive, Alkali					*						Note L
F8	Flammable Solid					*						Note K
G1	Gas, Poison (Nonflammable)						*					Note M
G2	Gas, Flammable						*					Note N
G3	Gas, Nonflammable						*					Note P
G4	Gas, Oxidizer (Nonflammable)						*					Note R
G5	Gas, Corrosive (Nonflammable)						*					Note S
G6	Gas, Poison, Corrosive (Nonflammable)						*					Note T
G7	Gas, Poison, Oxidizer (Nonflammable)						*					Note U
G8	Gas, Poison, Flammable						*					Note V
G9	Gas, Poison, Corrosive, Oxidizer (Nonflammable)						*					Note W

Secondary segregation applies to storage within assigned primary areas

Table C-1 Storage Segregation Matrix (HCCs)

Table C-1. Storage Segregation Matrix – Continued

HCC	HAZARD CHARACTERISTICS GROUP	PRIMARY SEGREGATION										SECONDARY SEGREGATION	
		A	C	D	E	F	G	L	P	R	T		
K1	Infectious Substance											*	Note X
K2	Cytotoxic Drugs											*	Note Y
M1	Magnetized Material							*					None
N1	Not Regulated as Hazardous							*					None
P1	Peroxide, Organic, Types A-F								*				None
P2	Peroxide, Organic, Type G (Low Risk)								*				None
R1	Reactive Chemical, Flammable									*			Note Z
R2	Water Reactive Chemical									*			Note AA
T1	Acute Toxin - Inhalation Hazard										*		None
T2	Acute Toxin, GHS Category 1										*		None
T3	Acute Toxin, GHS Category 2										*		None
T4	Acute Toxin, GHS Category 3										*		Note BB
T5	Pesticide, Low Risk							*					None
T6	Health Hazard							*					None
T7	Carcinogen (OSHA, NTP, IARC)										*		Note CC
V1	Miscellaneous Class 9 Hazardous Materials							*					None
V2	Aerosol, Nonflammable					*							Note EE
V3	Aerosol, Flammable					*							Note EE
V4	Combustible Liquid, GHS Category 4					*							None
V5	High Flash Point Materials							*					None
V6	Petroleum Products							*					None
V7	Environmental Hazard							*					None
Z1	Article Containing Asbestos							*					None
Z2	Article Containing Mercury							*					None
Z3	Article Containing Polychlorinated Biphenyls (PCB)							*					None
Z4	Article, Battery, Lead Acid, Nonspillable							*					None
Z5	Article, Battery, Nickel Cadmium, Nonspillable							*					None
Z6	Article, Battery, Lithium									*			Note DD
Z7	Article, Battery, Dry Cell							*					None
Z8	Article, Battery, Lithium Large Form									*			Note DD

Secondary segregation applies to storage within assigned primary areas

Table C-1 Storage Segregation Matrix (HCCs) continued

DEFINITION OF NOTES

NOTE A - Security Storage - will be well ventilated with limited access.

NOTE B - Inorganic Alkali Storage - store away from acids by at least one 4 ft aisle width and away from organic alkalis by at least one 4 ft aisle width.

NOTE C - Organic Alkali Storage - store away from acids by at least one 4 ft aisle width and away from inorganic alkalis by at least one 4 ft aisle width.

NOTE D - Inorganic Acid Storage - store away from alkalis (caustics) by at least one 4 ft aisle width and away from organic acids by at least one 4 ft aisle width. Separate from other acids with subsidiary risk labels by at least one 4 ft aisle width.

NOTE E - Organic Acid Storage - store away from alkalis (caustics) by at least one 4 ft aisle width and away from inorganic acids by at least one 4 ft aisle width. Separate from other acids with subsidiary risk labels by at least one 4 ft aisle width.

NOTE F - Further separate into Acid and Alkali Storage within the low hazard storage area to keep potentially incompatible products from mixing.

NOTE G - Separate from other oxidizers and oxidizers with secondary hazards by at least one 4 ft aisle width.

NOTE H - Magazine Storage.

NOTE J - Segregate into flammable liquid storage separate from flammable solids by at least one 4 ft aisle width.

NOTE K - Segregate into flammable solid storage separate from flammable liquids by at least one 4 ft aisle width.

NOTE L - Separate from other flammables and flammables with secondary hazards by at least one 4 ft aisle width.

NOTE M - Further segregate into Poison Gas storage within compressed gas area.

NOTE N - Further segregate into Flammable Gas storage within compressed gas area.

NOTE P - Further segregate into Nonflammable Gas storage within compressed gas area.

NOTE R - Further segregate into Oxidizer Gas within the Nonflammable Gas storage that is within the compressed gas area.

NOTE S - Further segregate into Corrosive Gas within the Nonflammable Gas storage that is within the compressed gas area.

NOTE T - Further segregate into Corrosive Gas within the Poison Gas storage that is within the compressed gas area.

NOTE U - Further segregate into Oxidizer Gas within the Poison Gas storage that is within the compressed gas area.

NOTE V - Further segregate into Flammable Gas within the Poison Gas storage that is within the compressed gas area.

NOTE W - Further segregate into Corrosive and Oxidizer Gas within the Poison Gas storage that is within the compressed gas area.

NOTE X - Further segregate into Biomedical storage within the Poison Storage area.

NOTE Y - Further segregate into a Medical Security storage within the Poison Storage area.

NOTE Z - Further segregate into a Spontaneously Combustible storage within the Reactive Storage area.

NOTE AA - Should not store in areas protected with water sprinkler system. Fire protection should be non-water based.

NOTE BB - Store away from food.

NOTE CC - Further segregation within Poison Storage area may be necessary if secondary hazards exist (i.e. flammable, corrosive, etc.)

NOTE DD - Separate from other products within the Reactive Storage area.

NOTE EE - Store aerosols from flammables by placing in separate room or barrier such as floor to ceiling wire mesh, chain link fence, etc. to protect personnel from aerosols that can become self-propelled projectiles.

Segregation Table for Hazardous Materials

Class or Division	Notes	1.1, 1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3 Gas Zone A	2.3 Gas Zone B	3	4.1	4.2	4.3	5.1	5.2	6.1 Liquids PG I Zone A	7	8 Liquids Only
Explosives	1.1 and 1.2 A	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives	1.3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives	1.4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Very Insensitive explosives	1.5 A	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Extremely insensitive explosives	1.6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Flammable Gases	2.1	X	X	O	X				X	O							O	O	
Non-Toxic, non-flammable gases	2.2	X			X														
Poisonous Gas Zone A	2.3	X	X	O	X		X				X	X	X	X	X	X			X
Poisonous Gas Zone B	2.3	X	X	O	X		O				O	O	O	O	O	O			O
Flammable Liquids	3	X	X	O	X			X	O							O	X		
Flammable Solids	4.1	X			X			X	O								X		O
Spontaneously combustible materials	4.2	X	X	O	X			X	O								X		X
Dangerous when wet materials	4.3	X	X		X			X	O								X		O
Oxidizers	5.1 A	X	X		X			X	O	O							X		O
Organic Peroxides	5.2	X	X		X			X	O								X		O
Poisonous Liquids PG I Zone A	6.1	X	X	O	X		O				X	X	X	X	X	X			X
Radioactive Materials	7	X			X		O												
Corrosive liquids	8	X	X	O	X			X	O			O	X	O	O	O	X		

Instructions for using the segregation table for hazardous materials are as follows:

- (1) The absence of any hazard class or division or blank space in the Table indicates that no restrictions apply.
- (2) The letter "X" in the table indicates that these materials may not be loaded, transported, or stored together in the same transport vehicle or storage facility during the course of transportation.
- (3) The letter "O" in the Table indicates that these materials may not be loaded, transported, or stored together in the same transport vehicle or storage facility during the course of transportation unless separated in a manner that, in the event of leakage from packages under conditions normally incident to transportation, commingling of hazardous materials would not occur. Notwithstanding the methods of separation employed, Class 8 (corrosive) liquids may not be loaded above or adjacent to Class 4 (flammable) or Class 5 (oxidizing) materials, except that shippers may load trucked shipments of such materials together when it is known that the mixture of contents would not cause a fire or a dangerous evolution of heat or gas.

Table C-2
Segregation Table for Hazardous Materials (class/division)

This Table outlines a method recommended for determining where to store hazardous materials not assigned an HCC based on the class or division numbers found in Title 49 CFR, Part 172.101. The number is displayed at the bottom of the placard or label, or on a shipping paper after the shipping name.

Class/ Division	HCC	Name	Primary Storage Area	Secondary Storage Area
1.1	E1	Explosives	Explosive	Magazine
1.2	E1	Explosives	Explosive	Magazine
1.3	E1	Explosives	Explosive	Magazine
1.4	E1	Explosives	Explosives	Magazine
1.4S	E2	Explosives	Low Hazard	Security
1.5	E1	Explosives	Explosive	Magazine
1.6	E1	Explosives	Explosive	Magazine
2.1	G2	Flammable Gases	Gas, Compressed	Flammable Gas
2.2	G3,G4, G5	Nonflammable Gases	Gas, Compressed	Nonflammable Gas
2.3	G1,G6, G7,G8, G9	Poison Gases	Gas, Compressed	Poison Gas
3	F1	Flammable Liquids, PG I	Flammable	Flammable Liquid
3	F2	Flammable Liquids PG II	Flammable	Flammable Liquid
3	F3,F4	Flammable Liquids PG III	Flammable	Flammable Liquid
4.1	F8	Flammable Solids	Flammable	Flammable Solid
4.2	R1	Spontaneously Combustible	Reactive	Spontaneously Combustible
4.3	R2	Dangerous When Wet	Reactive	Non Water Based Fire Protection
5.1	D1	Oxidizers	Oxidizer	None
5.2	P1	Organic Peroxides	Peroxide, Organic	None
6.1	T1,T2, T3	Poisonous Materials	Poison	None
6.1	T4	Poisonous Materials	Poison	Away from Food
6.2	K1	Infectious Substance	Poison	Biomedical
7	A1,A2, A3	Radioactives	Radioactive	Security
8	C1,C2, C4,C5	Corrosives	Corrosive	Acid
8	B1,B2	Corrosives	Corrosive	Alkali
9	V1	Miscellaneous Hazardous Material	Low Hazard *	None

* Material bearing warning label will not be assigned to a general purpose location without notification of approval by the installation Safe and Health Office.

Table C-3

Class or Division Cross Reference to Storage Areas

Class or Division		Notes	1.1, 1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3 gas Zone A	2.3 gas Zone B	3	4.1	4.2	4.3	5.1	5.2	6.1 liquids PG I Zone A	7	8 liquids only
Explosives	1.1 and 1.2	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives	1.3		*	*	*	*	*	X		X	X	X		X	X	X	X	X		X
Explosives	1.4		*	*	*	*	*	O		O	O	O		O				O		O
Very insensitive explosives	1.5	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Extremely insensitive explosives	1.6		*	*	*	*	*													
Flammable Gases	2.1		X	X	O	X				X	O							O	O	
Non-Toxic, non-flammable gases	2.2		X			X														
Poisonous gas Zone A	2.3		X	X	O	X		X				X	X	X	X	X	X			X
Poisonous Gas Zone B	2.3		X	X	O	X		O				O	O	O	O	O	O			O
Flammable Liquids	3		X	X	O	X				X	O					O		X		
Flammable Solids	4.1		X			X				X	O							X		O
Spontaneously combustible materials	4.2		X	X	O	X				X	O							X		X
Dangerous when wet materials	4.3		X	X		X				X	O							X		O
Oxidizers	5.1	A	X	X		X				X	O	O						X		O
Organic Peroxides	5.2		X	X		X				X	O							X		O
Poisonous liquids PG I Zone A	6.1		X	X	O	X		O				X	X	X	X	X	X			X
Radioactive Materials	7		X			X		O												
Corrosive liquids	8		X	X	O	X				X	O		O	X	O	O	O	X		

Instructions for using the segregation table for hazardous materials are as follows:

- (1) The absence of any hazard class or division or blank space in the Table indicates that no restrictions apply.
- (2) The letter "X" in the Table indicates that these materials may not be loaded, transported, or stored together in the same transport vehicle or storage facility during the course of transportation.
- (3) The letter "O" in the Table indicates that these materials may not be loaded, transported, or stored together in the same transport vehicle or storage facility during the course of transportation unless separated in a manner that, in the event of leakage from packages under conditions normally incident to transportation, commingling of hazardous materials would not occur. Notwithstanding the methods of separation employed, Class 8 (corrosive) liquids may not be loaded above or adjacent to Class 4 (flammable) or Class 5 (oxidizing) materials; except that shippers may load truckload shipments of such materials together when it is known that the mixture of contents would not cause a fire or a dangerous evolution of heat or gas.
- (4) The "*" in the Table indicates that segregation among different Class 1 (explosive) materials is governed by the compatibility table in paragraph (f) of 49CFR174.81.
- (5) The note "A" in the second column of the Table means that, notwithstanding the requirements of the letter "X", ammonium nitrate fertilizer may be loaded or stored with Division 1.1 (Class A explosive) or Division 1.5 (blasting agents) materials.
- (6) When the 172.101 Table or 172.401 of 49 CFR requires a package to bear a subsidiary hazard label, segregation appropriate to the subsidiary hazard must be applied when that segregation is more restrictive than that required by the primary hazard. However, hazardous materials of the same class may be stowed together without regard to segregation required by any secondary hazard if the materials are not capable of reacting dangerously with each other and causing combustion or dangerous evolution of heat, evolution of flammable, poisonous, or asphyxiant gases, or formation of corrosive or unstable materials

Figure 6-2. Segregation and Separation Chart of Hazardous Materials for Rail Shipments

Table C-4

Segregation and Separation of Hazardous Materials for Rail Shipments

Class or Division		Notes	1.1, 1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3 gas Zone A	2.3 gas Zone B	3	4.1	4.2	4.3	5.1	5.2	6.1 liquids PG I Zone A	7	8 liquids only
Explosives	1.1 and 1.2	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives	1.3		*	*	*	*	*	X		X	X	X		X	X	X	X	X		X
Explosives	1.4		*	*	*	*	*	O		O	O	O		O				O		O
Very insensitive explosives	1.5	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Extremely insensitive explosives	1.6		*	*	*	*	*													
Flammable Gases	2.1		X	X	O	X				X	O							O	O	
Non-Toxic, non-flammable gases	2.2		X			X														
Poisonous Gas Zone A	2.3		X	X	O	X		X				X	X	X	X	X	X			X
Poisonous Gas Zone B	2.3		X	X	O	X		O				O	O	O	O	O	O			O
Flammable Liquids	3		X	X	O	X				X	O					O		X		
Flammable Solids	4.1		X			X				X	O							X		O
Spontaneously combustible materials	4.2		X	X	O	X				X	O							X		X
Dangerous when wet materials	4.3		X	X		X				X	O							X		O
Oxidizers	5.1	A	X	X		X				X	O	O						X		O
Organic Peroxides	5.2		X	X		X				X	O							X		O
Poisonous liquids PG I Zone A	6.1		X	X	O	X		O				X	X	X	X	X	X			X
Radioactive Materials	7		X			X		O												
Corrosive liquids	8		X	X	O	X				X	O		O	X	O	O	O	X		

Instructions for using the segregation table for hazardous materials are as follows:

- (1) The absence of any hazard class or division or blank space in the Table indicates that no restrictions apply.
- (2) The letter "X" in the Table indicates that these materials may not be loaded, transported, or stored together in the same transport vehicle or storage facility during the course of transportation.
- (3) The letter "O" in the Table indicates that these materials may not be loaded, transported, or stored together in the same transport vehicle or storage facility during the course of transportation unless separated in a manner that, in the event of leakage from packages under conditions normally incident to transportation, commingling of hazardous materials would not occur. Notwithstanding the methods of separation employed, Class 8 (corrosive) liquids may not be loaded above or adjacent to Class 4 (flammable) or Class 5 (oxidizing) materials; except that shippers may load truckload shipments of such materials together when it is known that the mixture of contents would not cause a fire or a dangerous evolution of heat or gas.
- (4) The "*" in the Table indicates that segregation among different Class 1 (explosive) materials is governed by the compatibility table in paragraph (F) of 177.848 of 49 CFR.
- (5) The note "A" in the second column of the Table means that, notwithstanding the requirements of the letter "X", ammonium nitrate fertilizer may be loaded or stored with Division 1.1 (Class A explosive) or Division 1.5 (blasting agents) materials.
- (6) When the 172.101 Table or 172.402 of 49 CFR requires a package to bear a subsidiary hazard label, segregation appropriate to the subsidiary hazard must be applied when that segregation is more restrictive than that required by the primary hazard. However, hazardous materials of the same class may be stowed together without regard to segregation for any secondary hazard if the materials are not capable of reacting dangerously with each other and causing combustion or dangerous evolution of heat, evolution of flammable, poisonous, or asphyxiant gases, or formulation of corrosive or unstable materials.

Figure 6-3. Segregation and Separation Chart of Hazardous Materials for Carriage by Public Highway

Table C-5

Segregation and Separation of Hazardous Materials for Carriage by Public Highway

Class	1.1 1.2 1.5	1.3	1.4 1.6	2.1	2.2	2.3	3	4.1	4.2	4.3	5.1	5.2	6.1	6.2	7	8	9
Explosives, 1.1, 1.2, 1.5	(*)	(*)	(*)	4	2	2	4	4	4	4	4	4	2	4	2	4	X
Explosives, 1.3	(*)	(*)	(*)	4	2	2	4	3	3	4	4	4	2	4	2	2	X
Explosives, 1.4, 1.6	(*)	(*)	(*)	2	1	1	2	2	2	2	2	2	X	4	2	2	X
Flammable Gases, 2.1	4	4	2	X	X	X	2	1	2	X	2	2	X	4	2	1	X
Non-Toxic, non-flammable gases, 2.2	2	2	1	X	X	X	1	X	1	X	X	1	X	2	1	X	X
Poisonous gases 2.3	2	2	1	X	X	X	2	X	2	X	X	2	X	2	1	X	X
Flammable Liquids 3	4	4	2	2	1	2	X	X	2	1	2	2	X	3	2	X	X
Flammable Solids 4.1	4	3	2	1	X	X	X	X	1	X	1	2	X	3	2	1	X
Spontaneously combustible substances 4.2	4	3	2	2	1	2	2	1	X	1	2	2	1	3	2	1	X
Substances which are dangerous when wet 4.3	4	4	2	X	X	X	1	X	1	X	2	2	X	2	2	1	X
Oxidizing substances 5.1	4	4	2	2	X	X	2	1	2	2	X	2	1	3	1	2	X
Organic peroxides 5.2	4	4	2	2	1	2	2	2	2	2	2	X	1	3	2	2	X
Poisons 6.1	2	2	X	X	X	X	X	X	1	X	1	1	X	1	X	X	X
Infectious substances 6.2	4	4	4	4	2	2	3	3	3	2	3	3	1	X	3	3	X
Radioactive materials 7	2	2	2	2	1	1	2	2	2	2	1	2	X	3	X	2	X
Corrosives 8	4	2	2	1	X	X	X	1	1	1	2	2	X	3	2	X	X
Miscellaneous dangerous substances 9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Numbers and symbols relate to the following terms as defined in this section:

1 - "Away from."

2 - "Separated from."

3 - "Separated by a complete compartment or hold from."

4 - "Separated longitudinally by an intervening complete compartment or hold from."

X - The segregation, if any, is shown in the section 172.101 Table.

* - See section 176.144 of Title 49 for segregation within Class 1.

Figure 6-4. General Segregation Requirements for Hazardous Materials for Carriage by Vessel

Table C-6

General Segregation Requirements for Hazardous Materials for Carriage by Vessel

Class or Division Note 7	No te s	1.1	1.3	1.4	1.5	1.6	2.1	2.2	2.3 Gas Zone A	2.3 Gas Other than Zone A	3	4.1	4.2	4.3	5.1	5.2	6.1 Liquid PG-I Zone A	7	8 Liquid Only
1.1 and 1.2	1	*	*	*	*	*	X		X	X	X	X	X	X	X	X	X	X	X
1.3		*	*	*	*	*	X		X	X	X	X	X	X	X	X	X	X	X
1.4		*	*	*	*	*	0		0	0	0		0				0		0
1.5		*	*	*	*	*	0		0	0	0		0				0		0
1.6		*	*	*	*	*	0		0	0	0		0				0		0
2.1		X	X	0	0				X	0			0	0	0	0	0	0	0
2.2																			
2.3 Zone A		X	X	0	0		X				X	X	X	X	X	X			X
2.3 Other than Zone A		X	X	0	0		0				0	0	0	0	0	0			0
3		X	X	0	0	0			X	0		0	0	0	0	0	X		
4.1		X	X						X	0	0						X		0
4.2		X	X	0	0	0	0		X	0	0						X		X
4.3		X	X				0		X	0	0						X		X
5.1	1	X	X				0		X	0	0						X		0
5.2		X	X				0		X	0	0						X		0
6.1 Liquid PG-I Zone A	4	X	X	0	0	0	0				X	X	X	X	X	X			X
7	2,3	X	X				0												
8	4,5 6	X	X	0	0	0	0		X	0		0	X	X	0	0	X		

- Ammonium nitrate fertilizer may be loaded, transported, stored with Class 1.1 materials.
- Do not load, transport, or store fissile class III radioactive material (Class 7) on the same aircraft with any other hazardous material.
- Normal uranium, depleted uranium, and thorium metal in solid form radioactive materials (Class 7) may be loaded and transported with Class 1.1, 1.2, and 1.5 (explosives).
- Do not load, transport, or store cylinders or cyanide mixtures (Class 6.1) with any Class 8 materials.
- Separate nitric acid (Class 8) in carboys by 2.2 m (88 inches) in all directions from other corrosive materials in carboys when loaded on the same aircraft.
- Do not load, transport, or store charged electric batteries (Class 8) on the same aircraft with any Class 1.1 or 1.2.
- Class 6.1 poisonous liquids (other than PG 1, Zone A) corrosive solids, ORM-D, Class 9, and hazardous materials in Excepted Quantities may be transported with each other and all other hazardous materials without compatibility restrictions.

Figure 6-5. Segregation Table for Hazardous Materials for Military Air

Table C-7

Segregation Table for Hazardous Materials for Military Air

Hazardous Material Storage Segregation Chart

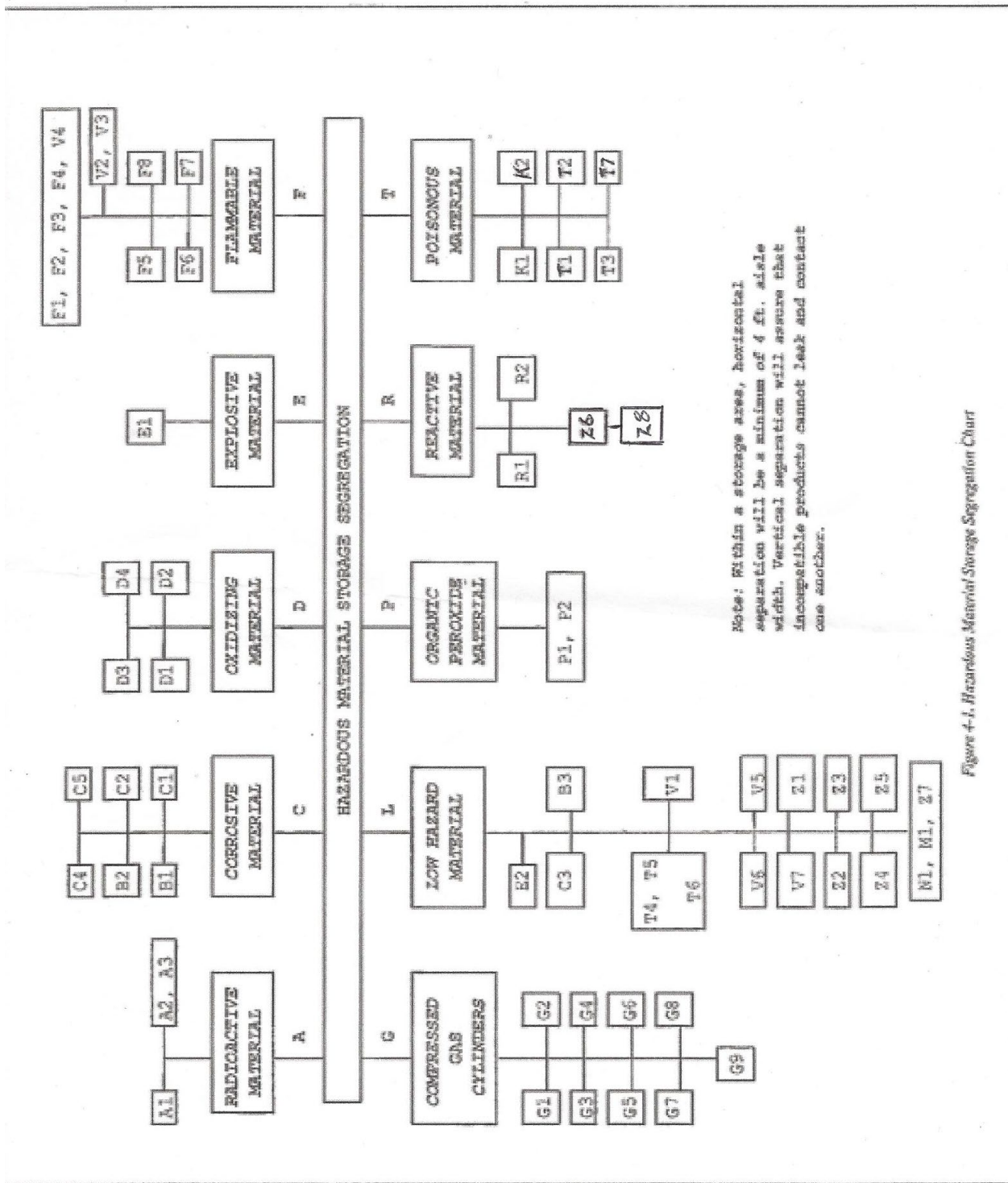


Figure 4-1. Hazardous Material Storage Segregation Chart

Table C-8 Hazardous Material Storage Segregation Chart

**APPENDIX D: ASSIGNMENT OF TEMPORARY HAZARD CHARACTERISTIC CODES
(HCCs)**

Assignment of Temporary Hazard Characteristic Codes (HCCs)			
Table D-1. DOT Transportation Labels			
DOT Label	Interim HCC	Recommended Storage Area	
		Primary	Secondary
Explosive 1.1	E1	Explosive	Magazine
Explosive 1.2	E1	Explosive	Magazine
Explosive 1.3	E1	Explosive	Magazine
Explosive 1.4	E2	Explosive	Security
Explosive 1.5	E2	Explosive	Security
Explosive 1.6	E2	Explosive	Security
Poison Gas	G1	Compressed Gas	Poison Gas Cylinder
Flammable Gas (Cylinder)	G2	Compressed Gas	Flammable Gas Cylinder
Flammable Gas (Aerosol Nonrefillable tank or Canister)	V3	Flammable	Aerosol Containers
Non-Flammable Gas	G3	Compressed Gas	Nonflammable Gas Cylinder
Flammable Liquid	F1-F4	Flammable	Flammable Liquid
Flammable Solid	F8	Flammable	Flammable Solid
Spontaneously Combustible	R1	Reactive	Spontaneously Combustible
Dangerous When Wet	R2	Reactive	Dangerous When Wet, No water sprinklers
Oxidizer	D1	Oxidizer	None
Organic Peroxide	P1	Peroxide Organic	None
Poison	T2	Poison	None
Harmful Keep Away From Food	T4	Low Hazard	Away From Food
Infectious Substance	K1	Poison	Biomedical
Radioactive I	A1	Radioactive	Security
Radioactive II	A1	Radioactive	Security
Radioactive III	A1	Radioactive	Security
Corrosive	C1,C2,C4,C5 (Acid)*	Corrosive	Acid
Corrosive	B1, B2 (Alkali)*	Corrosive	Alkali
Class 9	V1	Low Hazard	None
Magnetized Material	M1	General Purpose	None

* If it is not known if a corrosive is acid or alkali, contact HMIS to get a technical determination from MSDS.

DOT Transportation Labels

*Table D-2.
Recommended Storage Based on Precautionary Label Text (ANSI Z129.1)*

Signal Word	Examples of Statement of Hazard	Suggested Temporary HCC	Recommended Primary Storage Area	Recommended Secondary Storage Area
DANGER!	MAY BE FATAL IF SWALLOWED	T2	Poison	None
WARNING!	HARMFUL IF SWALLOWED	T3	Poison	None
WARNING!	HARMFUL IF SWALLOWED	T4	Low Hazard	Away from Food
DANGER!	MAY BE FATAL IF ABSORBED THROUGH SKIN	T2	Poison	None
WARNING!	HARMFUL IF ABSORBED THROUGH SKIN	T6	Low Hazard *	None
DANGER!	CAUSES (SEVERE)** BURNS	C1,C2, C4,C5	Corrosive	Acid
DANGER!	CAUSES (SEVERE)** BURNS	B1,B2	Corrosive	Alkali
DANGER!	EXTREMELY FLAMMABLE	F1	Flammable	Flammable Liquid
WARNING!	FLAMMABLE	F2,F3	Flammable	Flammable Liquid
WARNING!	FLAMMABLE	F8	Flammable	Flammable Solid
CAUTION!	COMBUSTIBLE	F4	Flammable	Flammable Liquid
CAUTION!	COMBUSTIBLE	V4	Flammable	None
DANGER!	EXTREMELY FLAMMABLE, CATCHES FIRE IF EXPOSED TO AIR	R1	Reactive	Spontaneously Combustible
DANGER!	STRONG OXIDIZER. CONTACT WITH OTHER MATERIALS MAY CAUSE FIRE	D1	Oxidizer	None
DANGER!	MAY BE FATAL IF INHALED	T1	Poison	None
WARNING!	HARMFUL IF INHALED	T2	poison	None
WARNING!	MAY CAUSE ALLERGIC RESPIRATORY REACTION	T6	Low Hazard *	None
CAUTION!	(VAPOR GAS)** REDUCES OXYGEN AVAILABLE FOR BREATHING	T6	Low Hazard *	None
WARNING!	CAUSES EYE IRRITATION	T6,C3,C4	Low Hazard *	None
WARNING!	CAUSES IRRITATION	T6,C3,C4	Low Hazard *	None
WARNING!	MAY CAUSE ALLERGIC SKIN REACTION	T6,C3,C4	Low Hazard *	None

* Material bearing precautionary label text will not be assigned a Low Hazard (General Purpose) location without notification of and approval by the installation Physical Science or Safety and Health Office.

** Enter proper term as appropriate.

Recommended Storage Based on Precautionary Label Text

Table D-3. Toxic and Hazardous Substances Listed in Title 29 CFR, Part 1910, Subpart Z

Material	Temporary HCC	Recommended Primary Storage Area	Recommended Secondary Storage Area
4-Nitrobiphenyl	T7	Poison	None
Alpha-naphthylamine	T7	Poison	None
Methyl chloromethyl ether (anhydrous)	F5	Flammable	Poison
3-3'-Dichlorobenzidine (and its salts)	T7	Poison	None
Bis-Chlorodimethyl ether (sym-Dichlorodimethyl ether - UN 2249)	F5	Flammable	Poison
Beta-Naphthylamine	T7	Poison	None
Benzene	F5	Flammable	Poison
Benzidine	T7	Poison	None
4-Aminodiphenyl (Biphenylamine)	T7	Poison	None
Ethyleneamine (Inhibited)	F5	Flammable	Poison
Beta-propiolactone	T7	Poison	None
2-Acetylaminofluorene	T7	Poison	None
4-Dimethylaminoazobenzene	T7	Poison	None
N-Nitrosodimethylamine	T7	Poison	None
Vinyl Chloride	G8	Compressed Gas	Poison/Flammable Gas
Inorganic Arsenic	T7	Poison	None
1,2-Dibromo-3-chloropropane	T7	Poison	Pesticide
Acrylonitrile	F5	Flammable	Poison
Ethylene Oxide	G8	Compressed Gas	Poison/Flammable

Note: Primary and Secondary storage criteria are same as specified in Table C-1. Permanent storage criteria for items listed above must be coordinated with the Installation Safety and Health Office.

Toxic and Hazardous Substances Listed in Title 29 CFR, Part 1910, Subpart Z

APPENDIX E

A GUIDE FOR DETERMINING
PACKAGING, MARKING, AND LABELING REQUIREMENTS FOR HAZARDOUS MATERIALS

SECTION I: PACKAGING REQUIREMENTS

GENERAL REQUIREMENTS (49 CFR, Section 173.24)

SPECIFIC REQUIREMENTS (See Section 172.101, 49 CFR for applicable material and packaging requirements)

- * Determine the Mode of Transportation for shipment
- * Determine PSN
- * Consult 49 CFR, Section 172.101, Hazardous Materials Table
- * Read across to column 8, Packaging Authorizations Hazardous Materials Table

Hazardous Materials Table

Symbol	Hazardous materials description and proper shipping names	Hazard class or Division	Identification Numbers	Packaging group	Label(s) required (if not excepted)	Special provisions	(8) Packaging authorizations (§ 173.***)			(9) Quantity limitations		(10) Vessel stowage requirements	
							Exceptions	Non-bulk packaging	Bulk packaging	Passenger aircraft or roller	Cargo aircraft only	Vessel stowage	Other stowage provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
...	Flammable liquids, composite, n.o.s.				FLAMMABLE LIQUID, CORROSIVE	T42	None	201	243	0.5 L	2.5 L	E	40
		...	...	II	FLAMMABLE LIQUID, CORROSIVE	T15, T26	None	202	243	1 L	5 L	B	40
		...	...	III	FLAMMABLE LIQUID, CORROSIVE	B1, T15, T26	150	203	242	5 L	60 L	A	40
D	Flammable liquids, elevated temperature material, n.o.s.	3	NA9276	III	FLAMMABLE LIQUID	.....	None	None	247	Forbidden	Forbidden	D	
...	Flammable liquids, n.o.s.	3	UN1993	I	FLAMMABLE LIQUID	T42	150	201	243	1 L	30 L	E	
		...	...	II	FLAMMABLE LIQUID	T8, T31	150	202	242	5 L	60 L	B	

- * Determine if "Limited Quantity"
Column 8a, Exceptions Apply

EXAMPLE

How Much
Material?You observe - Fiberboard box with
12 - 1 Liter containers inside the package .

- Turn to Section 173.150 noted in Column 8a.
- * Read Section 173.150

- * Does any provision of Section 173.150 coincide with the configuration you observed?

173.150 Exceptions for Class 3 (flammable and combustible liquids)

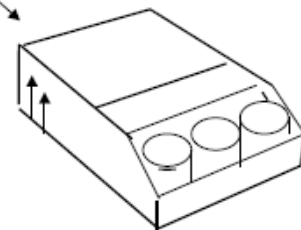
(b) Limited quantities. Limited quantities of flammable liquids (Class 3) are excepted from labeling requirements, unless offered for transportation or transported by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. In addition, shipments of limited quantities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight. The following packagings are authorized:

- (1) For flammable liquids in Packing Group I, inner packaging not over 0.5 L (0.1 gallon) net capacity each, packed in strong outer packagings;
- (2) For flammable liquids in Packing Group II, inner packagings not over 1.0 L (0.3 gallon) net capacity each, packed in strong outer packagings; and
- (3) For flammable liquids in Packing Group III, inner packagings not over 5.0 L (1 gallon) net capacity each, packed in strong outer packagings.

- * This is a "Limited Quantity" package, and, as such, it is excepted from specification packaging requirements which are referred to in column 8b (173.202) of the Hazardous Material Table. Limited Quantity packages being shipped by air are not excepted from labeling as indicated in 173.150(b).

- * If packaging configuration does not meet the requirements outlined in the "Limited Quantity" section, read across to column 8b as shown below.

- * See columns 9a and 9b for additional air shipment requirements .



172.101 Hazardous Materials Table - Continued

Sym- bols	Hazardous materials description and proper shipping names	Hazard class or Divisio n	Identifi- cation Numbers	Pack- ing group	Label(s) required (if not excepted)	Special provis- ions	(8) Packaging authorizations (§ 173.***)			(9) Quantity limitations		(10) Vessel stowage requirements	
							Exceptions	Non-bulk packaging	Bulk packaging	Passenger aircraft or relicor	Cargo aircraft only	Vessel stow- age	Other stowage provisio n
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
---	Flammable liquids, corrosive, n.o.s.				FLAMMABLE LIQUID, CORROSIVE	T42	None	201	243	0.5 L	2.5 L	E	40
				II	FLAMMABLE LIQUID, CORROSIVE	T15, T26	None	202	243	1 L	5 L	B	40
				III	FLAMMABLE LIQUID, CORROSIVE	81, T15, T26	150	203	242	5 L	60 L	A	40
D	Flammable liquids, elevated temperature material, n.o.s.	3	NA9276	III	FLAMMABLE LIQUID		None	None	247	Forbidden	Forbidden	D	
---	Flammable liquids, n.o.s.	3	UN1993	I	FLAMMABLE LIQUID	T42	150	201	243	1 L	30 L	E	
				II	FLAMMABLE LIQUID	T8, T31	150	202	242	5 L	60 L	B	

* The DoD PC-POP Program is available to identify those packaging configurations that have been tested and passed the performance tests specified in 49 CFR, Subpart M. The database can be downloaded from the DDC web page or obtained by e-mail. Contact the DDC at DSN 977-8238, (717) 770-8238 for further information.

SECTION II: MARKING REQUIREMENTS

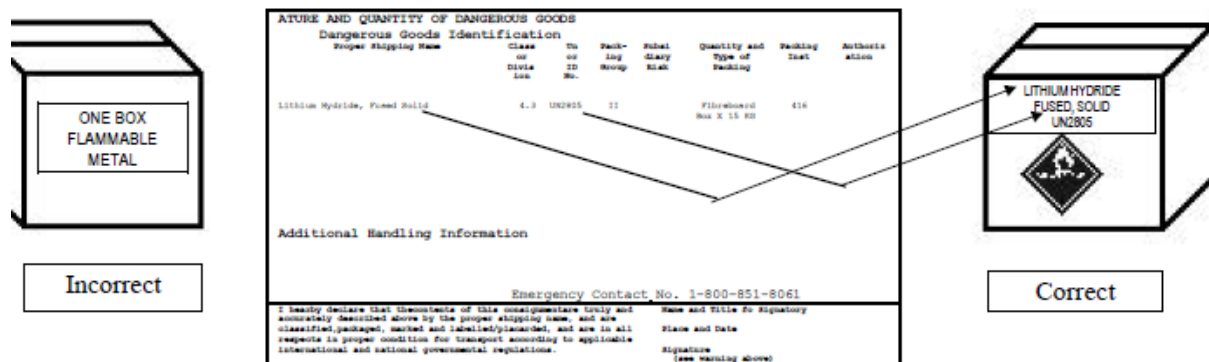
GENERAL REQUIREMENTS (Section 172.301 and MIL-STD-129)

- * PSN
- * Identification Number
- * Technical names (in parentheses) for materials described by certain generic or n.o.s. descriptions.
- * Consignee's or Consignor's name and address (section 172.301)

Note:

The name and address is not required when the package is:

- (1) Transported by highway only and will not be transferred from one motor carrier to another; or
- (2) Part of a carload lot, truckload lot or freight container load, and the entire contents of the rail car, truck, or freight container are shipped from one consignor to one consignee.



- * Compare PSN and identification number on the shipping paper to markings on the package .

SPECIFIC REQUIREMENTS

- * Liquid hazardous material (section 172.312) requires that each non-bulk combination packaging having inner packagings containing liquid hazardous materials be legibly marked with orientation arrows on at least two opposite verticle sides.
- * Hazardous substances (section 172.324) shall have the name of the hazardous substance as part of the PSN if it is not included in the PSN. If shipping a reportable quantity, the letters "RQ" shall be marked on the package in association with the PSN.
- * ORM D (section 172.316) must be marked with the ORM-D designation within a rectangle on at least one side or end immediately following or below the PSN of the material.
- * DOT exemptions (section 172.301) shall be marked with "DOT-E" followed by the assigned exemption number.
- * Poisonous hazardous materials (section 172.313) that are poisonous by inhalation will be marked "Inhalation Hazard" in association with the required labels or placards.

ADDITIONAL LABELING REQUIREMENTS

- * "Cargo Aircraft Only" -- Required for packages authorized for transport aboard cargo carrying aircraft only.
- * Mixed Packaging -- A label must be displayed for each class of material when different hazardous classes are packed in the same packaging.
- * Consolidated Packaging -- An overpack that contains two or more classes of hazardous materials must be labeled for each class of hazardous materials in the overpack.
- * Examples of DOT warning labels are shown in Chapter 2.

Packaging Codes

Interpreting Markings §§178.502 and 178.503

United Nations Symbol: For embossing metal receptacles, the letters UN may be applied in place of the symbol.

Packaging Code: Designates the type of packaging and material of construction. A letter "W" designates associate administrator approval. A letter "V" designates special "variation" packaging.

Performance Level: Identifies the performance standard for successful testing of the packaging.

- X - For packagings meeting **Packing Group I, II and III tests.**
- Y - For packagings meeting **Packing Group II and III tests.**
- Z - For packagings meeting **Packing Group III tests.**

Specific Gravity: Specific gravity for which the packaging design type has been tested. If the specific gravity does not exceed 1.2, the designation may be omitted.

Gross Mass: Packaging type tested for maximum gross mass in kilograms.

S: Designates that the packaging is intended to contain solids or inner packagings.

Hydrostatic Test Pressure: Internal Hydrostatic Test Pressure in Kilopascals. This test is not required for inner packaging of combination packaging.

Year of Manufacture: Last two digits of year of manufacture. Plastic drums and jerricans (1H and 3H) must be marked with the month of manufacture. The month marking may be located elsewhere on the package.

Country of Authorization: Country designation code indicates where the package is manufactured and marked.

Manufacturer Identification: Name and address or authorized symbol of packaging manufacturer or certifying agency.

Minimum Thickness: For metal or plastic drums, jerricans or the outer packaging of composite packaging intended for reuse or reconditioning.

R: Reconditioned packaging.

L: Reconditioned packaging having successfully passed a leakproofness test. This test is not required for inner packaging of combination packaging.

Note: Additional marking requirements for Reconditioned packaging are found in §178.503.

Additional Requirements for Intermediate Bulk Containers (IBC)

Month and Year: For IBCs, the month and year of manufacture.

Stacking Test Load: For IBCs, the stacked test load in kilograms. A number "0" shows that the IBC is not designed for stacking.

Note: Standards and codes for IBCs are found in §178.702 - 178.710

Required Tests for Non-Bulk Packaging

Drop Test (§178.603) All packaging design types.

Leakproofness Test (§178.604) All packaging design types intended for liquids.

Hydrostatic Test (§178.605) All metal, plastic, and composite design types intended to contain liquids.

Stacking Test (§178.606) All packaging design types other than bags.

Cooperage Test (§178.607) All bung-type wooden barrels.

Vibration Test (§178.608) All packaging design types.

Infectious Substances See §178.609 for test requirements for packagings for infectious substances.

Pressure Differential (§173.27) Packagings intended for air transport.

Packaging Codes

Non-Bulk Packaging Codes

§§178.504 - 178.521

1A1 Steel drum, non-removable head	4A Steel box
1A2 Steel drum, removable head	4B Aluminum box
1B1 Aluminum drum, non-removable head	4C1 Wood box, ordinary
1B2 Aluminum drum, removable head	4C2 Wood box, silt-proof walls
1D Plywood drum	4D Plywood box
1G Fiber drum	4F Reconstituted wood box
1H1 Plastic drum, non-removable head	4G Fiberboard box
1H2 Plastic drum, removable head	4H1 Plastic box, expanded
1N1 Metal drum, non-removable head	4H2 Plastic box, solid
1N2 Metal drum, removable head	5H1 Woven plastic bag, unlined or non-coated
2C1 Wooden barrel, bung type	5H2 Woven plastic bag, silt-proof
2C2 Wooden barrel, slack type, removable head	5H3 Woven plastic bag, water-resistant
3A1 Steel jerrican, non-removable head	5H4 Plastic film bag
3A2 Steel jerrican, removable head	5L1 Textile bag, unlined or non-coated
3B1 Aluminum jerrican, non-removable head	5L2 Textile bag, silt-proof
3B2 Aluminum jerrican, removable head	5L3 Textile bag, water-resistant
3H1 Plastic jerrican, non-removable head	5M1 Paper bag, multi-wall
3H2 Plastic jerrican, removable head	5M2 Paper bag, multi-wall water-resistant

§§178.522 and 178.523

6HA1 Plastic receptacle within a protective steel drum
6HA2 Plastic receptacle within a protective steel crate or box
6HB1 Plastic receptacle within a protective aluminum drum
6HB2 Plastic receptacle within a protective aluminum crate or box
6HC Plastic receptacle within a protective wooden box
6HD1 Plastic receptacle within a protective plywood drum
6HD2 Plastic receptacle within a protective plywood box
6HG1 Plastic receptacle within a protective fiber drum
6HG2 Plastic receptacle within a protective fiberboard box
6HH1 Plastic receptacle within a protective plastic drum
6HH2 Plastic receptacle within a protective plastic box
6PA1 Glass, porcelain, or stoneware receptacles within a protective steel drum
6PA2 Glass, porcelain, or stoneware receptacles within a protective steel crate or box
6PB1 Glass, porcelain, or stoneware receptacles within a protective aluminum drum
6PB2 Glass, porcelain, or stoneware receptacles within a protective aluminum crate or box
6PC Glass, porcelain, or stoneware receptacles within a protective wooden box
6PD1 Glass, porcelain, or stoneware receptacles within a protective plywood drum
6PD2 Glass, porcelain, or stoneware receptacles within a protective wickerwork hamper
6PG1 Glass, porcelain, or stoneware receptacles within a protective fiber drum
6PG2 Glass, porcelain, or stoneware receptacles within a protective fiberboard box
6PH1 Glass, porcelain, or stoneware receptacles within a protective expanded plastic packaging
6PH2 Glass, porcelain, or stoneware receptacles within a protective solid plastic packaging

Combination Packaging

United Nations Symbol: (un)
 Packaging Code: 4GV/X
 Performance Level: 20
 Gross Mass in Kilograms: S
 Solids: /
 Year of Manufacture: 05
 Country of Authorization: USA
 Manufacturer Identification: 0000

Single, Combination, or Composite Packaging - Solids

United Nations Symbol: (un)
 Packaging Code: 1A2/Z
 Performance Level: 40
 Gross Mass in Kilograms: S
 Solids: /
 Year of Manufacture: 05
 Country of Authorization: USA
 Manufacturer Identification: 0000

Single or Composite Packaging - Liquids

United Nations Symbol: (un)
 Packaging Code: 1A1/Z
 Performance Level: 1.4
 Specific Gravity: /
 Hydrostatic Test Pressure: 150
 Year of Manufacture: 05
 Country of Authorization: USA
 Manufacturer Identification: 0000

Intermediate Bulk Containers (IBC)

United Nations Symbol: (un)
 Packaging Code: 31HA1/Y
 Performance Level: /
 Month of Manufacture: 04
 Year of Manufacture: 03
 Country of Authorization: USA
 Manufacturer Identification: 0000
 Stack Test Load: 2400
 Gross Mass in Kilograms: 800

APPENDIX F

BLOCKING AND BRACING OF HAZARDOUS MATERIALS FOR TRANSPORTATION

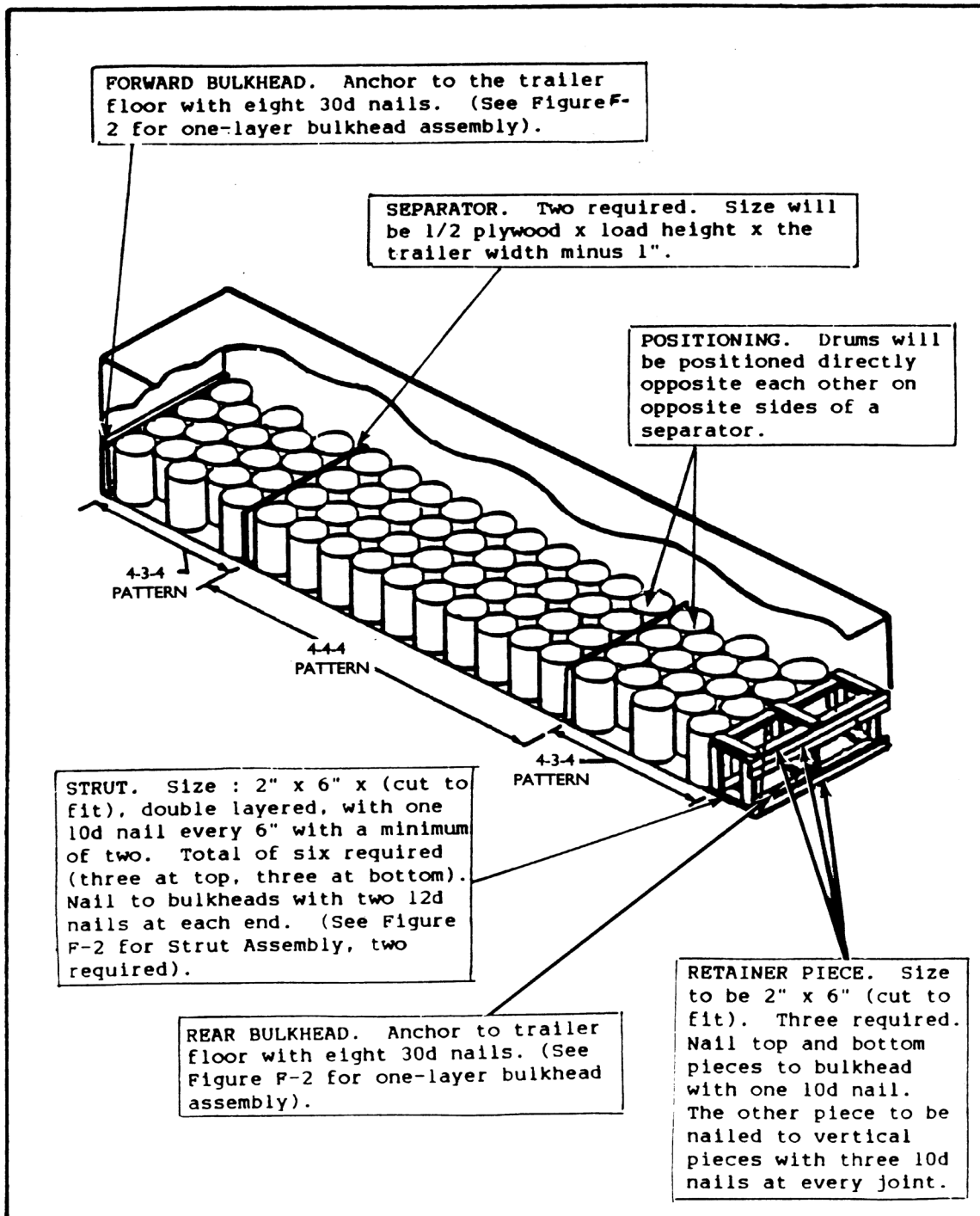


Figure F-1. Typical Load of Hazardous Materials in 55-Gallon Closed-Head Steel Drums in a 40-foot Trailer/Container

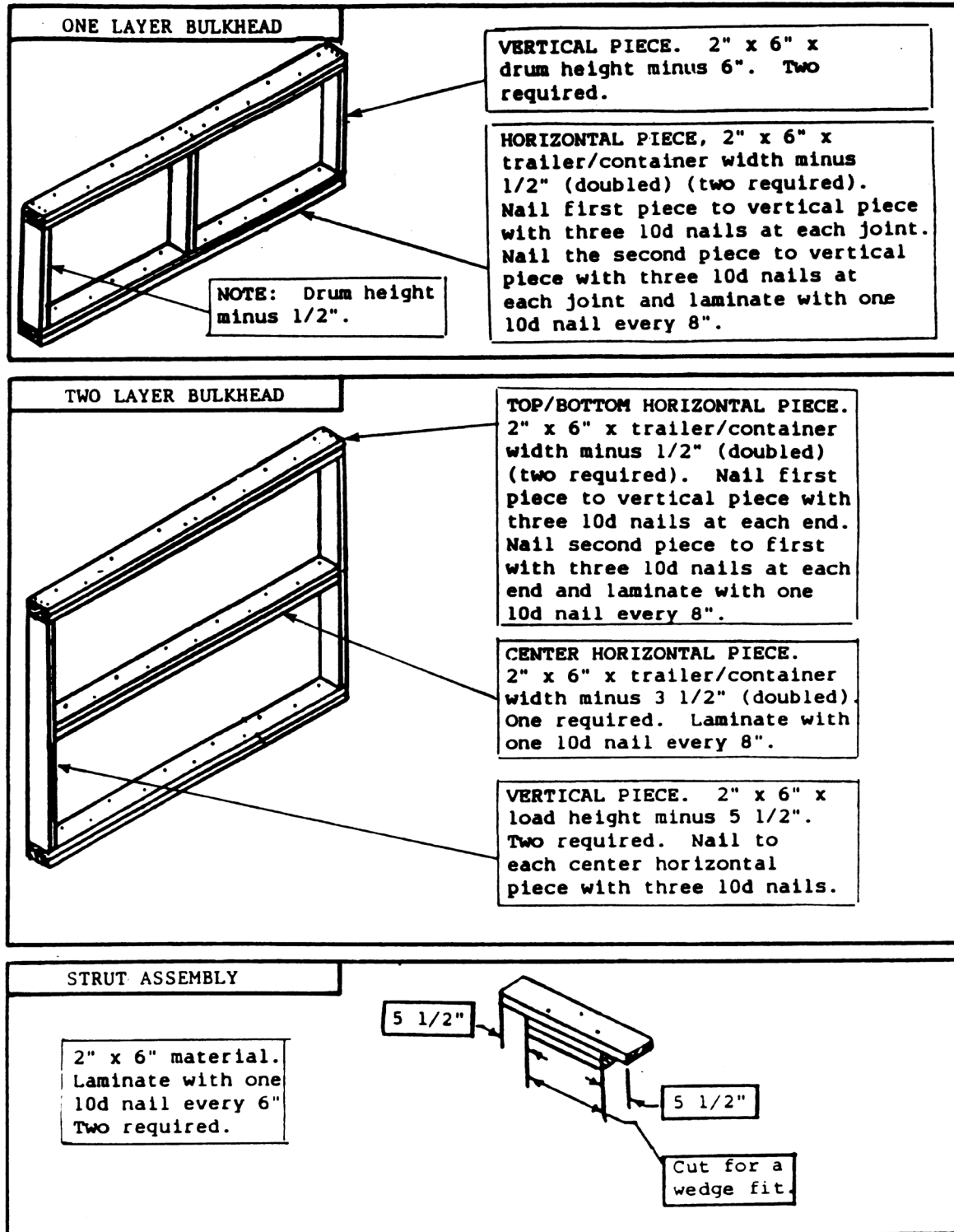


Figure F-2. Bulkhead and Strut Assembly

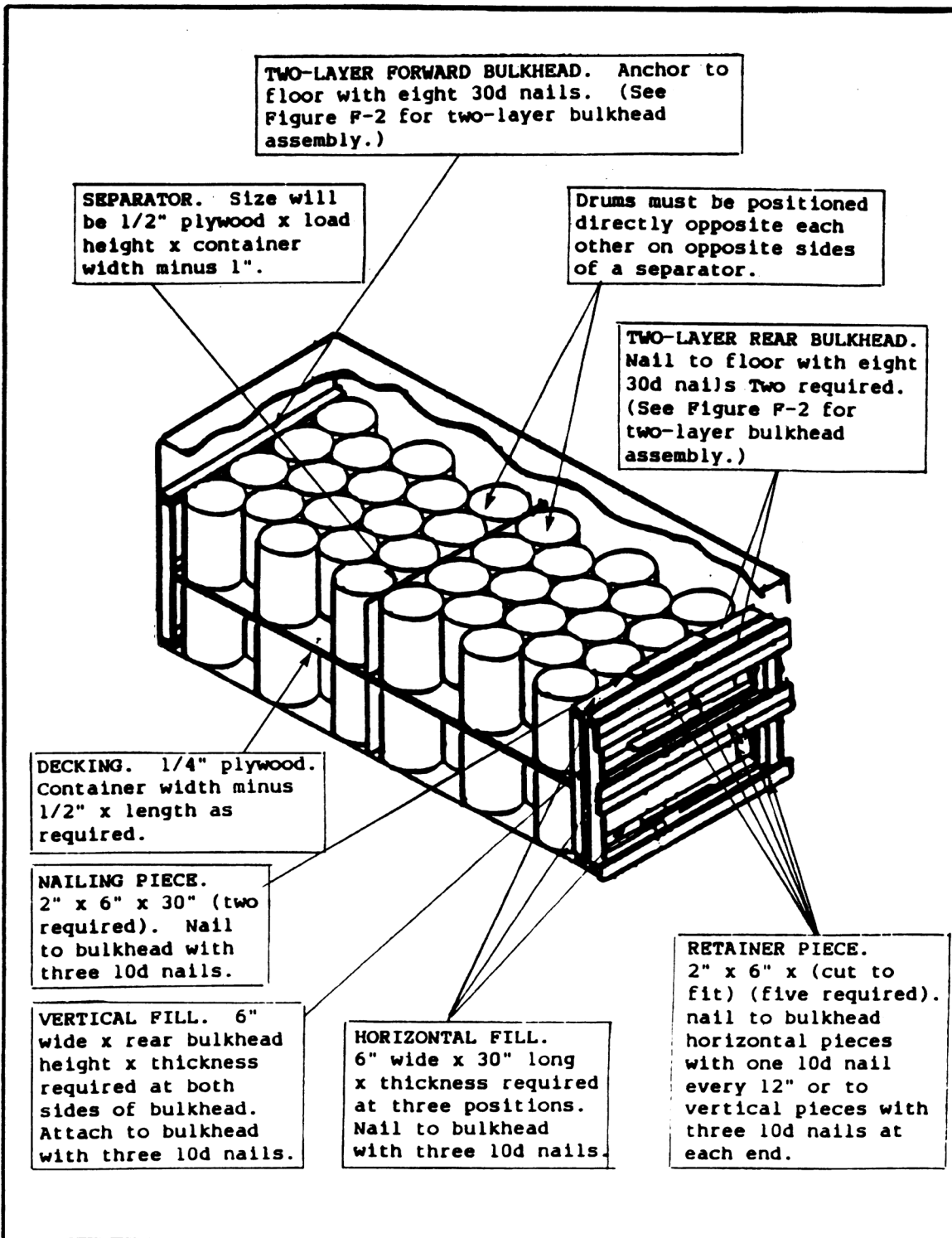


Figure F-3. Typical Load of Hazardous Materials in 55-Gallon Closed-Head Drums in a 20-foot Trailer/Container

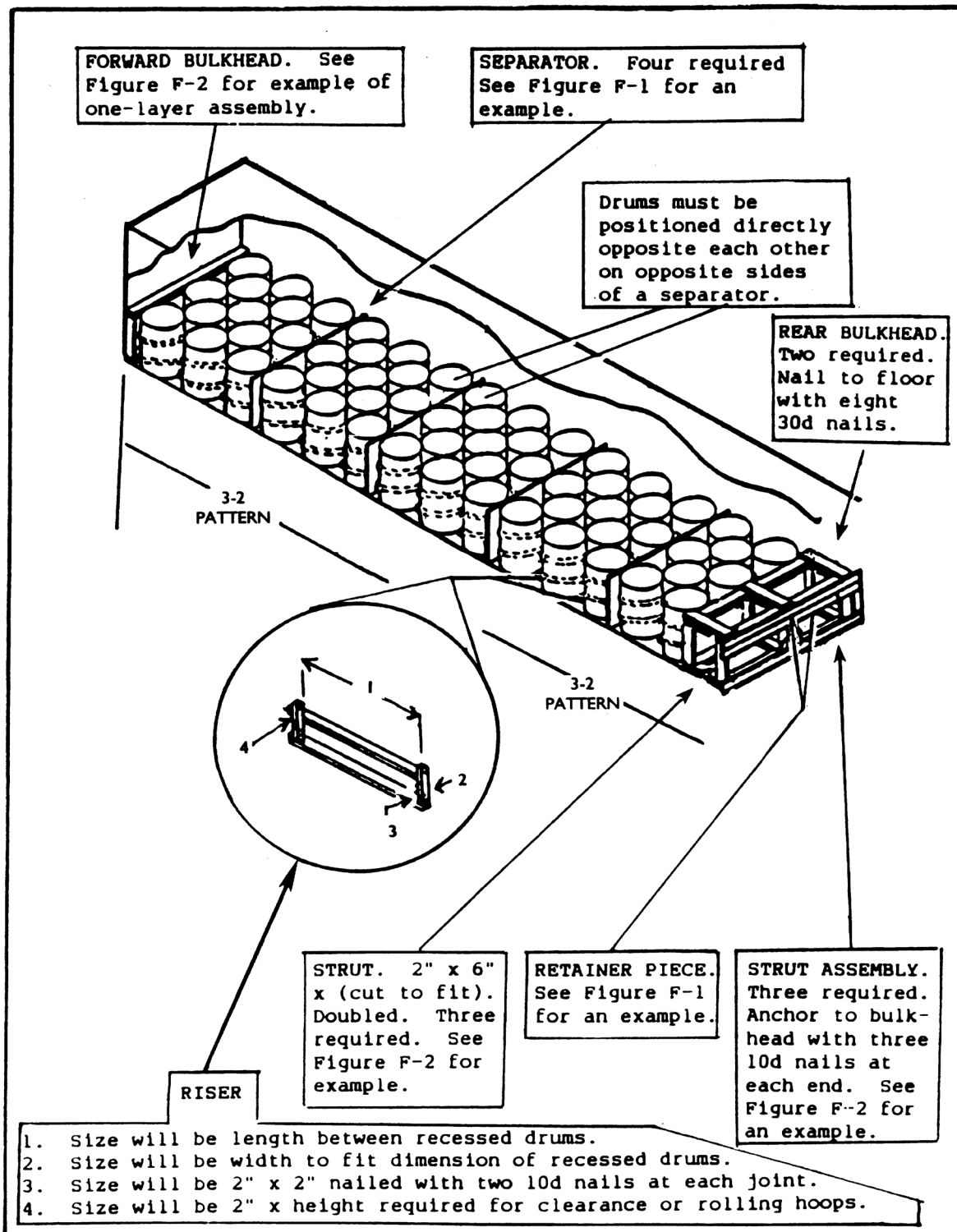


Figure F-4. Typical Load of Hazardous Materials in 55-Gallon Open-Head Steel Drums in a 40-foot Trailer/Container

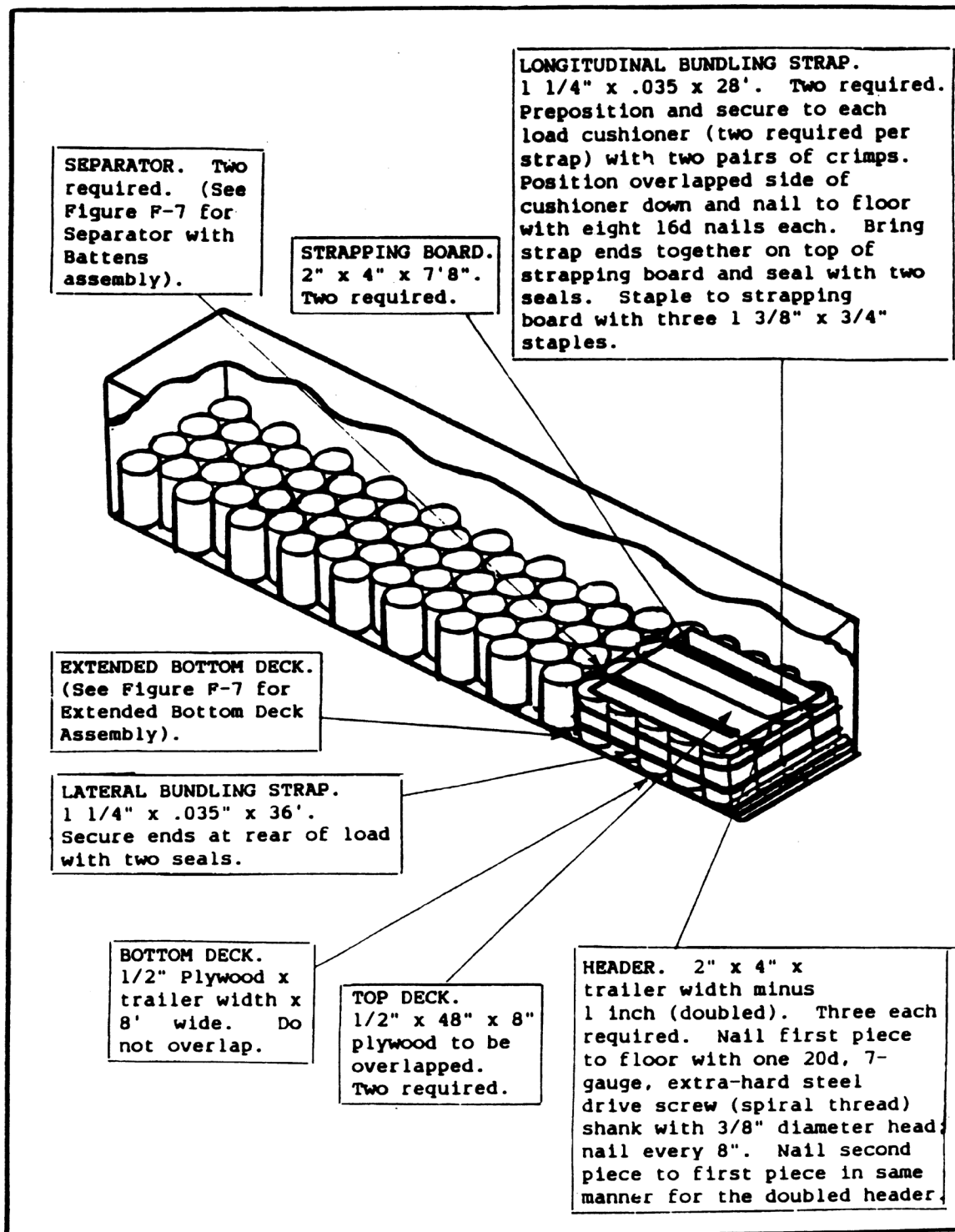


Figure F-5. Typical Load of Hazardous Materials in 55-Gallon Closed-Head Drums Braced with a Unitized Rear Bay in 40-foot Trailer/Container

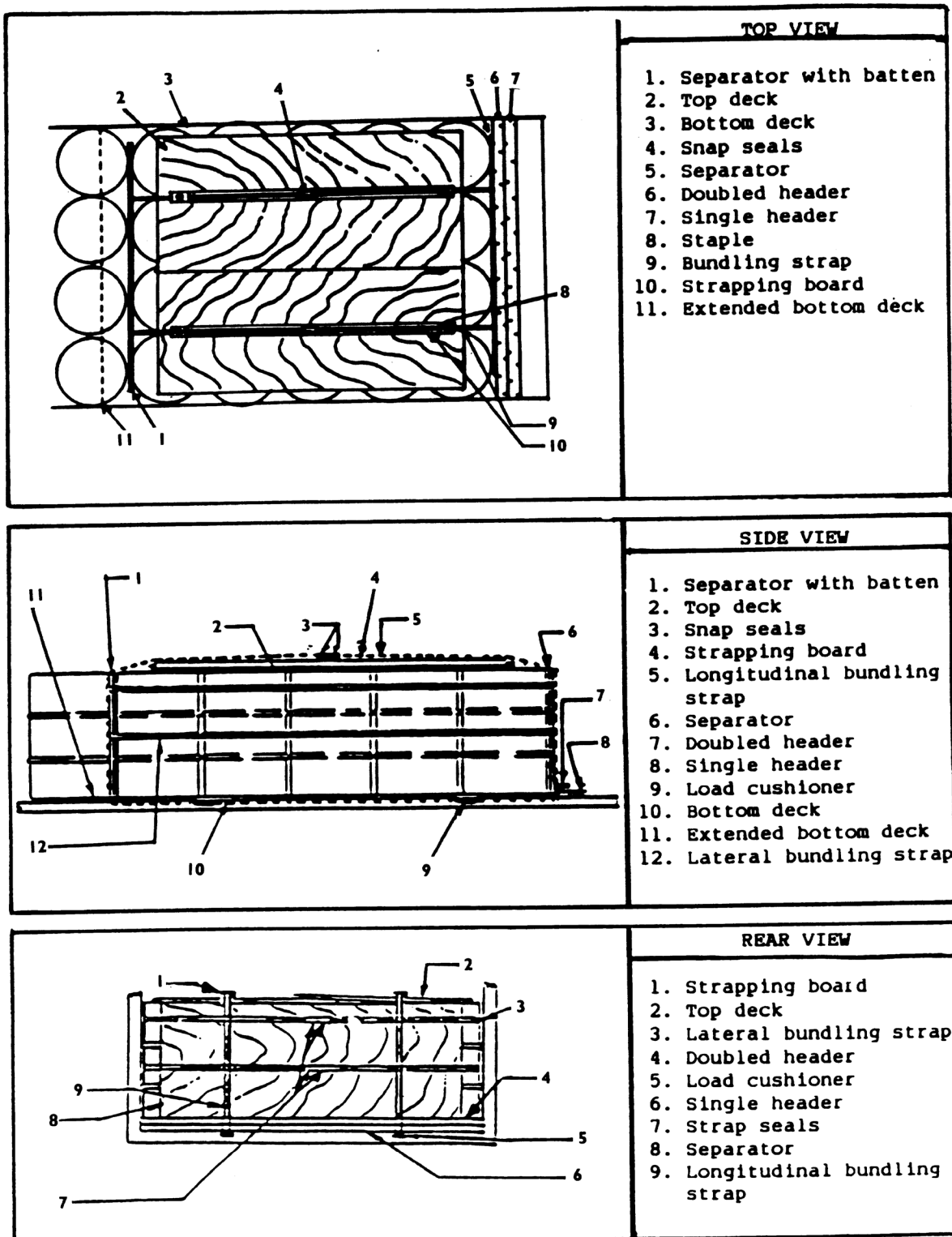


Figure F-6. Unitized Rear Bay Brace

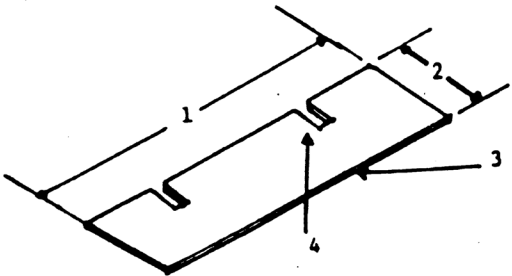
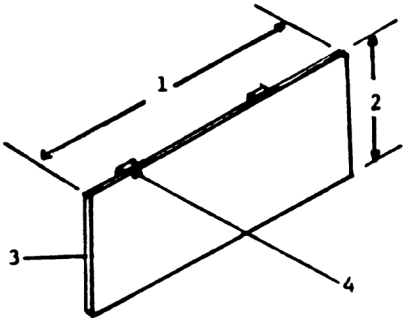
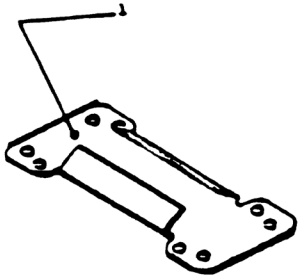

	<p style="text-align: center;">EXTENDED BOTTOM DECK</p> <ol style="list-style-type: none"> 1. Size: width of trailer of container minus 1/2" 2. Width will be that required to accommodate the load 3. Thickness of plywood to be 1/2" 4. Deck will be notched to provide for strap clearance
	<p style="text-align: center;">SEPARATOR WITH BATTENS</p> <ol style="list-style-type: none"> 1. Size: 6' 10" 2. Height will be that of the load 3. Size of vertical piece will be 1" x 4" x height of drum 4. Bearing piece will be 1/2" plywood, 6' 10" long x drum height in width. One required. Nail to vertical piece with one 6d nail every 8" and clinch
	<p style="text-align: center;">LOAD CUSHIONER</p> <ol style="list-style-type: none"> 1. Install with the side show in a downward position
	<p style="text-align: center;">"TOLE BARN" NAIL</p> <p>Size: 20d, 4" long, 7 gauge extra-hard steel, drive screw (spiral thread) shank; with 3/8" diameter</p>

Figure F-7. Extended Bottom Deck Assembly

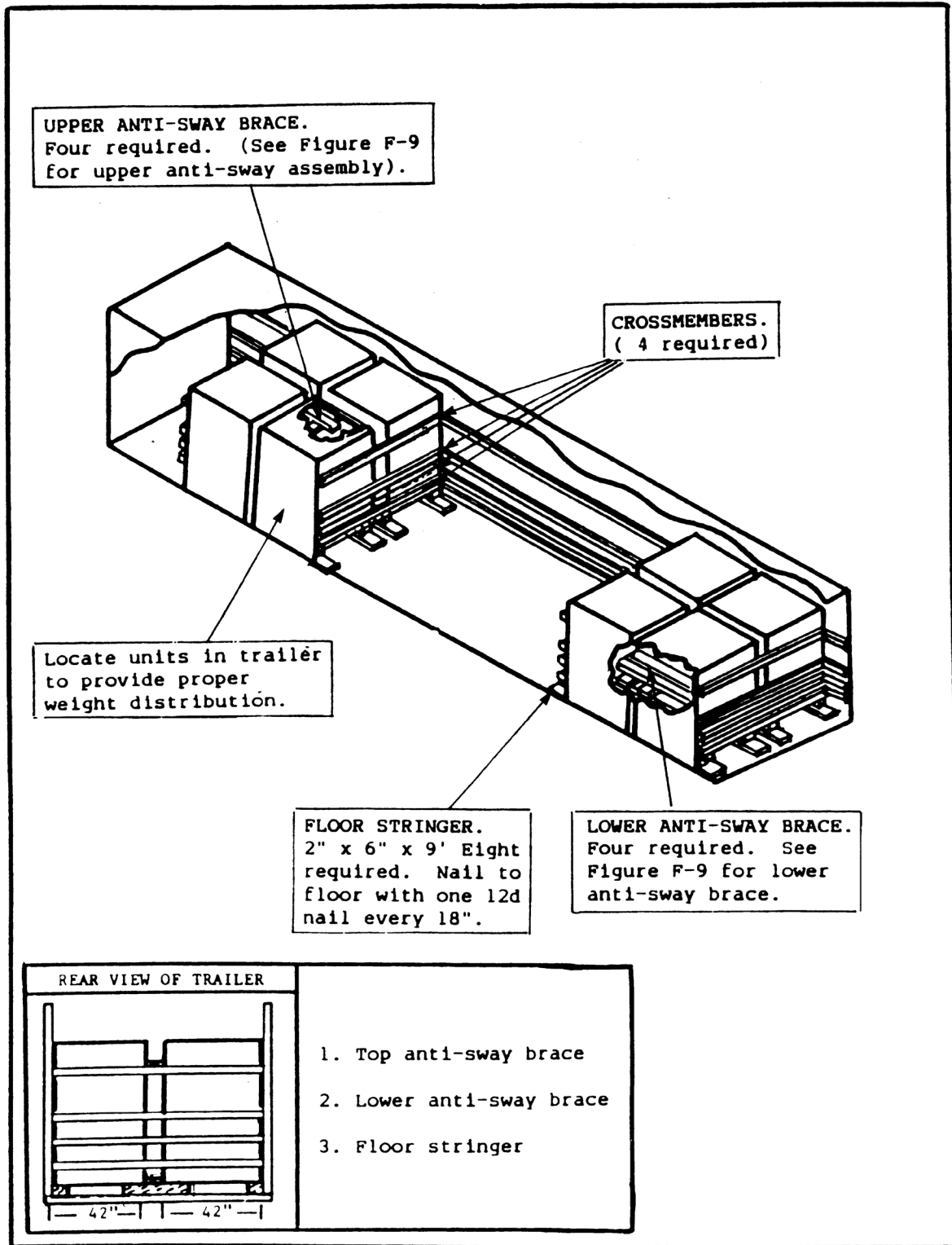


Figure F-8. Typical Load of Hazardous Materials in DOT Specification Portable Tanks in 40-foot Trailer/Container

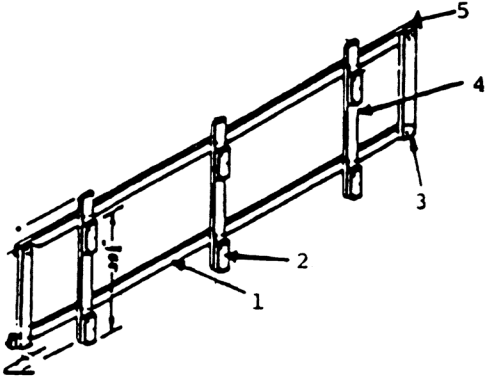
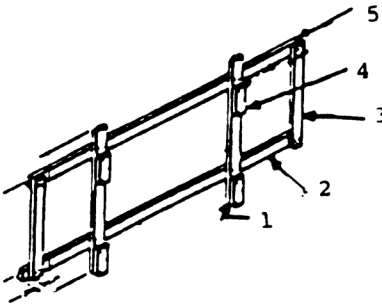
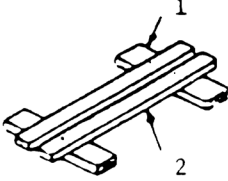
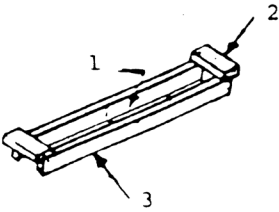
<p style="text-align: center;">SIDE BLOCKING GATE "A"</p> 	<ol style="list-style-type: none"> 1. Bottom horizontal piece will be 2" x 12' 3". One required. 2. Strut ledger will be 2" x 4" x 9". Six required. Nail to vertical piece with three 10d nails. 3. Stop piece will be 2" x 4" 2 33 1/2". Two required. Nail to horizontal piece with three 10d nails at each end. 4. Vertical piece will be 2" x 4" 2 x 48". Three required. Nail to the horizontal pieces with three 10d nails at each joint. 5. Top horizontal piece will be 2" x 4" x 12' 6". One required.
<p style="text-align: center;">SIDE BLOCKING GATE "B"</p> 	<ol style="list-style-type: none"> 1. Vertical piece will be 2" x 4" x 48". Two required. Nail to horizontal piece with three 10d nails to each joint. 2. Bottom horizontal piece will be 2" x 4" x 8' 6". One required. 3. Stop piece will be 2" x 4" x 33 1/2". Two required. Nail to horizontal pieces with three 10d nails at each end. 4. Strut ledger will be 2" x 4" x 9". Four required. Nail to vertical pieces with three 10 d nails. 5. Top horizontal piece will be 2" x 4" x 8' 3". One required.
<p style="text-align: center;">LOWER ANTI-SWAY BRACE</p> 	<ol style="list-style-type: none"> 1. Size will be 2" x 6" x 24". Two required. 2. Size will be 2" x 4" x 45". Two required. Nail with four 10d nails at each joint.
<p style="text-align: center;">UPPER ANTI-SWAY BRACE</p> 	<ol style="list-style-type: none"> 1. Spacer piece will be 2" x 4" x (cut to fit). Three required. 2. Support piece will be 2" x 4" x (cut to fit). Two required. Nail with three 10d nails. 3. Bearing piece will be 2" x 4" x (cut to fit). Two required. Nail to spacer pieces with two 10d nails at each joint.

Figure F-9. Assembly of Side Blocking Gate and Antisway Brace

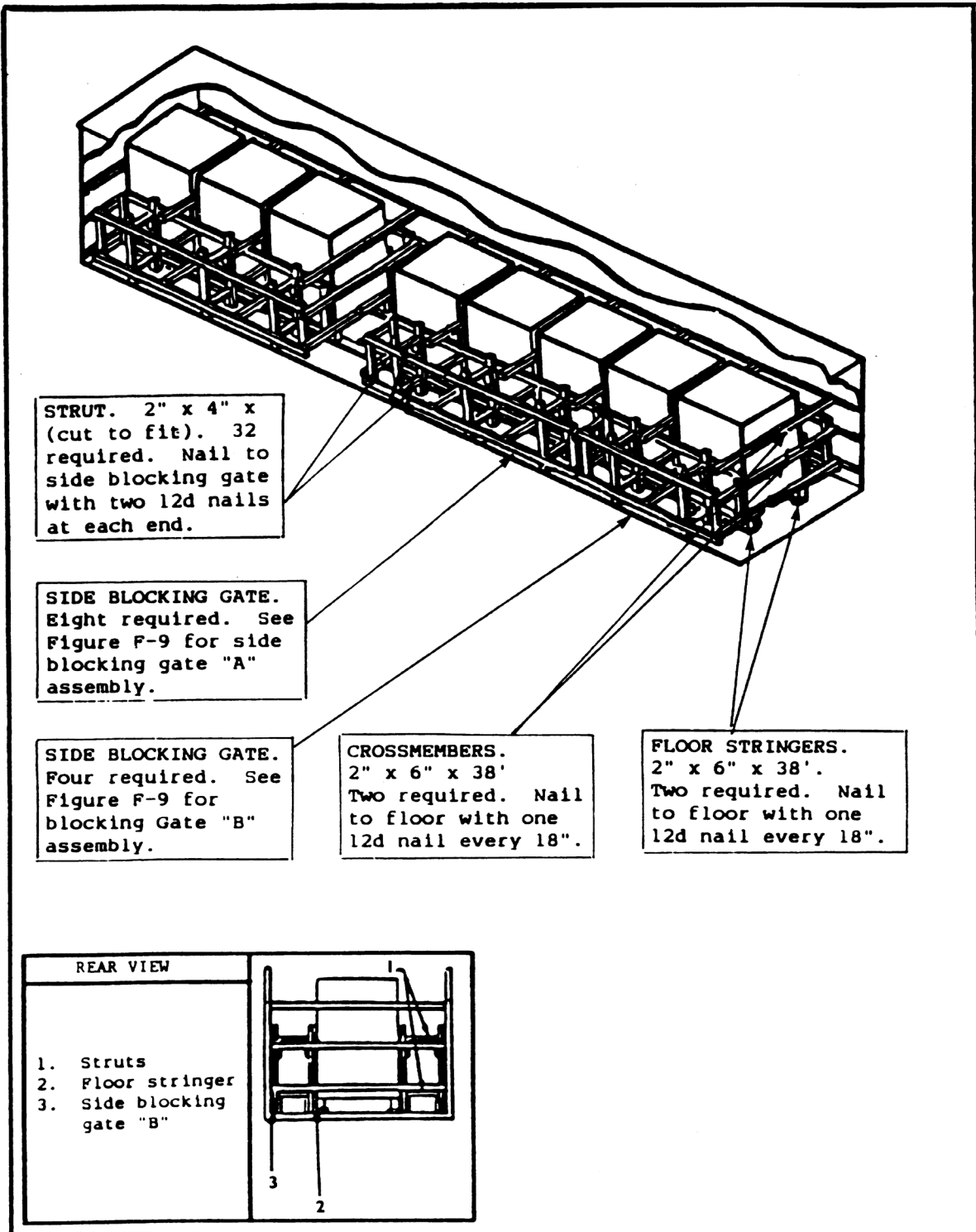


Figure F-10. Typical Load of Hazardous Materials in DOT Specification Portable Tanks in 40-foot Trailer/Container

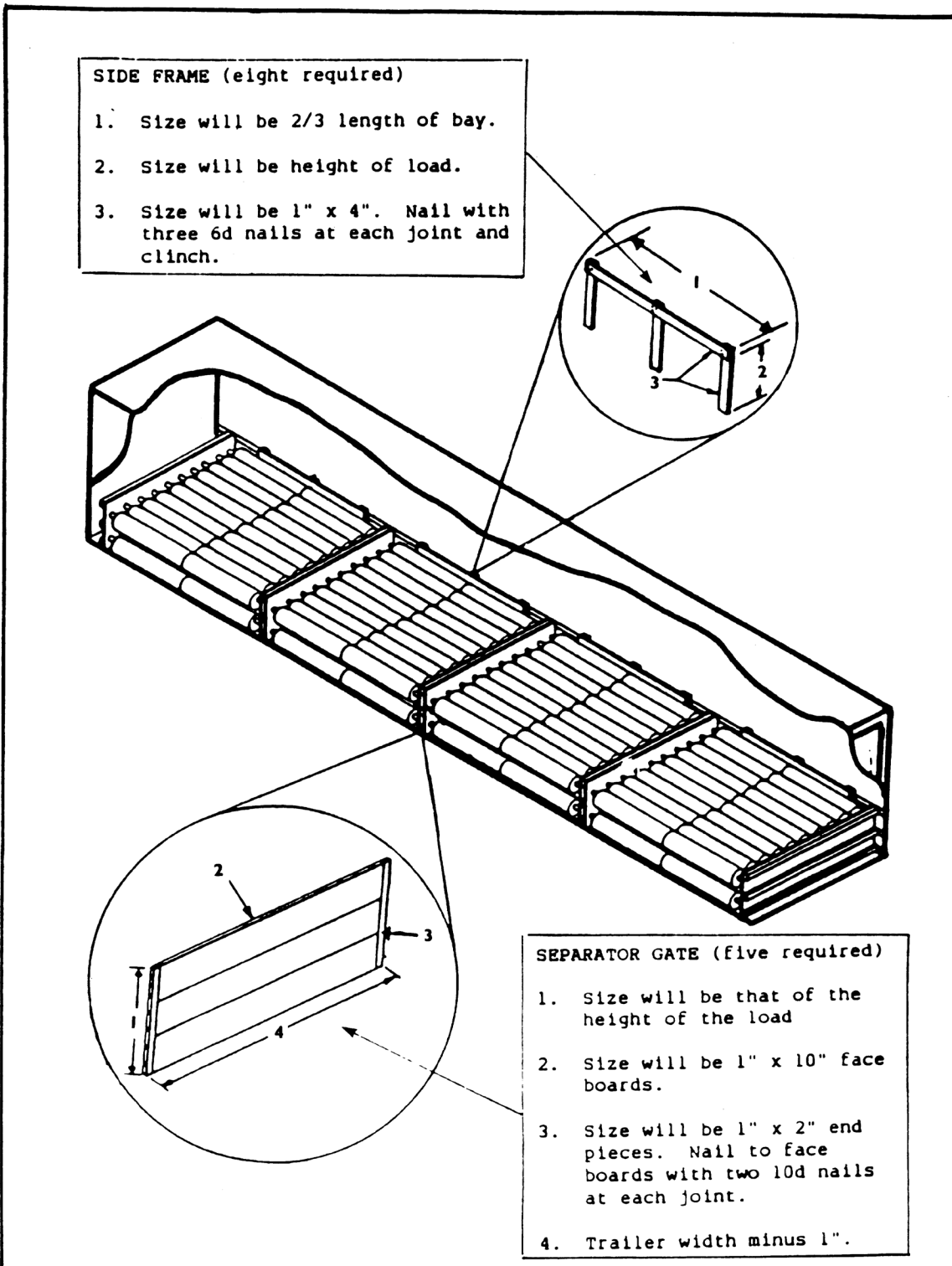


Figure F-11. Typical Load of Hazardous Materials in Compressed Gas Cylinders in a 40-foot Trailer/Container

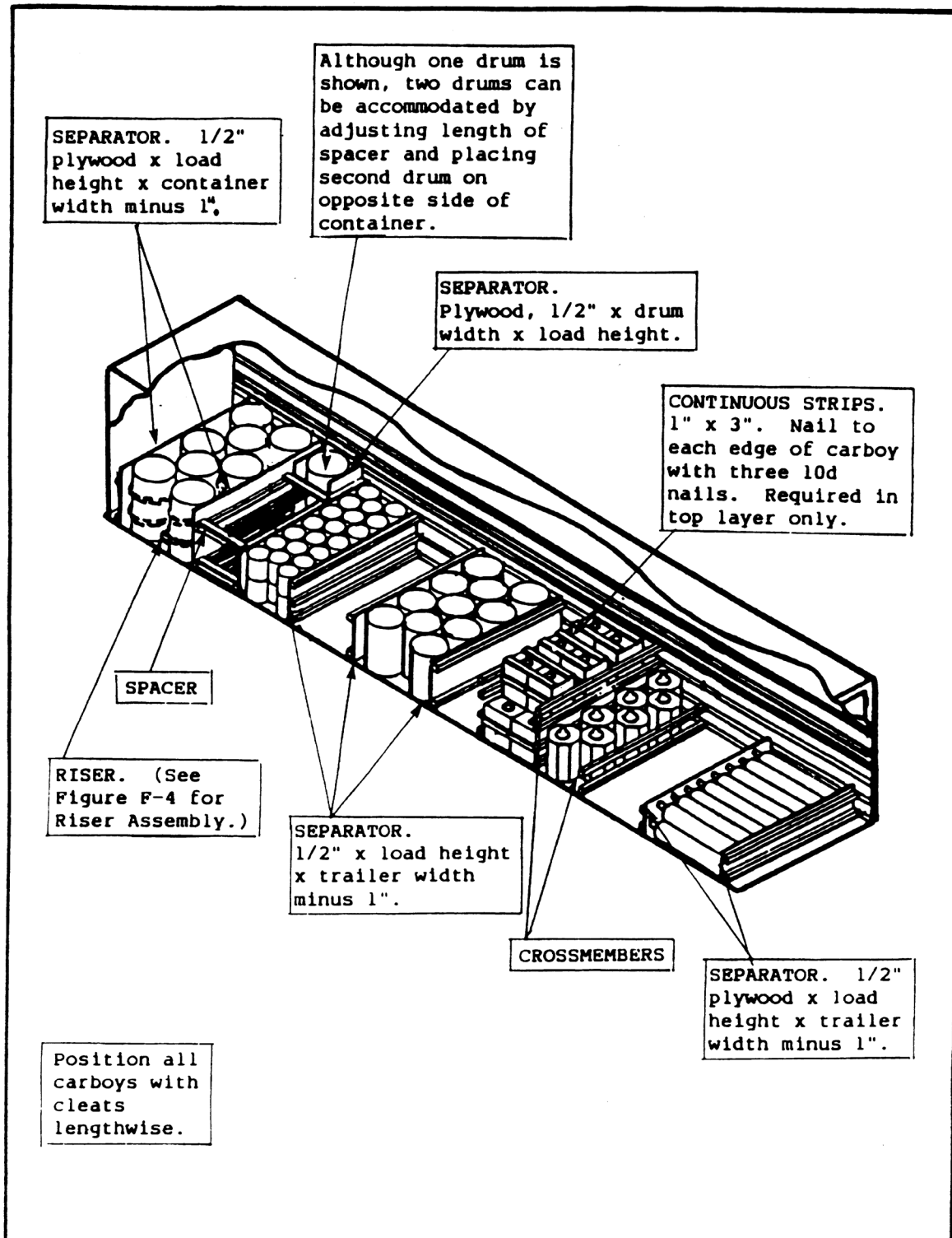


Figure F-12. Typical Mixed Load of Hazardous Materials in Various Containers in 40-foot Trailer/Container

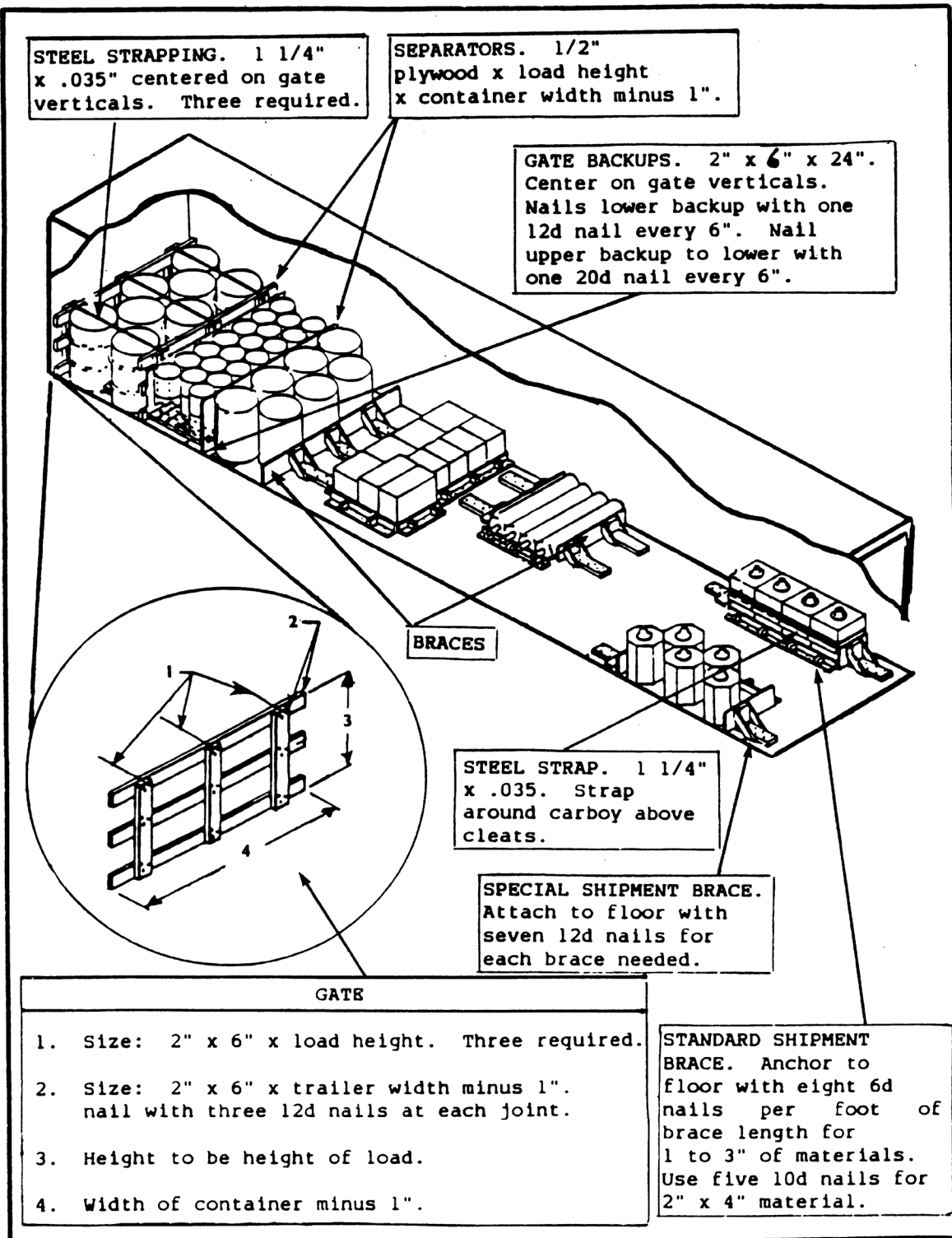


Figure F-13. Typical Mixed Load of Hazardous Materials in Various Containers in 40-foot Trailer/Container

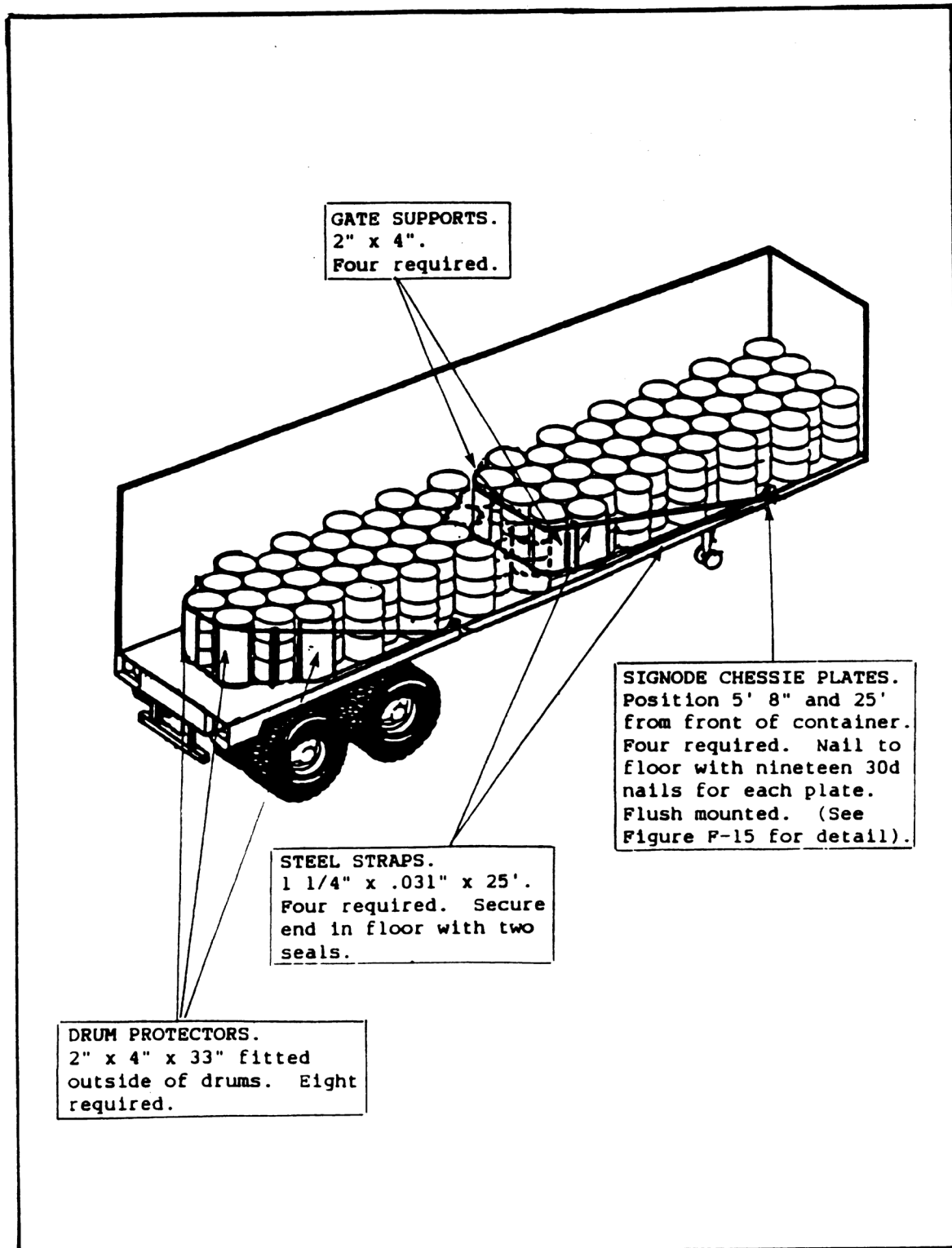


Figure F-14. Steel Strap Method with Signode Chessie Floor Plates in 40-foot Trailer

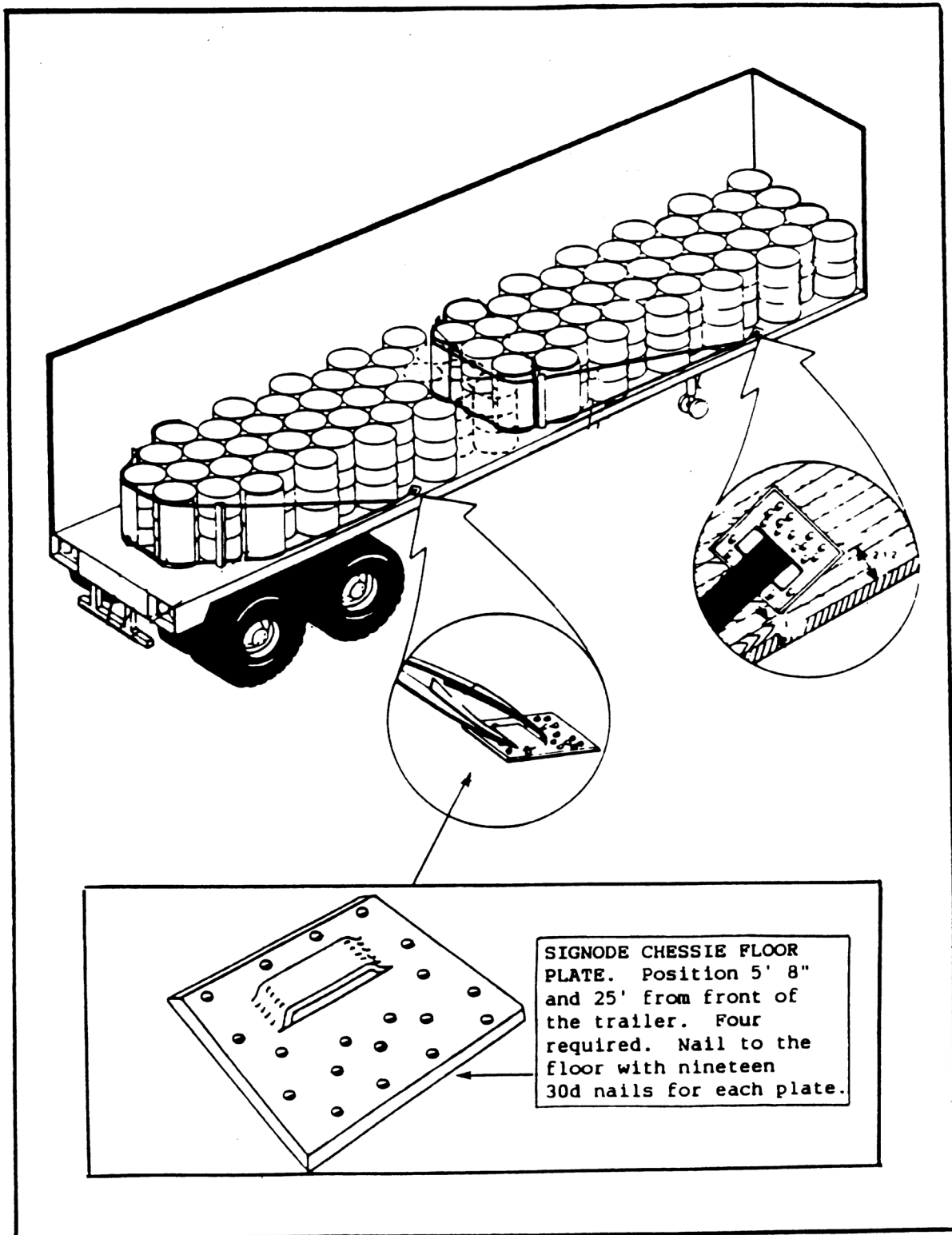


Figure F-15. Signode Chessie Floor Plate with Wall Anchor

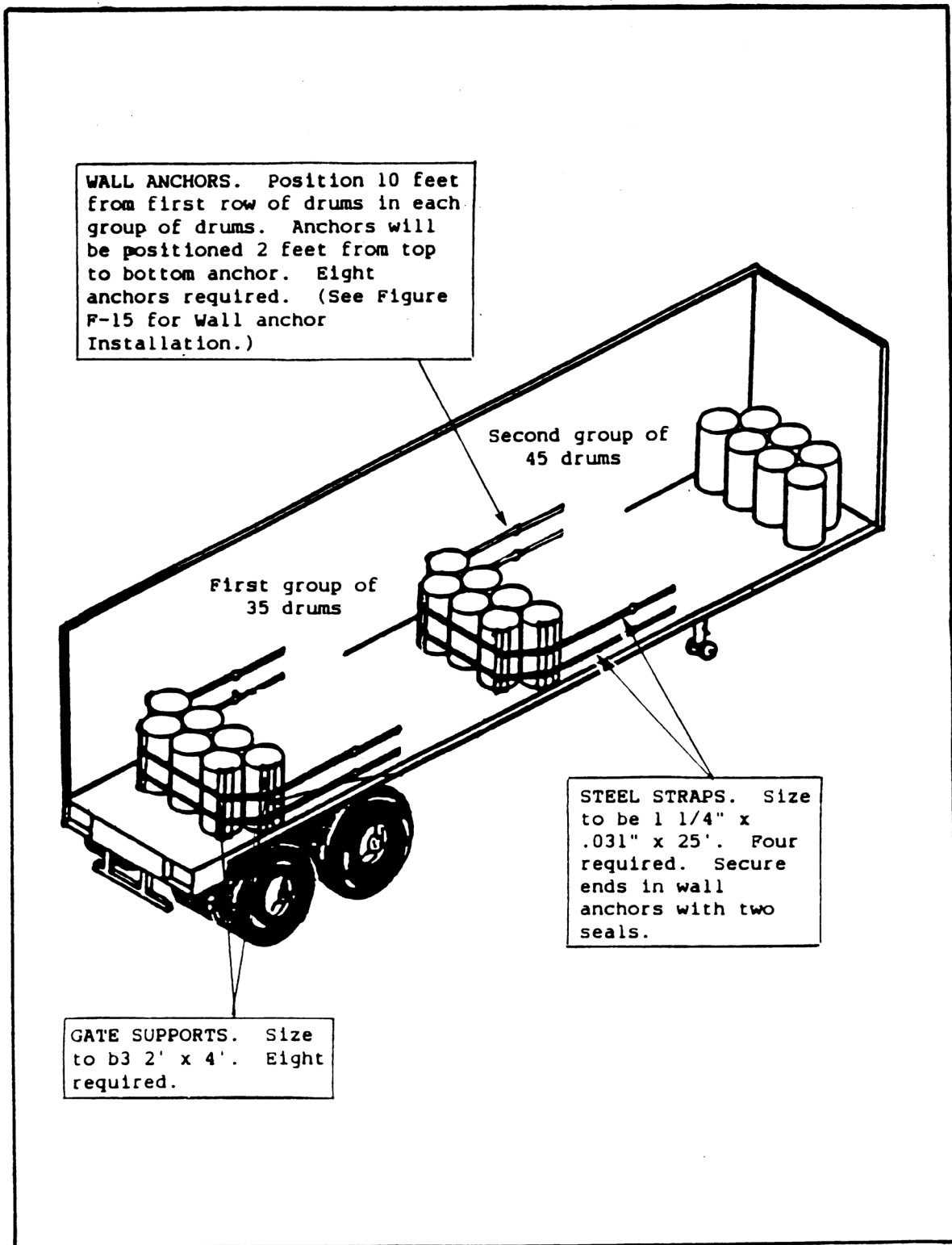


Figure F-16. Steel Strap Method with Wall Anchors in 40-foot Trailer

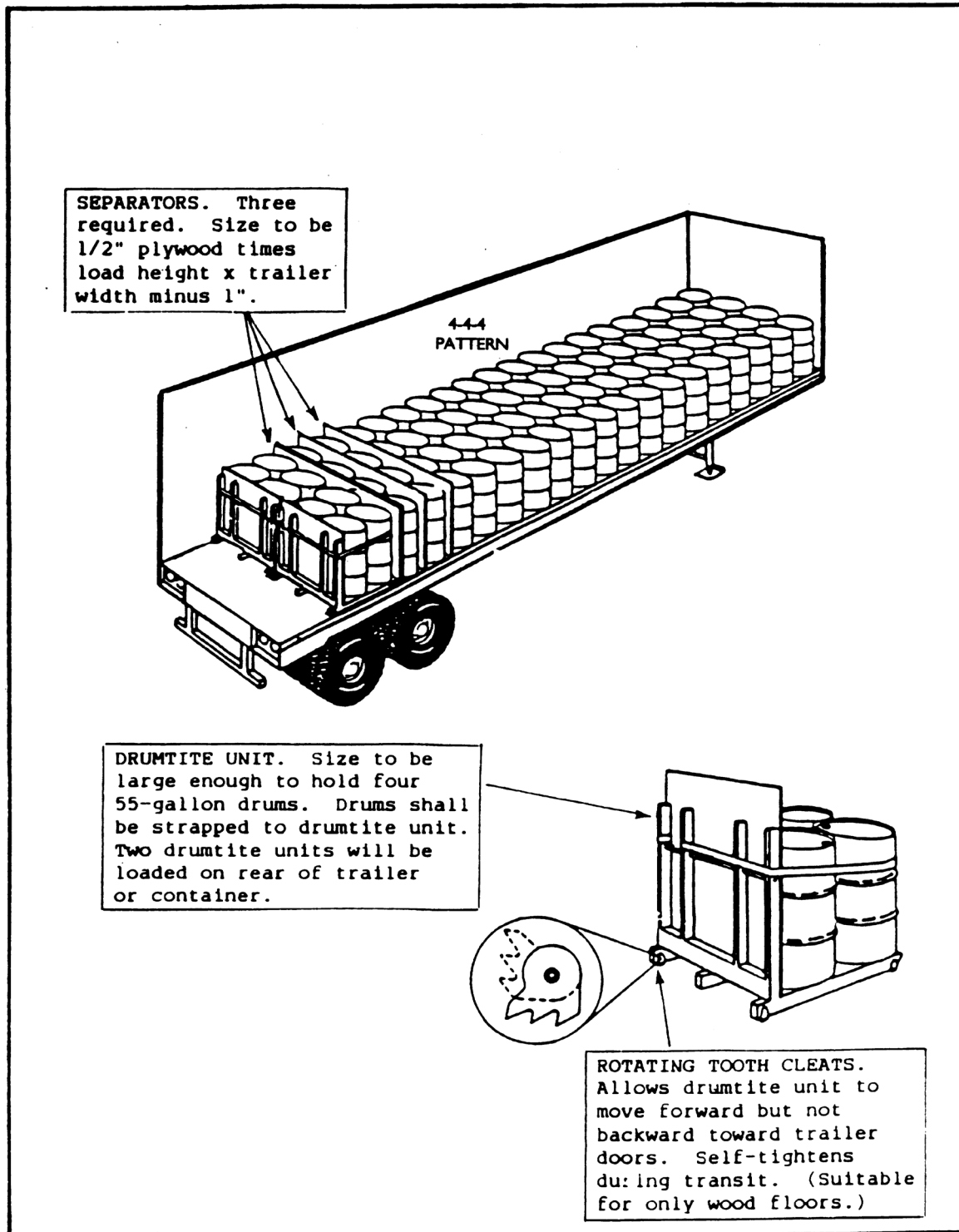


Figure F-17. Self-locking Skid Method Using Drumtite Units in 40-foot Trailer

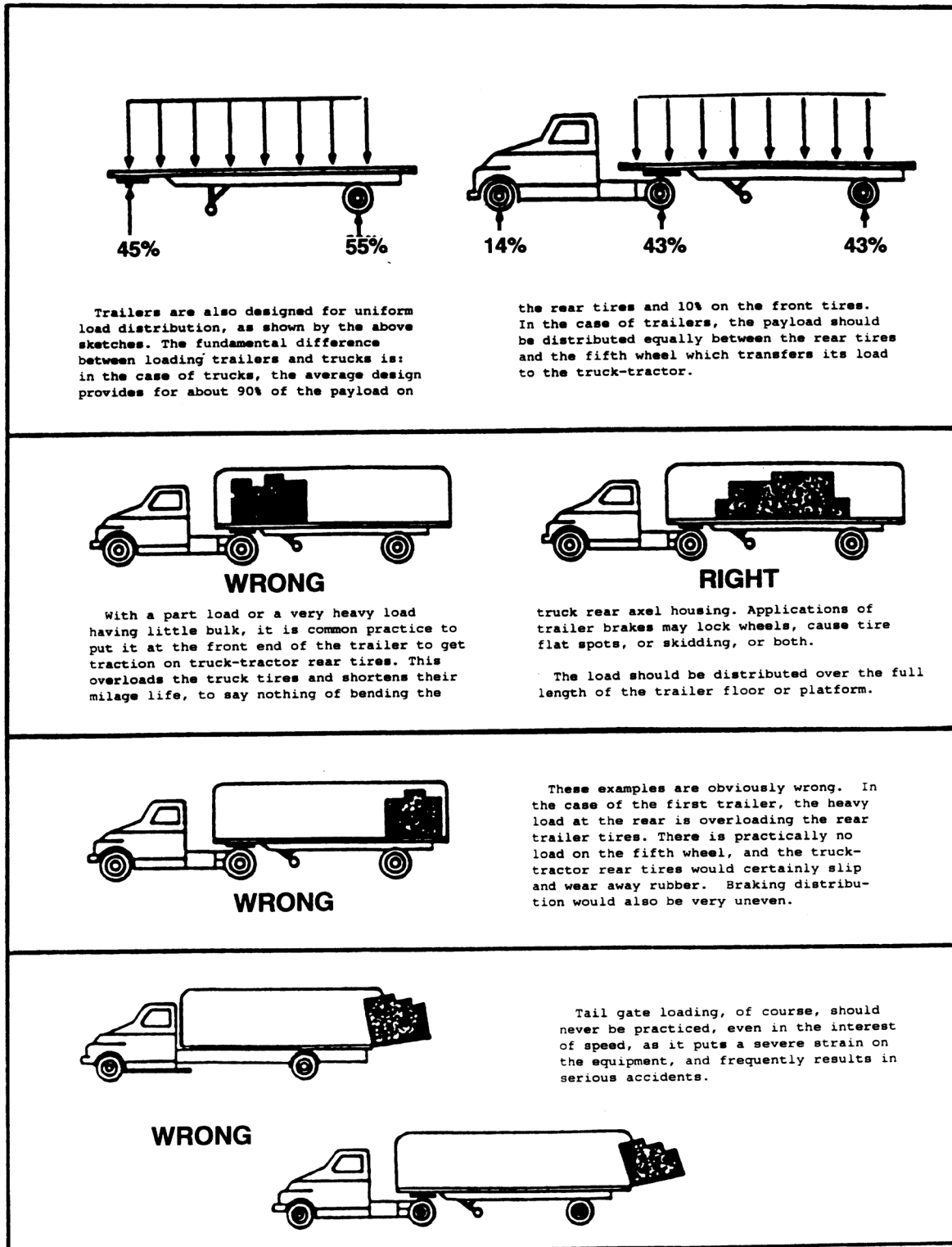


Figure F-18. Load Distribution

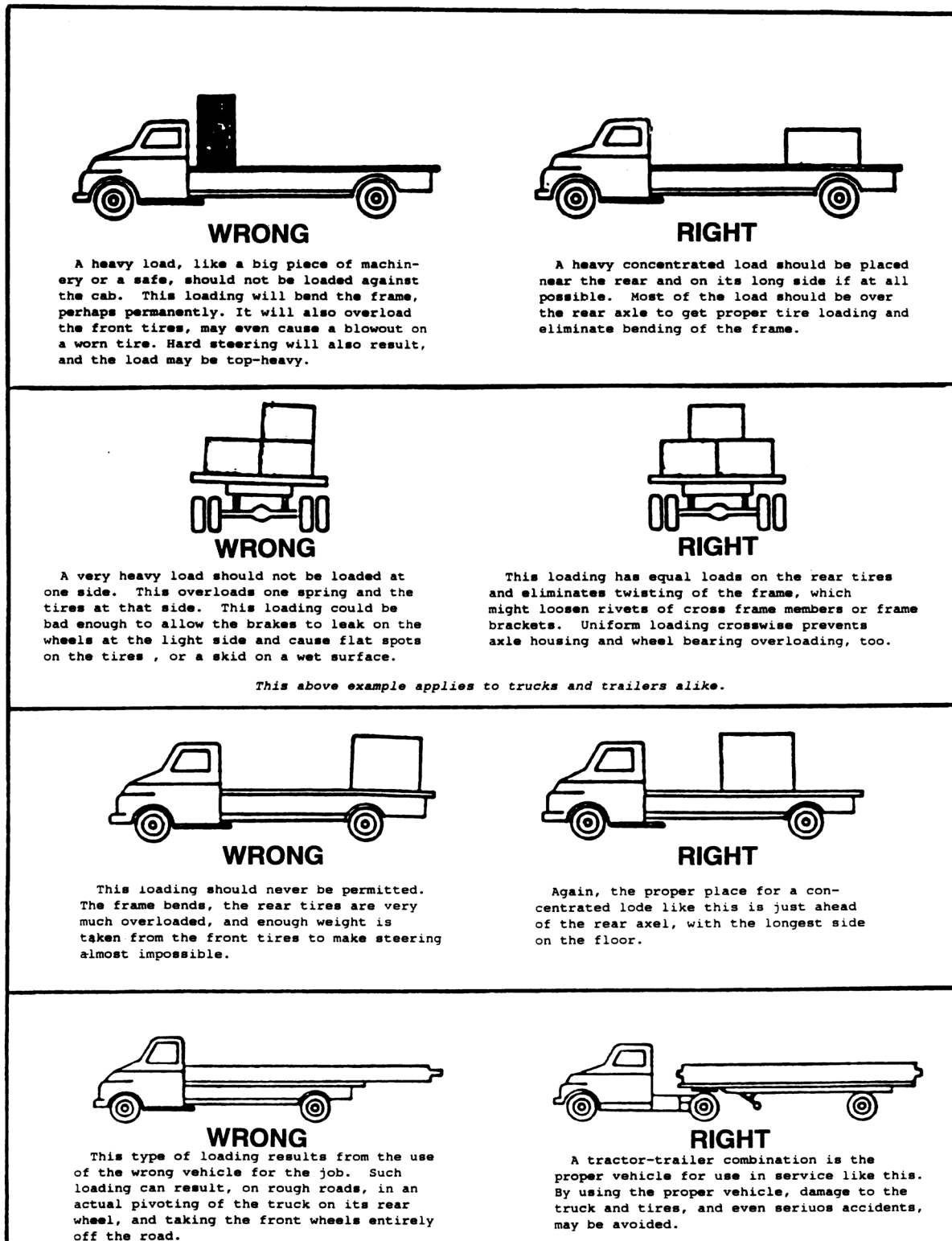
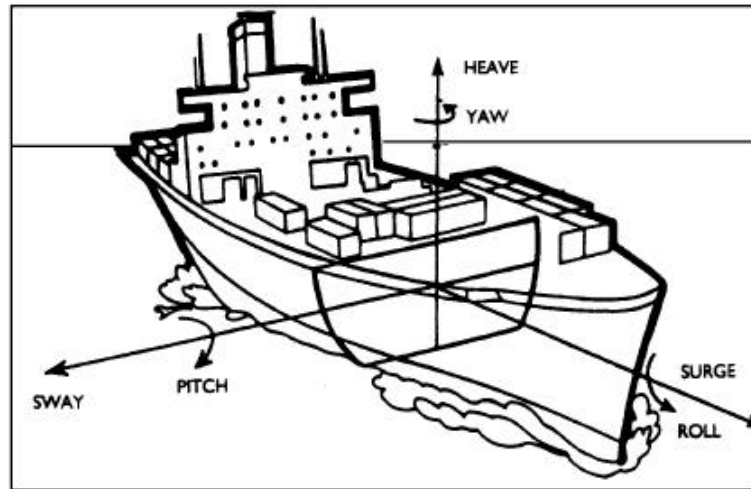
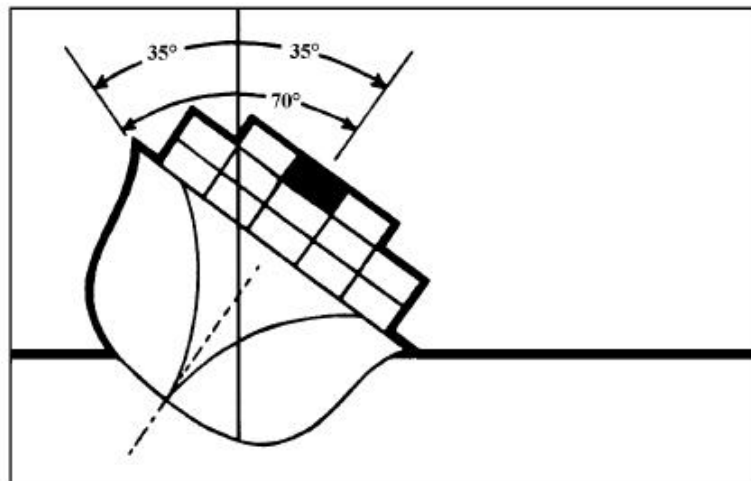


Figure F-18. Load Distribution, (Continued)



A ship at sea may move in six different directions.



This container may travel 70 degrees with each complete roll, as often as 7 to 10 times each minute.

Figure 6-1. Movement of a Ship at Sea

APPENDIX G: TRAINING REQUIREMENTS FOR HAZARDOUS MATERIALS
MANAGEMENT, SAMPLE TRAINING PLAN

1. General: Based on continually changing requirements of Hazardous Materials Training due to Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH) and Global Harmonization System (GHS), which affects Department of Transportation (DOT), Environmental Protection Agency (EPA), Occupational Safety Health Association (OSHA) and other Federal, State, Local and International entities. This section will only call out the regulations and subchapters for the aid in locating the most current requirements. The sources listed below are a basic guidance to a successful starting point for the training requirements of hazardous materials training. The internet offers several civilian organizations who offer a wide variety of the latest and most up-to-date Hazardous Materials training courses that may meet the requirements for your organization and its roles. Laws require companies that ship hazardous materials to ensure their shipping operations meet all applicable domestic and international standards. Additionally, hazmat training and documentation of training are mandatory for all hazmat employees who perform a pre-transportation function that affects the safe transport of hazardous materials.

2. DoD Agencies/Military Services: All applicable Federal, State, Local and International regulations apply to training requirements. In addition to these requirements, each service or organization may have their own training requirements for the various position/job individuals are performing. Check with your local training command for these requirements. The requirements will meet or exceed the Federal, State, Local and International requirements.

3. CFR (Title) 49: Transportation; Part 172, Hazardous Materials Table, Special Provisions, Hazardous materials Communications, Emergency Response Information, Training Requirements and Security.

(1) Subpart H: Training §172.700: This subpart prescribes requirements for training hazmat employees.

(a) Training means a systematic program that ensures a hazmat employee has familiarity with the general provisions of this subchapter, is able to recognize and identify hazardous materials, has knowledge of specific requirements of this subchapter applicable to functions performed by the employee, and has knowledge of emergency response information, self-protection measures and accident prevention methods and procedures (see §172.704). Modal-specific training requirements. Additional training requirements for the individual modes of transportation are in parts 174, 175, 176, and 177 of these subchapters.

(2) §172.701: Federal-State relationship: This subpart and the parts referenced in §172.700(c) prescribe minimum training requirements for the transportation of hazardous materials. For motor vehicle drivers, a state may impose more stringent training requirements on those requirements.

(3) §172.702: Applicability and responsibility for training and testing.

(4) §172.704: Training requirements: OSHA, EPA, and other training. Training conducted by employers to comply with the Hazard Communications Programs required by Occupational Safety and Health Administration of the Department of Labor (29 CFR 1910.120 or 1910.1200), or the Environmental Protection Agency (40 CFR 311.1), or training conducted by employers to comply with security training programs required by other Federal or international agencies, may be used to satisfy the training requirements.

(5) §175.20: Compliance and Training: An air carrier may not transport a hazardous material by aircraft unless each of its hazmat employees involved in that transportation is trained as required by subpart H of part 172. In addition, air carriers will comply with all applicable hazardous materials training requirements in 14 CFR part 121.

(6) §176.13: Responsibility for compliance and training.

(7) §177.800: Purpose and scope of this part and responsibility for compliance and training.

(8) §177.800: Driver Training.

4. CFR (Title) 14: Federal Aviation Administration (FAA):

a. §121.1005: Hazardous materials training.

b. §121.1007: Hazardous materials training records.

5. CFR (Title) 10: United States Nuclear Regulatory Commission: Additional Standards for Licenses, Certifications, and Regulatory Approvals.

§50.120: Training and qualification of nuclear power plant personnel.

§55.4: Definitions: Systematic approach to training means a training program that includes five elements.

6. CFR (Title) 29: Labor, Occupational Safety and Health Administration (OSHA), Part 1910, Subpart H, Hazardous Materials, §1910.120.

a. §1910.120(b) (ii) (D): The safety and health training program.

b. §1910.120(b) (3) (iv): The comprehensive work plan shall provide for the implementation of the training required in paragraph (e) of this section.

c. §1910.120(b) (4) (ii) (B): Employee training assignments to assure compliance with paragraph (e) of this section.

d. §1910.120(e): Training.

e. §1910.120(e) (1): General.

1. §1910.120(e)(1)(i): All employees working on site (such as but not limited to equipment operators, general labors, and others) exposed to hazardous substances, health hazards, or safety hazards and their supervisors and management responsible for the site shall receive training meeting the requirements of this paragraph before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances, safety, or health hazards, and they shall receive training as specified in this paragraph.

2. §1910.120(e) (1) (ii): Employees shall not be permitted to participate in or supervise field activities until they have been trained to a level required by their job function and responsibility.

7. International Air Transportation Association (IATA) and International Maritime Organization:

a. Air: If you ship hazmat by air within or outside the U.S., most air carriers require compliance with the International Aviation Transportation's Dangerous Goods Regulations. These rules are in addition to DOT 49 CFR. There are several hazmat air-shipper courses on the IATA DGR to meet IATA's initial and re-training mandate.

b. Vessel: If you ship hazmat by vessel within or outside the U.S., your shipments will comply with the DOT and International Maritime Organization's Dangerous Goods Code. There are several hazmat shipper-training courses on the IMDG Code to meet the IMO initial and re-training mandate.

c. Training requirements: The Sub-Section 1.5 (pdf) of the IATA Dangerous Goods Regulations (DGR) details the requirements and minimum aspects that will be included in a training program. It is important to note that different categories of staff require different training and that it will always be commensurate with their responsibilities. Responsibility belongs to all parties involved in air transport, including shippers, freight forwarders, ground service providers and airlines.

d. Training providers: IATA offers dangerous goods training in different locations for a wide variety of cargo specialists. In addition, through a network of training organizations, provides courses worldwide taught by local partners. Maintain the IATA training standards while complying with local regulations.

e. Training standards: The IATA standards related to dangerous goods training, including instructor qualifications, are developed by the DG Training Task Force (DGTTF) is overseen by the dangerous Goods Board(DGB), with both groups working towards improving safety and understanding of the dangerous goods requirements for air transport.

8. International Civil Aviation Organization (ICAO): The ICAO's Aviation Training Directory (ATD) is a global web-based listing of aviation training providers. It offers a comprehensive list

of government approved aviation-training centers, which allows visitors to freely browse through the site and obtain detail information on training courses, recognizing the authenticity of the center.

9. Defense Travel Regulation, DTR 4500.9R:

- a. Part II, Cargo Movement, Chapter 204, D., Training.
- b. Part II, Packaging and Handling, Chapter 208 B., Responsibilities (including training).

10. Training Requirements for Hazardous Materials Management: Sample Training Plan (Reference Only). The sample-training plan is not all-inclusive as some of the courses in the sample-training plan below are no longer available and consolidated or no longer required. This is for “REFERENCE ONLY” as a basic guideline or starting point. As stated above, contact your local training command/coordinator as what may be required for the position or Military Occupational Specialty (MOS) you are fulfilling and there may be additional Federal, State, Local and International requirements.

SAMPLE TRAINING PLAN:

Hazardous materials employees are assigned SKILL AREA CODES. A skill area code represents an assigned set of duties and responsibilities and defines minimum training requirements. An employee may be assigned multiple skill area codes. An employee will complete all training required under assigned skill area codes. When an employee has more than one skill area code, additional training is required for only those courses not contained in the first skill area code. Complete training within regulatory timeframes. The training specified addresses functional areas of responsibility. They are not intended to infer separate training courses are required for each series. Training designed to meet one requirement may also meet other functional area requirements. Trainers should plan training to encompass related areas of responsibility.

Table G-1 of this Appendix provides a summarization of a recommended approach for training typical depot personnel.

Table G-2 of this Appendix provides a detailed listing of skill codes by depot employee titles and lists recommended training.

Tables G-3 through G-5 of this Appendix provides a listing of the various initial, refresher, and implied training recommended.

When regulatory training timeframes are mandated, they are indicated under the appropriate course. Training courses in this Appendix are assigned a number series, i.e. R500, R600, or R700.

Courses listed in the R500 series are mandatory and require periodic retraining in order to meet regulatory requirements.

Courses listed in the R600 series are for refresher training requirements. Courses listed in the R700 series represent training implied by the Instruction. Implied training is not explicitly stated in the Instruction; however, training is required so the employee can gain the knowledge to complete their jobs in compliance with the Instructions. Skill codes implied training is recommended in addition to other specified courses and those codes include an "I".

Match course numbers as follows in order to identify the employee's complete training requirement.

MANDATORY TRAINING	REFRESHER TRAINING	IMPLIED TRAINING
502	R602	R702

Refresher/Implied training is not a requirement when there is no corresponding R600/R700 course given, i.e.

MANDATORY TRAINING	REFRESHER TRAINING	IMPLIED TRAINING
R501	NO REQUIREMENT	R701

Table G-1. Summarization of Selected Depot Personnel Function Specific Training
(Recommended Approach)

	<u>SKILL CODE</u>
RECEIVING	E06
WAREHOUSEMAN	E07
MHE OPERATOR	E08
LABORER	E09
PACKERS	E10
CERTIFIERS	E11
DOCUMENTS PREPARATION	E12
MOTOR VEHICLE OPERATOR	E13
RECOUPMENT	E14
STOCK MAINTENANCE	E15
INVENTORY INTEGRITY	E16

SURVEILLANCE INSPECTORS	E17
QUALITY ASSURANCE	E18
CYLINDER EMPLOYEES	E19
ASBESTOS	E20
RADIATION PERSONNEL	E23
STRATOSPHEREIC OZONE	E24
SECURITY (GATE GUARD)	E29
EMERGENCY RESPONSE	E52

501 - HAZARD COMMUNICATION

502 - FIRST RESPONDER: AWARENESS LEVEL

503 - FIRST RESPONDER: OPERATION LEVEL (INCLUDES 502)

504 - EMERGENCY RESPONSE (TECHNICIAN LEVEL) (INCLUDES 502, 503)

507 - SAFETY & HEALTH FOR HANDLERS OF HM/HW (INCLUDES 503)

508 - RCRA FOR GENERATORS OF HW

510 - TRANSPORTATION OF HM/HW FOR DoD

511 - STORAGE AND HANDLING OF HAZARDOUS MATERIAL

513 - PACKAGING OF HAZARDOUS MATERIALS FOR TRANSPORTATION (ALL COURSES LISTED IN ATTACHMENT 28 OF AFMAN 24-204 ARE ACCEPTABLE)

516 - RADIATION TRAINING

518 - ASBESTOS TRAINING

519 - RESPIRATOR TRAINING

520 - COMPRESSED GAS CYLINDERS

521 - EPA STRATOSPHERIC OZONE CERTIFICATION TRAINING (MVAC) (FOR EMPLOYEES SERVICING VEHICLE AIR CONDITIONERS)

522 - EPA STRATOSPHERIC OZONE CERTIFICATION (FOR EMPLOYEES SERVICING APPLIANCES)

523 - LEAD EXPOSURE TRAINING

529 - HAZARDOUS MATERIAL TRANSPORTATION TRAINING

530 - PERFORMANCE ORIENTED PACKAGING (POP) TRAINING

531 - OVERVIEW OF HAZARDOUS MATERIALS TRANSPORTATION

Table G-2. Detailed Description of HAZMAT Training Courses

Who Needs Training	Skill Code	Courses
Base Commanders, deputies, senior managers and lawyers	E01I	R703 - Executive Environmental
Environmental officers/specialists/engineers who are not physically involved with hazardous property/hazardous material but are responsible for determining and/or required, implementing policy and/or providing Technical guidance.	E02I	R704 - Environmental Coordinators Depending upon assigned duties, additional training will be customized to ensure training compliance. Courses may be selected from those listed in Table G-3. If additional skill area codes will be assigned.
Environmental specialists/engineers and those who perform environmentalist duties who are physically involved with hazardous property/hazardous material (including occasional contact) and affect transportation, but do not work in a TSD facility.	E03	R501 - Hazard Communication R503 - First Responder: Operation Level R507 - Safety and Health for Handlers of HM/HW (Includes R501 and R503) R508 - RCRA for Generators of HW R603 - Annual First Responder: Operation Level Refresher R608 - Annual RCRA for Generators of HW Refresher Depending upon assigned duties, additional training will be customized to ensure training compliance. Courses may be selected from those listed at the end of this table. If needed,
Receiving (Employees, including supervisors, involved in the handling and/or management of hazardous materials receiving operations. This includes, but is not limited to: Planners, Materials Handlers, and inspectors)	E06	R501 - Hazard Communication R502 - First Responder: Awareness Level R511 - Storage and Handling of Hazardous Material R530 - Performance Oriented Packaging R602 - Annual First Responder: Awareness Level Refresher

		R611 - Triennial Storage and Handling of Hazardous Material Refresher R630 - Triennial Performance Oriented Packaging (POP) Recurrent
Warehouseman (Employees, including supervisors, involved in handling and/or management of warehousing hazardous materials)	E07	R501 - Hazard Communication R502 - First Responder: Awareness Level R511 - Storage and Handling of Hazardous Material R602 - Annual First Responder: Awareness Level Refresher R611 - Triennial Storage and Handling of Hazardous Material Recurrent
Material Handling Equipment (MHE) Operator (Employees, including supervisors, operating MHE in the handling and/or storage and selection of hazardous materials)	E08	R501 - Hazard Communication R502 - First Responder: Awareness Level R511 - Storage and Handling of Hazardous Material R602 - Annual First Responder: Awareness Level Refresher R611 - Triennial Storage and Handling of Hazardous Material Recurrent
Laborer (Employees, including supervisors, whose duties are performed in a work area containing hazardous materials) (does not affect transportation)	E09	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher
Packers (Employees, including supervisors, involved in packaging of hazardous material)	E10	R501 - Hazard Communication R502 - First Responder: Awareness Level R511 - Storage and Handling of Hazardous Material R530 - Performance Oriented Packaging (POP) R602 - Annual First Responder: Awareness Level Refresher R611 - Biennial Storage and Handling of Hazardous Material Recurrent R630 - Triennial POP Refresher
Packaging Certifiers (Employees, including supervisors, involved in the certification of hazardous material)	E11	R501 - Hazard Communication R502 - First Responder: Awareness Level R511 - Storage and Handling of Hazardous Material R513 - Defense Packaging of HM for

		<p>Transportation (or equivalent)</p> <p>R530 - Performance Oriented Packaging (POP)</p> <p>R602 - Annual First Responder: Awareness Level Refresher</p> <p>R611 - Triennial Storage and Handling of Hazardous Material Refresher</p> <p>R613 - Biennial Defense (Refresher) Packaging</p> <p>R630 - Triennial POP Refresher</p>
Documents Preparation (Employees, including supervisors, involved in preparing the documentation for hazardous materials shipments)	E12	<p>R501 - Hazard Communication</p> <p>R502 - First Responder: Awareness Level</p> <p>R529 - Hazardous Material Transportation Training</p> <p>R602 - Annual First Responder: Awareness Level Refresher</p> <p>R629 - Triennial Hazardous Material Transportation Recurrent</p>
Motor Vehicle Operators (Drivers will comply with Federal Motor Carrier Safety Regulations, as appropriate. This includes The requirement for a commercial driver's license (CDL) and a hazardous material (HM) endorsement).	E13	<p>R501 - Hazard Communication</p> <p>R502 - First Responder: Awareness Level</p> <p>R529 - Hazardous Material Transportation Training</p> <p>R602 - Annual First Responder: Awareness Level Refresher</p> <p>R629 - Triennial Hazardous Material Transportation Recurrent</p> <p>Depending upon assigned duties, may also Require skill area code E25.</p>
Recoupment (Employees, including supervisors, involved in the physical recoupment of HM or in the decision-making process of recoupment operations).	E14	<p>R501 - Hazard Communication</p> <p>R503 - First Responder: Operation Level</p> <p>R507 - Safety and Health for Handlers of HM/HW (Includes R501 and R503)</p> <p>R508 - RCRA for Generators of HW</p> <p>R529 - Hazardous Materials Transportation Training</p> <p>R530 - Performance Oriented Packaging (POP)</p> <p>R603 - Annual First Responder: Operation Level Refresher</p> <p>R608 - Annual RCRA for Generators of HW Refresher</p> <p>R629 - Triennial Hazardous Material</p>

		<p>Transportation Recurrent R630 - Triennial POP Recurrent Depending upon assigned duties, may also require skill area codes E25 and E26.</p>
Stock Maintenance (Employees, including supervisors, involved in the repackaging, marking, and labeling of HM).	E15	<p>R501 - Hazard Communication R502 - First Responder: Awareness Level R507 - Safety and Health for Handlers of HM/HW (Includes R501 and R503) R508 - RCRA for Generators of HW R529 - Hazardous Material Transportation Training R530 - Performance Oriented Packaging (POP) R602 - Annual First Responder: Awareness Level Refresher R608 - Annual RCRA for Generators of HW Refresher R629 - Triennial Hazardous Material Transportation Recurrent R630 - Triennial POP Recurrent Depending upon assigned duties, may also require skill area codes E25 and E26.</p>
Inventory Integrity (Employees, including supervisors, who perform all aspects of physical inventory, location surveys, and denial research)	E16	<p>R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher</p>
Surveillance Inspectors	E17	<p>R501 - Hazard Communication R502 - First Responder: Awareness Level R511 - Storage and Handling of Hazardous Material R530 - Performance Oriented Packaging (POP) R602 - Annual First Responder: Awareness Level Refresher R611 - Triennial Storage and Handling of Hazardous Material Recurrent R630 - Triennial POP Recurrent</p>
Quality Assurance	E18	<p>R501 - Hazard Communication R502 - First Responder: Awareness Level R511 - Storage and Handling of Hazardous Material</p>

		R530 - Performance Oriented Packaging (POP) R602 - Annual First Responder: Awareness Level Refresher R611 - Triennial Storage and Handling of Hazardous Material Recurrent) R630 - Triennial POP Recurrent
Cylinder Employees (Employees, including supervisors, who handle, refurbish, and store compressed gas cylinders)	E19	R501 - Hazard Communication R502 - First Responder: Awareness Level R511 - Storage and Handling of Hazardous Material R520 - Compresses Gas Cylinders R602 - Annual First Responder: Awareness Level Refresher R611 - Triennial Storage and Handling of Hazardous Material Recurrent R620 - Annual Compressed Gas Cylinders Refresher
Employees exposed to airborne concentrations of asbestos at or above the action level and/or excursion limit as defined in 29 CFR 1910.1001 at the workplace.	E20	R501 - Hazard Communication R502 - First Responder: Awareness Level R507 - Safety and health for Handlers of HM (Includes R501 and R502) R518 - Asbestos Training R602 - Annual First Responder: Awareness Level Refresher R618 - Annual Asbestos Training Refresher Depending upon assigned duties, may also require skill area code E25.
Asbestos abatement inspector (Note: Does not include activities that involve non-building materials, such as asbestos brake linings, that may be either stored or used inside a building) (40 CFR 763, Appendix C to Subpart E).	E21	R501 - Hazard Communication R502 - First Responder: Awareness Level R517 - EPA Asbestos Certification R602 - Annual First Responder: Awareness Level Refresher R617 - Annual EPA Asbestos Certification Refresher Depending upon assigned duties, may also require skill area code E25.
Radiation Safety Officers (primary and alternates). Training is required under 10 CFR 19.12 and NRC license.	E22	R501 - Hazard Communication R502 - First Responder: Awareness Level R515 - Radiation Protection Training

		<p>R531 - Overview of Hazardous Material Transportation</p> <p>R602 - Annual First Responder: Awareness Level Refresher</p> <p>R615 - Annual Radiation Protection Refresher</p> <p>R631 - Triennial Overview of Hazardous Material Transportation Recurrent</p> <p>Depending upon assigned duties, may also require skill area code E25.</p>
Radiation Personnel (Employees working in or frequenting any portion of a restricted radiation area and are NOT assigned skill area code E22) (10 CFR 19.12)	E23	<p>R501 - Hazard Communication</p> <p>R502 - First Responder: Awareness Level</p> <p>R516 - Radiation Training</p> <p>R531 - Overview of Hazardous Material Transportation</p> <p>R602 - Annual First Responder: Awareness Level Refresher</p> <p>R616 - Annual Radiation Training Refresher</p> <p>R631 - Triennial Overview of Hazardous Material Transportation Recurrent</p> <p>Depending upon assigned duties, may also require skill area code E25.</p>
Stratospheric Ozone (Employees who require EPA technician certification as defined in 40 CFR 82.40 and 82.161 anyone who might release CFCs and/or HCFCs into the atmosphere)	E24	<p>R501 - Hazard Communication</p> <p>R502 - First Responder: Awareness Level</p> <p>R521 - EPA Stratospheric Ozone and/or Certification Training (MVAC)</p> <p>R522 - EPA Stratospheric Ozone Certification</p> <p>R531 - Overview of Hazardous Material Transportation</p> <p>R602 - Annual First Responder: Awareness Level Refresher</p> <p>R621 - Annual EPA Stratospheric Ozone Certification Training (MVAC) Refresher</p> <p>R622 Annual EPA Stratospheric Ozone Certification Refresher</p> <p>R631 - Triennial Overview of Hazardous Material Transportation Recurrent</p> <p>Depending on assigned duties, may also require skill area code E25.</p>
Employees required to wear respirators to protect against atmospheric	E25	<p>R501 - Hazard Communication</p> <p>R502 - First Responder: Awareness Level</p>

contamination. This decision will be made by the facility safety office by evaluating the occupational health hazards associated with the employee's duties (29 CFR 1910.134)

R519 - Respirator Training
R602 - Annual First Responder: Awareness Level Refresher
R619 - Annual Respirator Refresher

Employees involved in lead-based paint activities, including maintenance, renovation, removal, or disposal (40 CFR)

E26 R501 - Hazard Communication
R502 - First Responder: Awareness Level
R524 - EPA Lead Exposure Certification
R602 - Annual First Responder: Awareness Level Refresher
R624 - Annual EPA Lead Exposure Refresher
Depending upon assigned duties, may also require skill area code E25.

Employees who handle, mix, use or apply pesticides (40 CFR 171.4(c)) (DoD 4150.7-M, Annex 2)

E27 R501 - Hazard Communication
R502 - First Responder: Awareness Level
R525 - Pesticide Applicator Certification (DoD)
R526 - Pesticide Applicator Certification (State) (if required)
R602 - Annual First Responder: Awareness
R625 - DoD Pesticide Applicator Recertification Refresher
R626 - State Pesticide Applicator Recertification Refresher (if required)

E27I R710 - Hazardous Material transportation Uniform Safety Act (HMUTSA)
Depending upon assigned duties, may also require skill area code E25.

Security (Gate Guard) (Employees who in the course of their duties may be involved with hazardous materials and/or affect transportation (e.g., verifying that motor vehicles are properly placarded upon their arrival and departure from the facility))

E29 R501 - Hazard Communication
R502 - First Responder: Awareness Level
R531 - Overview of Hazardous Materials Transportation
R602 - Annual Emergency Response Refresher (Awareness)
R631 - Triennial Overview of Hazardous Materials Transportation Recurrent

Facility operations (carpenters)

E30 R501 - Hazard Communication
R502 - First Responder: Awareness Level
R602 - Annual First Responder: Awareness

Level Refresher

Facility Operations (painter)	E31	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher Depending upon assigned duties, may also require skill area code E25.
Facility Operations (roofer)	E32	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher
	E32I	R740 - General Awareness, Asbestos
Facility Operations: Masonry	E33	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher
	E33I	R740 - General Awareness, Asbestos
Facility Operations: Plumber, Steamfitter, Boiler Room, Heating, Electrician, Installers	E34	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher
	E34I	R740 - General Awareness, Asbestos R741 - General Awareness, Oil Pollution/ Recycling
Facility Operations: Welder	E35	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher
	E35I	R740 - General Awareness, Asbestos Depending upon assigned duties, may also require skill area codes E19 and E25.
Facility Operations: Air Conditioner/ Refrigerator	E36	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher
	E36I	R740 - General Awareness, Asbestos R741 - General Awareness, Oil Pollution/ Recycling R744 - General Awareness, Ozone Depleting Substances

Depending upon assigned duties, may also require skill area code E25.

Facility Operations: Maintenance Workers	E37	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher
	E37I	R740 - General Awareness, Asbestos R741 - General Awareness, Oil Pollution/ Recycling Depending upon assigned duties, may also require skill area code E25.
Facility Operations: Sheet Metal Worker	E39	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher
	E39I	R741 - General Awareness, Oil Pollution/ Recycling R742 - General awareness, Lead Exposure Depending upon assigned duties, may also require skill area code E25.
Vehicle/Equipment Maintenance: Motor Pool, Auto/MHE Mechanic	E40	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher
	E40I	R740 - General Awareness, Asbestos R741 - General Awareness, Oil Pollution Act/Oil Recycling R744 - General awareness, Ozone Depleting Substances Depending upon assigned duties, may also Require skill area code E25.
Utilities: Sewage treatment, Heat Plant, Boiler Room)	E42	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher
	E42I	R740 - General Awareness, Asbestos R741 - General Awareness, Oil Pollution/ Recycling R742 - General awareness, Lead Exposure R743 - General awareness, Compressed Gas Cylinders

Depending upon assigned duties, may also require skill area code E25.

Roads and Grounds: Maintenance	E43	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher Depending upon assigned duties, may also require skill area code E19 and E25.
Roads and Grounds: Gardener	E45	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher Depending upon assigned duties, may also require skill area code E27.
Roads and Grounds: Waste Management/Recycling)	E46 E46I	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher R740 - General Awareness, Asbestos R741 - General Awareness, Oil Pollution/ Recycling R742 - General Awareness, Lead Exposure R743 - General Awareness, Compressed Gas Cylinders
Audio Visual	E47 E47I	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher R741 - General Awareness, Oil Pollution/ Recycling
Master Planner Examiners	E48 E48I	R501 - Hazard Communication R716 - Natural and Cultural
Fire Department	E49	R501 - Hazard Communication R503 - First Responder: Operation Level R507 - Safety and Health for Handlers of HM/HW (Includes R501 and R503) R516 - Radiation Training R520 - Compressed Gas Cylinders R603 - Annual First Responder: Operation Level Refresher

		<p>R616 - Annual Radiation Training Refresher R620 - Annual Compressed Gas Cylinders Refresher R741 - General Awareness, Oil Pollution/ Recycling R742 - General Awareness, Lead Exposure R744 - General Awareness, Ozone Depleting Substances R745 - General Awareness, Emergency Planning and Community Right-to-Know (EPCRA) Depending upon assigned duties, may also require skill area code E25.</p>
Contracting Officers Representative (COR/COTR)	E50	<p>R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level</p>
	E51	<p>Depending on assigned duties, courses will be selected from R700 series courses.</p>
Member of Emergency Response Team (Technician level is defined in 29 CFR 1910.120(q)).	E52	<p>R501 - Hazard Communication R504 - Emergency Response (Technician) R510 - Transportation of HM/HW for DoD R604 - Annual Emergency Response Refresher (Technician) R610 - Biennial Transportation to HM/HW for DoD Recurrent</p>
	E52I	<p>R745 - General Awareness, Emergency Planning and Community Right-to-Know (EPCRA) R749 - General Awareness for RCRA Depending upon assigned duties, may also require skill area code E25.</p>
Member of Emergency Response Team (Specialist level is defined in 29CFR 1910.120(q)).	E53	<p>R501 - Hazard Communication R505 - Emergency Response (Specialist) R510 - Transportation of HM/HW for DoD R605 - Annual Emergency Response (Specialist) Refresher R610 - Triennial Transportation to HM/HW for DoD Recurrent R745 - General Awareness, Emergency Planning and Community Right-to-Know (EPCRA)</p>

		R749 - General Awareness for RCRA Depending upon assigned duties, may also require skill area code E25.
Member of Emergency Response Team (On Scene Incident Commander level is defined in 29 CFR 1910.120(q)).	E54	R501 - Hazard Communication R506 - Emergency Response (On Scene Incident Commander) R510 - Transportation of HM/HW for DoD R606 - Annual Emergency Response (On Scene Incident Commander) Refresher R610 - Biennial Transportation to HM/HW for DoD Recurrent R745 - General Awareness, Emergency Planning and Community Right-to-Know (EPCRA) R749 - General Awareness for RCRA Depending upon assigned duties, may also require skill area code E25.
Employees working at clean-up Operations required by a governmental body that are conducted at uncontrolled hazardous waste sites; corrective actions involving clean-up operations at RCRA sites; voluntary clean-up operations at sites recognized by governmental bodies at uncontrolled HW sites as defined in 29 CFR 1910.120(e).	E59	R501 - Hazard Communication R510 - Transportation of HM/HW for DoD R534 - Emergency Response for Hazardous Waste (HW) Clean-up Sites R610 - Triennial Transportation of HM/HW for DoD Recurrent R634 - Annual Emergency Response for Hazardous Waste (HW) Clean-Up Sites Refresher Depending upon assigned duties, may also require skill area code E25.
Environmental Compliance Auditors	E60	R501 - Hazard Communication R502 - First Responder: Awareness Level R602 - Annual First Responder: Awareness Level Refresher
	E60I	R711 - Environmental Audit Depending upon assigned duties, additional courses should be assigned as appropriate.
Environmental Monitors	E68	R501 - Hazard Communication R502 - First Responder Awareness Level R511 - Storage and Handling of Hazardous Material R602 - Annual First Responder Awareness Level Refresher

		<p>R611 - Triennial Storage and Handling of Hazardous Material Recurrent</p> <p>E68I R740 - General Awareness, Asbestos</p> <p>R741 - General Awareness, Oil Pollution/ Recycling</p> <p>R742 - General Awareness, Lead Exposure</p> <p>R743 - General Awareness, Compressed Gas Cylinders</p> <p>R744 - General Awareness, Ozone Depleting Substances</p> <p>Depending upon assigned duties, may also require skill area code E25.</p>
Employees who require State and/or	E69I	Depending upon assigned duties, courses will local training be selected from R700 series courses.
Employees who are not professional instructors and are appointed to provide classroom training to others.	E70I	R733 - Train-the-Trainer
Safety officers, Specialists, or Industrial Hygienists	E72	<p>R501 - Hazard Communication</p> <p>R502 - First Responder Awareness Level</p> <p>R602 - Annual First Responder Awareness Level Refresher</p>
	E72I	R705 - Overview of Environmental Regulations
Employees responsible for determining training requirements and/or implementing the training plans, e.g., training administrators, supervisors, training point-of-contact.	E73I	Courses providing instruction in the implementation of training plans.
Custodian (Employees, including supervisors, whose duties are performed in work area containing hazardous materials)	E74	<p>R501 - Hazard Communication</p> <p>R502 - First Responder: Awareness Level</p> <p>R602 - Annual First Responder: Awareness Level Refresher</p>
Administrative personnel who provide support to employees who are involved with hazardous material	E78	<p>R501 - Hazard Communication</p> <p>R502 - First Responder Awareness Level</p> <p>R602 - Annual First Responder Awareness Level Refresher</p>

Truck Control	E90	R501 - Hazard Communication R502 - First Responder Awareness Level R529 - Hazardous Material Transportation Training R602 - Annual First Responder Awareness Level Refresher R629 - Triennial Hazardous Material Transportation Training Recurrent
Storage Management (Distribution Facilities Specialist)	E91	R501 - Hazard Communication R502 - First Responder Awareness Level R511 - Storage and Handling of Hazardous Material R602 - Annual First Responder Awareness Level Refresher R611 - Triennial Storage and Handling of Hazardous Material Recurrent
Packaging Improvement (Packaging Specialist)	E92	R501 - Hazard Communication R502 - First Responder Awareness Level R511 - Storage and Handling of Hazardous Material R513 - Packaging of Hazardous Materials for Transportation R530 - Performance Oriented Packaging R602 - Annual First Responder Awareness Level Refresher R611 - Triennial Storage and Handling of Hazardous Material Recurrent R613 - Biennial Defense (Refresher) Packaging Recurrent R630 - Triennial Performance Oriented Packaging (POP) Recurrent
Traffic Management Specialist	E103	R501 - Hazard Communication R502 - First Responder Awareness Level R513 - Packaging of Hazardous Materials (HM) for Transportation R602 - Annual First Responder Awareness Level Refresher

R613 - Biennial defense (Refresher)
Packaging Recurrent

Table G-3. Summary of HAZMAT Training Courses

COMPLIANCE TRAINING: Initial Courses

<u>COURSE ID</u>	<u>COURSE TITLE</u>	<u>HOURS</u>
R501	Hazard Communication	4-6
R502	First Responder: Awareness Level	8
R503	First Responder: Operation Level	8-12
R504	Emergency response (Technician)	24-40
R505	Emergency Response (Specialist)	24-40
R506	Emergency Response (On Scene Incident Commander)	24-40
R507	Safety and Health for Handlers of HM/HW	40
R508	RCRA for Generators of HW	24-32
R509	RCRA Facility Compliance	40
R510	Transportation of HM/HW for DoD	40
R511	Storage and Handling of Hazardous Material	24
R512	HM Shipment Release for DRMS Distribution Personnel	40
R513	Packaging of Hazardous Material (HM) for Transportation	76
R514	RESERVED	
R515	Radiation Protection Training	120
R516	Radiation Training	24
R517	EPA Asbestos Certification	40
R518	Asbestos Training	24
R519	Respirator Training	8
R520	Compressed Gas Cylinders	24
R521	EPA Stratospheric Ozone Certification Training (MVAC)	40
R522	EPA Stratospheric Certification	24

R523	Lead Exposure Training	8
R524	EPA Lead Exposure Certification	24
R525	Pesticide Applicator Certification (DoD)	120
R526	Pesticide Applicator Certification (State)	
R527	RESERVED	
R528	RESERVED	
R529	Hazardous Material Transportation Training	16
R530	Performance Oriented Packaging (POP)	24
R531	Overview of Hazardous Material Transportation	8
R532	RESERVED	
R533	Oil Pollution Training	24
R534	Emergency Response for Hazardous Waste (HW) Clean-Up Sites	40-72
R535	EPA Asbestos Certification for Management Planners	40
R536	EPA Asbestos Certification for Abatement Project Designers	40
R537	EPA Asbestos Certification for Asbestos	40
R538	EPA Asbestos Certification for asbestos Abatement Workers	40
R539	EPA Asbestos Certification for Project Monitors	40
R540	Overseas Hazardous Waste Operations	
R541	Overseas Hazardous Waste Management	
R542	European Agreement Considering the International Carriage of Dangerous Goods by Road (ADR) Training	
R543	International Maritime Dangerous Goods (IMDG) for Shipment by Vessel	
R544	International Hazardous Materials Transportation Standards	

* All course hours are estimates

Table G-4. Summary of HAZMAT Training Courses

COMPLIANCE TRAINING: Refresher Courses

<u>COURSE ID</u>	<u>COURSE TITLE</u>	<u>HOURS</u>
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R602	Annual First Responder: Awareness Level Refresher	8
R603	Annual First Responder: Operation Level Refresher	8
R604	Annual Emergency Response (Technician) Refresher	8-24
R605	Annual Emergency Response (Specialist) Refresher	8-24
R606	Annual Emergency Response (On Scene Incident Commander) Refresher	8-24
R607	RESERVED	
R608	Annual RCRA for Generators of HW Refresher	8
R609	Annual RCRA Facility Compliance Refresher	8
R610	Triennial Transportation of HM/HW for DoD Recurrent	24
R611	Triennial Storage and Handling of Hazardous Material Recurrent	16
R612	Triennial HM Shipment Release for DRMS Distribution Personnel Recurrent	24
R613	Triennial Defense (Refresher) Packaging	36
R614	RESERVED	
R615	Annual Radiation Protection Refresher	24
R616	Annual Radiation Training Refresher	8
R617	Annual EPA Asbestos Certification Refresher	24
R618	Annual Asbestos Training Refresher	4
R619	Annual Respirator Refresher	4
R620	Annual Compressed Gas Cylinders Refresher	4
R621	Annual EPA Stratospheric Ozone Certification Training (MVAC) Refresher	
R622	Annual EPA Stratospheric Ozone Certification Refresher	8
R623	Annual Lead Exposure Refresher	4
R624	Annual EPA Lead Exposure Refresher	8
R625	DoD Pesticide Applicator Recertification Refresher	40
R626	State Pesticide Applicator	

R627	RESERVED	
R628	RESERVED	
R629	Triennial Hazardous Material Transportation Training Recurrent	
R630	Triennial Performance Oriented Packaging (POP) Recurrent	24
R631	Triennial Overview of Hazardous Material Transportation Recurrent	
R632	RESERVED	
R633	Annual Oil Pollution Training Refresher	4
R634	Annual Emergency Response for Hazardous Waste (HW) Clean-Up Sites Refresher	8
R635	Annual EPA Asbestos Certification for Management Planners Refresher	24
R636	Annual EPA Asbestos Certification for Abatement Project Designers Refresher	24
R637	Annual EPA Asbestos Certification for Asbestos Abatement Contractors And Supervisors Refresher	24
R638	Annual EPA Asbestos Certification for Asbestos Abatement Workers Refresher	24
R639	Annual EPA Asbestos Certification for Project Monitors Refresher	24

* All course hours are estimates

Table G-5. Summary of HAZMAT Training Courses

COMPLIANCE TRAINING: Implied Training Courses

<u>COURSE ID</u>	<u>COURSE TITLE</u>
R701	Hazard Communication Standard
R702	Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendments Reauthorization Act (SARA)
R703	Executive Environmental

R704	Environmental Coordinators
R705	Overview of Environmental Regulations
R706	National Environmental Policy Act (NEPA)
R707	Clean Air Act (CAA)
R708	Resource Conservation and Recovery Act
R709	Oil Pollution Act (OPA)
R710	Hazardous Materials Transportation Uniform Safety Act (HMUTSA)
R711	Environmental Audit
R712	Clean Water Act (CWA)
R713	Toxic Substances Control Act (TSCA)
R714	RESERVED
R715	Department of Energy
R716	RESERVED
R717	Asbestos Hazard Emergency Response (AHERA) and amended by Asbestos School Hazard Abatement Reauthorization Act (ASHARA)
R718	Natural and Cultural Resource Management
R719	Natural Resource Protection Laws
R720	Cultural Resource Protection Laws
R721	Stratospheric Ozone, Clean Air Amendment
R722	RESERVED
R723	RESERVED
R724	EPA Lead Exposure Training
R725	Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
R726	Contractor Line Item Number
R727	RESERVED
R728	RESERVED
R729	Emergency Planning and Community Right-to-Know Act (EPCRA)
R730	Buying Green: A Multi-Functional Approach to Pollution Prevention

R731	Safe Drinking Water Act (SDWA)
R732	Environmental Considerations in the Management of DoD Contracts
R733	Train-the-Trainer
R734	Inland Oil Spill Control
R735	Geotech Drilling and Sampling
R736	Sampling and Monitoring
R738	RESERVED
R739	Implementing the DLA Environmental Training Plan
R740	General Awareness, Asbestos
R741	General Awareness, Oil Pollution Act/Oil Recycling
R742	General Awareness, Lead Exposure
R743	General Awareness, Compressed Gas Cylinder
R744	General Awareness, Ozone Depleting Substances
R745	General Awareness, Emergency Planning and Community Right-to-Know Act (EPCRA)
R746	General Awareness, Cultural Resource Preservation Laws
R747	General Awareness, Pollution Prevention
R748	General Awareness, Environmental
R749	General Awareness for Resource Conservation Recovery Act (RCRA)
R750	Buying Green: A Multi-Functional Approach to Pollution Prevention
R751	Pollution Prevention Facility
R752	Environmental Monitors
R753	Pollution Prevention Program Operations and Management
R754	Pollution Prevention Tools, Techniques, and Technologies
R755	Environmental Negotiations Workshop
R756	Environmental Planning, Programming and Budgeting
R757	Environmental Risk Communication and Public Dialog Workshop

APPENDIX H: HMIRS FOCAL POINTS

DLA DLA Aviation dlahmirsfocalpoint@dla.mil DSN: 695-2721
 ATTN: VBA COMM: 804-279-2721
 8000 Jefferson Davis Hwy FAX: 804-279-4149
 Richmond, VA 23297-5685

AIRFORCE

AIR FORCE Safety and Health

USAFSAM/OET esoh.service.center@us.af.mil DSN: 798-3764 or
 ATTN: HMIRS Comm: 937-938-3764
 2510 Fifth St. BLDG 840 Toll Free: 888-232-EOSH
 Wright Patterson AFB, OH 45433 (3764)

AIR FORCE Transportation

HQ AFMC/A4RT HQAFCMCA410ART.HAZMAT@us.af.mil DSN: 787-4503-1984 or
 4375 Chidlaw Rd. 937-257-4503/1984
 Wright Patterson AFB, OH 45433-5540

US ARMY

Army & National Guard Transportation

U.S. Army Sustainment Command usarmy.tyad.usamc.mbx@mail.mil Comm: 570-615-9928
 Packaging, Storage & Containerization DSN: 795-9928
 Center (PSCC) HAZMAT/HMIRS Focal Point FAX: DSN: 795-7175
 11 Hap Arnold Blvd. or 570-615-7175
 Tobyhanna, PA 18466-5097

Army and National Guard Safety and Health

Commander DSN: 584-5470 or
 U.S. Army Comm: 410-436-5470
 Public Health Command FAX: DSN: 584-8795
 Attn: MCHB-IP-OIM or 410-436-8795
 Aberdeen Proving Ground, MD 21010-5403

DLA

DLA Aviation dlahmirsfocalpoint@dla.mil
ATTN: VBA
8000 Jefferson Davis Hwy
Richmond, VA 23297-5685

DSN: 695-2721
Comm: 804-279-2721
FAX: 804-279-4149

Navy & Marine Corps

Navy & Marine Corps Safety and Health

Navy & Marine Corps Public Health Center
ATTN: HMIRS
620 John Paul Jones Circle, Suite 1100
Portsmouth, VA 23708-2103

DSN: 377-0746 or
Comm: 757-953-0746
FAX: DSN: 377-0685
or 757-953-0685

Navy Transportation

NAVSUP WSS Norfolk Transportation & Distribution
Code N32, Suite 600
1837 Morris Street
Norfolk, VA 23511

DSN: 646-5451 or
Comm: 757-443-5451
FAX: 757-443-5411

Navy Logistics

NAVSUP WSS N62 Ashore HAZMAT Data
5450 Carlisle Pike
P.O. Box 2020 ashorehazmat.wss.fct@navy.mil
Mechanicsburg, PA 17055

DSN: 430-1560 or
717-605-1560

U.S. Coast Guard

USCG Safety and Health

US Department of Homeland Security hmirsuscg@dla.mil
COMMANDANT (CG-113)
Attn: Safety and Environmental Health
US Coast Guard Stop
7907 2703 Martin Luther King Jr. Avenue
SE
Washington, DC 20593-7907

Comm: 202-475-5214
FAX: 202-372-8467

U.S. Coast Guard (continued)

USCG Transportation

US Coast Guard Surface
Forces logistics Center (SFLC) Traffic Manager
2401 Hawkins Point Road- Bldg.88
Baltimore, MD 21226

Comm: 410-762-6927
FAX: 410-762-6932

GSA

GSA
Attn: Joe Abdeljawad Jawad.abdeljawad@gsa.gov
1800 F St., Room G300
Washington, DC 20405

Comm: 703-605-2566

HMIRS

HMIRS Program Management Office

Program Manager hmirs@dla.mil
Logistics Information Services
LDA
74 Washington Ave N
Battle Creek, MI 49037

DSN: 661-5990 or
Comm: 269-961-5990
FAX: DSN: 661-4008

HMIRS Functional Management Office

Functional Manager hmirsfm@dla.mil
DLA Aviation
Attn: VBB
8000 Jefferson Davis Hwy
Richmond, VA 23297-5607

DSN: 695-5878 or
Comm: 804-279-5878

APPENDIX I: SAFETY DATA SHEET AND WARNING LABEL (SAMPLE)

UNITED STATES
DEPARTMENT OF LABOR

Occupational Safety and Health Administration

Regulations (Standards - 29 CFR) - Table of Contents

- **Part Number:** 1910
- **Part Title:** Occupational Safety and Health Standards
- **Subpart:** Z
- **Subpart Title:** Toxic and Hazardous Substances
- **Standard Number:** 1910.1200 App D
- **Title:** Safety Data Sheets (Mandatory)
- **GPO Source:** e-CFR

A safety data sheet (SDS) shall include the information specified in Table D.1 under the section number and heading indicated for sections 1-11 and 16. If no relevant information is found for any given subheading within a section, the SDS shall clearly indicate that no applicable information is available. Sections 12-15 may be included in the SDS, but are not mandatory.

Table D.1—Minimum Information for an SDS

Heading	Subheading
1. Identification	(a) Product Identifier used on the label; (b) Other means of identification; (c) Recommended use of the chemical and restrictions on use; (d) Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party; (e) Emergency phone number.
2. Hazard(s) identification	(a) Classification of the chemical in accordance with paragraph (d) of §1910.1200; (b) Signal word, hazard statement(s), symbol(s) and precautionary statement(s) in accordance with paragraph (f) of §1910.1200. (Hazard symbols may be provided as graphical reproductions in black and white or the name of the symbol, e.g., flame, skull and crossbones); (c) Describe any hazards not otherwise classified that have been identified during the classification process; (d) Where an ingredient with unknown acute toxicity is used in a mixture at a concentration $\geq 1\%$ and the mixture is not classified based on testing of the mixture as a whole, a statement that X% of the mixture consists of ingredient(s) of unknown acute toxicity is required.
3. Composition/information on ingredients	Except as provided for in paragraph (i) of §1910.1200 on trade secrets: For Substances (a) Chemical name; (b) Common name and synonyms; (c) CAS number and other unique Identifiers; (d) Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance. For Mixtures In addition to the information required for substances: (a) The chemical name and concentration (exact percentage) or concentration ranges of all ingredients which are classified as health hazards in accordance with paragraph (d) of §1910.1200 and (1) Are present above their cut-off/concentration limits; or

APPENDIX I: SAFETY DATA SHEET AND WARNING LABEL (SAMPLE)CONTINUED

Safety Data Sheets (Mandatory) - 1910.1200 App D	(2) Present a health risk below the cut-off/concentration limits.
	(b) The concentration (exact percentage) shall be specified unless a trade secret claim is made in accordance with paragraph (i) of §1910.1200, when there is batch-to-batch variability in the production of a mixture, or for a group of substantially similar mixtures (See A.0.5.1.2) with similar chemical composition. In these cases, concentration ranges may be used.
	For All Chemicals Where a Trade Secret is Claimed Where a trade secret is claimed in accordance with paragraph (i) of §1910.1200, a statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required.
4. First-aid measures	(a) Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact, and ingestion; (b) Most important symptoms/effects, acute and delayed. (c) Indication of immediate medical attention and special treatment needed, if necessary.
5. Fire-fighting measures	(a) Suitable (and unsuitable) extinguishing media. (b) Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products). (c) Special protective equipment and precautions for fire-fighters.
6. Accidental release measures	(a) Personal precautions, protective equipment, and emergency procedures. (b) Methods and materials for containment and cleaning up.
7. Handling and storage	(a) Precautions for safe handling. (b) Conditions for safe storage, including any incompatibilities.
8. Exposure controls/personal protection	(a) OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available. (b) Appropriate engineering controls. (c) Individual protection measures, such as personal protective equipment.
9. Physical and chemical properties	(a) Appearance (physical state, color, etc.); (b) Odor; (c) Odor threshold; (d) pH; (e) Melting point/freezing point; (f) Initial boiling point and boiling range; (g) Flash point; (h) Evaporation rate; (i) Flammability (solid, gas); (j) Upper/lower flammability or explosive limits; (k) Vapor pressure; (l) Vapor density; (m) Relative density; (n) Solubility(ies); (o) Partition coefficient: n-octanol/water; (p) Auto-ignition temperature; (q) Decomposition temperature; (r) Viscosity.

APPENDIX I: SAFETY DATA SHEET AND WARNING LABEL (SAMPLE)CONTINUED

10. Stability and reactivity	(a) Reactivity; (b) Chemical stability; (c) Possibility of hazardous reactions; (d) Conditions to avoid (e.g., static discharge, shock, or vibration); (e) Incompatible materials; (f) Hazardous decomposition products.
11. Toxicological information	Description of the various toxicological (health) effects and the available data used to identify those effects, including: (a) Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact); (b) Symptoms related to the physical, chemical and toxicological characteristics; (c) Delayed and immediate effects and also chronic effects from short- and long-term exposure; (d) Numerical measures of toxicity (such as acute toxicity estimates). (e) Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition), or by OSHA.
12. Ecological information (Non-mandatory)	(a) Ecotoxicity (aquatic and terrestrial, where available); (b) Persistence and degradability; (c) Bioaccumulative potential; (d) Mobility in soil; (e) Other adverse effects (such as hazardous to the ozone layer).
13. Disposal considerations (Non-mandatory)	Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging.
14. Transport information (Non-mandatory)	(a) UN number; (b) UN proper shipping name; (c) Transport hazard class(es); (d) Packing group, if applicable; (e) Environmental hazards (e.g., Marine pollutant (Yes/No)); (f) Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code); (g) Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises.
15. Regulatory information (Non-mandatory)	Safety, health and environmental regulations specific for the product in question.
16. Other information, including date of preparation or last revision	The date of preparation of the SDS or the last change to it.

SAFETY DATA SHEET (SAMPLE)

SAFETY DATA SHEET

Barsol A-2915



Section 1. Identification 8010-00-280-1751, THINNER, PAINT PRODUCTS

GHS product identifier : Barsol A-2915
 Other means of identification : Not available.
 Product type : Liquid.
 Supplier's details : Barton Solvents, Inc.
 1920 NE Broadway P.O. Box 221
 Jes Moines, IA 50306-0221
 (515) 265-7998
 Emergency telephone number : CHEMTREC (800) 424-9300 (AVAILABLE 24 HOURS A DAY)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
 SKIN CORROSION/IRRITATION - Category 2
 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
 TOXIC TO REPRODUCTION (Unborn child) - Category 2
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation] - Category 3
 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
 ASPIRATION HAZARD - Category 1
 Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 6.6%

GHS label elements

Hazard pictograms



Signal word

: Danger

Hazard statements

: Highly flammable liquid and vapor.
 Causes serious eye damage.
 Causes skin irritation.
 Suspected of damaging the unborn child.
 May be fatal if swallowed and enters airways.
 May cause respiratory irritation.
 May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

General

: Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention

: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Wash hands thoroughly after handling.

Response

: Get medical attention if you feel unwell. IF EXPOSED OR CONCERNED: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage

: Store locked up. Store in a well-ventilated place. Keep cool.

SAFETY DATA SHEET (SAMPLE) CONTINUED

Barcode A2915

Section 2. Hazards identification

- Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.
- Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

- Substance/mixture : Mixture
- Other means of identification : Not available.

CAS number/other identifiers

- CAS number : Mixture
- Product code : 2300130

Ingredient name	%	CAS number
Propylene glycol monomethyl ether acetate	44.38	108-65-6
2-Butanone	28.18	78-93-3
Butyl Acetate	10.83	123-88-4
Toluene	10	108-88-3
Dimethylbenzene	5.288	1330-20-7
Ethyl Benzene	1.322	100-41-4

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures**Description of necessary first aid measures**

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed**Potential acute health effects**

- Eye contact** : Causes serious eye irritation.
- Inhalation** : May cause respiratory irritation.
- Skin contact** : Causes skin irritation.
- Ingestion** : May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness

SAFETY DATA SHEET (SAMPLE) CONTINUED

Biosol A-2915

Section 4. First aid measures

- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Ingestion** : Adverse symptoms may include the following:
nausea or vomiting
reduced fetal weight
increase in fetal deaths
skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures**Extinguishing media**

- Suitable extinguishing media** : Use dry chemical, CO₂, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.

Specific hazards arising from the chemical

- : Highly flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

Hazardous thermal decomposition products

- : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters

- : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters

- : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Remark

- : Vapor may travel considerable distance to source of ignition and flash back. (Toluene)

Remark

- : No additional remark.

Section 6. Accidental release measures**Personal precautions, protective equipment and emergency procedures****For non-emergency personnel**

- : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No fires, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

SAFETY DATA SHEET (SAMPLE) CONTINUED

Basis of A-2915

Section 6. Accidental release measures

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows: Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage**Precautions for safe handling**

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not swallow. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection**Control parameters****Occupational exposure limits**

2-Butanone

OSHA PEL (United States),
TWA: 200 ppmACGIH TLV (United States),
TWA: 200 ppm
STEL: 300 ppm

Butyl Acetate

ACGIH TLV (United States),
TWA: 150 ppm
STEL: 200 ppb
OSHA PEL (United States),
TWA: 150 ppm

SAFETY DATA SHEET (SAMPLE) CONTINUED

Borsol A-2915

Section 8. Exposure controls/personal protection

Toluene:	ACGIH TLV (United States, 2007), TWA: 20 ppm
Dimethylbenzene:	ACGIH TLV (United States): TWA: 100 ppm STEL: 150 ppm
Ethyl Benzene:	OSHA PEL (United States): TWA: 100 ppm ACGIH TLV (United States): TWA: 20 ppm OSHA PEL (United States): TWA: 100 ppm
Appropriate engineering controls	: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
Environmental exposure controls	: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
Individual protection measures	
Hygiene measures	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Eye/face protection	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
Skin protection	
Hand protection	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Body protection	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties**Appearance**

Physical state	: Liquid.
Color	: Clear
Odor	: Ester
Odor threshold	: Not available.
pH	: Not applicable.
Melting point	: May start to solidify at the following temperature: -74°C (-101.2°F) This is based on data for the following ingredient: Butyl Acetate. Weighted average: -83.64°C (-118.9°F)

SAFETY DATA SHEET (SAMPLE) CONTINUED

Bursol A-2916

Section 9. Physical and chemical properties

Boiling point	: Lowest known value: 79°C (174.2°F) (2-Butanone). Weighted average: 122.55°C (252.6°F)
Flash point	: Lowest known value; Closed cup: -5°C (23°F). (Tagilabute.). (2-Butanone)
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Highest known value: 3.8 (2-Butanone) Weighted average: 1.61 compared with Butyl acetate.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Greatest known range: Lower: 1.3% Upper: Higher than 13%.% (Propylene glycol monomethyl ether acetate)
Vapor pressure	: Highest known value: 9.5 kPa (70.9 mm Hg) (at 20°C) (2-Butanone). Weighted average: 9.33 kPa (24.98 mm Hg) (at 20°C)
Vapor density	: Highest known value: 4.6 (Air = 1) (Propylene glycol monomethyl ether acetate). Weighted average: 3.74 (Air = 1)
Relative density	: Weighted average: 0.89 (Water = 1)
Solubility	: Easily soluble in the following materials: methanol, diethyl ether, acetone. Soluble in the following materials: n-octanol. Insoluble in the following materials: cold water, hot water.
Solubility in water	: Not available.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Lowest known value: 407°C (764.6°F) (Butyl Acetate).
Decomposition temperature	: Not available.
SADT	: Not available.
Viscosity	: Dynamic: Highest known value: 0.73 cP (Butyl Acetate)

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
Incompatible materials	: Reactive or incompatible with the following materials: oxidizing materials.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information**Information on toxicological effects****Acute toxicity**

Product/Ingredient name	Result	Species	Dose	Exposure
2-Butanone	LC50 Inhalation Gas.	Rat	>5000 ppm	1 hours
	LD50 Dermal	Rabbit	>2000 mg/kg	-
Toluene	LD50 Oral	Rat	>2000 mg/kg	-
	LC50 Inhalation Gas.	Rat	>5000 ppm	1 hours
	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	>2000 mg/kg	-

Conclusion/Summary : No additional remark.

Irritation/Corrosion

Not available.

0/11

SAFETY DATA SHEET (SAMPLE) CONTINUED

Datsol A-2915

Section 11. Toxicological Information**Sensitization**

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Conclusion/Summary

: Inhalation of vapors may cause dizziness, an irregular heartbeat, narcosis, nausea or asphyxiation. (Toluene)

Classification

Product/ingredient name	OSHA	IARC	NTP
2-Butanone	-	4	-
Toluene	-	4	-
Ethyl Benzene	-	2B	-

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure

: Not available.

Potential acute health effects**Eye contact**

: Causes serious eye irritation.

Inhalation

: May cause respiratory irritation.

Skin contact

: Causes skin irritation.

Ingestion

: May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics**Eye contact**: Adverse symptoms may include the following:
pain or irritation
watering
redness**Inhalation**: Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced fetal weight
increase in fetal deaths
skeletal malformations**Skin contact**: Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations**Ingestion**: Adverse symptoms may include the following:
nausea or vomiting
reduced fetal weight
increase in fetal deaths
skeletal malformations

SAFETY DATA SHEET (SAMPLE) CONTINUED

Revised A-2915

Section 11. Toxicological Information

Delayed and immediate effects and also chronic effects from short and long term exposure:

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : Suspected of damaging the unborn child.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicityAcute toxicity estimates

Not available.

Section 12. Ecological InformationToxicity

Not available.

Persistence and degradability

Conclusion/Summary : No additional remark.

Bioaccumulative potential

Not available.

Mobility in soil


Soil/water partition coefficient (K_{d0}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SAFETY DATA SHEET (SAMPLE) CONTINUED

Section 14. Transport Information						
DOT Classification	UN number	UN proper shipping name	Transport hazard class(es)	Packing group	Environmental hazards	Additional information
	UN1263	Paint Related Material	3 	II	No.	No additional remark.

Special precautions for user : Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory Information

U.S. Federal regulations : TSCA 8(a) GDR Exempt/Partial exemption: Not determined
 United States Inventory (TSCA 8b): All components are listed or exempted.
 Clean Water Act (CWA) 307: No products were found.
 Clean Water Act (CWA) 311: No products were found.
 Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
 Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

Clean Air Act, Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304**Composition/Information on Ingredients**

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Fire hazard
 Immediate (acute) health hazard
 Delayed (chronic) health hazard

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Toluene	108-88-3	10
	Dimethylbenzene	1330-20-7	5.288
	Ethyl Benzene	100-41-4	1.322

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Toluene	No.	Yes.	No.	No.
Ethyl Benzene	Yes.	No.	No.	No.

SAFETY DATA SHEET (SAMPLE) CONTINUED

Barcof A-2915

Section 15. Regulatory Information

Canada Inventory : Not determined.

International regulations:

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Flammability	3
Health	3
Instability/Reactivity	0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-8888.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)



Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

Date of printing : 2/21/2014.
 Revision Date : 8/30/00; 3/4/08; 9/6/11; 1/15/13; 2/21/14
 Revision comments : Ethyl Benzene Classified 2R Carcinogen 08-30-2000; TLV Update 3/4/08; Ethylbenzene TLV revised 9/6/11; Inventory blend number added 1/15/13.
 Version : 3
 Key to abbreviations : ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpo") = marine pollution
 UN = United Nations
 References : Not available.

Notice to reader

SAFETY DATA SHEET (SAMPLE) CONTINUED

Barsol A-2915

Section 16. Other information

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

**THINNER, PAINT PRODUCTS 8010-00-280-1751 MIL-T-81772B, TYPE 1,
POLYURETHANE THINNER**

**DANGER! HIGHLY FLAMMABLE LIQUID AND VAPOR.
CAUSES SERIOUS EYE DAMAGE. CAUSES SKIN IRRITATION. SUSPECTED OF
DAMAGING THE UNBORN CHILD. MAY BE FATAL IF SWALLOWED AND
ENTERS AIRWAYS. MAY CAUSE RESPIRATORY IRRITATION. MAY CAUSE
DAMAGE TO ORGANS THROUGH PROLONGED OR REPEATED EXPOSURE.**



Prevention:

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. NO SMOKING. Use explosion proof electrical, ventilation, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well ventilated area. Do not breath vapor or spray mist. Wash hands thoroughly after handling.

Response:

Get medical attention if you feel unwell. If exposed or concerned, get medical attention. IF INHALED: remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER, doctor or physician if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER, doctor or physician. Do NOT induce vomiting. IF ON HAIR (or skin): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical attention/advice. If skin irritation occurs get medical attention/advice. If eye irritation persists get medical attention/advice. Take off contaminated clothing and wash before reuse. In case of fire: Use dry chemical, CO₂, water spray (fog) or foam.

Storage:

Store in a well ventilated place. Keep container tightly closed. Keep cool. Store locked up. Keep out of the reach of children. For professional use and industrial applications.

DISPOSE OF UNUSED PAINT AND WASTE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

For additional safety and chronic hazard information, refer to the Safety Data Sheet (SDS) for this product. Product is intended for use as specified. Not for sale or use in the South Coast Air Quality Management District.

838050 THINNER, PAINT PRODUCTS.

In accordance with Military Specification MIL-T-81772B, dated January 29, 1986 and Amendment 1, dated October 25, 1991.

USE: To be used for reducing aircraft coatings to the desired viscosity.

Blended and Packaged by: Barton Solvents, Inc., 901 S. 66th Terrace, Kansas City, KS 66111 (913) 287-5500
Distributed by: Davis Paint Company, 1311 Iron Street, North Kansas City, Mo. 64116 (800)821-2029

UN1268, PAINT RELATED MATERIAL, 3, PGII

H-3*, F-3, R-0

H = HEALTH

F = FLAMMABILITY

R = REACTIVITY

STORE AT 70°F. (+/- 20°F.)



8010002801751

8010-00-280-1751

CAGE: 09PU3

P/N: M81772-1-055G

THINNER, PAINT PRODUCTS

UI: 1-DR (208 LITERS) 55 GALLON DR

SPE8EB-16-M-0046

MHM: 11/15

MFD DATE: 11/15

INSP/TEST DATE: 11/18

Warning Label Sample

APPENDIX J: WARNING LABELS AND PLACARDS (DOT CHARTS)

Department of Defense (DOT) Chart 15

General Guidelines on Use of Warning Labels and Placards

LABELS

- See 49 CFR, Part 172, Subpart E, for complete labeling regulations.
- The Hazardous Materials Table [§ 172.101, Col. 6] identifies the proper label(s) for the hazardous material listed.
 - Any person who offers a hazardous material for transportation **MUST** label the package, if required [§ 172.400(a)].
 - Labels may be affixed to packages when not required by regulations, provided each label represents a hazard of the material contained in the package [§ 172.401].
 - For labeling mixed or consolidated packages, see § 172.404.
 - The appropriate hazard class or division number must be displayed in the lower corner of a primary and subsidiary hazard label [§ 172.402(b)].
 - For classes 1,2,3,4,5,6, and 8, text indicating a hazard (e.g., "CORROSIVE") is **NOT** required on a primary or subsidiary label. The label must otherwise conform to Subpart E of Part 172 [§ 172.405].
 - Labels must be printed on or affixed to the surface of the package near the proper shipping name marking [§ 172.406(a)].
 - When primary and subsidiary labels are required, they must be displayed next to each other [§ 172.406(c)].
 - For a package containing a Division 6.1, PG III material, the POISON label specified in § 172.430 may be modified to display the text PG III instead of POISON or TOXIC. Also see § 172.405(c).
 - The ORGANIC PEROXIDE label [§ 172.427] indicates that organic peroxides are highly flammable. Use of the ORGANIC PEROXIDE label eliminates the need for a flammable liquid subsidiary label. The color of the border must be black and the color of the flame may be black or white.

PLACARDS

- See 49 CFR, Part 172, Subpart F, for complete placarding regulations.
- Each person who offers for transportation or transports any hazardous material subject to the Hazardous Materials Regulations must comply with all applicable requirements of Subpart F [§ 172.500].
 - Placards may be displayed for a hazardous material, even when not required, if the placarding otherwise conforms to the requirements of Subpart F of Part 172 [§ 172.502(c)].
 - For other than Class 7 or the DANGEROUS placard, text indicating a hazard (e.g., "FLAMMABLE") is not required. Text may be omitted from the OXYGEN placard only if the specific ID number is displayed on the placard [§ 172.519(b)(3)].
 - For a placard corresponding to the primary or subsidiary hazard class of a material, the hazard class or division number must be displayed in the lower corner of the placard [§ 172.519(b)(4)].
 - Except as otherwise provided, any bulk packaging, freight container, unit load device, transport vehicle or rail car containing any quantity of material listed in Table 1 must be placarded [§ 172.504].
 - When the aggregate gross weight of all hazardous materials in non-bulk packages covered in Table 2 is less than 454 kg (1,001 lbs), no placard is required on a transport vehicle or freight container when transported by highway or rail [§ 172.504(c)].
 - Notes: See § 172.504(f)(10) for placarding Division 6.1, PG III materials.
 - Placarded loads require registration with USDOT. See § 107.601 for registration regulations.
 - The new ORGANIC PEROXIDE placard became mandatory 1 January 2011 for transportation by rail, vessel, or aircraft and becomes mandatory 1 January 2014 for transportation by highway. The placard will enable transport workers to readily distinguish peroxides from oxidizers [§ 172.552].

PLACARDING TABLES
[§ 172.504(e)]

TABLE 1

Category of material (Hazard Class or division number and additional description, as appropriate)	Placard name
1.1.....	EXPLOSIVES 1.1.....
1.2.....	EXPLOSIVES 1.2.....
1.3.....	EXPLOSIVES 1.3.....
2.5.....	POISON GAS.....
4.3.....	DANGEROUS WHEN WET.....
5.2 (Organic peroxide, Type B, liquid or solid, temperature controlled).....	ORGANIC PEROXIDE.....
6.1 (Materials poisonous by inhalation (see § 171.8)).	POISON INHALATION HAZARD.....
7 (Radioactive Yellow III label only).....	RADIOACTIVE I.....

¹ RADIOACTIVE placard also required for exclusive use shipments of low specific activity material and surface contaminated objects transported in accordance with § 173.427(b)(4) and (5) or (c) of the subchapter.

TABLE 2

Category of material (Hazard Class or division number and additional description, as appropriate)	Placard name
1.4.....	EXPLOSIVES 1.4.....
1.5.....	EXPLOSIVES 1.5.....
1.6.....	EXPLOSIVES 1.6.....
2.1.....	FLAMMABLE GAS.....
2.2.....	NON-FLAMMABLE GAS.....
3.....	FLAMMABLE.....
Combustible liquid.....	COMBUSTIBLE.....
4.1.....	FLAMMABLE SOLID.....
4.2.....	SPONTANEOUSLY COMBUSTIBLE.....
5.1.....	OXIDIZER.....
5.2 (Other than organic peroxide, Type B, liquid or solid, temperature controlled).....	ORGANIC PEROXIDE.....
6.1 (Other than materials poisonous by inhalation).....	POISON.....
6.2.....	(None).....
8.....	CORROSIVE.....
9.....	Class 9 (See § 172.504(f)(7)).....
ORM-D.....	(None).....

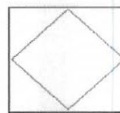
IDENTIFICATION NUMBER DISPLAYS



§ 172.332

Appropriate placard must be used with orange panel.

IDENTIFICATION NUMBER MARKINGS ON ORANGE PANELS OR APPROPRIATE PLACARDS MUST BE DISPLAYED ON: (1) Tank Cars, Cargo Tanks, Portable Tanks, and other Bulk Packagings; (2) Transport vehicles or freight containers containing 4,000 kg (8,820 lbs) in non-bulk packages of only a single hazardous material having the same proper shipping name and identification number loaded at one facility and transport vehicle contains no other material, hazardous or otherwise; and (3) transport vehicles or freight containers containing 1,000 kg (2,205 lbs) of non-bulk packages of materials poisonous by inhalation in Hazard Zone A or B. See §§ 172.301(a)(3), 172.313(c), 172.326, 172.328, 172.330, and 172.331.



§ 172.527

Square white background required for placard for highway route controlled quantity radioactive material and for rail shipment of certain explosives and poisons, and for flammable gas in a DOT 113 tank car [§ 172.507 and § 172.510].

This Chart is available online at the following link:
<http://phmsa.dot.gov/hazmat>



U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

USDOT/PHMSA/OH-MIT/PHI-H-50
1200 New Jersey Avenue, SE
Washington, D.C. 20590
Phone: (202) 366-4900
Email: training@dot.gov

PHI-H50-0143-0214

Department of Defense (DOT) Chart 15

Hazardous Materials Warning Placards

Actual placard size: at least 250 mm (7.84 inches) on all sides

CLASS 1 Explosives	CLASS 2 Gases	CLASS 3 Flammable Liquid and Combustible Liquid	CLASS 4 Flammable Solid, Spontaneously Combustible, and Dangerous When Wet		
<p>§172.507 §172.527 §172.524 §172.525</p> <p>* For Division 1.1, 1.2, or 1.3, containers marked and transported gross, other than a pack, placed any quantity. For Division 1.4, 1.5, and 1.6, containers marked when required placard 454 kg (1,001 lb) or more.</p>	<p>§172.503 §172.506 §172.507 §172.508</p> <p>For NON-FLAMMABLE GAS, OXYGEN (compressed gas or refrigerated liquid), and FLAMMABLE GAS, placard 454 kg (1,001 lb) or more gross weight. For TOXIC GAS, Division 2.3, placard any quantity.</p>	<p>§172.542 §172.544</p> <p>For FLAMMABLE placard 454 kg (1,001 lb) or more, GASOLINE may be used in place of FLAMMABLE placard displayed on a single tank or portable tank transporting gasoline by highway. Placard cannot be used transported in bulk. See § 172.504(a)(2) for use of FLAMMABLE placard in place of COMBUSTIBLE. FUEL OIL may be used in place of COMBUSTIBLE on a single or portable tank transporting fuel oil not classed as a flammable liquid by highway.</p>	<p>§172.546, §172.547, §172.548</p> <p>For FLAMMABLE SOLID and SPONTANEOUSLY COMBUSTIBLE, placard 454 kg (1,001 lb) or more. For DANGEROUS WHEN WET, Division 4.2, placard any quantity.</p>		
CLASS 5 Oxidizer & Organic Peroxide	CLASS 6 Poison (Toxic) and Poison Inhalation Hazard	CLASS 7 Radioactive	CLASS 8 Corrosive	CLASS 9 Miscellaneous	Dangerous
<p>Organic Peroxides, Division 5.2(1) (oil, wax, and slurry) 2014 (4/1/14)</p> <p>§172.550, §172.552</p> <p>For OXIDIZER and ORGANIC PEROXIDE (other than TYPE B, liquid, or solid), placard 454 kg (1,001 lb) or more. For ORGANIC PEROXIDE (Division 5.2, Type E, temperature controlled), placard any quantity.</p>	<p>§172.504(a)(1)(i), §172.554, §172.555</p> <p>For POISON (PG I or PG II, other than inhalation hazard) and TOXIC (PG I, E, placard 454 kg (1,001 lb) or more. For POISON-INHALATION HAZARD (Division 6.1), inhalation hazard only, placard any quantity.</p>	<p>§172.556</p> <p>Placard any quantity - packages bearing RADIOACTIVE YELLOW-III labels only. Certain low specific activity radioactive materials in "industrial use" will not bear this label, but the radioactive placard is required for exclusive use shipments of low specific activity material and surface contaminated objects that are coded in accordance with §172.504(a) Table 1 and §172.227(a)(2)</p>	<p>§172.558</p> <p>For CORROSIVE placard 454 kg (1,001 lb) or more.</p>	<p>§172.550</p> <p>Not required for domestic transportation. A tank packing or container of Class 9 material must be marked with the appropriate ID number displayed on a Class 9 placard, an orange panel, or a white square-on-point display.</p>	<p>§172.521</p> <p>Air freight containers, unit load devices, transport vehicles, or rail cars which contain non-bulk packages with two or more categories of hazardous materials that require placards may be placarded with DANGEROUS placards instead of the specific placards required for each of the materials in Table 2. However, when 1,000 kg (2,205 lb) or more of any category of material is loaded at one loading facility, the placard specified in Table 2 must be applied.</p>
				<p>§172.316(a)(2) (Road transport only).</p>	

Safety begins with communication!

Segregation Table for Hazardous Materials

Class or Division		Notes	1.1, 1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3 Gas Zone A	2.3 Gas Zone B	3	4.1	4.2	4.3	5.1	5.2	6.1 Liquids PG I Zone A	7	8 Liquids Only
Explosives	1.1 and 1.2	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives	1.3		*	*	*	*	*	X		X	X	X		X	X	X	X	X		X
Explosives	1.4		*	*	*	*	*	0		0	0	0		0				0		0
Very Insensitive explosives	1.5	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Extremely Insensitive explosives	1.6		*	*	*	*	*													
Flammable Gases	2.1		X	X	0	X				X	0							0	0	
Non-Toxic, non-flammable gases	2.2		X			X														
Poisonous Gas Zone A	2.3		X	X	0	X		X				X	X	X	X	X	X			X
Poisonous Gas Zone B	2.3		X	X	0	X		0				0	0	0	0	0	0			0
Flammable Liquids	3		X	X	0	X				X	0					0		X		
Flammable Solids	4.1		X			X				X	0							X		0
Spontaneously combustible materials	4.2		X	X	0	X				X	0							X		X
Dangerous when wet materials	4.3		X	X		X				X	0							X		0
Oxidizers	5.1	A	X	X		X				X	0	0						X		0
Organic Peroxides	5.2		X	X		X				X	0							X		0
Poisonous Liquids PG I Zone A	6.1		X	X	0	X		0				X	X	X	X	X	X			X
Radioactive Materials	7		X			X		0												
Corrosive Liquids	8		X	X	0	X				X	0	0	X	0	0	0	0	X		

Instructions for using the segregation table for hazardous materials are as follows:

- (1). The absence of any hazard class or division or blank space in the Table Indicates that no restrictions apply.
- (2). The letter "X" in the table Indicates that these materials may not be loaded, transported, or stored together in the same transport vehicle or storage facility during the course of transportation.
- (3). The letter "0" in the Table indicates that these materials may not be loaded, transported, or stored together in the same transport vehicle or storage facility during the course of transportation unless separated in a manner that, in the event of leakage from packages under conditions normally incident to transportation, commingling of hazardous materials would not occur. Notwithstanding the methods of separation employed, Class 3 (corrosive) liquids may not be loaded above or adjacent to Class 4 (flammable) or Class 5 (oxidizing) materials; except that shippers may load truckload shipments of such materials together when it is known that the mixture of contents would not cause a fire or a dangerous evolution of heat or gas.

Department of Defense (DOT) Chart 15

Hazardous Materials Warning Labels

Actual label size: at least 100 mm (3.9 inches) on all sides

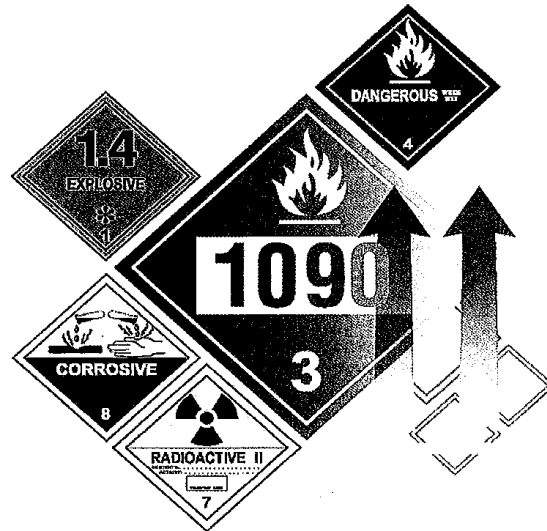
<p>CLASS 1 Explosives: Divisions 1.1, 1.2, 1.3, 1.4, 1.5, 1.6</p> <p style="text-align: center;">§172.411</p>	<p>CLASS 2 Gases: Divisions 2.1, 2.2, 2.3</p> <p style="text-align: center;">§172.405(a), §172.405, §172.416, §172.417</p>	<p>CLASS 3 Flammable Liquid</p> <p style="text-align: center;">§172.419</p>	<p>CLASS 4 Flammable Solid, Spontaneously Combustible, and Dangerous When Wet; Divisions 4.1, 4.2, 4.3</p> <p style="text-align: center;">§172.430, §172.422, §172.423</p>	<p>CLASS 5 Oxidizer, Organic Peroxide: Divisions 5.1 and 5.2</p> <p style="text-align: center;">§172.426, §172.427</p>
<p>* include correct 6 by group letter. ** include division number and compound by group letter.</p>				
<p>CLASS 6 Poison (Toxic), Poison Inhalation Hazard, Infectious Substance: Divisions 6.1 and 6.2</p> <p style="text-align: center;">§172.433, §172.434, §172.429, §172.430, §172.432</p>	<p>CLASS 7 Radioactive</p> <p style="text-align: center;">§172.436, §172.435, §172.440, §172.441</p>	<p>CLASS 8 Corrosive</p> <p style="text-align: center;">§172.442</p>	<p>CLASS 9 Miscellaneous Hazardous Material</p> <p style="text-align: center;">§172.446</p>	<p>Cargo Aircraft Only</p> <p style="text-align: center;">§172.448</p> <p>Empty Label</p> <p style="text-align: center;">§172.450</p>
<p>For Regulated Medical Waste (RMW), if neither of the above labels is not required on an outer packaging if the OSHA Biohazard ranking is used as prescribed in 29 CFR 1910.103(a). A bulk package of RMW must display a BIOHAZARD marking.</p>				

Department of Defense (DOT) Chart 15

DOT CHART 15
Hazardous Materials Markings, Labeling and Placarding Guide



Refer to 49 CFR, Part 172:
 Marking - Subpart D
 Labeling - Subpart E
 Placarding - Subpart F



NOTE: This document is for general guidance only and should not be used to determine compliance with 49 CFR, Parts 100-185.

HAZARDOUS MATERIALS MARKINGS

<p>Package Orientation (Red or Black)</p> <p>§172.312(a)</p>	<p>Keep Away from Heat</p> <p>§172.317</p>	<p>Fumigant Marking (Red or Black)</p> <p>§173.25(e)(4) §172.302(g) and §173.9</p>	<p>Biological Substances, Category B</p> <p>§172.318(e) §172.325 §172.332(a) §173.199 (c)(5)</p>	
<p>Limited Quantity*</p> <p>§172.315</p>	<p>ORM-D, Transition December 31, 2020</p> <p>§172.316</p>	<p>Excepted Quantity</p> <p>§173.4a(j)</p>	<p>Marking of IBCs</p> <p>§176.703(b)(7)(i)</p>	<p>Marine Pollutant</p> <p>§172.322</p>

* The limited quantity marking designates hazardous materials packages meeting the requirements for transportation as a limited quantity by air (Y mark) and packages meeting the requirements for transport as a limited quantity by surface modes (no Y). A Y-marked package meeting the requirements for transport by air may be transported by all modes. In some instances packages bearing the surface mark (no Y) may also be acceptable for transport by air provided the packages meet all relevant requirements for air transport (for example UN0012, UN0014, or UN0055).

SEGREGATION TABLE FOR HAZARDOUS MATERIALS

Department of Transportation
CLASS 1 EXPLOSIVES COMPATIBILITY TABLE

CLOSE PAGE

EXPLOSIVE COMPATIBILITY TABLE

PLACARD ANY QUANTITY

DRIVERS CHECKLIST

COMPATIBILITY TABLE FOR CLASS 1 EXPLOSIVES MATERIALS													
Compatibility Group	A	B	C	D	E	F	G	H	J	K	L	N	S
A		X	X	X	X	X	X	X	X	X	X	X	X
B	X		X	X ⁽⁵⁾	X	X	X	X	X	X	X	X	4/5
C	X	X		2	2	X	6	X	X	X	X	3	4/5
D	X	X ⁽⁵⁾	2		2	X	6	X	X	X	X	3	4/5
E	X	X	2	2		X	6	X	X	X	X	3	4/5
F	X	X	X	X	X		X	X	X	X	X	X	4/5
G	X	X	6	6	6	X		X	X	X	X	X	4/5
H	X	X	X	X	X	X	X		X	X	X	X	4/5
J	X	X	X	X	X	X	X	X		X	X	X	4/5
K	X	X	X	X	X	X	X	X	X		X	X	4/5
L	X	X	X	X	X	X	X	X	X	X	1	X	X
N	X	X	3	3	3	X	X	X	X	X	X		4/5
S	X	4/5	4/5	4/5	4/5	4/5	4/5	4/5	4/5	4/5	X	4/5	

FOOTNOTES:

- (X) Materials may not be loaded or transported together in same vehicle;
- (1) Explosives in compatibility group "L" only to be carried with identical explosives;
- (2) Any combination of compatibility groups C, D, or E is assigned to compatibility group E;
- (3) Any combination of compatibility groups C, D, or E with those in N is assigned to group D;
- (4) Means Section 177.835(g) when transporting detonators;
- (5) Division 1.4S fireworks not to be loaded on same vehicle with Division 1.1 or 1.2 materials.
- (6) Explosive articles in compatibility group G, other than fireworks and those requiring special stowage, may be stowed with articles of compatibility groups C, D, and E, provided no explosive substances are carried in the same vehicle.

SEGREGATION TABLE FOR HAZARDOUS MATERIALS (DEPARTMENT OF TRANSPORTATION (DOT))

Department of Transportation
HAZADOUS MATERIALS SEGREGATION TABLE

CLASS 1 CLASS 2 CLASS 3 CLASS 4 CLASS 5 CLASS 6 CLASS 7 CLASS 8 CLASS 9 MISCELLANEOUS

Hazardous Materials Markings

Identification Number Displays

General Guidance

SEGREGATION TABLE FOR HAZARDOUS MATERIALS																				
Class or Division	Notes	1.1 1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3 Gas Zone A	2.3 Gas Zone B	3	4.1	4.2	4.3	5.1	5.2	6.1 Liquids PGI Zone A	7	8 Liquids only	
Explosives - 1.1 / 1.2	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives - 1.3		*	*	*	*	*	X		X	X	X		X	X	X	X	X			X
Explosives - 1.4		*	*	*	*	*	O		O	O	O		O				O			O
Very Insensitive Explosives - 1.5	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Extremely Insensitive Explosives - 1.6		*	*	*	*	*														
Flammable Gases - 2.1		X	X	O	X				X	O							O	O		
Non-Toxic, Non-Flammable gases - 2.2		X			X															
Poisonous Gas Zone A - 2.3		X	X	O	X		X					X	X	X	X	X				X
Poisonous Gas Zone B - 2.3		X	X	O	X		O					O	O	O	O	O				O
Flammable Liquids - 3		X	X	O	X				X	O						O	X			
Flammable Solids - 4.1		X			X				X	O							X			O
Spontaneously Combustible Materials - 4.2		X	X	O	X				X	O							X			X
Dangerous When Wet Materials - 4.3		X	X		X				X	O							X			O
Oxidizers - 5.1	A	X	X		X				X	O	O						X			O
Organic Peroxides - 5.2		X	X		X				X	O							X			O
Poisonous Liquids PGI Zone A - 6.1		X	X	O	X		O					X	X	X	X	X				X
Radioactive Materials - 7		X			X		O													
Corrosive Liquids - 8		X	X	O	X				X	O		O	X	O	O	O	X			

FOOTNOTES:

- The absence of any hazard class or division or a blank space in the table indicates that no restrictions apply;
 - (X) These materials may not be loaded, transported, or stored together in the same transport vehicle or storage facility during the course of transportation;
 - (O) These materials may not be loaded, transported, or stored together in the same transport vehicle or storage facility during the course of transportation unless separated in a manner that, in the event of leakage from packages under conditions normally incident to transportation, commingling of hazardous materials would not occur. Notwithstanding the methods of separation employed, Class 8 (corrosive) liquids may not be loaded above or adjacent to Class 4 (flammable) or Class 5 (oxidizing) materials; except that shippers may load truckload shipments of such materials together when it is known that the mixture of contents would not cause a fire or a dangerous evolution of heat or gas;
 - (*) Segregation among different Class 1 (explosive) materials is governed by the compatibility table;
 - (A) Notwithstanding the requirements of the letter "X", ammonium nitrate (UN 1942) and ammonium nitrate fertilizer may be loaded or stored with Division 1.1 (Class A explosive) or Division 1.5 (blasting agents) materials;
- When the §172.101 table or §172.402 of this subchapter requires a package to bear a subsidiary hazard label, segregation appropriate to the subsidiary hazard must be applied when that segregation is more restrictive than that required by the primary hazard. However, hazardous materials of the same class may be stowed together without regard to segregation required for any secondary hazard if the materials are not capable of reacting dangerously with each other and causing combustion or dangerous evolution of heat, evolution of flammable, poisonous, or asphyxiant gases, or formation of corrosive or unstable materials.

APPENDIX K: FORMS

DoD Multimodal Dangerous Goods Declaration (DD Form 2890) Surface Vessel)

DOD MULTIMODAL DANGEROUS GOODS DECLARATION			
This form may be used as a dangerous goods goods declaration as it meets the requirements of SOLAS 74, Chapter VII, regulation 54 MARPOL 79/78 ANNEX III, Regulation 4			
1. SHIPPER/CONSIGNOR/SENDER SW3124 DLA DISTRIBUTION SUSQUEHANNA EAST NEW CUMBERLAND PA 17070 5001 USA		2. TRANSPORT DOCUMENT NUMBER W01E86	3. PAGE 01 OF 01 PAGES
4. SHIPPER'S REFERENCE (TCN) W91EB822900003XXX		7. CARRIER (To be completed by the carrier)	
5. FREIGHT FORWARDER'S REFERENCE	6. CONSIGNEE 0000 HQ HQ ARGENT BAGRAM OPERATION ENDURING FREEDOM BAGRAM AIR BASE SSF AWCF BAGRAM AF		
24-HOUR EMERGENCY ASSISTANCE TELEPHONE NUMBERS:			
DOD NON-EXPLOSIVE HAZMAT: 1-800-861-8061 AT SEA: COLLECT 1-804-279-3131	DOD HAZ CLASS1 (EXPLOSIVES) ONLY: COLLECT: (709)896-4886/4886 or DSN: 312-225-4886/4696 (Watch Officer)	CHEMICAL/BIOLOGICAL WARFARE MATERIAL: DUTY HOURS: DSN: 584-3044/7211/6456 410-436-3044/7211/6456 - Ask for TEUS3	DOD SECURE HOLDING: 1-800-624-0331 OIL/CHEMICAL SPILLS: NRC & TERRORIST HOTLINE: 1-800-424-8802 AT SEA: COLLECT: 202-287-2875
DOD RADIOACTIVE MATERIALS: COLLECT .DLA: 1-800-861-8061 AT SEA: COLLECT 804-279-3131			
8. THIS SHIPMENT IS WITHIN THE LIMITATIONS PRESCRIBED FOR: (X as applicable)			9. CONTAINER PACKING CERTIFICATE OR VEHICLE PACKING DECLARATION, DD FORM 2781, IS ATTACHED (X if applicable)
<input type="checkbox"/> MILITARY VESSEL	<input type="checkbox"/> COMMERCIAL VESSEL	<input type="checkbox"/> HIGHWAY/RAIL	
10. VOYAGE DOCUMENT NUMBER AND SAILING DATE (To be completed by the carrier)		11. PORT/PLACE OF LOADING 0001MJ	
12. PORT/PLACE OF DISCHARGE QA1		13. DESTINATION 0000 HQ HQ ARGENT BAGRAM BAGRAM AF	
14. SHIPPING MARKS	DESCRIPTION OF GOODS (UN No., PSN, HC, SHC, PG, number and kind of package, and additional information as required by regulation)		NET MASS/GTY (kg/l)
UN1263, PAINT RELATED MATERIAL, CLASS 3, II, FP 5 C 1 STEEL DRUM X 18.9 L EMS NO. F-E, 5-E			GROSS MASS (kg) 17.70
15. CONTAINER IDENTIFICATION NO./VEHICLE REGISTRATION NO.	16. SEAL NUMBER(S)	17. CONTAINER/VEHICLE AND TYPE	18. TARE MASS (kg)
19. ADDITIONAL HANDLING INFORMATION			
20. RECEIVING ORGANIZATION RECEIPT Received the above number of packages/containers/trailers in apparent good order and condition, unless stated hereon:			
a. RECEIVING ORGANIZATION REMARKS			
b. HAULER'S NAME	c. VEHICLE REGISTRATION NO.	d. SIGNATURE AND DATE	e. DRIVER'S SIGNATURE
21. SHIPPER PREPARING THIS FORM			
SHIPPER'S DECLARATION. I hereby declare that the contents of this consignment are fully and accurately described above by the Proper Shipping Name, and are classified, packaged, marked, and labeled/placarded and are in all respects in proper condition for transport according to the International and national government regulations.			
a. NAME OF COMPANY/MILITARY UNIT DLA DISTRIBUTION SUSQUEHANNA EAST		b. NAME/STATUS OF DECLARANT/CERTIFIER XXXXXX XXXXXX	
c. PLACE AND DATE NEW CUMBERLAND PA 03SEP2016		d. SIGNATURE OF DECLARANT/CERTIFIER	
DD FORM 2890, AUG 2014		PREVIOUS EDITION IS OBSOLETE	14.1100

RADIOACTIVE MATERIAL MOVEMENT FORM (DDC FORM 4155.64)

Radioactive Material Movement Form				
1. Type: Shipment: <input checked="" type="checkbox"/> Receipt: <input type="checkbox"/>		2. TCN: W81B9W52380009BXX		
3. TO: 0040 QM CO QM COMP SPLY CO DSU OPS AWCF SSF BLDG 3005 LYMAN RD SCHOMELD BARRACKS HI 96857-5200		4. FROM: DLA DISTRIBUTION SUSQUEHANNA EAST 2001 NORMANDY DRIVE NEW CUMBERLAND PA 17070-5001		
Commodity Description				
5. NSN: 6605011966971		6. NAME: COMPASS,MAGNETIC,UN		
7. Quantity: 3	8. Condition Code: A	11. Physical Form: Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas <input checked="" type="checkbox"/>		
9. Radionuclide(s): H3		12. Transportation Form: Special <input type="checkbox"/> Normal <input checked="" type="checkbox"/>		
10. Actvlty: Per Item: 4.44 GBQ (in SI Units) Per Item:		Total: 13.32 GBQ Total:	13. Transportation Index: 0.0	
Package/Radiation Rate		Dry Wipe		LSC Wipe
14. Survey Meter Type/Serial No: 451P/2697		18. Lab Meter Type/Serial Number:		22. LSC Meter Type/Serial Number: LSC/095112
15. Date Calibration Due: 2016-06-19		19. Date Calibration Due:		23. Date Calibration Due: 2016-02-06
16. mR/hr: 0.002	17. microSv/hr: 0.02000	20. Alpha dpm/100cm ²	21. Beta dpm/100cm ²	24. LSC dpm/100cm ² 0.0
Shipment Information				
25. Excepted Notice: Proper shipping name				
1. Radioactive material, excepted package - articles manufactured from natural uranium or depleted uranium or natural Thorium, UN 2909				
2. Radioactive material, excepted package - limited quantity of material, UN 2910				
X 3. Radioactive material, excepted package - instruments or articles, UN 2911				
4. Radioactive material, Type A package, Special form, non fissile, UN 3332				
5. Non-regulated quantities of radioactive material. No UN required.				
26. Label Required: Excepted <input checked="" type="checkbox"/> White I <input type="checkbox"/> Yellow II <input type="checkbox"/> Yellow III <input type="checkbox"/> Non-regulated <input type="checkbox"/>				
Remarks and Special Provisions				
27.				
28. For additional information on these items call the RPO at 717-770-4275				
29. Certified By: XXXXXXXXXX				Date: 2015-08-31
30. Surveyed By: XXXXXXXXXX				Date: 2015-08-31
DDC Form 4155.64				10.1v00

SHIPPERS DECLARATION OF DANGEROUS GOODS (COMMERCIAL/MILITARY AIR)

SHIPPER'S DECLARATION FOR DANGEROUS GOODS (Provide at least two copies to the airline.)							
<p>Shipper XXXXX DLA DISTRIBUTION SUSQUEHANNA EAST 2001 NORMANDY DRIVE NEW CUMBERLAND PA 17070 5001 USA</p>	<p>Air Waybill No. 645494878738 Page 1 of 1 Pages Shipper's Reference Number SW321824550000XXX <small>(optional)</small></p>						
<p>Consignee SW3128 COMMANDING OFFICER FISC-N CODE 432.4 ISSOT BLDG SDA-216 1860 LEUTZE ROAD NORFOLK VA 235110000</p>	<p>WARNING Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.</p>						
<p><i>Two completed and signed copies of this Declaration must be handed to the operator</i></p>							
<p>TRANSPORT DETAILS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"> <p>This shipment is within the limitations prescribed for <small>(delete non-applicable)</small></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">HAZARDOUS</td> <td style="text-align: center;">CARGO</td> </tr> <tr> <td style="text-align: center;">AIRFREIGHT</td> <td style="text-align: center;">AIRCRAFT ONLY</td> </tr> </table> </td> <td style="width: 40%;"> <p>Airport of Departure</p> </td> </tr> </table>	<p>This shipment is within the limitations prescribed for <small>(delete non-applicable)</small></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">HAZARDOUS</td> <td style="text-align: center;">CARGO</td> </tr> <tr> <td style="text-align: center;">AIRFREIGHT</td> <td style="text-align: center;">AIRCRAFT ONLY</td> </tr> </table>	HAZARDOUS	CARGO	AIRFREIGHT	AIRCRAFT ONLY	<p>Airport of Departure</p>	<p>Airport of Destination</p>
<p>This shipment is within the limitations prescribed for <small>(delete non-applicable)</small></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">HAZARDOUS</td> <td style="text-align: center;">CARGO</td> </tr> <tr> <td style="text-align: center;">AIRFREIGHT</td> <td style="text-align: center;">AIRCRAFT ONLY</td> </tr> </table>	HAZARDOUS	CARGO	AIRFREIGHT	AIRCRAFT ONLY	<p>Airport of Departure</p>		
HAZARDOUS	CARGO						
AIRFREIGHT	AIRCRAFT ONLY						
<p>NATURE AND QUANTITY OF DANGEROUS GOODS <small>UN Number or Identification Number, proper shipping name, Class or Division, (subsidiary risk), packing group (if required), and all other required information.</small></p> <p>UN1263, PAINT, 3, II// 1 STEEL DRUM X 18.9 L//364</p>							
<p>Additional Handling Information</p>							
<p>EMERGENCY CONTACT: 1-800-851-8061/804-279-3131 COLLECT</p>							
<p>I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable International and national governmental regulations. I declare that all of the applicable air transport requirements have been met.</p>	<p>Name/Title of Signatory XXXXX XXXXX Place and Date NEW CUMBERLAND PA 0388P2015 Signature <small>(see warning above)</small></p>						
<p>Style F07LB LABELMASTER® (800) 621-5808 www.labelmaster.com 10.1v00</p>							

FEDEX GRND HAZARDOUS MATERIALS CERTIFICATION		SHIPPER'S NAME & ADDRESS DLA DLA DISTRIBUTION SUSQUEHANNA EAST 2001 NORMANDY DRIVE NEW CUMBERLAND PA 17070 5001			SHIPPER NUMBER 8965894 DATE 09 02 2015		EMERGENCY CONTACT NUMBER: 1-800-851-8061 <small>This telephone number is for emergency response information.</small>		
Abbreviations not permitted except where noted.									
NUMBER AND TYPE OF PACKAGING	IDENTIFICATION NUMBER	D.O.T. SHIPPING NAME OF MATERIAL <small>(Additional entries if applicable)</small>	HAZARD CLASS OR DIVISION NUMBER	PACKING GROUP	WEIGHT U/M	TYPE DOT LABEL, LTD. CITY, SPECIAL PERMIT OR OR EXEMPTION NUMBER	RECEIVER'S NAME, CITY & STATE <small>(Abbreviations permitted)</small>	TRACKING I.D.	
1 4G	UN 1950	AEROSOLS	2.1		4.5 KG	FLAMMABLE GAS	DOJCRECWHSE162-3 POCTERYRIVERAPH 209839 4307 25600SOUTHCHRISMAINROAD TRACY CA95304-5000	645494877915 TCN:SW319552020002XAX	
							EMERGENCY CONTACT NUMBERS HAZMAT EMERGENCY CONTACT: CALL 800-851-8061 AT SEA 804-279-3131 (COLLECT)		
1 FIBERBOARD BOX	UN 1263	PAINT	3	II	18.8 L	FLAMMABLE LIQ. LIQ. LIQ.	COMMANDING OFFICER: FSCN COP1432-41507ALGSDA-216 1850LEUTZERDAD NORFOLK VA23511-0000	645494878645 TCN:SW321824550000XXX	
							EMERGENCY CONTACT NUMBERS HAZMAT EMERGENCY CONTACT: CALL 800-851-8061 AT SEA 804-279-3131 (COLLECT)		
THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION.									
SIGNATURE _____							Date/Time: 2015245 13:02:32		
EPO950 11.11.09							Page 1 of 1		

OP-950 FedEx Hazardous Materials Certification Form

Title:	Inert Certificate	
Type of Property includes but is not limited to:	1. Small Arms and Light Weapons (complete weapon) 2. Barrel assembly and upper receiver 3. Ammunition pouches/ outer tactical vests/Individual load-bearing equipment/Modular Lightweight Load Carrying Equipment (MOLLE) 4. Ammunition magazines and clips 5. Bandoleers and ammunition belts 6. Dummy munitions	
Requirements:	The generating activity shall ensure that this property is properly inspected to determine the presence or absence of explosive hazards prior to referral to the DLA Disposition Services site or release from DoD control. The personnel certifying and verifying the inspection shall certify on the DD Form 1348-1A. The certification requires dual signatures (certifier, verifier) and printed full name, rank/rate, organization name and address, and phone number (commercial and DSN) of the personnel that certified and verified the inspection.	
DTID:	QTY:	
NSN or Description:		
Certification Statement:		
The property associated with this DTID has been inspected by the Certifier and independently re-inspected by the Verifier and to the best of our knowledge is free of materiel potentially presenting an explosive hazard (MPPEH)..		
Signature (Certifier): _____ Date _____ Printed Name/Grade/Rank: _____ Title: _____ Phone (COM/DSN/FAX): _____ Address: _____ _____ ===== Signature (Verifier): _____ Date _____ Printed Name/Grade/Rank: _____ Title: _____ Phone (COM/DSN/FAX): _____ Address: _____ _____		
Reference:	DoD 4160.21-M, "Defense Materiel Disposition Manual," current edition	

INERT CERTIFICATE

GLOSSARYPART I. ABBREVIATIONS AND ACRONYMS

AAR	Association of American Railroads
ACGIH	American Conference of Governmental Industrial Hygienists
AFJMAN	Air Force Joint manual
AFR	Air Force Regulation
AIS	automated information system
ALARA	as low as reasonably achievable
ASHERA	Asbestos Hazard Emergency Response Act
ANSI	American National Standards Institute
AR	Army Regulation
ASHARA	Asbestos School Hazard Abatement Reauthorization Act
ASTM	American Society of Testing and Materials
AUTODIN	automatic digital network
BOE	Bureau of Explosives
CAA	Clean Air Act
CAA	competent authority approval
CDL	commercial driver's license
CEPP	Community Emergency Preparedness Program
CERCLA	Comprehensive Environmental Response, Cleanup and Liability Act
CFC	chlorofluorocarbons
CFR	Code of Federal Regulations
CHLOREP	Chlorine Emergency Plan
COE	certificate of equivalency
COFC	container on flat car
CONUS	Continental United States
COSIS	care of supplies in storage
CWA	Clean Water Act
DLA	Defense Logistics Agency
DLAH	Defense Logistics Agency handbook
DLAM	Defense Logistics Agency manual
DLAR	Defense Logistics Agency Regulation
DoD	Department of Defense
DoDAC	Department of Defense ammunition code
DoDi	Department of Defense Instruction
DOT	Department of Transportation
DRMS	Defense Reutilization and Marketing Service
DRO	disposal release order

DTR	Defense Transportation Regulation
DTS	Defense Transportation System
DSS	Distribution Standard System
EO	Executive Order
EPCRA	Emergency Planning and Community-Right-to-Know Act
FEMA	Federal Emergency Management Agency
FIFO	first-in/first-out
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FOB	free on board (Origin or Destination)
GBL	Government Bill of Lading
GPO	Government Printing Office
GSA	General Services Administration
HAZMAT	hazardous materials
HAZMIN	hazardous minimization
HAZWOPER	hazardous waste operations and emergency response
HCC	hazard characteristic code
HCS	hazard communication standard
HM	hazardous materials
HMIRS	Hazardous Materials Information Resource System
HMR	Hazardous Materials Regulation
HMTA	Hazardous Materials Transportation Act
HSAC	Hazardous Storage Area Code
HW	hazardous waste
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICC	Interstate Commerce Commission
ICP	inventory control point
IMDG	international maritime dangerous goods
IMDGC	international maritime dangerous goods codes
IMO	International Maritime Organization
ISCP	Installation Spill Contingency Plan
JSM	joint service manual
kPa	kilopascal
LCL	less than carload
LEPC	Local Emergency Planning Committee
LTL	less than truckload

MCO	Marine Corps order
MHE	materials handling equipment
MILSTAMP	Military Standard Transportation and Movement Procedures
MMC	Material Management Center
NCP	National Contingency Plan
NEC	National Electric Codes
NIOSH	National Institute for Occupational Safety and Health
NRC	Nuclear Regulatory Commission
NRFI	not ready for issue
NRT	national response team
NSN	national stock number
OASD	Office of the Assistant Secretary of Defense
ODS	ozone depleting substance
ORM	other regulated materials
OSHA	Occupational Safety and Health Administration
PICA	Primary Inventory Control Activity
PHMSA	Pipeline and Hazardous Material Safety Administration
PMRD	Prepositioned Materiel Receipt Document
POC	Point of Contact
POP	Performance Oriented Packaging
PPA	Pollution Prevention Act of 1990
ppb	parts per billion
PPE	personal protective equipment
ppm	parts per million
psi	pounds per square inch
psia	pounds per square inch absolute
PSN	proper shipping name
QAR	quality assurance representative
RCRA	Resource Conservation and Recovery Act
RPO	radiation protection officer
RQ	reportable quantity
RTECS	registry of toxic effects of chemical substances
SARA	Superfund Amendments and Reauthorization Act
SDDC	Surface Deployment and Distribution Command
SDR	Supply Discrepancy Report
SDS	Safety Data Sheet
SDWA	Safe Drinking Water Act
SERC	State Emergency Response Commission
SF	Standard Form
SOP	standard operating procedure

SPCC	Spill Prevention Control and Countermeasure Plan
SSA	system safety analysis
TDG	transport of dangerous goods
TDR	Transportation Discrepancy Report (SF 361)
TIs	technical instructions (ICAO)
TLV	threshold limit value
TM	technical manual
TOFC	trailer on flat car (piggyback)
TPQ	threshold planning quantity
TSCA	Toxic Substance Control Act (Public Law 99-519)
TU(s)	transportation unit(s)
UN	United Nations
USC	United States Code
USCG	United States Coast Guard

PART II. DEFINITIONS

Acid - One of a large class of chemical substances whose water solutions have one or more of the following properties: ability to make blue litmus paper turn red and to cause other indicator dyes to change characteristic colors, ability to react with and dissolve certain metals to form salts and ability to react with bases or alkalis to form salts. All acids contain hydrogen and in water, ionization or splitting of the molecule occurs so that hydrogen ions are formed. The pH of these solutions is less than 7.0.

ADR - The European agreement concerning the international carriage of dangerous goods by road.

Alkali - Any substance that in water solution is, more or less irritating or caustic to the skin and mucous membranes; turns red litmus paper blue and has a pH value greater than 7.0.

Atmospheric Pressure - Atmospheric Pressure is 101.3 kPa (14.7 psi).

Certificate of Equivalency (COE) - Approval that the proposed packaging for shipment of hazardous materials either equals or exceeds the requirements of Title 49 CFR.

Closed Transport Vehicle - A transport vehicle equipped with an attached exterior enclosure that restricts the access of unauthorized persons to the cargo space containing the radioactive materials during normal transport. The enclosure may be either temporary or permanent. In the case of packaged materials, the enclosure may be of the "see-through" type and will limit access from top, sides, and ends.

Combination Packaging - A combination of packaging, for transport purposes, consisting of one or more inner containers secured in a non-bulk outer packaging. It does not include a composite packaging.

Combustible Liquid - A combustible liquid is any liquid that does not meet the definition of any other classification specified in this manual and has a flash point above 60.5° C (141° F) and below 93° C (200° F). Any mixture having one or more components with a flash point of 93° C (200° F) or higher, that makes up at least 99 percent of the total volume of the mixture is not a combustible liquid.

Competent Authority Approval (CAA) - Written approval granted by the DOT Competent Authority to use a design-type package without POP testing it. DoD activities cannot waive POP requirements.

Competent Authority - A national agency responsible under its national law for the control or regulation of a particular aspect of the transportation of hazardous materials. The Associate Administrator, Pipeline and Hazardous Materials Safety Administration, US Department of Transportation, is the United States Competent Authority.

Composite Packaging - Packaging consisting of an outer packaging and inner receptacle, so constructed that the inner receptacle and the outer packaging form an integral packaging. Once assembled it remains thereafter an integrated single unit; it is filled, stored, shipped, and emptied as such.

Compressed Gas in Solution - A non-liquefied compressed gas dissolved in a solvent.

CONEX - A military-controlled and owned reusable serially numbered, steel shipping container in either of two sizes.

Container - Any portable device, in which a material is stored, transported, disposed of, or otherwise handled.

Containerization - The use of containers to unitize cargo for transportation, supply, and storage. Containerization incorporates supply, transportation, packaging, storage, and security together with visibility of container and its contents into a distribution system from source to user.

Contingency - An emergency involving military forces caused by natural disasters, terrorists, subversives, or by required military operations. Due to the uncertainty of the situation, contingencies require plans, rapid response, and special procedures to ensure the safety and readiness of personnel, installations, and equipment.

Dangerous When Wet - A hazard classification and label requirement for water-reactive materials being shipped by DOT and international modes of transportation.

Design - The description of a special form material, a package, or a packaging, that enables those items to be fully identified. The description may include specifications, engineering drawings, reports meeting regulatory requirements, and other relevant documentation.

Division - A subdivision of a hazard class.

DOT Special Permit - Administrative relief granted based on new technology of equivalent levels of safety or levels of safety consistent with the public interest and the policy of the Hazardous Materials Transportation Act.

Drum - A flat-ended or convex-ended cylindrical packaging made of metal, fiberboard, plastic, plywood, or other suitable materials.

Egress - Exit.

Expiration Date - (As relates to Shelf life) The date by which nonexpendable items should be discarded as no longer suitable for issue or use.

Flash Point - The minimum temperature at which a liquid within a test vessel gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid. Flash points are determined by the testing prescribed in 49 CFR 173.120.

FSC - Federal Supply Class - The four-digit number preceding the NIIN that signifies the special group to which an item belongs (e.g. 6810, Chemicals; 8040, Adhesives)

FSCM/FSCNM - Federal Supply Code for Manufacturers/Federal Supply Code for Non-manufacturers. The five-position code assigned to any contractor who does business with the Government. For purposes of this document, when FSCM is written, it can be assumed that FSCNM is also included. (Now retitled CAGE).

Handlers - Personnel who handle hazardous materials or hazardous materials documentation.

Hazard Class - The category of hazard assigned to a hazardous material based on defining criteria. Hazard classes are explosives (Class 1), compressed gases (Class 2), flammable liquids (Class 3), flammable solids, spontaneous combustible material and dangerous when wet (Class 4), oxidizers and organic peroxides (Class 5), poisons and infectious substances (etiologic agents) (Class 6), radioactive materials (Class 7), corrosive materials (Class 8), and miscellaneous dangerous goods (Class 9).

Hazard Zone - One of four levels of hazard (hazard zones A through D) assigned to gases and one of two levels of hazard (hazard zones A and B) assigned to liquids that are poisonous by inhalation. A hazard zone is based on the LC50 value for acute inhalation toxicity of gases and vapors.

Hazardous Cargo Inspectors - DoD personnel whose duties require them to review the integrity of the packaging and accuracy of documentation for all hazardous materials being transported within the Defense Transportation System (DTS) or by commercial carriers.

Hazardous Cargo Preparers - DoD personnel whose duties require them to sign legally binding documentation certifying that hazardous materials are properly classified, packaged, marked and

labeled, and in all respects meet the legal requirements for transportation within the DTS or by commercial carriers.

Hazardous Materials - OSHA's Hazard Communication standard defines a hazardous material as any chemical that presents a physical hazard or a health hazard. A substance or material, which determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated. The term includes hazardous substances, hazardous wastes, marine pollutants, and elevated temperature materials. Materials designated as hazardous under the provisions of CFR 49, sections 172.101, 172.102, and materials that meet the defining criteria for hazard classes and divisions in Part 173.

Hazardous Substance (DOT) - A material, including its mixtures and solutions, that is capable of posing an unreasonable risk to health, safety, and property when transported in a quantity (in one package) which equals or exceeds the reportable quantity (RQ) listed in Appendix A of 49 CFR 172.101.

Hazardous Waste - Any solid waste that meets the definition in 40 CFR 261.3 and/or identified as a specific state hazardous waste.

HAZMAT Employee - A person employed by a HAZMAT employer and who in the course of employment directly affects hazardous materials transportation safety. This term includes an owner-operator of a motor vehicle, which transports hazardous materials in commerce. This term includes an individual, including a self-employed individual, employed by a HAZMAT employer who, during the course of employment:

- (1) Loads, unloads, or handles hazardous materials
- (2) Tests, reconditions, repairs, modifies, marks, or otherwise represents containers, drums, or packaging as qualified for use in the transportation of hazardous materials.
- (3) Prepares hazardous materials for transportation
- (4) Is responsible for safety of transporting hazardous materials; or
- (5) Operates a vehicle used to transport hazardous materials.

HAZMAT Employer - A person who uses one or more of its employees in connection with: transporting hazardous materials in commerce; causing hazardous materials to be transported or shipped in commerce; or representing, marking, certifying, selling, offering, reconditioning, testing, repairing, or modifying containers, drums, or packaging as qualified for use in the transportation of hazardous materials. This term includes an owner-operator of a motor vehicle, which transports hazardous materials in commerce. This term also includes any department, agency, or instrumentality of the United States, a State, a political subdivision of a State, or an Indian tribe engaged in an activity described in the first sentence of this definition.

Inner Packaging - A packaging for which an outer packaging is required for transport. It does not include the inner receptacle of a composite packaging.

Inner Receptacle - A receptacle that requires an outer packaging in order to perform its containment function. The inner receptacle may be an inner packaging of a combination packaging or the inner receptacle of a composite packaging.

Intermodal Container - A freight container designed and constructed to permit it to be used interchangeably in two or more modes of transport.

Intermodal Portable Tank or IM Portable Tank - A specific class of portable tanks designed primarily for international intermodal use.

Jerrican - A metal or plastic packaging of rectangular or polygonal cross-section.

Label - Any diamond, square, or rectangular-shaped attachment to a package that identifies the hazardous nature of a material.

Limited Quantity - when specified as such in a section applicable to a particular material means the maximum amount of a hazardous material for which there is a specific labeling or packaging exception.

Liquid - A material that has a vertical flow of over 2 inches (50mm) within a three minute period, or a material having one gram or more liquid separation, when determined IAW the procedures specified in ASTM D 4359-84, Standard Test Method for Determining whether a Material is a Liquid or Solid.

Magazine Vessel - A vessel used for the receiving, storing, or dispensing of explosives.

Magnetic Material - Any packaged material that has a magnetic field strength of 0.002 gauss or more measured at 2.1 m (7ft) from any surface of the package.

Mode - Any of the following transportation methods: rail, highway, air, or vessel.

Non-Bulk Packaging - A packaging which has: (1) A maximum capacity of 450 L (119 gallons) or less as a receptacle for a liquid. (2) A maximum net mass of 400 kg (882 pounds) or less and a maximum capacity of 450 L (119 Gallons) or less as a receptacle for a solid. (3) A water capacity of 454 kg (1000 pounds) or less as a receptacle for a gas as defined in 49 CFR, 173.115.

Non-Reusable Container - A packaging (container) whose reuse is restricted IAW the provisions of 49 CFR, 173.28.

Operator - A person who controls the use of an aircraft, vessel, or vehicle.

Outage or Ullage - The amount by which a packaging falls short of being liquid full, usually expressed in percent by volume.

Outer Packaging - The outermost enclosure of a composite or combination packaging together with any absorbent materials, cushioning and any other components necessary to contain and protect inner receptacles or inner packaging.

Overpack - An enclosure used by a single consignor to provide protection or convenience in handling of a package or to consolidate two or more packages. Overpack does not include a freight container.

Package or Outside Package - A packaging plus its contents.

Packaging - A receptacle and any other components or materials necessary for the receptacle to perform its containment function.

Packers - Personnel, who package hazardous materials, but do not sign legally binding documents.

Packing Group - A grouping according to the degree of danger presented by hazardous materials. Packing Group, I, indicates great danger; Packing Group II, medium danger; Packing Group III, minor danger.

PCB(s) Polychlorinated Biphenyls - A series of compounds used for a number of industrial purposes, which are now found throughout the natural environment. PCBs are toxic to some marine life at concentrations of a few parts per billion (ppb) and are known to cause skin diseases, digestive disturbances, and even death in humans at higher concentrations. PCBs are persistent in the environment and do not easily decompose, and bio magnify up the food chain.

pH - A value taken which represents the acidity or alkalinity of an aqueous solution. It is defined as the logarithm of the reciprocal of the hydrogen ion concentration of a solution.

Primary Hazard - The hazard class of a material as assigned in the Title 49 CFR 172.101.

Proper Shipping Name - The name of the hazardous material shown in Roman print (not italics) in Title 49 CFR 172.101.

Receptacle - A containment vessel for receiving and holding materials, including any means of closing.

Reportable Quantity - (RQ) The quantity specified in column 3 of the table in Title 49 CFR 172.101, Appendix A for any material identified in column 1.

Residue - The hazardous material remaining in a packaging, including a tank car, after its contents have been unloaded to the maximum extent practicable and before the packaging is either refilled or cleaned of hazardous material and purged to remove any hazardous vapors.

RID - European regulatory body that regulates rail shipments of dangerous goods in Europe.

Salvage Drum - A metal or plastic drum with a removable head that is compatible with the material and is used to transport damaged or leaking hazardous materials or hazardous waste for repackaging or disposal.

SEAVAN - Commercial or Government-owned (or leased) shipping container.

Shipping Paper - A shipping order, bill of lading, manifest or other shipping document serving a similar purpose and containing the information required by Title 49 CFR 172.202, 172.203, and 172.204.

Single Packaging - A non-bulk packaging other than a combination packaging.

Solid - A material which has a vertical flow of two inches (50mm) or less within a three-minute period, or a separation of less than one gram of liquid when determined IAW the procedures specified in ASTM D 4359, "Standard Test Method for Determining Whether a Material is a Liquid or Solid."

State - A State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, the Virgin Islands, American Samoa, Guam, or any other territory or possession of the United States designated by the Secretary.

Stowage - The act of placing hazardous materials on board a vessel.

Subsidiary Hazard - A hazard of a material other than the primary hazard.

Tactical - A tactical operation is the movement of personnel, equipment and supplies of an organization so they can accomplish their immediate military combat objective.

Technical Name - A recognized chemical name or microbiological name currently used in scientific and technical handbooks, journals, and texts. Generic descriptions are authorized provided they readily identify the general chemical or microbiological group.

Threshold Limit Value (TLV) - A registered trademark of the American Conference of Governmental Industrial Hygienists (ACGIH). ACGIH presents the most recent TLVs for commonly used industrial chemical compounds. The Threshold Limit Value-Time Weighted Average (TLV-TWA) is the time weighted average concentration for a normal 8-hour workday and 40-hour workweek to which nearly all workers may be repeatedly exposed, day after day, without adverse effect. Threshold Limit Value-Short Term Exposure Limit (TLV-STEL, 15 minutes) is the concentration to which workers can be exposed continuously for a short period of time without suffering from (1) irritation; (2) chronic or irreversible tissue damage; or (3) narcosis of sufficient degree to increase the likelihood of accidental injury, impair self-rescue, or materially reduce work efficiency, provided that the daily TLV-TWA is not exceeded. This is not a separate independent exposure limit but, rather, supplements the time recognized acute effects from a substance whose toxic effects are primarily of a chronic nature. STELs are

recommended only where toxic effects have been reported from high short-term exposures in either humans or animals.

Transport Vehicle - A cargo-carrying vehicle such as an automobile, van, tractor, truck, semitrailer, tank car or rail car used for the transportation of cargo by any mode.

UN - United Nations.

UN Number - The four-digit number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods to identify a substance or a particular group of substances. (The prefix "UN" will always be used in conjunction with these numbers.)

UN Standard Packaging - A specification packaging conforming to the requirements in Title 49 CFR, subparts L, M, N, O, P, and Q of part 178.

Unit Load Device - Any type of freight container, aircraft pallet with a net, or aircraft pallet with a net over an igloo.

Vessel - Includes every description of watercraft, used or capable of being used as a means of transportation on the water.

Water Resistant - Having a degree of resistance to permeability by and damage caused by water in liquid form.

Wooden Barrel - A packaging made of natural wood, of round cross-section, having convex walls, consisting of staves and heads and fitted with hoops.