

Mercury Management

TRANSPORTATION AND STORAGE PLAN

April 2004



**Defense Logistics Agency
Defense National Stockpile Center
Fort Belvoir, Virginia**

DEFENSE LOGISTICS AGENCY

DEFENSE NATIONAL STOCKPILE CENTER

MERCURY TRANSPORTATION AND STORAGE
PLAN

APRIL 2004

Prepared by:
Tennessee Valley Authority
Muscle Shoals, Alabama

TABLE OF CONTENTS

	PAGE
LIST OF FIGURES	ii
LIST OF TABLES	ii
EXECUTIVE SUMMARY	iii
1.0 INTRODUCTION	1-1
2.0 DESCRIPTION OF MERCURY STOCKPILE	2-1
3.0 REGULATIONS	3-1
4.0 TRANSPORTATION OF MERCURY	4-1
4.1 Health and Safety, Environmental Protection, and Security	4-1
4.2 Oak Ridge to Warren	4-3
4.2.1 Responsibilities	4-3
4.2.2 Transportation Mode	4-3
4.2.3 DOT Exemption from Marking and Labeling Individual Flasks	4-3
4.3 DNSC Depots to Consolidation Site	4-3
4.3.1 Responsibilities	4-3
4.3.2 Transportation Mode	4-4
5.0 STORAGE OF MERCURY AT THE CONSOLIDATION SITE	5-1
5.1 Storage Requirements	5-1
5.2 Health and Safety	5-2
5.3 Storage Layout Requirements	5-3
6.0 REFERENCES	6-1
7.0 ACRONYMS AND ABBREVIATIONS	7-1
APPENDICES	
Appendix A - DOT Exemption (DOT-E 13252) From Marking and Labeling Individual Mercury Flasks Overpacked in Box Pallets	
Appendix B - Appendix 4-A of DNSC Operations and Logistics Storage Manual (DNSCM 4145.1), Storage of Mercury	
Appendix C - DNSC Commodity Specific Policy for Mercury	
Appendix D - DNSC Hazardous Materials Transportation Security Plan	
Appendix E - Diagram of a Pan Van	

LIST OF FIGURES

<u>FIGURE</u>	<u>TITLE</u>	<u>PAGE</u>
2-1	Mercury Flasks in 30-Gallon Steel Drum	2-2
2-2	Mercury Flasks in Box Pallets	2-3
4-1	Example (Except for Size or Color) of a Hazard Class 8 Placard Containing the UN Identification Number for Mercury	4-5

LIST OF TABLES

<u>TABLE</u>	<u>TITLE</u>	<u>PAGE</u>
2-1	Mercury Stockpile at DNSC Depots and Oak Ridge Y-12 National Security Complex	2-1

EXECUTIVE SUMMARY

The Defense National Stockpile Center (DNSC), a field activity of the Defense Logistic Agency (DLA), maintains strategic and critical materials to reduce the nation's dependence on foreign sources of supply during national emergencies. One of the commodities currently stored by DNSC is mercury. DNSC has over 4,800 tons (net weight) of mercury stored at four sites in the United States. Due to increasing public concerns over the use, disposal, and management of mercury, DNSC recently prepared an Environmental Impact Statement (EIS), as required under the National Environmental Policy Act (NEPA), to evaluate options for long-term management and/or utilization of the mercury stockpile. As a result of this review, the option selected by DNSC is to consolidate the mercury at one centralized location. This will facilitate management and control of the stockpile. A consolidation site has not been selected, but DNSC is evaluating consolidation at one of the DNSC depots where mercury is presently stored or at one of two sites identified during the EIS process.

The purpose of this Transportation and Storage Plan is to provide information on regulatory and other requirements for transportation of the mercury from the current sites to a consolidation site and for storage at the consolidation site, in a safe and environmentally sound manner. Since the consolidation site has not been selected, a supplement to this plan may be required prior to actual consolidation of the mercury stockpile.

About 84% of the mercury stockpile is currently stored at three DNSC depots located in New Haven, Indiana; Somerville, New Jersey; and Warren, Ohio. The remaining 16% is stored at the Department of Energy's (DOE's) Y-12 National Security Complex in Oak Ridge, Tennessee. The mercury stored at the depots is packaged in wrought iron or steel flasks packed in 30-gallon United Nations (UN) Specification 1A2, removable head, epoxy-lined steel drums banded on flat pallets. The drums serve as outer packagings and provide secondary containment for the mercury if a flask leaks. For added safety the flasks inside each drum are contained in a 30-gallon, 6-mil, plastic bag closed with a twist tie, and the drums are contained in a catch pan on top of the pallet. The drums also provide protection from the escape of mercury vapor at normal storage temperatures because the drum lids have a rubber gasket and are secured with a bolt-closure making them air and liquid tight. They are pressure rated to 4.5 psi (air pressure). The mercury at Oak Ridge is packaged in flasks overpacked in wooden box pallets. Prior to consolidation of the stockpile, this mercury shall be transported to Warren Depot and the flasks repacked in 30-gallon steel drums on flat pallets.

Consolidation of the mercury stockpile shall require:

- Transportation of the DNSC mercury stored at Oak Ridge in flasks overpacked in box pallets to Warren Depot for repacking in drums on flat pallets; and
- Transportation of the mercury from two of the existing DNSC depots to the third, if one of the existing depots is selected as the consolidation site, or

- Transportation of the mercury from the three existing DNSC depots to another consolidation site.

The mercury shall be transported by motor carrier. A secondary containment (pan) van shall be used when transporting the mercury from Oak Ridge to Warren. Pan vans will not be required when transporting the mercury from the depots to the consolidation site because the plastic bags, drums, and drip pans already provide several levels of containment.

A number of measures shall be taken to help ensure, health and safety, environmental protection, and security during transportation of mercury. These measures shall include:

- Complying with the U.S. Department of Transportation (DOT) regulations pertaining to mercury
- Complying with Appendix 4-A of the DNSC Operations and Logistics Storage Manual (DNSCM 4145.1) Storage of Mercury
- Complying with DNSC Commodity Specific Policy for Mercury.
- Ensuring that all personnel are properly trained(see section 4.1 for details).
- Monitoring periodically for mercury vapor and providing personnel with appropriate personal protective equipment.
- Inspecting box pallets containing mercury flasks and flat pallets containing mercury flasks in drums before and during loading and unloading for damage and/or leakage.
- Tracking shipments via satellite and reporting any deviations from scheduled routes to DNSC officials.

Mercury shall be stored at the consolidation site in accordance with Appendix 4-A of the DNSC Operations and Logistics Storage Manual (DNSCM 4145.1), Storage of Mercury and the DNSC Commodity Specific Policy for Mercury. These documents require that mercury be stored in a dry warehouse equipped with a fire suppression system, if constructed of combustible materials, and sealed floors to resist mercury penetration in the unlikely event of a leak or spill. The plastic bags, drums, and drip pans should contain mercury from leaks or spills under normal storage conditions. The total area, excluding aisles and entrances areas, required to store the approximately 4289 flat pallets with steel drums containing the 128,660 mercury flasks will be approximately 68,624 square feet.

1.0 INTRODUCTION

The Defense National Stockpile Center (DNSC), a field activity of the Defense Logistic Agency (DLA), maintains strategic and critical materials to reduce the nation's dependence on foreign sources of supply during national emergencies. DNSC has over 50 years of experience in buying, selling, and safely warehousing industrial material.

One of the commodities currently stored by DNSC is mercury. DNSC has over 4,800 tons (net weight) of mercury stored at four sites in the United States. DNSC recently prepared an Environmental Impact Statement (EIS), to evaluate options for long-term management and/or utilization of the mercury stockpile. As a result of this review, the option selected by DNSC is to consolidate the mercury at one location. A consolidation site has not been selected, but DNSC is evaluating consolidation at one of the DNSC depots where mercury is presently stored or at one of two sites identified during the EIS process.

This Transportation and Storage Plan includes information on regulatory and other requirements for transportation of the mercury from the current sites to a consolidation site and for storage at the consolidation site in a safe and environmentally sound manner. Since the consolidation site has not been selected, a supplement to this plan may be required prior to actual consolidation of the mercury stockpile.

2.0 DESCRIPTION OF MERCURY STOCKPILE

Mercury is currently stored at four sites located in (1) New Haven, Indiana; (2) Somerville, New Jersey; (3) Warren, Ohio; and (4) Oak Ridge, Tennessee. All mercury is packed in wrought iron or steel flasks. Each flask has an iron screw plug. The flasks vary in size and shape, but each flask contains approximately 76 pounds of mercury.^[1]

The mercury flasks stored at New Haven, Indiana; Somerville, New Jersey; and Warren, Ohio are packed in 30-gallon, UN Specification 1A2, removable head, epoxy-lined steel drums meeting United States (U.S.) Department of Transportation (DOT) Packing Group I (PG I) requirements. Each steel drum is cushioned in the bottom and, except for odd lots, contains six flasks separated by cardboard partitions. The drums provide secondary containment for the mercury if a flask leaks. As an added safety measure the flasks inside each drum are contained in a 30-gallon, 6-mil, plastic bag closed with a twist tie. The drums also provide protection from the escape of mercury vapor at normal storage temperatures because the drum lids have a rubber gasket and are secured with a bolt-closure making them air and liquid tight. They are pressure rated to 4.5 psi (air pressure). In addition, the steel drums containing the mercury flasks are banded on flat pallets (5 drums/pallet). Each flat pallet has a catch pan in which the drums are placed. A typical picture of flasks in a 30-gallon drum, with the head removed is shown in Figure 2-1.

The flasks at Oak Ridge, Tennessee are overpacked in wooden box pallets (approximately 45 flasks/pallet). A typical picture of the flasks and box pallets is shown in Figure 2-2. Prior to consolidation of the stockpile, the mercury at Oak Ridge shall be transported to Warren, Ohio and repacked in 30-gallon steel drums on flat pallets so that it is packaged the same as the remainder of the stockpile.

A summary of the mercury stored at each site is provided in Table 2-1 below.

TABLE 2-1
Mercury Stockpile at DNSC Depots and Oak Ridge Y-12 National Security Complex

Site	Number of Flasks	Pounds	Tons
New Haven Depot ^[2]	16,151	1,228,000	614.00
Somerville Depot ^{[2][3]}	75,880	5,767,576	2,883.79
Warren Depot ^[2]	16,353	1,242,000	621.00
Oak Ridge Y-12 National Security Complex ^[4]	20,276	1,540,976	770.49
Totals	128,660	9,778,552	4,889.28



Figure 2-1
Mercury Flasks in 30-Gallon Steel Drum



Figure 2-2
Mercury Flasks in Box Pallets

3.0 REGULATIONS

Shipment of mercury is regulated under the Federal Hazardous Materials Transportation Law (Federal Hazmat Law) which is commonly known as the Hazardous Materials Transportation Act (HMTA). The purpose of the HMTA is to provide adequate protection against risks inherent in transporting hazardous materials in commerce. The U.S. DOT promulgates the HMTA through regulations in 49 CFR Parts 171-180. The mercury stockpile shall be transported in compliance with these regulations.

4.0 TRANSPORTATION OF MERCURY

Consolidation of the mercury stockpile will require:

- Transportation of the DNSC mercury stored at Oak Ridge in flasks overpacked in box pallets to Warren Depot for repacking in drums on flat pallets; and
- Transportation of the mercury from two of the existing DNSC depots to the third, if one of the existing depots is selected as the consolidation site, or
- Transportation of the mercury from the three existing DNSC depots to another consolidation site.

4.1 HEALTH AND SAFETY, ENVIRONMENTAL PROTECTION, AND SECURITY

The following measures shall be taken to help ensure health and safety, environmental protection, and security during transportation of the mercury:

- No other commodity shall be included in the mercury shipments. Conveyance shall be requested “Exclusive Use Only”.
- All personnel involved in transportation of the mercury shall have training required by DOT (see 49 CFR Part 172, Subpart H), Occupational Safety and Health Administration (OSHA), and other regulations. Personnel involved in transportation of the mercury stored at Oak Ridge, shall be trained on their job-specific requirements under DOT exemption DOT-E 13252 (see Subsection 4.2.3 below and Appendix A).
- Personnel shall comply with mercury vapor monitoring and personal protective equipment (PPE) requirements given in Appendix 4-A of the DNSC Operations and Logistics Storage Manual (DNSCM 4145.1), Storage of Mercury (Appendix B) and the DNSC Commodity Specific Policy for Mercury (Appendix C). Personnel working at Y-12 National Security Complex, Oak Ridge, Tennessee, shall comply with the Department of Energy (DOE) mercury monitoring and protective equipment procedures.
- In addition to mercury vapor monitoring, box pallets containing mercury flasks and flat pallets containing mercury flasks in drums shall be visually inspected before and during loading and unloading for damage and/or leakage. They shall also be inspected to ensure that they meet DOT packaging requirements for mercury (see 49 CFR Parts 173.24, .24a, and .164(d)) and that the pallets and drums are properly marked and labeled in accordance with 49 CFR Part 172, Subparts D and E, respectively, and DOT exemption DOT-E 13252 (see Subsection 4.2.3 below and Appendix A).

- DNSC or DOE shall provide truck drivers with shipping papers and emergency response information in accordance with 49 CFR Part 172, Subparts C and G. The emergency response information shall also be provided to personnel involved in loading and unloading the mercury. Truck drivers transporting the Oak Ridge mercury shall also be provided with a copy of DOT exemption DOT-E 13252 (see Subsection 4.2.3 below and Appendix A). The copy shall be kept aboard the truck during transit.
- Pallets containing the mercury flasks shall be loaded/unloaded by qualified/trained forklift operators and all OSHA and other safety requirements shall be met.
- Pallets shall be braced in the trailers to prevent motion/movement during transit and the flasks inside the box pallets or drums and the drums on the flat pallets shall be secured to prevent relative motion between them (see 49 CFR Part 177.834).
- Carriers shall placard trucks/trailers using the corrosive placard with the UN identification number for mercury (2809) as a marking on the placard (see Figure 4-1).
- DNSC, DOE, and carrier personnel shall comply with requirements specified in their respective security plans required by 49 CFR Part 172, Subpart I. Requirements of the DNSC Hazardous Materials Transportation Security Plan (Appendix D) include:
 - Identifying driver name through carrier dispatch in order to allow photo verification.
 - Verifying that the driver has a Government issued photo identification and/or commercial driver's license for comparison with information provided by the carrier.
 - Recording seal/lock numbers on the shipping documentation for sealed loads.
 - Providing consignee with advanced notification of carrier, seal/lock numbers, and an estimated time of arrival.
 - Requiring that each vehicle is equipped for tracking its location via satellite during transit.
- Carriers shall track trucks/trailers during transit via satellite and report any deviations from scheduled routes to DNSC officials.
- Carriers shall comply with DOT regulations pertaining to movement of motor vehicles in emergency situations (see 49 CFR Part 177.823) and disabled vehicles and broken or leaking packages (see 49 CFR Part 177.854).
- Incidents that occur during transportation of mercury shall be reported by telephone to the National Response Center ((800) 424-8802) and others as required by DOT regulations in 49 CFR Parts 171.15, .16, and .21; EPA regulations in 40 CFR Parts 302.6 and 355.40; and DOT exemption DOT-E 13252 (see Subsection 4.2.3 below

and Appendix A). Follow-up reporting shall also be conducted in accordance with these regulations and the exemption. Within 12 hours of occurrence, incidents shall be reported to the Directorate of Stockpile Operations and the Directorate of Environmental Management and Quality Assurance by telephone and by either e-mail or fax.

4.2 OAK RIDGE TO WARREN

4.2.1 Responsibilities

DNSC or DOE shall be responsible for shipping the DNSC mercury from Oak Ridge to Warren. This responsibility includes contracting with carrier, preparing the mercury for shipment in compliance with DOT regulations, including requirements under DOT exemption DOT-E 13252, and loading it onto carrier's vehicles. The carrier shall be responsible for safely transporting the mercury from Oak Ridge to Warren in compliance with DOT regulations, including carrier requirements under DOT exemption DOT-E 13252. DNSC or its contractor shall be responsible for unloading, repackaging, and storing the mercury at Warren Depot.

4.2.2 Transportation Mode

The mercury stored at Oak Ridge shall be transported to Warren by motor carrier using a secondary containment (pan) van. A pan van is a 48-foot long x 8.5-foot wide trailer with a self-contained 6-inch high steel containment pan. A diagram of the pan van is given in Appendix E.

4.2.3 DOT Exemption from Marking and Labeling Individual Flasks

At DNSC's request DOT granted an exemption (DOT-E 13252) from marking and labeling each individual flask in the box pallets at Oak Ridge. This exemption requires marking and labeling of each box pallet and compliance with the safety control measures, special provisions, modes of transportation authorized, modal requirements, compliance requirements, and reporting requirements specified in the exemption (Appendix A), as well as all other applicable DOT regulations. Compliance includes marking each box pallet with the exemption number (DOT-E 13252) as required by 49 CFR Part 172.301(c).

4.3 DNSC DEPOTS TO CONSOLIDATION SITE

4.3.1 Responsibilities

DNSC shall be responsible for shipping the mercury from the DNSC depots to the consolidation site. This responsibility includes procuring the contract with carrier, preparing the mercury for shipment in compliance with DOT regulations, and loading it onto carrier's vehicles. The carrier shall be responsible for safely transporting the mercury to the consolidation site in compliance with DOT regulations. DNSC or its

contractor shall be responsible for preparing space for storing the mercury at the consolidation site, inspecting and unloading it upon arrival, and storing it.

4.3.2 Transportation Mode

The mercury shall be transported from the DNSC depots to the consolidation site by motor carrier. A pan van is not required because the plastic bags, drums, and pallet drip pans already provide several levels of containment.



Figure 4-1
Example (Except for Size or Color) of a Hazard Class 8 Placard Containing the UN
Identification Number for Mercury
(See 49 CFR Parts 172.519 and 172.332 for specifications)

5.0 STORAGE OF MERCURY AT THE CONSOLIDATION SITE

Mercury shall be stored at the consolidation site in accordance with Appendix 4-A of the DNSC Operations and Logistics Storage Manual (DNSCM 4145.1), Storage of Mercury (Appendix B) and the DNSC Commodity Specific Policy for Mercury (Appendix C).

5.1 STORAGE REQUIREMENTS

Storage requirements include the following:

- Flasks of mercury shall be stored in an upright position within 30-gallon UN approved drums, in a dry warehouse segregated by country of origin. Mercury should not be stored in the same section with other commodities.
- The warehouse shall be equipped with a fire suppression system, if constructed of combustible materials, and floors shall be sealed to resist mercury penetration.
- Secondary containment for mercury storage shall consist of a drip pan placed under all drums containing mercury.
- Provisions shall be made for adequate warehouse ventilation under all conditions.
- All drums shall be inspected before being placed in permanent storage. Should a drum appear damaged or routine monitoring detect abnormally high mercury vapor in the warehouse, the source of the anomaly shall be determined. If detectable leakage occurs during storage, the procedures outlined in enclosure 1 of Appendix C shall be followed. Any increase in the number of flasks resulting from an accumulation of mercury from leakers shall be reported on DNSC Form 42, Receiving Report. No increase in weight shall be recorded as this weight is already accounted for in the original receipts of the mercury. Within 12 hour of a leak being detected, the Directorate of Stockpile Operations and the Directorate of Environmental Management and Quality Assurance shall be notified by telephone and by either e-mail or fax.
- To facilitate the taking of a physical inventory by count and computation, each pallet holding fewer than 30 flasks and each drum containing fewer than 6 flasks shall be clearly marked in a manner visible from the aisle.
- When the Oak Ridge mercury is overpacked at Warren, six flasks shall be placed in each drum, except when there are an insufficient number of flasks of the country of origin to fill up a drum.

5.2 Health and Safety

Measures to protect the health and safety of personnel involved in storage of the mercury stockpile include the following:

- The storage site for mercury shall be in an area apart from materials such as food for man or animals, products for biological use, medical supplies, clothing, or other materials, which might become contaminated.
- Although mercury in tightly stoppered iron or steel containers does not present a health hazard to employees, mercury that has escaped into the storage area through leakage or spillage or absorbed into the floors and walls may present a hazard. Under such conditions it is possible that the concentration of mercury vapor in the air may exceed the guidelines that have been set forth in standards of good industrial practice such as Threshold Limit Values (TLVs) promulgated by the American Conference of Governmental Industrial Hygienists. Under these conditions employees shall be protected from mercury exposure using administrative/engineering controls and/or personal protective equipment in accordance with the DNSC Commodity Specific Policy for Mercury (Appendix C).
- Meticulous housekeeping procedures shall be enforced to prevent the absorption of mercury into the floors and walls of the buildings and to prevent the accumulation of hazardous concentrations of mercury vapor in the storage area. Should leakage or spillage occur it shall be cleaned up immediately. Small quantities of mercury may be collected by a capillary tube attached to an aspirator bottle. Larger spills require a mercury vacuum. Care shall be exercised to prevent spilled mercury from entering a water drainage system.
- The storage site shall be monitored for mercury vapor prior to conducting operational activities and whenever there is a question or concern about the concentration of mercury in the air. The results shall be used to establish the sampling protocol, administrative/engineering controls, and PPE required to protect workers and the environment. Continuous monitoring for mercury vapor is not anticipated because the plastic bags and drums will preclude significant leaks of mercury under normal storage conditions. Walk through inspections, when no appreciable amount of time is spent in the mercury storage area, are not considered hazardous to personnel; however, the area shall be well ventilated prior to entry. DNSC or the contractor acting as its agent shall ensure that mercury storage areas are periodically tested with a mercury analyzer to determine the mercury vapor level. The results of the tests shall be filed at the site. Should levels above the DNSC action level be detected, the Directorate of Stockpile Operations and the Directorate of Environmental Management and Quality Assurance shall be notified within 12 hours of detection. Notification shall be by both telephone and by e-mail or fax.

- Personnel performing repackaging, reflagging, or cleanup operations shall be provided with appropriate safety equipment and clothing, including:
 - Half facepiece, dual cartridge respirator with National Institute for Occupational Safety and Health (NIOSH) approval for mercury
 - Impervious type coveralls with hoods and booties
 - Nitrile gloves
 - American National Standards Institute (ANSI) approved safety shoes
 - Safety goggles or glasses with side shields
- There shall be no eating, drinking, or smoking in the mercury storage/work area. Personnel leaving the storage/work area shall wash with hot water and soap and change clothes.
- Caution signs shall be placed on all entryways into the mercury storage areas. Because mercury is a toxic metal, firefighting personnel and others who may have occasion to enter a mercury storage area under fire conditions shall be cautioned that highly toxic mercury vapor may be present. Each entrance into a mercury storage area shall be marked with a sign stating the following:

“CAUTION”
MERCURY, METALLIC
Highly toxic by skin absorption
and inhalation of fume or vapor

5.3 Storage Layout Requirements

The steel drums containing the 128,660 mercury flasks will be stored on approximately 4289, 48-inch by 48-inch flat pallets. The storage layout for a flat pallet is 16 square feet. The total area required to store the mercury stockpile, excluding aisles and entrances areas, is approximately 68,624 square feet. The recommended layout (layout will vary depending on the consolidation site selected) is as follows:

- Storage area locations for the pallets shall be in back-to-back rows along the length of the storage area.
- Rows shall be placed with a minimum aisle space of 3-foot along the walls.
- Aisle width between each set of back-to-back rows shall be enough to provide easy access for a forklift, emergency response equipment, etc.

6.0 REFERENCES

1. *Defense National Stockpile Center Operations and Logistics Storage Manual* (DNSCM 4145.1), Appendix 4-A, pp. 1.
2. *Mercury Investigation Report*, Defense Logistics Agency, Defense National Stockpile Center, January 2000.
3. *Notification of Stockpile Inspection Report No. 44*, Somerville Depot, January 14, 1999.
4. *Notification of Stockpile Inspection Report No. 36*, Oak Ridge Y-12 National Security Complex, November 2, 1999.

7.0 ACRONYMS AND ABBREVIATIONS

ANSI - American National Standards Institute
CFR - Code of Federal Regulations
DLA - Defense Logistics Agency
DNSC - Defense National Stockpile Center
DOE - Department of Energy
DOT - Department of Transportation
EIS - Environmental Impact Statement
EPA - Environmental Protection Agency
HMTA - Hazardous Materials Transportation Act
NEPA - National Environmental Policy Act
NIOSH - National Institute for Occupational Safety and Health
No. - Number
OSHA - Occupational Safety and Health Administration
PG - Packing Group
PPE - Personal Protective Equipment
psi - Pounds Per Square Inch
TVA - Tennessee Valley Authority
U.S. - United States
UN - United Nations

APPENDIX A

DOT EXEMPTION (DOT-E 13252) FROM MARKING AND LABELING INDIVIDUAL MERCURY FLASKS OVERPACKED IN BOX PALLETS



U.S. Department
of Transportation
**Research and
Special Programs
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

OCT 24 2003

DOT-E 13252

EXPIRATION DATE: September 30, 2005

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: U.S. Department of Defense
Defense National Stockpile Center
Ft. Belvoir, VA
2. PURPOSE AND LIMITATION:
 - a. This exemption authorizes the transportation in commerce of mercury in non-specification reusable metal packagings overpacked in wooden crates without individually marking and labeling the inner packagings. This exemption provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.
 - b. The safety analyses performed in development of this exemption only considered the hazards and risks associated with transportation in commerce. The safety analyses did not consider the hazards and risks associated with other uses not associated with transportation in commerce.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR Subpart D - Marking, and Subpart E - Labeling, in that the individual non-specification packagings are not required to be marked or labeled.
5. BASIS: This exemption is based on the application of the Department of Defense dated May 6, 2003 submitted in accordance with § 107.105 and the public proceeding thereon.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Materials Description			
Proper Shipping Name	Hazard Class/ Division	Identi- fication Number	Packing Group
Mercury	8	UN2809	PGIII

7. SAFETY CONTROL MEASURES:a. PACKAGING - The prescribed packaging is as follows:

(1) A non-specification metal receptacle meeting the requirements of § 173.164(d)(2) overpacked in;

(2) A wooden crate with approximate dimensions of: 36" x 36" x 20". The crate drawing, dated February 5, 1962, is on file with the Office of Hazardous Materials Exemptions and Approvals.

b. OPERATIONAL CONTROLS - The crates shall be transported:

(1) From Oak Ridge, TN to the consolidation facility only.

(2) By private or contract carrier in exclusive use of the Defense National Stockpile Center.

(3) No other materials will be present on the vehicle during transport.

(4) The trailers shall be fitted with a secondary form of containment in case of leakage during transport.

(5) Loading and unloading of the mercury will be accomplished by DNSC personnel or DNSC contractors only.

8. SPECIAL PROVISIONS: A current copy of this exemption must be maintained at each facility where the package is offered or reoffered for transportation.9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle only.

10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each cargo vessel, aircraft or motor vehicle used to transport packages covered by this exemption. The shipper must furnish a copy of this exemption to the air carrier before or at the time the shipment is tendered.
11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:
- o All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
 - o Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this exemption, including display of its number, when this exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS: The carrier is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable. (Sections 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.) In addition, the holder(s) of this exemption must inform the AAHMS, in writing, of any incident involving the package and shipments made under the terms of this exemption.

Issued in Washington, D.C.:



Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

OCT 24 2003

(DATE)

OCT 24 2003

Page 4

Continuation of DOT-E 13252

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, Department of Transportation, Washington, D.C. 20590.
Attention: DHM-31.

Copies of this exemption may be obtained by accessing the Hazardous Materials Safety Homepage at <http://hazmat.dot.gov/exemptions> Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

PO:

APPENDIX B

APPENDIX 4-A OF DNSC OPERATIONS AND LOGISTICS STORAGE MANUAL (DNSCM 4145.1), STORAGE OF MERCURY

The version of Appendix 4-A that appears in this appendix was current on May 6, 2004.

Consult the DLA website,

<http://www.iamthekey.com/IGD Links/Compounds/MERCURY.pdf>

to ensure that you have the latest version)

APPENDIX E

DIAGRAM OF A PAN VAN

APPENDIX 4-A

STORAGE OF MERCURY

1. Description- Mercury, also called quicksilver, is a metal that is liquid at ordinary temperatures. It has a silvery-white color and a high luster.

2. Packaging- Mercury is packed in cast iron or steel flasks securely stoppered with a screw plug to prevent leakage. Flasks may vary considerably in size and shape but each flask normally contains 76 pounds net of mercury. Mercury may also be packaged in stainless steel, one metric ton (1,000 KG) containers.

3. Marking- Prior to receipt, each flask will be stenciled or will have a non-ferrous metal tag firmly wired to its neck showing Government contract number, lot, container number, country of origin, and the gross, tare, and net weights. Markings for drums containing mercury flasks will have country of origin, number of flasks, and net weight. Markings for containers other than flasks will be determined by DNSC-OL.

4. Storage

- a. Flasks of mercury will be stored in an upright position within 30-gallon UN approved drums, or in specially designed box pallets in a dry sprinklered warehouse segregated by country of origin. Mercury should not be stored in the same section with highly combustible commodities such as rubber. A drip pan will be placed under the drums, or flasks, to contain any mercury from leaking containers.
- b. Leaking containers should be replaced before placing in permanent storage. Should leakage occur during the life of storage, the mercury should be recovered and filtered through cheesecloth into a special flask or flasks stenciled "Mercury from Leakers" to distinguish it from that in original flasks. Note Paragraph 5, PRECAUTIONS TO BE TAKEN. Any increase in the number of flasks resulting from an accumulation of mercury from leakers, should be reported on DNSC Form 42, Receiving Report. No increase in weight should be recorded as this weight is already accounted for in the original receipts of the mercury. When leakage is detected, the Directorate of Stockpile Operations and the Directorate of Environmental Management shall be notified.
- c. To facilitate the taking of a physical inventory at any time by count and computation the same number of flasks will be placed in each drum, or box pallet, except when an odd number of flasks do not fill up a drum or a box pallet. The pallets shall be stacked in uniform rows and height. Each pallet or drum will indicate the number of flasks contained within.

5. Precautions to be Taken

- a. Health- Elemental mercury can be taken into the body by inhaling mercury vapor, absorption through the skin, or ingestion of by mouth, and these can result in acute

APPENDIX 4-A

STORAGE OF MERCURY

or chronic illness. Therefore, personnel in mercury storage areas must take special precautions. Follow DNSC Occupational Health Guidelines for mercury.

b. General

1. The storage site for mercury should be in an area apart from materials such as food for man or animals, products for biological use, medical supplies, clothing, or other materials, which might become contaminated.
2. Although mercury in tightly stoppered iron or steel containers does not present a health hazard to employees, mercury that has escaped into the room through leakage or spillage or has been absorbed into the floors and walls does present a hazard. Under these conditions it is possible that the concentration of mercury vapor in the air may exceed the guidelines that have been set forth in standards of good industrial practice such as Threshold Limit Values (TLV) promulgated by the American Conference of Governmental Industrial Hygienists.
3. Meticulous housekeeping procedures should be enforced to prevent the absorption of mercury into the floors and walls of the buildings and to prevent the accumulation of hazardous concentrations of mercury vapor in the storage area. Should leakage or spillage occur it shall be cleaned up immediately. Small quantities of mercury may be collected by a capillary tube attached to an aspirator bottle. Larger spills require a mercury vacuum. Care must be exercised to prevent spilled mercury from entering a water drainage system.
4. Walk through inspections, when no appreciable amount of time is spent in the mercury storage area, are not considered hazardous to personnel. If personnel are to spend any greater length of time in the area, the area must be ventilated sufficiently so that the mercury vapor concentration does not exceed the DNSC action level for mercury. Testing with a mercury vapor detector shall be done whenever there is a question about the concentration of mercury in the air. Under the direction of DNSC-E, mercury storage areas shall periodically be tested with a mercury analyzer to determine the mercury content in the air. The results of the tests will be furnished to depot officials.
5. Personnel performing repackaging, reflasking, or cleanup operations shall be provided with appropriate safety equipment and clothing, including
 - a. Half facepiece, dual cartridge respirator with NIOSH approval for mercury.
 - b. Impervious type coveralls with hoods and booties
 - c. Nitrile gloves
 - d. ANSI approved safety shoes
 - e. Safety goggles or glasses with side shields

APPENDIX 4-A

STORAGE OF MERCURY

6. There shall be no eating, drinking, or smoking in the work area. Personnel leaving the work area should wash with hot water and soap and change clothes.
7. Caution placards shall be placed on all entryways into the mercury storage areas. As mercury is a toxic metal, firefighting personnel and others who may have occasion to enter a mercury storage area under fire conditions must be cautioned that highly toxic mercury vapor may be present. Each entrance into a mercury storage area shall be marked:

“CAUTION”
MERCURY, METALLIC
Highly toxic by skin absorption
And inhalation of fume or vapor

Reference: Occupational Health Guidelines-Mercury, Revised January 15, 1997
Page 5, paragraph 1

Environmental Inspection Plan For Mercury in Storage

The Defense National Stockpile Center (DNSC) stores 4,436 metric tons of mercury. Most of the inventory has been stored for nearly 50 years in steel flasks. For more information on sampling and testing please refer to Chapter 5-15, page 10 of 26.

1.0 Problem Definition and Background

The DNSC has recently over packed the stockpile mercury at New Haven, IN; Warren, OH; and Somerville, NJ to ensure that no mercury will be released into the environment. The new packaging configuration is six, 76-pound steel storage flasks, placed inside a 30-gallon, 16-gauge steel drums with a 6-mil plastic bag, absorbent pads on the bottom and cardboard dividers as cushioning. Five such configured drums are placed on a two-way; flush; non-reversible; 48" X 48"; group III; hard wood; four-stringer pallet. The storage of Stockpile mercury will be in a specially prepared, secured warehouse.

At room temperature mercury is a shining, mobile liquid metal, silver white in color and is slightly volatile. Liquid Mercury and mercury vapor pose a health hazard if sufficient quantities are inhaled, ingested or absorbed through the skin. After absorption, the blood carries elemental mercury to the central nervous system where it may causes damage.

2.0 Purpose of the Environmental Inspection Plan

APPENDIX 4-A

STORAGE OF MERCURY

This Environmental Inspection Plan has been prepared to improve the inspection and reporting process for the mercury storage area and to document and support the correct storage and control measures of mercury required for the protection, safety and health of workers, the public and environment.

3.0 Environmental Protection Specialist

The duties of the Environmental Specialist are to conduct and report measurements of mercury vapors in the air and visually inspect for metallic mercury on the floor, drip pans, pallets, or drums. The inspection tag information will be completed after each inspection. The inspection report will utilize the mandatory Excel format provided on December 22, 1999. All reports will be concise, factual, and reflect the storage conditions. All reports shall be transmitted electronically to a Headquarters Environmental Protection Specialist.

4.0 Inspection Equipment Required

Direct reading mercury vapor monitor, 120 volt 500 watt quartz high intensity portable lights with an output of 16,830 lumens, and personal protective equipment such as protective clothing and a respirator with mercury filters.

5.0 Operational Procedures

The Directorate of Environment will assign a qualified Environmental Protection Specialist to perform the inspection. A Headquarters Environmental Protection Specialist will review the inspection report prior to distribution and complete a memorandum of concurrence for all corrective actions. The Director of Environment Management will review all memorandums of corrective action prior to distribution. The Headquarters Environmental Protection Specialist will electronically transmit all reports and memorandums to the respective Distribution Facility Manager, the Chief of Operations Division, and the Chief of the Environmental Management Division.

5.1 Frequency of Inspections

A normal inspection level is defined as one inspection per month. A reduced inspection will be one inspection each six months. A tightened inspection is defined as one inspection per week.

Normal inspection to reduced inspection will occur when four consecutive normal inspection cycles do not detect any visible mercury or mercury vapors at or above the DNSC action level of 0.025 mg/m^3 (25,000 nanograms/ m^3),

Tightened inspection will occur when one inspection detects visible mercury or mercury vapors in excess of 0.025 mg/m^3 (25,000 nanograms/ m^3) and will continue until any

APPENDIX 4-A**STORAGE OF MERCURY**

visible mercury is cleaned and mercury vapors are reduced to less than 0.0125 mg/m^3 ($12,500 \text{ nanograms/m}^3$),

Normal inspection frequency will resume when two tightened inspection cycles do not detect visible mercury or mercury vapors in excess of 0.0125 mg/m^3 ($12,500 \text{ nanograms/m}^3$).

5.2 Temperature, Barometric Pressure, and Humidity

On the day of the inspection the inspector will document the inside and outside temperature for the Depot. This information will be documented in the inspection report.

5.3 Vapor Monitoring

A direct reading mercury vapor monitor with detection limits at 0.001 mg/m^3 ($1,000 \text{ nanograms/m}^3$) shall be utilized to record the levels of mercury vapors in the warehouse air. A total of four air samples will be taken in each inspection aisle, two at the breathing zone and two at the floor level. The samples will be taken at random locations in the inspection aisle. The sample shall be documented on the attachment portion of the report. If all of the samples are under 0.025 mg/m^3 ($25,000 \text{ nanograms/m}^3$), DNSC action level, no action is required. If any reading is found to be above the DNSC action level, an investigation of the storage will be initiated to determine the cause. Corrective action will take place to reduce mercury vapors in the air to below the DNSC action level.

5.4 Visual Inspection

The mercury storage warehouse and storage aids will be visually inspected with the use of high intensity lights. The floor, drip pans, pallets, and drums will be thoroughly visually inspected for metallic mercury. If metallic mercury is found an investigation will be initiated to determine the cause. Corrective action will take place to remediate the visual metallic mercury and prevent future leakage.

5.5 Documentation and Records

Depots storing metallic mercury were provided an inspection-reporting format on December 22, 1999. The documentation of the inspection will be completed on the DNSC Form 30 with an attachment per the instruction page. All reports will be concise, factual, and reflect the storage conditions. All reports will be transmitted electronically to the Depot Manager, Chief of Operations and the Chief of Environmental Management Division.

5.6 Corrective Action

APPENDIX 4-A

STORAGE OF MERCURY

The Environmental Protection Specialist will consult with the Headquarters Environmental Protection Specialist and the responsible Distribution Facility Manager to determine best corrective action. The Headquarters Environmental Protection Specialist will document the corrective action concurrence in memorandum format and follow-up on the corrective action weekly until the corrective action is completed.

APPENDIX 4-A

STORAGE OF MERCURY

B. THIS and Specific Warehouse location:
 Depot Area Open Storage Area:

1. NAME & LOCATION OF DEPOT OR FACILITY		2. NAME AND TYPE OF COMMODITY		3. SERIAL NO.	
				4. REGION	
5. DATE OF INSPECTIO	A. LAST	6. TYPE OF STORAGE AND SPECIFIC DEPOT AREA			
	B. THIS				
7. NAME AND TITLE OF PERSON RESPONSIBLE FOR MATERIAL			7A. TEL. NUMBER		7B. EXTENSION

INSPECTION DATA (Check and complete. Explain negative responses.)				YES	NO
8. STORAGE	A. Storage facilities are of the type prescribed in the Storage Manual.			N/A	N/A
	B. Storage facilities are maintained in good order.			N/A	N/A
9. MATERIAL	A. Material is stored in the manner prescribed in the Storage Manual.			N/A	N/A
	B. Material is free of deterioration, infestation, contamination, commingling, migration and erosion.			N/A	N/A
10. RECORDS	A. Depot Manager confirmed that all entries have been posted.			N/A	N/A
	B. Depot postings indicate last RR No. _____ dated _____, last OSR No. _____ dated _____			N/A	N/A
11. UNITS	Quantity indicated in Item 14h reflects depot posting and agrees with actual and/or computed count.			N/A	N/A
12. SECURITY AND FIRE	Security and fire protection are being provided in accordance with Quality Assurance and Materials Inspection Handbook and Storage Manual Requirements.			N/A	N/A
				N/A	N/A
13. CONTAINERS, PILES, OR	A. Material is stored in proper containers (Check only if applicable).			N/A	N/A
	B. All containers, piles and/or units are marked as prescribed in the Storage Manual.			N/A	N/A
	C. Condition of containers (Give exact number in Class III under remarks). Manual			(1) CLASS I N/A	(2) CLASS II N/A

14. DESCRIPTION OF CONTAINERS, PILES, OR OTHER UNITS.

a. Program	b. Type (Pile, case, ingot, bale, etc.)	c. Width	d. Length	e. height	f. diam.	g. WEIGHT OF UNIT		h. Total Number of Units	i. TOTAL WEIGHT	
						(1)	(2) NET		(1)	(2) NET

15. REMARKS (Review all other appropriate questions contained in "guide for the inspection of stockpiled materials and storage facilities," and, if deficiencies are found, give the appropriate guide numbers and complete details in this block.)

See Attached Narrative

16. RECOMMENDATIONS (Not to be construed by storage depot or facility as authorization to proceed with remedial measures beyond the scope of usual authority.)

17. DISTRIBUTION	→ E. DIVISION	→ DNSC-EE	→ SUPERVISORY E
	→ DEPOT MANAGER	→ STOCKPILE OP DIV	→ DNSC-EH
	→ E SPECIALIST	→	→ EWA

18. NAME OF INSPECTOR (Type or Print)	18A. SIGNATURE	18B. DATE OF SIGNATURE
---------------------------------------	----------------	------------------------

APPENDIX 4-A

STORAGE OF MERCURY

6. Average Storage factor

- a. Volume: 18 Net cubic feet per short ton
- b. Square Feet – 5.6 gross square feet per short ton

FOR ADDITIONAL INFORMATION ON THIS COMMODITY REFER TO THE SAFETY DATA MATERIAL SHEET OR THE MOST RECENT PURCHASE SPECIFICATION.

APPENDIX C

DNSC COMMODITY SPECIFIC POLICY FOR MERCURY

The version of the document given in this appendix was current on May 6, 2004.

Consult the DLA website,

<http://www.iamthekey.com/IGD Links/IGD1009-3-5.pdf>

to ensure that you have the latest version

MERCURY

Revised January 15, 1997

SCOPE: This guideline applies to all potential exposures to elemental mercury at Defense Logistics Agency/Defense National Stockpile Center (DLA/DNSC) Depots, their satellite locations, and any military locations storing this material for the DLA/DNSC.

RESPONSIBILITY: It shall be the responsibility of the DLA/DNSC Safety and Health Manager to institute and monitor the procedures outlined in this guideline in order to insure that the safety and health of all authorized personnel engaged in visiting, inspecting, handling, storing, and outloading mercury from stockpile locations is maintained.

PERMISSIBLE EXPOSURE LIMITS: The Department of Labor, Occupational Safety and Health Administration (OSHA) has established permissible exposure limits (PEL's) for mercury in the workplace. No employee shall be exposed to airborne mercury vapor concentrations in excess of 0.05 milligrams per cubic meter of air (mg/m³) as an 8 hour time weighted average (TWA).

CEILING LIMIT: No employee shall be exposed to mercury vapor concentration in excess of 0.1 milligrams per cubic meter of air (mg/m³) as a time weighted average over a period of 15 minutes.

DNSC ACTION LEVEL: Mercury vapor concentrations in excess of 0.025 mg/m³ as a 8 hour time weighted average, when measured at the approximate breathing zone of a worker shall constitute a condition necessary to implement FULL personal protection and monitoring procedures.

NOTE: Regardless of airborne levels of mercury vapor, skin contact with elemental mercury (liquid, not vapor) shall not be permitted. All necessary steps shall be taken to protect personnel engaged in stockpile operational activities from skin contact.

ADMINISTRATIVE CONTROLS

DNSC management shall utilize all the administrative controls necessary to maintain employee exposure to a minimum. Administrative controls are controls such as, but not limited to, reduction in number of hours personnel may be exposed during a specific work shift, employee rotation to prevent excessive and repeated potential exposure.

DNSC management shall utilize all the engineering controls at their disposal to ensure DNSC employees and other persons involved in DNSC work related activities in and around areas where mercury is stored are not exposed to airborne concentrations of mercury vapor in excess of the OSHA established TWA. Engineering controls are controls such as, but not limited to, isolation, enclosure, local exhaust ventilation,

reflasking, containment, and/or overpackaging used to contain mercury and prevent it from entering the environment.

Where engineering or administrative controls are not feasible to reduce and maintain mercury levels below 0.025 mg/m³ personal protective equipment, including respiratory protection shall be worn.

Some of the engineering methods utilized to reduce airborne concentrations of mercury at DNSC locations may include, but shall not be limited to:

- a. Rehabilitation of flasks of mercury.
- b. "Capping" empty flasks that contain residual mercury.
- c. Use of overpackaging or other containerization for flasks or drums of mercury which have developed leaks or otherwise, may spill their contents.
- d. Decontamination of space and materials contaminated by mercury in a manner consistent with the examples outlined in Enclosures 1 & 2.
- e. Use of portable local exhaust ventilation positioned at work locations where the concentration of airborne mercury vapors may be generated.
- f. Inspection of mercury containers every six months to ensure that all necessary steps are being taken to reduce the potential for release of mercury into the general work environment.
- g. Transferring and shipping mercury from stockpile sites in a manner as prescribed below.

Any mercury transported from a stockpile site to another location shall be carried out in such a manner that it conforms to all Department of Transportation (DOT) and DNSC requirements for transport of that material and will prevent the release, during normal handling and transportation, of liquid mercury into an environment exterior to its outer packaging.

RESPIRATORY PROTECTION PROGRAM

The selection, use, and proper maintenance of respirators shall be in accordance with 29 CFR 1910.134, and the DNSC Respiratory Protection Program. All respirators used shall be approved by the National Institute of Occupational Safety and Health (NIOSH) for the purpose and concentrations intended.

All persons entering areas where mercury is stored, shall wear, as a minimum, a disposable respirator for use in atmospheres containing mercury vapor (3M8708) provided that levels monitored are in excess of the DNSC action level of 0.025 mg/m³ but less than 0.05 mg/m³. If less than the DNSC Action Level no respiratory protection is warranted.

Airborne concentrations of mercury in excess of 0.05 mg/m³, but less than 0.5 mg/m³, will require, as a minimum, the use of a half face piece respirator with belt mounted cartridges for elemental mercury.

Airborne concentrations of mercury in excess of 0.5 mg/m³ will require the use of an air supplied respirator or air powered air purifying respirator with a canister providing protection against mercury.

NOTE: As airborne concentrations of mercury vapor elevate so does the level of respiratory protection. NIOSH criteria documents and respiratory guidelines will dictate the type of respirators needed for the concentrations of mercury found.

Work tasks, other than inspections and visiting walk-throughs, which require use of respirators and some form of physical exertion on the part of the worker shall be assigned only to those DNSC employees who have been examined by a licensed physician. The purpose of this examination is to determine that the person is capable of performing the duties assigned, while wearing restrictive type respiratory protection without potential for impairment to their health.

Useful information that should be provided to the physician in order to determine the above include: 1) a description of the employee's duties as they relate to his potential mercury exposure; 2) types of respirators that the employee will be required to wear when carrying out their work assignments; and, 3) any information from previous medical examinations which otherwise might not be available to the examining physician.

PERSONAL PROTECTIVE CLOTHING

Personal protective clothing shall be worn by all DNSC personnel and other persons, if in the judgment of the Safety and Health Manager or their designee there is a reasonable potential for physical contact with mercury, or the documented airborne concentration exceeds the DNSC action level.

The "protective clothing" shall consist of whole-body covering, gloves, and head and foot covering. Clothing and gloves shall be the type that will be impervious to the penetration or absorption of metallic mercury.

CHANGE ROOMS AND CLOTHING LOCKERS

At all DNSC mercury storage locations, change rooms or similarly designated areas which include areas for changing clothes, washing and showering shall be made available. It is recommended that the use of showers at these facilities be dependent upon the type of personal exposure an individual has received during the course of their workday. Requirements for their use shall be based on the exposure concentrations and the extent of exposure as determined by workplace monitoring during the work shift.

Disposable clothing contaminated with liquid mercury and used mercury vapor respirator cartridges, shall be disposed of in a polyethylene bag, properly sealed and labeled for proper disposal.

METHODS OF MEASUREMENT

Determination of airborne concentrations of elemental mercury as a vapor shall be made using the methods described in the manufactures instruction for the monitoring equipment.

All equipment used for monitoring mercury at DNSC facilities and satellites shall be properly calibrated prior to use.

ENVIRONMENTAL

An initial determination of the airborne concentration of mercury vapor shall be made using a portable mercury vapor sniffer or equivalent prior to conducting operational activities in DNSC mercury storage areas. If levels are found in excess of the DNSC action level, the storage area(s) shall be thoroughly aired prior to commencement of operational activities. The information gathered during this initial survey shall dictate what administrative and/or engineering controls are necessary and what the level of personal protection is needed to protect workers and the environment.

Periodic area sampling for airborne concentrations of mercury vapor shall be conducted on an annual basis, preferably during the warm summer months. Passive inorganic mercury vapor badges shall be used. Monitoring shall also be performed during the handling, storage, reflasking, overpackaging, and/or shipment of mercury to establish a baseline for potential exposures during these operations. The results of initial air monitoring will establish the sampling protocol to effectively protect DNSC workers and the environment.

PERSONAL

Personal monitoring using the inorganic mercury vapor badges shall be required during any mercury work activity where environmental samples indicate airborne concentrations of mercury are in excess of the DNSC action level. Personal samples shall be collected at the breathing zone of all workers.

OBSERVATION OF MONITORING AND ACCESS TO RECORDS

DNSC, other Federal employees and contract personnel (if it relates to mercury vapor monitoring during a time period when any of the above persons were in DNSC mercury storage areas for any legitimate reason while sampling was being conducted) shall have the reasonable opportunity to observe any monitoring and have access to their monitoring results and records.

CAUTION SIGNS AND LABELS

"Caution" signs shall be posted outside the entrance to ALL DNSC mercury storage areas. "Caution" labels shall also be used to identify the contents of reclaimed mercury and contaminated waste of mercury.

1. Caution signs must state:

"CAUTION"
Mercury, Metallic
Highly toxic by skin absorption
and inhalation of fume or vapor

2. Shipping labels for mercury must state:

MERCURY - corrosive- UN2809

3. Reportable Quantity (RQ) Labels must state:

Mercury RQ 1 pound or .454 kilograms

4. Shipping papers must clearly state:

Mercury, UN2809, Corrosive - RQ 1 lb. or .454 kg

THIS SHIPMENT MEETS THE REQUIREMENTS OF THE DEPARTMENT OF TRANSPORTATION REGULATIONS. ONCE (IF) THESE CONTAINERS (FLASK(S)) ARE REMOVED FROM THE OVERPACK CONTAINER THEY MUST EACH (INDIVIDUALLY) BE APPROPRIATELY LABELED AND MARKED TO MAINTAIN COMPLIANCE WITH APPLICABLE REGULATIONS.

HOUSEKEEPING, SPILLS, AND DECONTAMINATION

All mercury storage areas shall be inspected on a timely basis to ensure they are free from accumulation of mercury. When mercury is accidentally released into the warehouse or to the outside environment, it shall be thoroughly cleaned up using the procedures contained in Enclosures 1, 2, and 3.

WASTE DISPOSAL

All waste mercury or materials contaminated with mercury shall be disposed of in a manner and at a location approved by the EPA, and State environmental authorities. DLA/DRMS may also be used for this disposal action, if appropriate.

TRAINING

Training requirements appear in Enclosure 4.

RECORDKEEPING

All environmental and personal monitoring exposure records shall be maintained by DNSC for a period of at least 20 years. One copy shall be kept on file at the respective DNSC depot office and one copy in the DNSC Safety office. If exposures exceed the DNSC action level a copy will be sent to the respective PHS Health unit of the employee for inclusion in their permanent medical records.

DNSC, other Federal employees, and other persons shall have access to any records of environmental or personal monitoring that are directly related to their exposure. Any DNSC, other Federal, and when applicable, other persons who have been exposed to mercury in excess of 0.05 mg/m³ expressed as a time weighted average shall be notified in writing within five days of the finding.

A log of personnel requesting mercury records access shall be kept in the same file for the same period of time as previously noted.

MEDICAL EXAMINATIONS

Medical examinations shall be provided for all DNSC employees potentially exposed to mercury. Such examinations shall be on an annual basis or more frequently if medically indicated. Additional Bio-medical monitoring of DNSC employees shall only be carried out when it has been determined by the DNSC Safety Manager to be necessary and appropriate due to exposure considerations.

MEDICAL RECORDS

A copy of all medical records relating to mercury exposure preplacement, annual, and termination of employee medical examinations shall be maintained for at least 20 years.

ACCESS

The content of ALL medical, mercury exposure and related documents shall be made available to only those parties who are authorized under existing Federal regulations.

MERCURY STORAGE AREA ENTRANCE AND EXIT RECORDS

A permanent log shall be kept of all persons entering and exiting DNSC mercury storage areas. A log shall be placed inside each separate mercury storage section near a frequently used entrance door. Information to be included in the log shall be:

- a. Name of individual entering area
- b. Time and date entered
- c. Reason for entering
- d. Personal protective equipment utilized
- e. Time of exit

The log sheets shall be retrieved from the mercury storage area on a biannual basis and maintained in a file located at the respective DNSC depot office.

Personnel working in a mercury storage areas that enter and exit the area frequently during a work shift need only to sign in when they first enter and sign out at the end of their work shift.

ENCLOSURE 1

SPILLS AND DECONTAMINATION

Spills and leaks of mercury shall be promptly cleaned up by appropriate means. Specialized vacuum cleaners equipped with mercury vapor absorbing filters that prevent dispersal of mercury vapors back into the workplace air are the best and fastest way to cleanup mercury spills.

The following emergency procedures shall be observed when cleaning and decontaminating areas where elemental mercury has been spilled. The environmental conditions existing at the time of the spill will dictate the exact manner in which a spill is cleaned up. Specific procedures and methods for cleanup will be determined by the Directorate of Strategic Materials Management, Safety and Health Staff, DNSC-MH.

1. Clear all personnel from the general area of the spill. Only authorized personnel, designated as part of the cleanup and decontamination operation shall be allowed in the area of the spill during cleanup and/or decontamination.
2. Prior to putting on personal protective equipment and clothing to conduct the cleanup operation. All employees shall remove any exposed gold, copper or silver jewelry, watches, wallets, combs and other personal items (cigarettes, pipes, cigars, etc.) usually carried on a person.
3. Ensure that it is understood that eating, drinking, chewing or smoking is strictly prohibited in any mercury storage area, and that the washing of exposed skin i.e. hands, face, and neck are required prior to smoke breaks, lunch breaks and that showers are required at the end of the shift.
4. Put on all necessary personal protective clothing, including respiratory protection, disposable coveralls including headgear (hoods), gloves and rubber boots.
5. Attach a personal mercury dosimeter near the breathing zone of all personnel involved in the cleanup operation.
6. Prior to entrance by personnel to conduct cleanup activities, open warehouse storage doors to disperse (airing) accumulated vapors. It may also be necessary to provide portable local exhaust ventilation to reduce the levels of mercury vapors to workable levels.
7. During the "airing" procedure, the air should be monitored to determine the airborne concentration of mercury vapors using a calibrated Mercury Vapor Sniffer. Airborne concentration of mercury dictate which type of respiratory protection is necessary to protect workers. If airborne concentrations of mercury are in excess of .25 mg/m³, after

the area has been thoroughly aired, only supplied air or self-contained breathing apparatus can be used. If this situation occurs, contact DNSC-MH immediately for further procedures and instructions.

8. Cleanup operations shall be conducted in a manner that will minimize and limit the amount of contamination to the protective clothing, equipment, and to the storage area and other materials contained therein.

9. From monitoring mercury vapor levels and visual observation it should be determine if the spilled mercury can be reclaimed without immediately applying the mercury vapor chemical absorbent/depressant. If it appears that mercury vapors are continuing to be generated from the spill and reclamation is not feasible apply the absorbent/depressant according to the manufacturer's recommendations.

10. After the majority of the spilled mercury has been cleaned up, the surface area of the spill shall be thoroughly cleaned again using suitable solution of HgX or any other approved chemical absorbent/depressant.

11. Upon completion of the initial cleanup and decontamination, a mercury-indicating powder shall be applied to determine if additional decontamination is required.

12. After completing the cleanup, decontamination, or at the end of the work shift, whichever comes first, all mercury waste, such as disposable personal protective clothing, disposable respirators, and other contaminated debris shall be placed in a covered, lined, and properly labeled as a hazardous waste container.

13. Personnel directly engaged in the cleanup and decontamination operation shall thoroughly wash and shower at the end of the shift.

14. One or two persons from the clean-up team should be designated to decontaminate the rubber boots with HgX solution. This can be accomplished using a bucket with an adequate amount of solution and a scrub brush.

15. Dispose of the accumulated mercury-contaminated material and spent mercury cleanup solutions in a manner and at a location approved by the Environmental Protection Agency (EPA). DLA/DRMS may be used for this disposal action

NOTE: Exact details of sampling, decontamination and disposal procedures in conjunction with any DNSC decontamination operation shall be developed and carefully delineated by the Directorate of Strategic Materials Management, Safety and Health Staff (DNSC-MH). DNSC-MH shall determine the sampling, decontamination, and disposal options best suited for the specific situation since each spill and cleanup operation is different.

ENCLOSURE 2

TEST TO CHECK THE EFFECTIVENESS OF DECONTAMINATION

A spill of metallic mercury shall be thoroughly cleaned up immediately because mercury vaporizes at room temperature. Airborne concentrations of mercury can reach dangerous levels in a very short period of time. A typical mercury spill will produce three different types of mercury droplets. The first, is large drop that is easily visible and accessible; the second, a droplet which tends to be small yet visible, but often difficult to pick up; and finally, a micro-droplet which is too small to be visible thus extremely difficult to be removed.

More often than not cleanup operations leave residual mercury because they are undertaken in a haphazard manner. Residual mercury is generally the result of "micro-droplets" in the cracks and crevices of the floors, walls, storage containers and storage aids (i.e. pallets, trays, etc.). The use of a mercury-indicating chemical is essential to detect if there is any hidden mercury left behind. This will provide a good indication if further decontamination is necessary because on contact with actual mercury or mercury vapors the indicating chemical will change from a bone-white color to a pink or black color.

The indicating chemical is applied by sprinkling a thin layer of powder over the decontaminated area or the area in question. Vertical surfaces can be treated by preparing a thin paste with water and painting it over the area in question. After it has been applied, the indicating chemical layer should remain undisturbed for 24 hours. The presence of mercury or mercury vapor will be indicated by individual or numerous pink or black spots. Each spot pinpoints a source of mercury or mercury vapor.

If the test indicates there is no mercury vapor present, it can be swept or wiped away. If the test is positive, however, it should be retained for disposal, along with the additional mercury contaminated waste collected during subsequent cleanup operations.

The active ingredient in the mercury-indicating chemical may be irritating, therefore personnel using this material shall avoid breathing the powder dust of the chemical by wearing an appropriate toxic dust respirator and avoid contact with the hands by wearing gloves. It is recommended that the exposed skin i.e. face, neck, and hands be thoroughly washed after using this material.

ENCLOSURE 3

**CHEMICALS THAT CAN BE USED FOR
CLEANUP AND DECONTAMINATION ACTIVITIES**

The mercury Spill Cleanup Kit contains cinnasorb absorbent base and Reabsorb mercury vapor depressant.

J.T. Baker Chemical Company
Safety Products Department
Phillipsburg, NJ 08865

FOR MEDIUM TO LARGE SPILLS

HgX Mercury Decontaminate Powder

Action Associates
100 Thompson Street
Pittston, PA 18640 717/654-0612

MERCURY INDICATING CHEMICAL

Lab Safety Supply Co.
P O Box 1368
Janesville, WI 53547-1368

ENCLOSURE 4

TRAINING

The DNSC Safety Manager shall establish a training program to instruct DNSC personnel, other Federal agencies and other persons, when necessary, of the potential health hazards involved in the handling, storage and outloading of stockpile mercury. Information covered should include, but should not be limited to, the parameters listed below.

Inform personnel of correct work and storage practices, emergency procedures to be followed in case of spills, leaks, or fire and, personal protective equipment requirements. Discuss with personnel the signs and symptoms of overexposure to inorganic mercury compounds and instruct them to immediately notify the DNSC-MH safety staff should they develop any symptoms.

Instruct personnel in the DNSC operations which could result in exposure to mercury above DNSC action levels, as well as safe work practices for the handling, use, storage, or disposal of mercury in normal and emergency operational activities.

Educate personnel in the proper housekeeping practices, decontamination procedures in the event of a mercury spill, and fire emergency procedures.

Explain the possibility of ingesting inorganic mercury by hand-to-mouth contact when good personal hygiene is not practiced.

Instruct personnel in the measures necessary to protect them from excessive exposures to mercury, such as limiting the time of exposure, the use of engineering controls (such as portable exhaust ventilation), and the wearing of proper and approved personal protective clothing, respirators, and equipment.

Instruct personnel as to the purpose, proper use, maintenance, and limitations of their respirators and personal protective equipment.

ENCLOSURE 5

PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

Where protective clothing is required in this program, or under 29 CFR 1910.132, the Safety and Health Manager shall provide and ensure that all DNSC employees wear appropriate protective clothing, such as, but not limited to, coveralls, smocks, aprons, gloves, boots, head covering, and respirators.

1. DNSC employees shall ensure that protective clothing contaminated by mercury is discarded in a manner that will not introduce the contaminant(s) into the warehouse and surrounding environment. All protective clothing shall be removed by DNSC personnel in designated areas and deposited in properly labeled lined and covered waste containers.

2. Street clothing and street footwear will not be permitted in the workplace whenever airborne mercury concentrations exceed the permissible exposure limit, or potential contact with mercury or its inorganic compounds exist. Contaminated clothing or footwear shall not leave the worksite except for disposal.

3. If protective clothing and footwear is provided for a longer period or use, they should be stored separately from personal street clothing, street footwear, food, tobacco products, and other personal effects.

4. If rubber boots are used as protective footwear and become contaminated by elemental mercury, they shall be decontaminated by washing the exterior contaminated area of the boot(s) in a solution of HgX, using a scrub brush designated for this purpose.

5. Shower facilities shall be provided and used prior to changing into street clothes.

6. Work and street clothes shall not be stored in the same area.

ENCLOSURE 6

OVERPACKAGING PROCEDURES FOR SUB SPEC FLASKS AND SUSPECTED LEAKERS

SCOPE: These guidelines cover the procedures, methods and materials to overpack sub-spec flasks and suspected leakers so they can be handled/shipped with minimum risk of contamination. A known leaker will be set aside and reflasked before shipping. The following procedures or equivalent proven methods shall be used for sub spec flasks or known leakers:

NOTE: Medical surveillance procedures. A medical doctor shall check all employees who will be exposed to mercury before they begin work. The following areas shall be checked and discussed:

1. Dental work within last three months
2. Rashes, sores or cuts on the skin
3. Respiratory tract
4. Allergies
5. Hazards of mercury (Explain the neurological, liver, and kidney disorders that can be caused by mercury).
6. The 24-hour urine sample, collected before an individual is exposed to mercury and another 24-hour sample, collected after the project is completed.

* THE DNSC SAFETY AND HEALTH MANAGER WILL DETERMINE WHEN THE ABOVE MEDICAL PROCEDURES ARE APPROPRIATE BASED ON THE WORK TO BE PERFORMED.

ENVIRONMENTAL SURVEILLANCE PROCEDURE: Monitor the area at all times with a Mercury Vapor Detector. A mercury vapor badge shall be worn by each worker to give a TWA for mercury exposure.

DESIGNATED WORK AREA: An area shall be designated for each phase of the overpackaging operation. Every effort shall be made to limit the personnel in the area. ONLY individuals responsible for the mercury overpackaging project, properly protected with suitable clothing and respirators, shall enter the work area.

OVERPACKAGING PROCEDURE

1. Place a 10' X 20' piece of 8 mil plastic on the floor over cardboard and staple to 2" X 4"s on three sides, leaving the front open. This will serve as the primary work area. Any leakage or spills will be confined to this area. The plastic over cardboard working surface prevents the warehouse floors from being contaminated.

2. Pick up box pallet with a forklift and place it into a large plastic shroud, pulling the bag around the pallet from the open end toward the forklift. Staple the end to the pallet after the pallet has been set down on a flat bed truck. The shroud should be large enough to extend about 14 inches up from the bottom on the open side. The plastic shroud will contain any leakage that may occur during transport from the storage area to the primary work area. This will avoid contamination of trucks and floors by catching mercury droplets which may be on the pallets or flasks. All box pallets containing mercury will be handled as contaminated.

3. Set the pallet down in the holding area which has been prepared with plastic. Move the pallets as needed to the work area. The packing area should be adjacent to the work area.

CARDBOARD CONTAINERS

1. Place two fiberboard containers into a large plastic shroud on a flat pallet. The pallet will have a cardboard protective sheet between the shroud and pallet. This protects the shroud from nail heads on the pallet.

2. Remove flasks from the box pallet. Check the flasks for leaks and place them into polyethylene bags. Place the overbagged flasks into a fiberboard container which has been lined with a 6 mil plastic bag.

3. Move the pallet to the packing area and tie off the tops of the plastic bags. Pack vermiculite or zonolite around the flasks.

4. Heat seal the plastic liner, seal the cardboard box, and seal the outer plastic shroud. This can be done with a heat shrink machine or a portable heat sealer.

5. Band the sealed unit of two fiberboard containers to a pallet.

6. Gross weigh.

DRUMS

1. Place drum on flat pallet. Line drum with plastic bag.

2. Remove individual flasks from the box pallet. Check the flasks for leaks and place them inside plastic bags.

3. Tie the tops of the bags and place them into the drum. Pack vermiculite or zonolite around the flasks so that the flasks will not shift.

4. Heat seal the plastic drum liner, seal the cardboard box, and seal the outer plastic shroud. This can be done with a heat shrink machine or a portable heat sealer.

5. Band drums to pallet.

6. Gross weigh.

CLEAN UP: Mix a solution of HgX (calcium polysulfide) and mop the entire work area leaving a heavy film of solution on the floor to dry. Use Mercury Vapor Detector to check the floor to see if any readings can be obtained. A mercury indicating chemical can and should also be used to detect residual mercury contamination.

The following materials are the minimum required to safely work and properly overpackage mercury flasks.

1. HgX (Calcium Polysulfide)
2. Mercury Vapor Detector
3. Protective clothing (including rubber boots and gloves)
4. Metals hooks (similar to hay hook)
5. Vermiculite or zonolite
6. Plastic bags for flasks, 13" x 24"
7. Twine and nylon filament tape
8. Plastic liner for fiberboard cartons, 112" x 48"
9. Plastic shroud, 50" x 42" x 76"
10. Fiberboard cartons, 30" x 24" x 24" or drums, 30 gal., 18 1/4" dia. x 28"
11. Cardboard strips 4 inches wide, under bands
12. 8 mil plastic, 10' wide, work area
13. Pallets, hardwood, 40" x 48"
14. Cardboard V-3, 40" x 48" (cut to fit pallet)
15. Heat shrink machine and/or portable heat sealer
16. Forklift
17. Banding and banding equipment

18. Waste disposal containers for any mercury contaminated waste generated during the procedure

ENCLOSURE 7

STANDARD EQUIPMENT AND MATERIALS FOR ALL DNSC MERCURY STORAGE AREAS

- * Mercury high efficiency vacuums
- * HgX
- * Mercury Indicating Chemical
- * Aspirator bottles
- * Spare clean flasks or other appropriate containers
- * Appropriate labels
- * Protective clothing to include booties, head covering
- * Respirators, spare canisters and parts
- * Shovels
- * Brooms
- * Tape
- ** All Mercury Monitoring Equipment

APPENDIX D

DNSC HAZARDOUS MATERIALS TRANSPORTATION SECURITY PLAN

5. Personnel Security

Employees at the DNSC depots work under a comprehensive security program. This program includes:

- A background check by the Office of Personnel Management (OPM) for all DNSC personnel;
- DNSC escort of visitors at DNSC depots;
- Additional background checks of guard staff; and
- Physical security of each depot.

6. Facility Security

The DNSC has implemented safeguards and security programs designed to assure appropriate levels of protection against unauthorized access, theft, diversion, loss of custody, destruction, and other hostile acts that may cause unacceptable adverse impacts on any of the applicable materials listed above or on the health and safety of DNSC employees, the public or the environment. Specifics of the facility security at each depot are described in Section 7.2.

7. Risk Assessment

The DNSC has assessed the potential vulnerabilities of its facilities and operations concerning current general terrorism threat situation, the nature of the materials shipped and/or transported, and regulatory requirements.

The DNSC has determined that potentially significant security threats exist with operations affecting certain materials. For purposes of designating and applying security policies and identifying potentially vulnerable operations the following general assessment has been made. This general assessment will be communicated to employees, as appropriate to their duties.

7.1. Scope

This Security Plan applies to DNSC depots at Binghamton, NY, Clearfield, UT, Curtis Bay, MD, Hammond, IN, New Haven, IN, Scotia, NY, Somerville, NY and Warren, OH. These DNSC depots store and ship a limited number of hazardous materials (Table 1). There are no new materials coming into the Stockpile. All of the hazardous materials managed by the DNSC, except some of the mercury, are located at DNSC operated depots. Some of the mercury is stored at a Department of Energy (DOE) facility located in Oak Ridge, TN. This document does not address the physical security provided at the DOE location.

DEFENSE NATIONAL STOCKPILE CENTER (DNSC) HAZARDOUS MATERIALS TRANSPORTATION SECURITY PLAN

1. Introduction

The Department of Transportation (DOT) requires that any person who offers for transportation in commerce or transports in commerce hazardous materials (HAZMAT) must have in place a security plan for the hazardous materials (49 CFR Part 172, Subpart I, §§ 172.800, 172.802, and 172.804). This document is the Security Plan for the hazardous materials that the Defense National Stockpile Center (DNSC) manages. The DNSC has a limited number of commodities that are classified as hazardous materials for transportation. As the DNSC sells or otherwise disposes of these materials they are shipped from the DNSC depots to other locations. DNSC may also ship materials between its depots. The DNSC usually is not the shipper but DNSC personnel perform pre-shipment functions that are required to be covered by a Security Plan. Occasionally, DNSC is also the shipper of record and this Security Plan also covers those cases.

2. Security Objectives

The security objectives for the DNSC for all hazardous materials shipments originating from DNSC depots are:

- Respond to significant threats and vulnerabilities identified in an assessment of transportation security risks.
- Provide training of employees in both general terrorism awareness and company procedures.
- Provide training for all HAZMAT employees in general transportation security awareness.
- Provide appropriate training for those employees who are specifically involved in the development and implementation of the Security Plan.
- Assure the safety and security of the DNSC personnel, facilities and equipment, materials, and the general public.
- Comply with applicable federal, state, international and local regulations.
- Deter theft of Government property.
- Respond to changes in the security environment according to the DoD Security Condition Levels.

The contents of this Security Plan will be communicated to all applicable DNSC personnel, according to their need to know, except for those portions of the plan which are denoted as being security sensitive information.

3. DNSC Security Organization

Security is the responsibility of every employee of the DNSC. Each employee involved in transportation of hazardous materials has a responsibility to remain knowledgeable of and to comply with the DNSC's security policies and procedures, as applicable to that particular employee's position. All employees are responsible for reporting observations of breaches in security to their supervisors and as their job duties require to DNSC officials, and other external authorities, such as law enforcement agencies, as needed. All employees are encouraged to contribute suggestions to their supervisor or manager which may improve the performance of this Security Plan.

The Directorate of Stockpile Operations will periodically monitor security conditions and shall revise the Plan as **necessary to assure** that its objectives are met. The policies and procedures contained in this Security Plan are effective as of the date shown below.

4. Applicability

This Security Plan applies to **transportation managers**, supervisors, warehousemen, and security personnel, as well as others who are, or may be, involved with materials covered by this plan.

This plan applies to DNSC personnel when the DNSC offers for transportation in commerce and/or performs one or more pre-transportation functions for one or more of the following hazardous materials listed in 49 CFR § 172.800(b):

- - A shipment of a quantity of hazardous materials in a bulk packaging having a capacity of 3,500 gallons (13,248 liters) for liquids or gases or more than 468 cubic feet (13.24 cubic meters) for solids;
- A shipment in other than a bulk packaging of 5,000 pounds (2,268 kilograms) gross weight or more of one hazard class for which placarding of a vehicle, rail car, or freight container is required for that hazard class of 49 CFR Part 172, Subpart F; or
- A **quantity of hazardous material that requires placarding under the provisions of 49 CFR Part 172, Subpart F.**

For materials that the DNSC sells, the buyer is also the shipper. However, the DNSC does provide one or more pre-shipment functions. This Security Plan addresses those functions that the DNSC performs. In addition, there are two or more hazardous commodities that the DNSC expects to have no market for and therefore must dispose of without selling. In those cases, the DNSC will be the shipper and contractors will carry out the shipping activities including transportation. This Security Plan also addresses these cases.

Table 1. List of hazardous materials stored at DNSC depots

Stockpile Material	HazMat Shipping Name	Division	ID #	Packing Group
Manganese Dioxide, Synthetic Battery Grade	Oxidizing solid, n.o.s. (manganese dioxide)	5.1	UN 1479	PG III
Mercury	Mercury	8	UN2809	PG III
Tantalum and Columbium (Niobium) source materials Radioactive lots	Radioactive material, LSA, n.o.s.	7	UN 2912	n/a
Tantalum Metal Capacitor Grade, Grade 2	Metal Powders, flammable, n.o.s. (tantalum)	4.1	UN 3089	PG III
Tantalum Metal Capacitor Grade 1, 5	Metal Powders, flammable, n.o.s. (tantalum)	4.1	UN 3089	PG II
Tantalum Metal Capacitor Grade, Grade 1A, 3, 4	Metal Powders, flammable, n.o.s. (tantalum)	4.1	UN 3089	PG II
Thorium (Hydroxide, Oxide)	Radioactive material, LSA, n.o.s.	7	UN 2912	n/a
Thorium Nitrate	Radioactive material, LSA, n.o.s.	7	UN 2912	n/a
Titanium Sponge	Titanium sponge granules	4.1	UN2878	PG III
Tungsten Metal Powder, Carbon reduced (Contract NSP-34 only)	Metal Powders, flammable, n.o.s. (tungsten)	4.1	UN 3089	PG III
Tungsten Metal Powder, Hydro Reduced, Type IV	Metal Powders, flammable, n.o.s. (tungsten)	4.1	UN 3089	PG II
Tungsten Metal Powder, Hydro Reduced, Types V	Metal Powders, flammable, n.o.s. (tungsten)	4.1	UN 3089	PG III
Tungsten Metal Powder, Hydro Reduced, Types VI, VII,	Metal Powders, flammable, n.o.s. (tungsten)	4.1	UN 3089	PG III
Tungsten Metal Scrap, Lots 1, 2	Radioactive material, LSA, n.o.s.	7	UN 2912	n/a
Tungsten Metal Scrap, Codes 1,2, 6	Radioactive material, LSA, n.o.s.	7	UN 2912	n/a

7.2. Knowledge of Operations

All of the DNSC depots have essentially the same security and operating policies.

For all new government employees, the Office of Personnel Management performs a personal history background check. In addition, contract guard service employees are vetted by the Federal Protective Service (FPS), which does a check with the National Crime Information Center (NCIC) and gets a fingerprint check by the Federal Bureau of Investigation (FBI).

All hazardous materials are packaged in appropriate storage containers and are stored in locked warehouses, with the exception of titanium sponge, which is stored out of doors in drums at Curtis Bay and New Haven depots. The packaging for materials typically is large enough and contains enough material that it is not easily concealed or even moved by human effort. In addition all depots containing hazardous materials are required to have the following:

- Posted fencing,
- Perimeter lighting,
- 24 hours armed guard service; at gate during duty hours, roving patrols during non-duty hours,
- All visitors sign in at gate after presenting valid, government issued identification,
- Advance notification requirements for visiting foreign nationals,
- Warehouse doors locked,
- Contractor employees operating large loading equipment accompanied by DNSC employees,
- Parking of personal vehicles restricted to designated areas,
- Transport conveyances scheduled in advance,
- An individual physical security plan, which is reviewed annually.
- An inventory of the materials in storage.

7.3. Assessment

All of the material that DNSC manages present a relatively low risk to the public health during storage and transportation. There are no materials that present significant direct hazards of explosion, fire, or acute toxicity. Because of this the flammable metals and oxidizers have a low attractiveness for diversion to a terrorist activity. All of the radioactive material except thorium nitrate are only slightly radioactive and also have low attractiveness. The thorium nitrate while much more concentrated, and thus more radioactive, is not in an easily dispersible form and would probably be difficult to use directly in a successful Radiological Dispersion Device (RDD).

The flammable metals require considerable heat (e.g., propane torch) to ignite and once ignited most of them burn slowly and none evolve toxic fumes or gasses. The oxidizer barely qualifies as an oxidizer and would provide little acceleration to a fire.

All of the radioactive materials contain natural uranium and natural thorium and have low levels of radioactivity. Most of the radioactive materials are ores and concentrates of other metals that have some relatively small concentrations of uranium or thorium that are enough to require classification of the material as radioactive.

The thorium nitrate is the exception to the general case of the material being products containing small concentrations of radioisotopes. Thorium nitrate was produced in the late 1950's and early 1960's for possible use as a feedstock for reactor fuel. However, the material is not pure enough for the intended use. Diversion to a RDD is possible however the material is not packaged in a highly dispersible form. In a majority of the packages the thorium nitrate is a solid block weighing at least 200 lbs. In the remainder of the packages it is gravel sized particle with no "fines" that might cause a dust.

7.4. Strategy

The DNSC has put in place a strategy of defense in depth for all of the hazardous materials it manages. This strategy begins with knowing who has access to the hazardous materials. A second layer of security is provided by preventing or detecting access by unauthorized individuals onto DNSC depot property and buildings used to store hazardous materials.

7.5. Verification

The DNSC performs annual reviews of the physical security at each of the depots that it manages.

8. Site Specific Security Procedures

Site specific procedures are contained in the physical security plan for each depot.

9. En Route Security

The DNSC has taken steps to require that the commercial carrier transporting applicable hazardous materials has a security plan in place that adequately addresses the assessed security risks of the material to be transported, including risks related to the storage incidental to transportation. For material that is sold a condition of sale stipulates that the carrier used by the buyer to transport the hazardous material will have a security plan for that hazardous material en route. For material that the DNSC ships, the contractor

performing the shipping activities will certify that the carrier used for those shipments has a Security Plan for the hazardous material being shipped.

For shipments of hazardous material for which the DNSC is the shipper, it will take the following steps:

- Identify driver name through carrier dispatch in order to allow photo verification.
- Verify that the driver has a Government issued photo identification and/or commercial driver's license for comparison with information provided by the carrier.
- Record seal/lock numbers on the shipping documentation for sealed loads.
- Provide consignee with advanced notification of carrier, seal/lock numbers, and an estimated time of arrival.
- Require satellite tracking of thorium and mercury shipments.

10. Records

DNSC will maintain the master copy of this Security Plan. All copies of the completed Plan are considered sensitive information and should be treated accordingly.

This Plan must be retained for as long as it remains in effect. Copies of the Plan, or portions thereof, must be available to the employees who are responsible for implementing it, consistent with personnel security clearance or background investigation **restrictions and a demonstrated need to know**. The Plan must be revised and updated as **necessary** to reflect changing circumstances. When the Plan is updated or revised, all copies of the Plan must be maintained as of the date of the most recent revision.

This Plan will be reviewed and self-assessments conducted periodically by the Directorate of Stockpile Operations.

11. Training

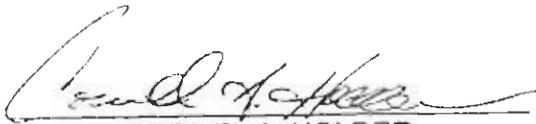
Each hazardous material employee of the DNSC must be trained concerning the Security Plan and its implementation (49 CFR Part 172, Subpart I). These specific subjects may need to be listed as individual elements in the training curriculum in order to facilitate simplicity of training

- Security objectives
- Employee responsibilities
- Specific security procedures (identified in depot specific physical security plans)
- Actions to take in the event of a security breach
- Organizational Security Structure for each depot (identified in depot specific physical security plans)

12. Concurrence

Jennifer Buchanan for ^{11/26/03} DNSC-C
J. E. Kelly 11/26/03 DNSC-E
Bathia J. Wolf 11-25-2003 DNSC-G
R. J. L. 11/26/03 DNSC-O

Plan Edition: _1_



CORNEL A. HOLDER
Administrator,
Defense National Stockpile Center

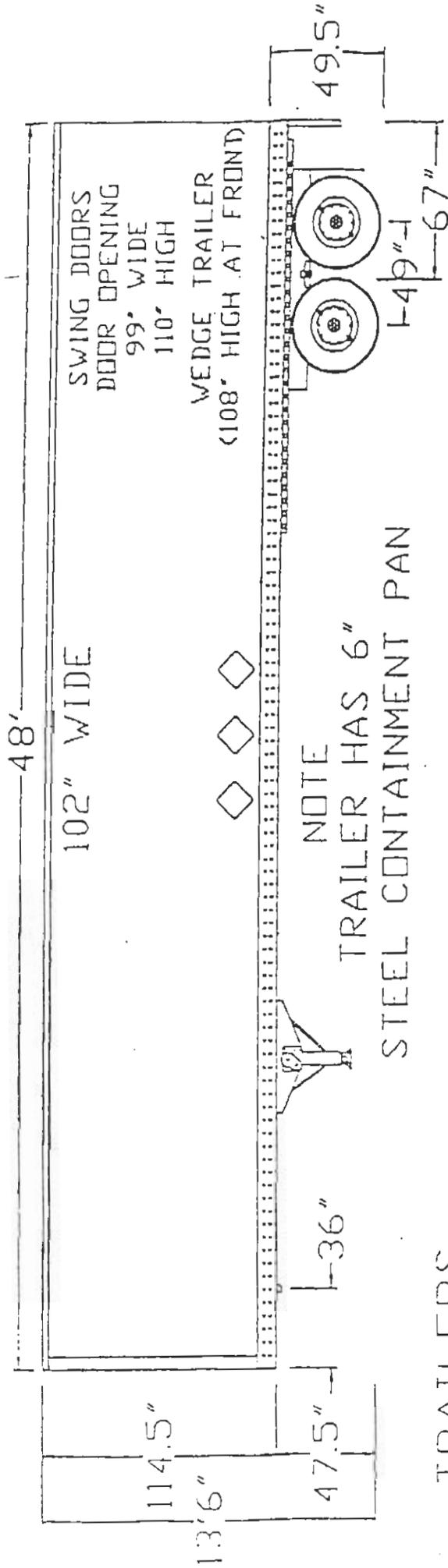
Date: 12/3/03

APPENDIX E
DIAGRAM OF A PAN VAN

PAN VAN/SLIDING TANDEM

1995 STOUGHTON MODEL AVW-485T-S-C-WDG

VANIN95
H HINKLE



TRAILERS

548001-548100 GRP II 524.0

FOLLOWING UNITS HAVE LIFT GATES

548027 087

056 AND UNITS 089 THRU 100

085

suspension- SPRING H8800

axles- RKWL

weight- 15,600

tires- 295/75R22.5

capacity 55,000 EVEN

4'-

5'-

10'- 25,000

15'-

TO 127' IN 4" INCREMENTS

SPRING TRA D21

cam 16WKL21-175 & 16WKR21-175

brake 45150 PLUS

bearing in-218248 out-212049

drum 66864

hub 2023 WEBB

seal 372-7097

shock NONE

slack adj. AS1020 5.5' 28SP 1.5' DIA

winch NONE