

**ATTACHMENT 3**

**HDP-PO-WM-900**  
**Waste Management and Transportation Plan**  
**25 Pages**

**Westinghouse Electric Company LLC,**  
**Hematite Decommissioning Project**

**Docket No. 070-00036**



## **Hematite Decommissioning Project**

**NUMBER: HDP-PO-WM-900**

**TITLE: Waste Management and Transportation Plan**

**REVISION: 1**

**EFFECTIVE DATE: 1/14/2011**

**QUALITY-RELATED**

**REVISION LOG**

<b>Revision No. Effect. Date</b>	<b>Change(s)</b>
0 10/20/2010	See Revision 0 of this Policy for information on its changes.
1 1/14/2011	This revision changes the policy from Proprietary Class 2 to Non-Proprietary Class 3. The revision is contained within the header of each page and therefore sidebars will not be utilized to indicate the change.

Are Quality Records generated? YES or **NO**. If yes, list below and ensure that these completed records are retained in accordance with HDP-PR-QA-009.

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## 1.0 PURPOSE

This policy establishes the responsibilities and requirements for the management, packaging, transportation, security and disposal of waste materials generated during decommissioning activities at the Hematite Decommissioning Project (HDP) such that they will be carried out in compliance with federal, state and local regulations.

## 2.0 POLICY

Licensed radioactive material shall be disposed of by transfer to an authorized recipient; by decay in storage; by effluent release within the limits of 10 CFR 20.1301; or as authorized under 10 CFR 20.2002 or 20.2003 (Reference 5.1). No person may offer for transportation or transport a hazardous waste in interstate or intrastate commerce except in accordance with 49 CFR Transportation. Policies and procedures shall be established for the waste management (including transportation) area, (Reference 5.24).

## 3.0 APPLICABILITY

This policy is applicable to persons generating, handling, packaging, preparing and transporting waste or hazardous materials from activities at the HDP.

## 4.0 DEFINITIONS/ACRONYMS

### 4.1 Definitions

Aerosol Can - means a pressurized can which creates an aerosol mist of liquid particles.

Asbestos Waste - means waste materials containing more than one percent chrysotile, amosite, crocidolite, tremolite asbestos, anthrophyllite asbestos, actinolited asbestos, and any of these materials that has been chemically treated and/or altered (Reference 5.4).

Commercial Solid Waste - means all types of solid wastes generated by stores, offices, restaurants, warehouses and other non-manufacturing activities, excluding residential and industrial wastes.

Construction and Demolition Waste - means the waste building materials, packaging, and rubble resulting from construction, remodeling, repair, and demolition operations on pavements, houses, commercial buildings, and other structures.

Electronic Waste - means waste material that consists of items that contain electronic circuit boards, except for smoke detectors.

Fissile Exempt - means fissile material meeting the exemption standards of 10 CFR 71.15, Exemption from Classification as Fissile Material (Reference 5.2) or 49 CFR 173.453, Fissile Materials – Exceptions (Reference 5.21).

Fissile Material - means the radionuclides uranium-233, uranium-235, plutonium-239 and plutonium-241, or any combination of these radionuclides. Fissile material means the fissile nuclides themselves, not material containing fissile nuclides. Un-irradiated natural uranium and depleted uranium and natural uranium

or depleted uranium, that has been irradiated in thermal reactors only, are not included in this definition (Reference 5.2).

Hazardous Material - means a substance or material that the United States Department of Transportation (DOT) has determined is capable of posing an unreasonable risk to health, safety and property when transported in commerce and has designated as hazardous. The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in 49 CFR 172.101, Purpose and Use of Hazardous Materials Table (Reference 5.20), and materials that meet the defining criteria for hazard classes and divisions in 49 CFR 173, Shippers – General Requirements For Shipments and Packagings (Reference 5.21).

Hazardous Substance - means a material including its mixtures or solutions that is listed in Appendix A of 49 CFR 172.101 (Reference 5.20) and is in a quantity, in one package, that equals or exceeds the reportable quantity listed.

Hazardous Waste - means any material that is subject to the Hazardous Waste Manifest Requirements of 40 CFR 262, Standards Applicable to the Generators of Hazardous Waste (Reference 5.17).

HAZMAT Employee - means a person (either Westinghouse or non-Westinghouse) who is employed by a HAZMAT employer and who in the course of employment directly affects hazardous materials transportation safety (Reference 5.20).

Infectious Waste - also known as Biohazard Waste, means waste capable of producing an infectious disease because it contains pathogens of sufficient virulence and quantity so that exposure to the waste by a susceptible human host could result in an infectious disease. These wastes include isolation wastes, cultures and stocks of etiological agents, blood and blood products but not patient care wastes such as bandages or disposable gowns that are lightly soiled with blood or other body fluid, pathological wastes, other contaminated wastes from surgery and autopsy, contaminated laboratory wastes, sharps, dialysis unit wastes, discarded biological materials known or suspected to be infectious (Reference 5.14).

Investigation Derived Waste (IDW) - means waste materials generated as a result of field investigation activities that may pose a threat to human health and the environment. Examples include soil cuttings, protective clothing, wash water and water from well purges (Reference 5.37).

Labeling - means the application of the appropriate hazard label as defined in 49 CFR 172 Subpart E – Labeling (Reference 5.20).

Low Level Radioactive Waste (LLRW) - means those low level radioactive wastes containing source, special nuclear or byproduct material that are acceptable for disposal in a land disposal facility. This does not include radioactive waste that is classified as high-level radioactive waste, transuranic waste, or spent nuclear fuel.

Marking - means a descriptive name, identification number, instructions, cautions, weight, specification, or UN marks, or combinations required by 49 CFR 172 Subpart D – Marking (Reference 5.20) to be on the outer packaging of hazardous materials.

Mixed Waste - means a combination of hazardous and radioactive waste.

Office Waste - means solid waste generated from office trash cans. The physical form of the waste includes items such as paper, cardboard, food residues, food containers and general trash, but does not include universal waste such as batteries, light bulbs or empty aerosol cans.

Polychlorinated Biphenyls (PCB) Bulk Product Waste - means waste from manufactured products containing PCBs in a non-liquid state, at any concentration where the concentration at the time of designation for disposal was greater than 50 ppm PCBs. PCB bulk product waste includes, but is not limited to (Reference 5.18):

- Non-liquid bulk wastes or debris from the demolition of buildings and other man-made structures manufactured, coated, or serviced with PCBs,
- PCB-containing wastes from the shredding of automobiles, household appliances or industrial appliances,
- Plastics (such as plastic insulation from wire or cable; radio; television and computer casings; vehicle parts or furniture laminates); preformed or molded rubber parts and components, applied dried paints, varnishes, waxes or other similar coatings or sealants; caulking; adhesives; paper; Galbestos; sound deadening or other types of insulations; and felt or fabric products such as gaskets,
- Fluorescent light ballasts containing PCBs in the potting material.

Placarding - means the application of the appropriate hazard placard as required by 49 CFR 172 Subpart F – Placarding (Reference 5.20).

Regulated Asbestos Containing Material - means (Reference 5.4);

- Friable asbestos material,
- Category I non-friable asbestos containing material that has become friable,
- Category I non-friable asbestos containing material that will be or has been subjected to sanding, grinding, cutting or abrading, or
- Category II non-friable asbestos containing material that has a high probability of becoming or has become crumbled, pulverized, or reduced to a powder by the forces expected to act on the material in the course of demolitions or renovation operations.

Sewage - means the mainly liquid waste containing some solids produced by humans that typically consist of waste water, feces, urine and other material that drains from toilets, sinks or showers.

Sharps - means the discarded sharps, including hypodermic needles, syringes and scalpel blades. Broken glass or other sharp items that have come in contact with material considered infectious by definition are also included.

Special Nuclear Material (SNM) - means plutonium, uranium-233, uranium enriched in the isotope 233, or in the isotope 235, but does not include source material (Reference 5.1).

Special Nuclear Material of Low Strategic Significance for HDP - means (Reference 5.3):

- Less than 1000 grams, but more than 15 grams of uranium-235 contained in uranium enriched to 20 percent or more in the uranium-235 isotope.
- Less than 10,000 grams but more than 1000 grams of uranium-235 contained in uranium enriched to 10 percent or more but less than 20 percent in the uranium-235 isotope.
- 10,000 grams or more of uranium-235 contained in uranium enriched above natural but less than 10 percent in the uranium-235 isotope.

Universal Waste - means hazardous wastes such as batteries, pesticides, thermostats and lamps that are subject to reduced regulatory requirements under 10 CSR 25-16, Universal Waste (Reference 5.13).

Used Oil - includes but is not limited to, petroleum-derived and synthetic oils which have been spilled into the environment or used for lubrication/cutting oil, heat transfer, hydraulic power or insulation in dielectric transformers (Reference 5.11).

#### 4.2 Acronyms

ACM	Asbestos Containing Material
ARAR	Applicable or Relevant and Appropriate Requirements
CAA	Controlled Access Area
CSR	Code of State Regulations
DOT	United States Department of Transportation
EH&S	Environmental Health & Safety
EPA	United States Environmental Protection Agency
FNMCP	Fundamental Nuclear Material Control Plan
HAZMAT	Hazardous Material
HDP	Hematite Decommissioning Project
HRCR	Hematite Radiological Characterization Report
HSA	Historical Site Assessment
IDW	Investigation Derived Waste
IDWTS	Investigation Derived Waste Treatment System
LLRW	Low Level Radioactive Waste
LSA	Low Specific Activity

MC&A	Material Control and Accounting
MDNR	Missouri Department of Natural Resources
NPDES	National Pollution Discharge Elimination System
NRC	United States Nuclear Regulatory Commission
PCB	Polychlorinated Biphenyls
ppm	parts per million
PQP	Project Quality Plan
RCRA	Resource Conservation and Recovery Act
RG	Remediation Goal
RSO	Radiation Safety Officer
SNM	Special Nuclear Material
TSDF	Treatment Storage and Disposal Facility
VOC	Volatile Organic Compounds
WAC	Waste Acceptance Criteria
WM	Waste Management
WMTP	Waste Management and Transportation Plan

## 5.0 REFERENCES

- 5.1 10 CFR 20, *Standards for Protection Against Radiation*
- 5.2 10 CFR 71, *Packaging and Transportation of Radioactive Material*
- 5.3 10 CFR 73, *Physical Protection of Plants and Materials*
- 5.4 10 CSR Chapter 6, *Air Quality*
- 5.5 10 CSR 10-6.241, *Asbestos Abatement Projects-Registration, Notification and Performance Requirements*
- 5.6 10 CSR 10-6.250, *Asbestos Projects Certification, Accreditation and Business Exemption Requirements Generators of Hazardous Waste*
- 5.7 10 CSR 25-3, *Hazardous Waste Management System: General*
- 5.8 10 CSR 25-4, *Methods of Identifying Hazardous Waste*
- 5.9 10 CSR 25-5, *Rules Applicable to Generators of Hazardous Waste*
- 5.10 10 CSR 25-7, *Rules Applicable to Owners/Operators of Hazardous Waste Facilities*
- 5.11 10 CSR 25-11, *Used Oil*
- 5.12 10 CSR 25-13, *Polychlorinated Biphenyls*
- 5.13 10 CSR 25-16, *Universal Waste*
- 5.14 10 CSR 80-7.010, *Infectious Waste Management*

- 5.15 40 CFR 61, *National Emission Standards for Asbestos*
- 5.16 40 CFR 261, *Identification and Listing of Hazardous Wastes*
- 5.17 40 CFR 262, *Standards Applicable to Generators of Hazardous Wastes*
- 5.18 40 CFR 761, *Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce and Use Prohibitions*
- 5.19 49 CFR 171, *General Information, Regulations and Definitions*
- 5.20 49 CFR 172, *Hazardous Materials Table, Special Provisions, Hazardous Materials Communication, Emergency Response Information, and Training Requirements*
- 5.21 49 CFR 173, *Shippers General Requirements for Shipments and Packaging*
- 5.22 49 CFR 174, *Carriage by Rail*
- 5.23 49 CFR 177, *Carriage by Public Highway*
- 5.24 License No. SNM-33, *NRC Materials License No. SNM-33 for Westinghouse-Hematite*
- 5.25 National Pollution Discharge Elimination System (NPDES) Permit, MO-0000761
- 5.26 MO-ARAR013, *Applicable or Relevant and Appropriate Requirements*
- 5.27 HDP-PO-GM-002, *Training Plan*
- 5.28 HDP-PO-HP-100, *Radiation Protection Plan*
- 5.29 PO-MCA-001, *Fundamental Nuclear Material Control Plan*
- 5.30 HDP-PO-QA-001, *Project Quality Plan (PQP)*
- 5.31 HDP-PR-QA-013, *Software/Calculation Validation*
- 5.32 DO-08-003, *Hematite Radiological Characterization Report (proposed draft)*
- 5.33 DO-08-005, *Historical Site Assessment (proposed draft)*
- 5.34 2008 Emergency Response Guidebook
- 5.35 Remedial Investigation for the Westinghouse Hematite Site Report
- 5.36 NRC Low-Level Licensing Branch, *Technical Position on Radioactive Waste Classification, Revision 0 (5/83)*
- 5.37 USEPA Publication 9345.3-03FS, *Guide to Management of Investigation-Derived Waste*

## 6.0 RESPONSIBILITIES

### 6.1 Project Director

The Project Director has the overall project responsibility for Waste Management and Transportation Plan (WMTP) activities.

### 6.2 Radiation Safety Officer (RSO)

The RSO is responsible to the Project Director for the overall implementation of the WMTP.

**6.3** Environmental Health and Safety Manager (EH&S)

The EH&S Manager is responsible for characterization and overseeing the remediation of soils containing Volatile Organic Compounds (VOCs) and other non-radiological contaminants to achieve the HDP Remediation Goals (RGs).

**6.4** Waste Management (WM)

WM reports to the RSO and is responsible for ensuring radioactive, hazardous and mixed waste are properly identified, classified, packaged, marked, labeled and offered for transport in accordance with DOT and other applicable regulations.

**6.5** Health Physics Technicians

Health Physics Technicians that report to WM are responsible for assigned activities as provided by the WMTP and the implementing procedures.

**6.6** Operations Personnel

Operations personnel that are assigned to load and handle waste are responsible to operate equipment in a safe and reasonable manner, install cribbing and bracing and package waste as directed.

**6.7** Contractor Support Personnel

Contractor Support Personnel are responsible to perform activities in accordance with the WMTP.

**7.0 BACKGROUND**

For the purpose of effective planning and scheduling, and as a contingency, this WMTP is designed to address waste streams that could be generated based upon historical information provided in the Historical Site Assessment (HSA) (Reference 5.33) regarding the operating history of the facility, the observed radiological conditions detailed in Hematite Radiological Characterization Report (HRCR) (Reference 5.32), and the contaminants reported in the Remedial Investigation for the Westinghouse Hematite Site Report (Reference 5.35). This WMTP has been developed based upon this information.

Information as provided in the HSA and the HRCR establish that the major types of radioactive waste to be generated during planned demolition and decommissioning activities is solid radioactive waste from the completion of building demolition, removal of slabs and foundations, buried piping systems (e.g. storm drain and septic treatment systems), burial pit and soils remediation activities. Liquid radioactive waste may also be encountered in the form of used lubricants from maintenance of on-site equipment, and Asbestos Containing Material (ACM) may be encountered in the Burial Pits and the Red Room Roof excavation areas.

Characterization sample analysis has confirmed the presence of VOCs in subsurface soils. However, characterization sample analysis has not confirmed the presence of any other hazardous or mixed waste in subsurface soil in excess of concentrations that would render these materials Resource Conservation and Recovery Act (RCRA) characteristic hazardous waste.

## 8.0 GENERAL REQUIREMENTS

### 8.1 Quality Assurance

This WMTP and implementing procedures shall comply with the requirements of HDP-PO-QA-001, Project Quality Plan (PQP) (Reference 5.30).

The procurement of services and materials for the waste management and transportation activities shall be in accordance with the requirements of the PQP.

In the event that a shipment of fissile material is required, the HDP will subcontract the shipment of fissile material to a licensee of the NRC that maintains an approved quality assurance program in accordance with 10 CFR 71 Subpart H - Quality Assurance (Reference 5.2).

### 8.2 Nuclear Criticality Safety

This WMTP and implementing procedures shall comply with the site's nuclear criticality safety requirements.

### 8.3 Material Control & Accounting

Material Control & Accounting (MC&A) requirements for waste containing recoverable special nuclear material (SNM) shall be met in accordance with the PO-MCA-001, Fundamental Nuclear Material Control Plan (FNMCP) (Reference 5.29) and MC&A procedures.

### 8.4 Training

8.4.1 Individuals assigned to WMTP activities shall have completed site training in accordance with HDP-PO-GM-002, Training Plan (Reference 5.27).

8.4.2 Individuals handling hazardous material for shipment shall have completed Hazardous Material (HAZMAT) employee training in accordance with the Training Plan.

8.4.3 In addition to the requirement to complete HAZMAT employee training, Health Physics Technicians performing shipping activities and radiological surveys shall have completed training on the applicable procedure(s).

8.4.4 Individuals authorizing shipments shall have completed classroom training on DOT Hazardous Material Transportation regulations. Course completion certificates shall be forwarded to the RSO for approval of the trained individual as an authorized shipper for HDP and retained in the individual's training file. Recurrent training shall be conducted at least once every three years for individuals authorizing ground shipments and at least once every two years for individuals authorizing air shipments.

**8.5** Waste Minimization

Procedures, Work Packages and Routine Work shall be developed and implemented such that the generation of radioactive and hazardous waste is minimized to the extent practicable.

**8.6** Waste Characterization

All waste generated at HDP will be characterized to establish the appropriate classification of the waste. The results of the characterization will be used to segregate materials into the appropriate waste stream. Appropriate methodologies will be used to perform characterization. The selected methods may include a combination of the following:

- visual inspection
- document search
- process knowledge
- volumetric sampling
- direct sampling

8.6.1 The RSO shall approve volumetric sampling methodology utilized for radioactive waste characterization through the review and approval of procedures, technical basis documents or work packages. The analysis may be performed on-site or at an approved off-site vendor facility.

8.6.2 The EH&S Manager shall approve sample analysis methodology for hazardous constituents through the review and approval of procedures, technical basis documents or work packages. The analysis may be performed on-site or at an approved off-site vendor facility.

8.6.3 Chemical characterization data from the Remedial Investigation for the Westinghouse Hematite Site Report, (Reference 5.35) may be used to establish chemical evaluation requirements.

8.6.4 For radioactive waste and mixed waste shipments, the waste sampling and classification methodology shall be sufficient to identify the actual radioactivity in a container within a factor of ten (10) in accordance with NRC Low-Level Licensing Branch, Technical Position on Radioactive Waste Classification (Reference 5.36).

8.6.5 Radiological characterization data from the HRCR may be used to establish scaling factors for radioactive waste manifesting purposes.

**8.7**    Packaging

Procedures and/or Work Packages shall be developed and implemented such that waste generated at HDP is packaged in accordance with the applicable DOT and NRC regulations, and is compliant with all other applicable regulations, and the receiving facilities waste acceptance criteria (WAC), license or other requirements.

**8.8**    Labeling and Marking

Procedures and/or Work Packages shall be developed and implemented such that waste packages and packaging generated at HDP is labeled and marked in accordance with all applicable NRC and DOT regulations.

**8.9**    Storage

Procedures and/or Work Packages shall be developed and implemented such that waste is stored in accordance with applicable United States Environmental Protection Agency (EPA) and NRC regulations, and in accordance with License No. SNM-33 requirements.

**8.10**   Waste Disposition

8.10.1   Commercial, Construction and Demolition wastes will generally be disposed of by contracting to local firms. The selected waste management firm(s) will provide on-site collection containers, pick up and lawfully dispose of the waste.

8.10.2   Hazardous and Industrial waste processing and disposal will generally be completed by contracting to an authorized hazardous waste broker. To be authorized the following items shall be available to personnel at the HDP Site:

- executed contract or purchase order
- the names of the TSDF's that will receive the waste
- documentation that the selected TSDF has been approved by Westinghouse
- the waste brokers EPA identification number

8.10.3   Radioactive wastes shall be sent to authorized companies for processing and/or disposal. To be authorized, the following items shall be available to personnel at the Hematite Site:

- executed contract or purchase order
- the company's EPA Identification number
- the company's WAC
- the company's Radioactive Materials License or authorized NRC license exemption, and/or State permits

8.10.4 Mixed Wastes shall be sent to authorized companies for processing and/or disposal. To be authorized, the following items shall be available to personnel at the Hematite Site:

- executed contract or purchase order
- the company's EPA ID number
- the company's WAC
- the company's Radioactive Materials License or authorized NRC license exemption, and/or State permits

## **9.0 COMMERCIAL WASTE, CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT**

The waste streams associated with Commercial Waste, Construction and Demolition waste are based on the location of generation and the process knowledge associated with the waste. Generally, the waste in this category will be generated in areas that do not have a history of radiological or chemical contamination or will have been radiologically released by the Radiation Protection staff. The specific types of waste that are expected to be generated include:

- Office Waste (Commercial Waste)
- Construction and Demolition Waste
- Infectious Waste (Sharps and Bandages)
- Asbestos
- Sewage

### **9.1 Office Waste**

Office waste consists of solid waste generated from trash cans in Buildings 110, 230, the receiving warehouse and other similar areas. The physical form of the waste includes paper, food residues, food containers and general trash, but does not include universal waste such as batteries or light bulbs.

Office waste will be collected and transferred to an on-site rubbish bin. The transportation and disposal of the rubbish will be provided under contract to an approved waste hauler.

No specified packaging, manifesting, transportation, receipt verification or tracking is required for office waste.

### **9.2 Construction and Demolition Waste**

Construction and Demolition Waste includes waste from Building 231, remodeling work from Building 230 or 110, and rubble from parking lots or other areas that are not posted for radiological or hazardous materials. Demolition debris from radiologically or hazardous material impacted areas may be included in this category of waste if Radiation Protection and EH&S determined that it meets established criteria for release.

Waste will be transferred to the demolition waste bin as necessary. The transportation and disposal of the demolition debris will be provided under contract to an approved waste hauler.

No specified packaging, manifesting, transportation, receipt verification or tracking is required for construction and demolition waste.

### 9.3 Infectious Wastes (Bio-Hazard Waste)

Infectious wastes are wastes that would be generated at HDP due to injury of personnel, the treatment of medical conditions such as diabetes, sewage and/or the accumulation of animal feces in structures.

Procedures and/or Work Packages that provide information on treatment, packaging, shipment manifesting, and shipment tracking of infectious waste shall comply with 10 CSR 80-7.010, Infectious Waste Management (Reference 5.14).

Used bandages or slightly bloody absorbent materials that have been unconditionally released by the Radiation Protection staff may be disposed of as commercial waste, if the blood has dried and disposal as commercial waste is approved by WM.

Radiologically contaminated bandages or slightly bloody absorbent materials are required to be treated prior to placement in a radioactive waste container.

### 9.4 Asbestos Wastes

The Missouri Department of Natural Resources (MDNR) is a delegated agency of the EPA for administering 40 CFR 61, Subpart M, the National Emission Standard for Asbestos (Reference 5.15).

Procedures and/or Work Packages for the management of asbestos shall be developed and implemented such that they comply with 10 CSR 10-6.241, Asbestos Abatement Projects-Registration, Notification and Performance Requirements (Reference 5.5) and 10 CSR 10-6.250, Asbestos Projects Certification, Accreditation and Business Exemption Requirements Generators of Hazardous Waste (Reference 5.6).

If ACM is determined to be contaminated with radioactive or hazardous material, the asbestos marking, labeling, shipment and disposal requirements will be in addition to the marking, labeling, shipment and disposal requirements of the additional hazard.

### 9.5 Sewage

The Sanitary Wastewater Treatment Plant shall be operated such that it is compliant with the effluent limits of License No. SNM-33 and the requirements of NPDES Permit MO-0000761 (Reference 5.25).

The use of portable rest room facilities is anticipated for the HDP. The portable rest room facilities shall be located outside of restricted areas and/or radioactive material areas. An approved contractor will be used to provide removal and disposal of the sewage. No specified packaging, manifesting, transportation, tracking or receipt verification is required for non-radioactive sewage waste.

If radioactive sewage is encountered, such as from the abandoned septic tank, then arrangements for the treatment and disposal shall be made with an appropriately licensed facility.

## 10.0 HAZARDOUS AND INDUSTRIAL WASTE MANAGEMENT

To ensure application of the appropriate governing regulations, the EH&S manager shall review and approve procedures and work packages pertaining to a specific hazardous or industrial waste. Procedures and/or work packages shall reference the applicable regulation for the hazardous or industrial waste.

The EH&S Manager shall ensure that the following programmatic elements are addressed within procedures and work packages for each hazardous and industrial waste at HDP:

- Waste characterization
- Waste Segregation
- Waste Storage
- Waste Manifesting
- Transportation
- Report requirements
- Waste Identification
- Waste packaging
- Waste inspection
- Receipt verification
- Transportation security

The EH&S Manager ensures that chemical hazards are identified and develops appropriate training for the hazards. Department Managers ensure personnel assigned to work under these procedures and work packages have completed the necessary training for the hazard prior to performing work.

The expected waste streams associated with hazardous and industrial wastes are primarily non-radioactive waste generated during decommissioning operations at HDP.

### 10.1 Hazardous Waste

The hazardous wastes that are expected to be generated at the HDP are expected to fall in the category of characteristic hazardous waste. Characteristic hazardous waste exhibit the characteristics of ignitability, corrosivity, reactivity or toxicity as defined by 40 CFR 261, Identification and Listing of Hazardous Wastes (Reference 5.16) and 10 CSR 25-4, Methods of Identifying Hazardous Waste (Reference 5.8).

Procedures and/or Work Packages that provide information on the handling, storage, inspections, treatment, packaging, shipment manifesting, and shipment of hazardous waste shall be compliant with 10 CSR 25-5, Rules Applicable to Generators of Hazardous Waste (Reference 5.9), 10 CSR 25-7, Rules Applicable to Owners/Operators of Hazardous Waste Facilities (Reference 5.10), 40 CFR 262, Standards Applicable to Generators of Hazardous Wastes (Reference 5.17) and other applicable State and Federal regulations.

### **10.2** Universal Waste

Universal Waste is a form of hazardous waste which is regulated in accordance with 10 CSR 25-16, Universal Waste (Reference 5.13). Universal waste that may be generated includes but is not limited to batteries, pesticides, mercury containing equipment and lamps.

Procedures and/or Work Packages that provide information on the handling, storage, treatment, packaging, shipment manifesting, and shipment of hazardous waste shall be compliant with applicable State and Federal regulations.

### **10.3** PCB Bulk Product Waste

The PCB Bulk Product Waste is a form of toxic waste which is regulated under the provisions of 10 CSR 25-13, Polychlorinated Biphenyls (Reference 5.12) and 40 CFR 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce and Use Prohibitions (Reference 5.18). HDP is expected to generate PCB containing lighting ballasts and small PCB containing capacitors. The Remedial Investigation for the Westinghouse Hematite Site Report did not identify any painted structures or large transformers containing PCB.

Procedures and/or Work Packages that provide information on the handling, storage, inspection, packaging, shipment manifesting, and shipment of PCB Bulk Product Waste shall be compliant with applicable State and Federal regulations.

### **10.4** Electronic Waste

Recycled electronic waste is excluded as a solid or hazardous waste under 40 CFR 261.2(e) by the State of Missouri and the EPA. Electronic waste generally consists of items that contain electronic circuit boards such as computers, keyboards, telephones, radiation survey instrumentation, televisions/monitors and printers.

Smoke detectors containing radioactive sources are specifically excluded from the category of electronic waste. Smoke detectors containing radioactive sources will typically be returned to the manufacturer. No specified packaging, manifesting, transportation, receipt verification or tracking is required for electronic waste. Electronic waste will be accumulated and dispositioned to an electronic waste recycler on an annual basis.

### **10.5** Aerosol Cans

Aerosol cans are hazardous material in transportation due to being a pressurized container. Additionally, the contents may contain hazardous constituents, such as spray paints.

Aerosol cans shall be emptied of their contents to the maximum extent practical. Prior to disposal aerosol cans will be punctured and the contents drained or allowed to dry. After the aerosol can is drained/dry, it may be placed in an appropriate commercial waste container.

### **10.6** Used Oil

Used Oil is a non-hazardous material regulated under 10 CSR 25-11, Used Oil (Reference 5.11).

Procedures and/or Work Packages that provide information on the handling, storage, inspection, packaging, shipment manifesting, and shipment of Used Oil shall be compliant with applicable State and Federal regulations.

### **10.7** Commercial Chemicals

Containers of chemicals shall be evaluated for disposition by waste management personnel prior to disposal.

To the extent practical, materials or commercial chemicals that could become hazardous wastes will be completely used for the materials intended purpose.

## **11.0 RADIOACTIVE WASTE MANAGEMENT**

Radioactive waste management activities are conducted in accordance with approved procedures and work packages that are designed to address the expected radioactive waste types generated at HDP. Radioactive waste management activities are integrated into the demolition and remediation activities as described in the various site policies, procedures and work packages. Procedures and work packages for the management of radioactive waste are developed in accordance with the requirements of the Radiation Protection Plan (Reference 5.28).

The majority of radioactive waste at HDP will be solid LLRW generated during building demolition and decommissioning activities associated with excavation activities. The two general types of solid radioactive waste expected to be generated are:

- Debris such as concrete rubble, building materials, piping, conduit and exhumed Burial Pit waste.
- Volumetrically contaminated material such as soil, sediment, charcoal, resin and limestone.

Minor amounts of low level liquid radioactive waste are expected to be generated. The radioactive liquids that are expected to be generated during demolition and decommissioning activities include lubricants, such as oil and hydraulic fluid, from the maintenance of on-site equipment.

HDP expects to ship radioactive waste using one of the following proper shipping names:

- UN2912, Radioactive Material, Low Specific Activity (LSA-I)-fissile excepted, 7
- UN3321, Radioactive Material, Low Specific Activity (LSA-II) fissile excepted, 7
- UN2910, Radioactive Material, Excepted Package, Limited Quantity of Material, 7
- Not DOT Regulated

The following programmatic elements shall be addressed as applicable within procedures and work packages for each type of radioactive waste encountered at HDP:

- |                           |                       |
|---------------------------|-----------------------|
| • Waste Identification    | • Waste Segregation   |
| • Waste Packaging         | • Waste Storage       |
| • Waste Inspection        | • Waste Manifesting   |
| • Receipt Verification    | • Transportation      |
| • Transportation Security | • Report Requirements |

### 11.1 Fissile Material

HDP expects that all shipments containing fissile material will meet the fissile exempt requirements as described in 49 CFR 173.453, Fissile Material – Exceptions (Reference 5.21).

Procedures and/or work packages shall be developed to ensure that individual radioactive waste package radioactivity is controlled to meet the limits associated with the fissile material exemptions in 10 CFR 71.15, Exemption from Classification of Fissile Material, (Reference 5.2), the receiving facility WAC, and radioactive materials license or specifically-granted exemptions.

HDP will not maintain an approved Quality Assurance Program in accordance with 10 CFR 71, Subpart H, Quality Assurance (Reference 5.2). If HDP identifies a shipment that does not meet fissile exempt requirements, the shipment shall be performed by a qualified vendor with a previously approved quality assurance program pursuant to 10 CFR 71.101(f) (Reference 5.2).

## 12.0 MIXED WASTE MANAGEMENT

Mixed waste consists of a mixture of hazardous and radioactive waste. Based upon information provided in the HSA, five types of mixed waste streams could be generated during remediation activities:

- Corrosive/Radioactive Waste

- Toxic-VOC/Radioactive Waste
- Toxic-Dense Non Aqueous Phase Liquids/Radioactive Waste
- Toxic-Heavy Metals/Radioactive Waste
- Reactive-Pyrophoric-Uranium Metal chips/Radioactive Waste

Mixed waste shall be managed to meet the selected disposal site's WAC and land disposal restrictions, site license or NRC approved exemption prior to off-site disposal.

If it is determined that it is necessary to perform on-site treatment of mixed waste, then approved procedures or work packages shall be utilized to implement the treatment methods used. To ensure application of the appropriate governing regulation, the RSO and EH&S Manager shall review and approve procedures and work packages pertaining to treatment of mixed waste. Procedures and work packages shall reference the applicable regulations.

### **13.0 INVESTIGATION DERIVED WASTE (IDW) MANAGEMENT**

As HDP is managed as a Comprehensive Environmental Response, Compensation and Liability Act site, an Investigation Derived Waste Management Plan shall be maintained in accordance with USEPA Publication 9345.3-03FS, Guide to Management of Investigation-Derived Waste (Reference 5.37).

Investigation Derived Waste is waste generated as a result of field investigation activities. The hazardous and radioactive characteristics of the material are not known at the time of generation and are being held pending sample results. The waste streams associated with IDW include:

- Water from wells and cleaning of sampling equipment
- Excess soil and debris from sampling evolutions
- Protective clothing worn during sampling

Upon receipt of the sample results, solid IDW may be dispositioned in accordance with the applicable section of this plan.

Liquid IDW generated from field investigation activities shall be transferred to the Investigation Derived Waste Treatment System (IDWTS) or equivalent system for treatment. The design and operation of the IDWTS shall be such that it can be discharged to Outfall 001 and meet the effluent release criteria in License No. SNM-33 and ARARs MO-0000761 (Reference 5.26).

## 14.0 TRANSPORTATION

Procedures shall be developed and implemented that provide direction on the handling, packaging, loading, marking, labeling, placarding, inspection, shipment manifesting, emergency response information, and shipment of hazardous material in accordance with 49 CFR 171, General Information, Regulations and Definitions (Reference 5.19), 49 CFR 173, Shippers General Requirements for Shipments and Packaging (Reference 5.21), 49 CFR 174, Carriage by Rail (Reference 5.22), 49 CFR 177, Carriage by Public Highway (Reference 5.23), and all other applicable regulation as provided in 49 CFR Transportation and all other applicable State and Local regulations.

For shipments of hazardous material, procedures shall contain shipping check lists which are used to document compliance with the applicable regulations.

### 14.1 Calculations

Calculations are necessary to complete manifesting of radioactive material shipments. To ensure acceptable and standard methodologies are utilized for the calculations, approved procedures and technical basis documents shall be provided for the use and documentation of radioactive material calculations as follows:

#### 14.1.1 Calculations completed by hand shall:

- Provide the degree of accuracy required to meet expected tolerances.
- Formulas shall be professionally recognized, such as formulas that are published or identified by a regulatory agency, professional society or standard text book.
- The assumptions, data and calculations shall be documented.
- The calculations are reviewed by an individual that did not complete the calculation and is responsible for assuring the formulas, assumptions and data are appropriate and that the calculations are complete and accurate.

#### 14.1.2 Calculations completed by the use of spreadsheets are acceptable if the following is accomplished:

- The spread sheet has been validated in accordance with quality assurance software/calculation validation requirements (Reference 5.31).
- The formula and calculation cells in the spreadsheet are protected from unauthorized modification.
- The input data is verified by an individual that did not input the data.

#### 14.1.3 Calculations completed by programs that are recognized by the NRC do not require that validation be performed on-site. Verification of input data is required. The following are examples of programs recognized by the NRC:

- Integrated Shipping and Inventory Program
- RADMAN
- Microshield
- Isoshield
- Microskyshine
- Low Track

14.1.4 Calculations utilized for preparing shipping manifests shall be transmitted to record storage with the corresponding shipping package. Technical basis documents utilized for preparing shipping manifests shall be controlled in accordance with site procedures.

#### **14.2 Shipping Manifests**

In addition to the requirements of the DOT for shipping manifests, shipments of low level radioactive waste intended for disposal shall have a Uniform Low-Level Radioactive Waste Manifest or equivalent in accordance with Appendix G of 10 CFR 20 (Reference 5.1).

In addition to the requirements of the DOT for shipping manifests, shipments of hazardous waste shall have a Uniform Hazardous Waste Manifest in accordance with 40 CFR 262 (Reference 5.17).

#### **14.3 Shipment Tracking**

14.3.1 For radioactive and mixed waste shipments, a trace investigation will be completed if receipt acknowledgment is not received within 20 days after transfer. The results of the trace investigation shall be reported to the NRC within 2 weeks of completion of the investigation as required by 10 CFR 20, (Reference 5.1).

14.3.2 For shipments of SNM of low strategic significance conduct immediately a trace investigation of any shipment that is lost or unaccounted for after the estimated arrival time and notify the NRC Operations Center within one hour after recovery of or accounting for such lost shipment in accordance with the provisions of 10 CFR 73.71, Reporting of Safeguards Events.

14.3.3 For shipments of SNM of moderate strategic significance initiate immediately a trace investigation of any shipment that is determined to be lost or unaccounted for after a reasonable time beyond the estimated time of arrival. Notify the NRC Operations Center within one hour after recovery or accounting for such lost shipment in accordance with the provisions of 10 CFR 73.71, Reporting of Safeguards Events.

14.3.4 For a hazardous waste shipment manifested on a uniform hazardous waste manifest, a trace investigation will be completed if receipt acknowledgment is not received within 35 days after transfer. If a signed

receipt acknowledgement is not received within 45 days of the transfer, the MDNR will be notified in accordance with 10 CSR 25-3, Hazardous Waste Management System: General (Reference 5.7).

#### **14.4 Emergency Response**

14.4.1 For shipments of hazardous materials, the emergency response information shall be provided on or with the shipping paper as required by 49 CFR 172 (Reference 5.20). The information shall include a telephone number that is:

- Monitored at all times the hazardous material is in transport.
- Answered by an individual who is either knowledgeable of the hazardous material being shipped and has comprehensive emergency response and incident mitigation information for that material, such as that available in the latest edition of the Emergency Response Guidebook (Reference 5.34).
- Entered on the shipping paper.

14.4.2 Emergency response actions may be self performed or contracted to an agency. In either case, the current information on the material being shipped is provided before the hazardous material is offered for transportation.

14.4.3 Actions taken by Westinghouse subsequent to being notified of a transportation event or accident will be dependent on requests by the local field commander, such as local or state police or fire departments. If requested, Westinghouse may respond with equipment, personnel and supplies to assist in the mitigation of event.

#### **15.0 TRANSPORTATION SECURITY PLAN**

A Hazardous Material Transportation Security Plan consistent with the requirements of 49 CFR 172 (Reference 5.20) for a shipment of SNM of Low Strategic Significance is provided in Appendix A. The details of this type of plan are controlled in accordance with the site's Physical Security Plan.

#### **16.0 FORMS**

None

#### **17.0 APPENDICES**

Appendix A: *Transportation Security Plan for Shipments of SNM of Low Strategic Significance*

**APPENDIX A**  
**TRANSPORTATION SECURITY PLAN FOR**  
**SHIPMENTS OF SNM OF LOW STRATEGIC SIGNIFICANCE**

**1.0 PURPOSE**

The purpose of this appendix is to identify additional security requirements for shipments of Special Nuclear Material of Low Strategic Significance in accordance with 10 CFR 73.67(g) (Reference 5.3). The HDP does not intend to ship on any conveyance a quantity of SNM greater than 10 kilograms. Additionally, the quantity of SNM loaded on any conveyance will be maintained less than the definition of SNM of moderate strategic significance. Actions identified in this appendix will be documented via shipping checklists and attachments in the shipment package. Shipments may be completed either by rail or by truck.

**2.0 PRE-SHIPMENT ACTIONS**

2.1 HDP will take the following actions prior to the shipment leaving the facility:

2.1.1 Provide the receiver advance notification including:

- Mode of transport
- Estimated time of arrival
- Location of the nuclear material transfer point
- Name of Carrier
- Transport identification

2.1.2 Receive confirmation from the receiver that the receiver will be ready to accept the shipment at the planned time and location and acknowledges the specified mode of transportation. This may be in the form of an email.

2.1.3 Apply tamper indicating seals to the container.

2.1.4 Check and verify the integrity of the containers and seals prior to shipment.

2.1.5 Arrange for in transit physical protection of the material.

2.1.6 Make arrangements for notification upon arrival of the shipment at its destination, or of any shipment that is lost or unaccounted for after the estimated time of arrival at its destination.

2.2 In-Transit Physical Protection

2.2.1 Each transport company used for transportation of hazardous materials will be confirmed to have a transportation security plan.

- 2.1.2 Specific instructions to the transporter will be provided in the form of exclusive use instructions. The instructions will require the transporter to notify HDP in the event a credible threat is received concerning the shipment, an attempted theft of the shipment is made or if the shipment is lost or stolen.
- 2.1.3 HDP will notify the NRC Operations Center within 1 hour of receiving information regarding a credible threat to a shipment, loss of a shipment or attempted theft of a shipment of SNM of low strategic significance.
- 2.1.4 HDP will immediately conduct a trace investigation of any shipment that is lost or unaccounted for after the estimated arrival time and notify the NRC Operations Center within one hour after recovery of or accounting for a lost or stolen shipment of SNM of low strategic significance.