

11/19/1999



**Department of Energy**  
Albuquerque Operations Office  
Los Alamos Area Office  
Los Alamos, New Mexico 87544

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Mr. John E. Kieling, Acting Program Manager  
RCRA Permits Management Program  
Hazardous and Radioactive Materials Bureau  
New Mexico Environment Department  
2044 Galisteo St., Building A  
P.O. Box 26110  
Santa Fe, New Mexico 87505

Dear Mr. Kieling:

**Subject: Resource Conservation and Recovery Act (RCRA) Permit Modification Request, Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit No. NM0890010515-1**

The purpose of this letter is to request a review of the included information and a determination that the proposed change to the LANL hazardous waste permit is a Class 1 modification in accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, revised January 1, 1997 (20 NMAC 4.1), Subpart IX, §270.42(d)(1). This letter and the information provided are in response to discussions held between your staff and LANL representatives of the Department of Energy/University of California (DOE/UC) in several recent permit issues meetings. With one exception, this information duplicates that provided in the "Los Alamos National Laboratory General Part B Permit Renewal Application," Revision 1.0, (General Part B) submitted to the New Mexico Environment Department (NMED) on January 15, 1999.

As we have discussed, LANL requests that the attached plans be approved as modifications to the existing LANL hazardous waste facility permit, originally issued in 1989, rather than wait until the permit is renewed. These plans are frequently updated to reflect upgrades in LANL's hazardous waste management and emergency response capabilities. Mixed waste management units and generator accumulation areas incorporate the updates to the LANL waste management programs in accordance with 20 NMAC 4.1, Subpart VI, Subparts B and D, and Subpart III, §262.34(a)(4), respectively. This can result in inconsistencies between the management of these units and permitted units until the plans can be changed for the permitted units through the permit modification process. We also believe that the review of these plans at this time will support the future review effort for the General Part B.



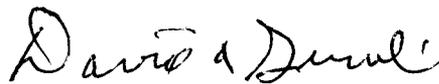
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This submittal includes three plans included in the General Part B: Appendix C, "Inspection Plan;" Appendix D, "Personnel Training Plan;" and Appendix E, "Contingency Plan." These plans, as included here and in the General Part B, have been upgraded from previously approved plans included in the September 1995 Technical Areas 50 and 54-West Permit Modification Request, approved by NMED on February 28, 1997. The changes to the Inspection Plan are limited to incorporating new inspection requirements for 20 NMAC 4.1, Subpart V, Subpart AA-DD, the inclusion of current "Inspection Record Forms" as examples, and text changes. The Contingency Plan has been modified to reflect revised emergency response contacts, support organizations, and available equipment.

This Training Plan includes one change that was not included in the previous version of the General Part B. We will no longer include the requirement for "Hazardous Waste Operations and Emergency Response" (HAZWOPER) training for treatment, storage, and disposal facility (TSDF) workers in the plan. The LANL training program for these workers includes RCRA courses ("Waste Generation Overview," "RCRA Personnel Training," and "RCRA Refresher Training") that provide more extensive and specific information to meet the requirements of 20 NMAC 4.1, Subpart V, §264.16 than are typically provided by HAZWOPER. In addition, the HAZWOPER training requirement is mandated by Occupational Safety and Health Act (OSHA) regulations, and these workers will continue to receive the course under that authority. For these reasons, we no longer believe the HAZWOPER requirement is appropriate for this class of worker in the hazardous waste facility permit. The student manuals for these LANL courses are included with this submittal to provide information on the training provided. We also believe that because the HAZWOPER courses are authorized under OSHA only and their deletion does not affect the core RCRA training requirements contained in the Training Plan, this change is administrative and does not affect the classification determination for this permit modification. If this proposal is approved, the Training Plan included here should be used to replace Appendix D of the General Part B.

If you should have any questions or comments concerning this permit modification submittal, please contact Jody Plum of my staff at (505) 665-5042 or Jack Ellvinger, UC, at (505) 667-0633.

Sincerely,



David A. Gurulé, P.E.  
Area Manager

LAAME:3JP-128

Enclosure

cc:

See page 3

John E. Kieling

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cc w/enclosure:

Robert S. (Stu) Dinwiddie, Ph.D.  
Hazardous and Radioactive Materials Bureau  
New Mexico Environment Department  
2044 Galisteo Street, Building A  
P. O. Box 26110  
Santa Fe, New Mexico 87505

John E. Kieling

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bcc w/enclosure:

H. Haynes, Office of Counsel, LAAO

J. Rochelle, LC-GL, LANL, MS-A187

bcc w/o enclosure:

T. Gunderson, DLDOPS, LANL, MS-A100

D. Erickson, ESH-DO, LANL, MS-K491

J. Ellvinger, ESH-19, LANL, MS-K490

G. Bacigalupa, ESH-19, LANL, MS-K490

ESH-19 (990055.GB), LANL, MS-K490

# **Los Alamos National Laboratory General Part B Plans Permit Modification Request**

Prepared by:

*Los Alamos National Laboratory  
Hazardous and Solid Waste Group (ESH-19)  
Los Alamos, New Mexico 87545*

November, 1999

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Document: LANL General Part B Plans  
Permit Modification Request  
Revision No.: 1.1  
Date: November 1999



Los Alamos National Laboratory  
General Part B Plans  
Permit Modification Request

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## LIST OF ATTACHMENTS

### ATTACHMENT

### TITLE

- |   |   |
|---|---|
| A | Permit Modification Request   |
| B | Los Alamos National Laboratory General Part B Permit Application, Revision 1.0, October, 1998, Appendix C, "Inspection Plan"  |
| C | Proposed Personnel Training Plan  |
| D | Proposed Personnel Training Plan Changes ("bold/strikeout" format based on the Los Alamos National Laboratory General Part B Permit Application, Revision 1.0, October, 1998, Appendix D, "Personnel Training Plan"). |
| E | Los Alamos National Laboratory "Waste Generation Overview" Student Manual   |
| F | Los Alamos National Laboratory "RCRA Personnel Training" Student Manual   |
| G | Los Alamos National Laboratory "RCRA Refresher Training" Student Manual   |
| H | Los Alamos National Laboratory General Part B Permit Application, Revision 1.0, October, 1998, Appendix E, "Contingency Plan"   |
| I | Certification   |

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## LIST OF ABBREVIATIONS/ACRONYMS

AR	Action Required
ESH-19	LANL's Hazardous and Solid Waste Group
IRF	Inspection Record Form
LANL	Los Alamos National Laboratory
NA	Not Applicable
20 NMAC 4.1	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
RCRA	Resource Conservation and Recovery Act
TA	technical area

## APPENDIX C INSPECTION PLAN

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.15, revised January 1, 1997 [1-1-97], "General Inspection Requirements," this appendix presents inspection requirements applicable to all currently existing hazardous or mixed waste management units at Los Alamos National Laboratory (LANL) that are included in technical area (TA)-specific permit applications, permit modification requests, or permit renewal documents, unless explicitly provided in those documents (e.g., the "Technical Area 55 Part B Permit Application," Revision 0.0 [LANL, 1996]). Pursuant to 20 NMAC 4.1, Subpart V, 264.15(a) [1-1-97], inspection schedules for the units have been developed to identify equipment malfunctions and deterioration, operator errors, and discharges that might cause or lead to a release of hazardous or mixed waste and pose a threat to human health and the environment. As specified in 20 NMAC 4.1, Subpart IX, 270.14(b)(5) [1-1-97], this inspection plan, which presents general inspection schedules, is being submitted with this permit application. Inspections will be conducted often enough to identify problems in time to correct them before they harm human health or the environment.

### C.1 GENERAL INSPECTION SCHEDULES AND REQUIREMENTS [20 NMAC 4.1, Subpart IX, 270.14(b)(5) and 20 NMAC 4.1, Subpart V, 264.15(b) and (c)]

In accordance with the requirements of 20 NMAC 4.1, Subpart IX, 270.14(b)(5), and 20 NMAC 4.1, Subpart V, 264.15(b)(1) [1-1-97], a written inspection schedule has been developed at LANL. This schedule will be followed for the inspection of monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, and responding to environmental or human health hazards. Inspections may be conducted at any time during the applicable day or week, as specified in the inspection schedule. A copy of this inspection plan, which includes inspection schedules, will be maintained by LANL's Hazardous and Solid Waste Group (ESH-19) and by the site operator (i.e., the division or operating group that is responsible for or manages the unit), as required in 20 NMAC 4.1, Subpart V, 264.15(b)(2) [1-1-97].

Inspection schedules outlining the items to be addressed on LANL's Hazardous and Mixed Waste Facility Inspection Record Form (IRF) and inspection frequencies for the unit types addressed in TA-specific permit applications, permit modification requests, or permit renewal documents are

be identified and noted, even if corrected immediately by the inspector. If inspection results indicate that corrective measures are warranted, any and all actions taken (along with time, date, and other pertinent information) will be recorded in Part II of the IRF and the AR noted on all subsequent IRFs until corrective measures are completed. Only after corrective measures have been completed and recorded on an IRF can an OK be entered in the "Condition" column on the IRF.

C.1.2 Inspection Frequency [20 NMAC 4.1, Subpart V, 264.15(b)(4)]

Inspection frequencies relevant to the unit types addressed in TA-specific permit applications, permit modification requests, or permit renewal documents are presented in Sections C.2 through C.9 of this appendix. Inspection frequencies may be increased at LANL's discretion, or if unexpected malfunctions occur or an accelerated deterioration rate of containers, secondary containment systems, and/or equipment is detected.

C.1.3 Actions Resulting From Inspections [20 NMAC 4.1, Subpart V, 264.15(c)]

If any defects, deterioration, damage, or potential hazards are discovered during an inspection, appropriate corrective measures (e.g., transfer of waste from a defective container to an appropriate container in good condition, repair or replacement of nonfunctioning equipment and/or systems, or removal of any accumulated liquids) will be completed on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Any action taken in response to an inspection will be noted on the IRF.

If a hazardous condition is imminent or has already occurred, an assessment of the condition will be made immediately, followed by appropriate remedial action. The condition will be assessed by the division or operating group that is responsible for or manages the unit. If this assessment indicates that human health or the environment may be adversely affected, the contingency plan (Appendix E of this document) may be implemented. The contingency plan discusses the appropriate responses to emergency situations. Evacuation determinations will be made as outlined in Table E-4 of the contingency plan. In the event the contingency plan is implemented, any sampling, decontamination, and verification will be conducted as specified in that plan. If the condition is such that the contingency plan is not implemented, remedial action will be defined and documented by the division or operating group that is responsible for or manages the unit.

- Accumulation start date
- Compatibility
- Structural integrity of containers
- Un/loading) area
- Aisle space/stacking
- Pallets/raised containers
- Presence and condition of shaft cover

**C.3 INSPECTION SCHEDULE AND REQUIREMENTS FOR TANK SYSTEMS [20 NMAC 4.1, Subpart V, 264.15(b), 264.193(i), and 264.195]**

Resource Conservation and Recovery Act (RCRA)-regulated tank systems are inspected according to the schedule provided below. The inspection frequency is adequate based on the deterioration rate of equipment/systems and the probability of adverse impact to human health or the environment if failure of the equipment/systems or any operator error goes undetected between inspections.

**C.3.1 Daily (During Operation)**

Tank systems (including ancillary equipment) will be inspected at least once each operating day. An operating day includes when waste is added to or emptied from a tank, or when tank treatment is conducted. Tank systems will be inspected for the items listed below, as appropriate:

- General information
- Secondary containment structures
- Labels
- Structural integrity of tanks and ancillary equipment
- (Un)loading areas
- Aboveground portions of tank systems to detect corrosion or releases of waste and to detect any possible malfunctions to overflow/spill control equipment, tank monitoring and leak detection systems, and data from these systems
- Proper operating condition of treatment tank (if applicable)

**C.3.2 Weekly**

Weekly inspection requirements for tank systems include the following items, as appropriate:

- General information
- Communications equipment

#### C.4 INSPECTION SCHEDULE AND REQUIREMENTS FOR OPEN BURNING/OPEN DETONATION UNITS [20 NMAC 4.1, Subpart V, 264.15(b) and 264.602]

Open burning/open detonation units are inspected according to the schedule provided below. Inspection frequencies are adequate based on the deterioration rates of equipment/systems and the probability of harm to human health or the environment if failure of the equipment/systems occurs, or any operator error goes undetected between inspections.

##### C.4.1 On Day of Treatment

Inspections will be conducted every day of operation (i.e., every day that open burning/open detonation occurs). For inspections conducted on the day of treatment at open burning/open detonation units, the following items will be addressed, as appropriate:

- General information
- Secondary containment structures (if applicable)
- Detonation pad run on/off control
- (Un)loading area
- Overall condition

Monitoring controls, emergency shutdown controls, and alarms or warning systems associated with the open burning/open detonation units will be inspected and/or tested for proper operating condition prior to the initiation of treatment at the units.

##### C.4.2 Weekly

Weekly inspections of open burning/open detonation units will be conducted if no treatment will occur during that week or when waste is present on the treatment unit and awaiting treatment. Weekly inspections will address the following items, as appropriate:

- General information
- Communications equipment
- Warning signs
- Security
- Work surfaces
- Spill/fire equipment
- Eyewashes/safety showers
- Wind sock (if applicable)
- Secondary containment structures (if applicable)
- Detonation pad run on/off control
- (Un)loading area
- Overall condition

C.6 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART AA REQUIREMENTS [20 NMAC 4.1, Subpart V, Part 264, Subpart AA]

Inspection and monitoring requirements for units subject to 20 NMAC 4.1, Subpart V, Part 264, Subpart AA [1-1-97], are addressed in Attachment C of TA-specific permit applications, permit modification requests, or permit renewal documents.

C.7 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART BB REQUIREMENTS [20 NMAC 4.1, Subpart V, Part 264, Subpart BB]

Inspection and monitoring requirements for units subject to 20 NMAC 4.1, Subpart V, Part 264, Subpart BB [1-1-97], are addressed in Attachment C of TA-specific permit applications, permit modification requests, or permit renewal documents.

C.8 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART CC REQUIREMENTS [20 NMAC 4.1, Subpart V, Part 264, Subpart CC]

Inspection and monitoring requirements for units subject to 20 NMAC 4.1, Subpart V, Part 264, Subpart CC [1-1-97], are addressed in Attachment C of TA-specific permit applications, permit modification requests, or permit renewal documents.

C.9 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART DD REQUIREMENTS [20 NMAC 4.1, Subpart V, Part 264, Subpart DD]

Inspection and monitoring requirements for units subject to 20 NMAC 4.1, Subpart V, Part 264, Subpart DD [1-1-97], are addressed in Attachment C of TA-specific permit applications, permit modification requests, or permit renewal documents.

C.10 REFERENCES

LANL, 1996, "Technical Area 55 Part B Permit Application," Revision 0.0, Los Alamos National Laboratory, Los Alamos, New Mexico.

# HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM

<sup>1</sup> FACILITY:	<input type="checkbox"/> <90-DAY ACCUMULATION AREA	<sup>4</sup> START DATE:	<sup>5</sup> END DATE:					
<sup>2</sup> Site ID #:	<input type="checkbox"/> TREATMENT, STORAGE, OR DISPOSAL UNIT							
<sup>6</sup> <input type="checkbox"/> Containers <input type="checkbox"/> Landfill <input type="checkbox"/> Thermal Treatment <input type="checkbox"/> Physical Treatment <input type="checkbox"/> Biological Treatment <input type="checkbox"/> Chemical Treatment <input type="checkbox"/> Tank <input type="checkbox"/> UST <input type="checkbox"/> Miscellaneous Unit (OB/OD, Cementation)								
<b>PART I- Enter condition of the item inspected (OK, NA [Not Applicable], or AR [Action Required]) in column for day inspected.</b>								
ITEM	INSPECTED FOR:	MON	TUE	WED	THU	FRI	SAT	SUN
<sup>7</sup> NO USE	No waste opened, moved, received, treated, or removed; or no waste stored							
<sup>8</sup> COMMUNICATIONS EQUIPMENT	Availability and proper operating condition							
<sup>9</sup> WARNING SIGNS	Posted, legible, and bilingual							
<sup>10</sup> SECURITY	Condition of fences, gates, locks, and other access control equipment							
<sup>11</sup> WORK SURFACES/ FLOORS	Any conditions that could lead to an accident or spill							
<sup>12</sup> SPILL/FIRE EQUIPMENT	Present, appropriate, and in proper operating condition							
<sup>13</sup> EYEWASHES/ SAFETY SHOWERS	Proper operating condition							
<sup>14</sup> WIND SOCK	Proper operating condition and checked for damage							
<sup>15</sup> SECONDARY CONTAINMENT	Standing water/waste, integrity, surrounding vegetation, and erosion							
<sup>16</sup> RUN-ON/OFF CONTROL	Ponding, integrity, erosion, and damage							
<sup>17</sup> COVERS/LIDS OF CONTAINERS	Closed and secured properly							
<sup>18</sup> LABELS	Proper labels on all tanks and containers							
<sup>19</sup> ACCUMULATION START DATE	Present and legible							
<sup>20</sup> COMPATIBILITY	Separated according to compatibility							
<sup>21</sup> INTEGRITY (Containers, tanks, and ancillary equipment)	Integrity, leakage, deterioration, corrosion, and damage							
<sup>22</sup> (UN)LOADING AREA	Spills and deterioration							
<sup>23</sup> AISLE SPACE/STACKING	Appropriateness and adequacy							
<sup>24</sup> PALLETS AND RAISED CONTAINERS	Any condition that could result in failure							
<sup>25</sup> TANK SYSTEMS (Aboveground portions)	Discharge controls, leakage, fill level, and corrosion							
<sup>26</sup> TREATMENT TANKS	Proper operating condition and leakage							
<sup>27</sup> SHAFTS	Presence and condition of cover							
<sup>28</sup> FILTER VESSELS (for open burning)	Deterioration and sand condition							
<sup>29</sup> OPEN BURNING UNITS	Deterioration, vegetation, sand condition, erosion, and leakage							
<sup>30</sup> OPEN DETONATION UNITS	Condition, vegetation, and erosion							
<sup>31</sup> CEMENTATION UNITS	Structural integrity and condition of equipment and systems							

For Informational Purposes Only

Figure C-1

**Instruction for Use of the Hazardous and  
Mixed Waste Facility Inspection Record Form**

**Part I**

**TO BE CONDUCTED FOR ALL INSPECTIONS:**

**(Not all items in this section will apply to all facilities. An "NA" [not applicable] is required if the item does not apply.)**

1. **FACILITY:** Location information, including TA, building, and room (if applicable). Other location descriptors may be necessary (e.g., TA-59-3-114 or TA-59-1 S, Dock).
2. **Site ID Number:** An identification number is assigned to every facility. This allows for ease in identification of a certain TSD unit <90-day accumulation area.
3. **<90-DAY ACCUMULATION AREA:** Should be checked if this location is intended for operation in accordance with generator requirements for storage of hazardous or mixed waste for less than 90 days.

**TREATMENT, STORAGE, OR DISPOSAL (TSD) UNIT:** Should be checked if this location is listed in LANL's Hazardous Waste Facility Permit or General Part A Permit Application as a TSD operation.

4. **START DATE:** The date of the actual first working day of the week.
5. **END DATE:** The date of the actual last working day of the week.
6. Check the appropriate box for the type of operation. Several boxes may be checked, if necessary, for those locations where inspections are combined on a single sheet. You must have prior approval from ESH-19 to combine inspections for more than one unit.
7. **NO USE:** May be checked if waste was not received at, moved, or opened (to add or remove waste) within, treated at, or removed from a unit for the day in question. For some inspections that are performed weekly, "NO USE" may be checked if no waste was stored. In the situation that this box is checked, the individual responsible for the inspection must only complete this box and the signature section for that day/week. If any hazardous or mixed waste is subsequently placed at the site for any reason, a full inspection must be performed immediately and then subsequently according to the inspection plan. List "NA" to show normal nonworking days. Holidays and Laboratory closures should also be noted (e.g., by writing "H" or "Closed" in the first box and drawing a line all the way down the page).
8. Communication equipment must be inspected in order to ensure availability and proper operating condition for each piece of equipment (e.g., telephones, radios, and alarms). Consultation with ESH-19 prior to use of the facility/location is available, if necessary.

**Instruction for Use of the Hazardous and  
Mixed Waste Facility Inspection Record Form  
(Continued)**

19. All containers and tanks of hazardous or mixed waste in <90-day accumulation areas must be marked with the accumulation start date. This date must be legible. At <90-day accumulation areas, containers must be marked with the accumulation start date at the time the container first receives any waste. For <90-day accumulation areas, no containers may exceed 90 days from the accumulation start date to the time they are delivered to a permitted treatment, storage, or disposal unit. At TSD units, all containers must be dated when they arrive at the facility. At TSD units, no hazardous or mixed waste may be stored for over one year, unless specifically exempted.
20. All hazardous or mixed waste containers holding materials that may be incompatible with any other materials at that location must be separated from those materials by dikes, berms, or other physical barriers to prevent a possible reaction.
21. All containers and tanks must be checked for structural integrity, leakage, corrosion, or damage. This includes checking the condition of all construction materials, fixtures, seams, and auxiliary equipment. There are special inspection criteria for tank systems (see item 25 below).
22. Loading and unloading areas must be inspected daily when in use for signs of damage or deterioration that may lead to an accident or spill. This includes asphalt covered areas and areas where containers or tanks are handled or the contents thereof are transferred.
23. Adequate aisle space must be maintained to allow for inspection and for the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency. All containers of hazardous and mixed waste must be stored in a manner that ensures a minimum 2-foot aisle space, unless otherwise specified for the facility.
24. Hazardous or mixed waste contained in TSD units and <90-day accumulation areas must be stored on pallets, elevated, or otherwise protected from contact with accumulated liquid.

**TANKS SYSTEMS:**

25. For tank systems used for treatment or storage of hazardous or mixed waste, all aboveground portions of the tank system, including any and all ancillary plumbing, must be inspected for signs of leaking, corrosion, deterioration, or improper operation. Tanks must be operated with a minimum freeboard of 6 inches. If the tank system includes discharge controls, overtopping controls, tank level alarms, or other monitoring equipment, including leak detection equipment, all controls and relevant data must be checked to ensure they are operating properly and that operation is within design specifications for the system.
26. Hazardous and mixed waste treatment tanks must be operated within the design specifications and in accordance with standard operating procedures and work plans. Tanks must be inspected for leakage or damage prior to operation.

**Instruction for Use of the Hazardous and  
Mixed Waste Facility Inspection Record Form  
(Continued)**

**Part II**

List any action required. Document any action taken immediately and express any plans for future action to be taken. If necessary, attach additional sheets to IRF to efficiently cover the action taken or required. Initial any information or comments added, and if more than one action is required or conducted, assign a number to each AR.

**For Informational Purposes Only**

**APPENDIX D**  
**PERSONNEL TRAINING PLAN**

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Permit Modification Request  
Revision No.: 1.1  
Date: November 1999

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D-2	Outline of Facility-Specific and On-the-Job Training for Treatment, Storage, and Disposal Facility Operations

## LIST OF ABBREVIATIONS/ACRONYMS

E	Environmental Science and Waste Technology Division
EDS	Employee Development System
EM&R	LANL's Emergency Management and Response Office
EM	Environmental Management
EMP	Emergency Management Plan
ES&H	environment, safety, and health
ESH-10	LANL's Hazardous Materials Response Group
ESH-13	LANL's ES&H Training Group
ESH-19	LANL's Hazardous and Solid Waste Group
FWO	Facility & Waste Operations Division
HAZWOPER	Hazardous Waste Operations and Emergency Response
JCNNM	Johnson Controls Northern New Mexico
LANL	Los Alamos National Laboratory
20 NMAC 4.1	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
OJT	on-the-job training
OSHA	Occupational Safety and Health Administration
PTLA	Protection Technology Los Alamos
RCRA	Resource Conservation and Recovery Act
TSDF	treatment, storage, and disposal facility
USC	United States Code

## **APPENDIX D PERSONNEL TRAINING**

This section describes the personnel training program for Los Alamos National Laboratory (LANL) treatment, storage, and disposal facility (TSDF) workers. Training requirements for TSDF personnel are specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.16, revised January 1, 1997 [1-1-97], "Personnel Training," and are included in this document, required by 20 NMAC 4.1, Subpart IX, 270.14(b)(12) [1-1-97]. The primary objective of the training program is to prepare personnel to operate and maintain safely those areas managing hazardous and/or mixed waste, in accordance with 20 NMAC 4.1, Subpart V, Part 264 [1-1-97]. This training program applies to all employees of the U.S. Department of Energy, the University of California, and any subcontractors who work regularly at LANL TSDFs and manage hazardous and/or mixed waste. The degree of training varies with the job duties.

### **D.1 HAZARDOUS AND MIXED WASTE MANAGEMENT/RESPONSIBILITIES**

Waste management activities and responsibilities at specific hazardous and/or mixed waste management units are handled by the appropriate LANL division or group. Waste management groups within the Environmental Science and Waste Technology (E) and Facility and Waste Operations (FWO) Divisions are responsible for most centralized waste management activities at LANL. The Hazardous and Solid Waste Group (ESH-19) is responsible for providing waste management regulatory guidance to all LANL personnel and operations. Other personnel at LANL that may provide assistance in various waste management activities are discussed in the following paragraph and in Appendix E of this document.

Laboratory-contracted support services (e.g., Johnson Controls Northern New Mexico [JCNNM]) provide trained personnel to assist in waste-handling activities. Personnel in the Health Physics Operations Group, the Occupational Medicine Group, the Industrial Hygiene and Safety Group, the Criticality Safety Group, the Occurrence Investigation Group, the Hazardous Materials Response Group (ESH-10), the Air Quality Group, the Water Quality and Hydrology Group, the Ecology Group, and personnel in ESH-19 are trained in their respective specialties to provide emergency response support. Protection Technology Los Alamos (PTLA) is responsible for LANL security, and provides workers trained in traffic and site-access control.

The Emergency Management and Response Office (EM&R) provides emergency planning and response at LANL and has the overall responsibility for LANL's Emergency Management Plan (EMP) training. The Environment, Safety, and Health Division Training Group (ESH-13) is responsible for developing and delivering LANL-wide environment, safety, and health (ES&H) training. Courses on hazardous and/or mixed waste are designed with substantial input from ESH-19, the E and FWO Division waste management groups, and other subject matter experts, as appropriate.

D.2 TRAINING CONTENT, FREQUENCY, AND TECHNIQUES [20 NMAC 4.1, Subpart IX, 270.14(b)(12) and 20 NMAC 4.1, Subpart V, 264.16(a), (b), (d), and (e)]

The training program instituted at LANL includes a combination of LANL-wide courses, facility-specific training, and on-the-job training (OJT). LANL-wide courses are provided internally or through external vendors. They are usually classroom-based and may be received off-site. Facility-specific training may be developed and delivered within a particular TSDF, and OJT consists of supervised and documented training focused primarily on procedures performed by individual workers. Each of these types of training is described briefly in Sections D.2.1 through D.2.3. All LANL employees and LANL contract and support personnel who handle hazardous and/or mixed waste at TSDFs receive the appropriate level of training within six months of their date of hire or transfer for work at a TSDF. Personnel will not work in unsupervised waste handling positions at TSDFs until they have successfully completed the appropriate level of training for their positions and responsibilities.

Records of LANL-wide training currently sponsored or administered by ESH-13 are entered by that group into the Employee Development System (EDS), the official LANL training database. These records document that the required training has been successfully completed by the worker. Training records of former workers are kept for at least three years from the date that they last worked at the TSDF. It is required that records documenting successful completion of facility-specific, on-the-job, or externally provided training be kept by the sponsoring LANL organization. LANL will maintain, at a minimum, hard or electronic copies of TSDF training records for currently employed workers until the TSDF closes.

Table D-1 presents components of the LANL-wide training program as administered through ESH-13. This table includes a listing of the relevant training courses, a summary of topics, and a

designation of the relevant courses for each job category. Categories of workers presented in Table D-1 include TSDF hazardous/mixed waste workers, managers and supervisors of TSDF hazardous/mixed waste workers, emergency responders, and uncontrolled area potential release site workers. Table D-2 summarizes the components of facility-specific training and OJT that workers receive, as applicable. Each training element has been designed to ensure that every worker involved in hazardous and/or mixed waste handling operations is properly trained in the procedures relevant to the positions in which they are employed. Tracking the completion of training is possible through the EDS training plans. If a worker is no longer involved in hazardous and/or mixed waste handling operations, continued training to meet the components of the relevant hazardous waste management program is not required.

TSDF Hazardous/Mixed Waste Workers are responsible for handling hazardous/mixed wastes at a TSDF. In addition, they are responsible for assisting in TSDF spill and emergency response activities, as required.

Managers and Supervisors of TSDF Hazardous/Mixed Waste Workers are directly responsible for day-to-day operations related to TSDF waste management activities. They are also responsible for assuring that personnel safety and training requirements are met.

Emergency Responders are trained emergency response personnel (e.g., ESH-10, Technical Area 55 Emergency Response Team) that respond to emergencies (e.g., spills, fires, explosions) involving hazardous and/or mixed wastes. Emergency Responders also provide support for emergency response activities.

Uncontrolled Area Potential Release Site Workers conduct investigations and remedial activities at potential release sites. They are also responsible for proper remediation waste management from generation to disposal, including waste characterization, treatment, and storage.

Training materials of LANL-wide training courses are on file in the ES&H Training Center and are available for review by all hazardous/mixed waste management and handling personnel, emergency response personnel, and regulatory agencies. Course content will be reviewed annually and updated as required to remain current with hazardous waste management regulations. Alternative forms of training (e.g., paper-based self-study courses, computer-based training) may be taken to

meet specific training requirements. Such alternate forms of training must be approved by ESH-13 personnel and be determined to be equivalent in content to more traditional classroom-based training courses. Files listing the requisite skills, education, and training for workers who handle hazardous and/or mixed waste and the duties and responsibilities for each job description, as well as the name of each worker filling a job description, are maintained at LANL, as required by 20 NMAC 4.1, Subpart V, 264.16(d)(2) [1-1-97].

#### D.2.1 LANL-Wide Courses

Hazardous waste management courses for TSDF personnel include Waste Generation Overview, Resource Conservation and Recovery Act (RCRA) Personnel Training, and RCRA Refresher training. Additional LANL-wide courses may be required for specific job functions.

An introductory course, "Waste Generation Overview," provides information needed to identify wastes that are subject to hazardous waste regulations in 20 NMAC 4.1, Subpart II [1-1-97]. The training defines and addresses the identification of hazardous waste and hazardous constituents (including hazardous components in mixed waste). Waste minimization, storage requirements, and waste disposal are also presented.

The course "RCRA Personnel Training" provides an overview of state and federal hazardous waste management regulations and emphasizes compliance with the RCRA requirements that apply to job-related activities, such as the safe handling of hazardous and mixed waste. Instructors are trained in hazardous and mixed waste management programs and procedures and in RCRA (*42 United States Code [USC] 6901 et seq.*). ESH-13, with guidance from ESH-19, provides an annual refresher of applicable hazardous waste management requirements. The course "RCRA Refresher Training" is intended to update personnel on LANL procedures and changes in RCRA (*42 USC 6901 et seq.*) provisions and 20 NMAC 4.1 regulations and to provide them with an overview of their introductory training. TSDF personnel who handle hazardous and/or mixed waste and/or clean up spills or releases of hazardous and/or mixed waste at TSDFs and the managers and supervisors of these workers also receive instruction on appropriate topics listed in Table D-1.

#### D.2.2 Facility-Specific Training [20 NMAC 4.1, Subpart V, 264.16(a)(3)]

Waste-handling personnel will participate in facility-specific training at their particular work locations, as appropriate. Table D-2 addresses program requirements that ensure that hazardous and mixed

waste management and handling personnel know the specific requirements for their particular facilities and are able to respond effectively to emergencies. Personnel will become familiar with emergency procedures, equipment, and systems at their particular facility, including emergency and monitoring equipment use, inspection, repair, and replacement, as appropriate. In addition, they will receive instruction on contingency plan contents and implementation (as they apply to their particular facility) including, but not limited to, communications or alarm systems, response to fires and explosions at their facility, key parameters for automatic waste-feed cutoff systems, shutdown of facility operations, and response to groundwater contamination incidents.

#### D.2.3 On-the-Job Training

Supervised and documented OJT may be developed and delivered by supervisors or other subject matter experts who are able to evaluate worker proficiency and determine appropriate training for the procedures required of each function-specific position. OJT topics may include implementation of facility-specific procedures, maintenance of operating records, reporting requirements, and TSDf-specific inspection requirements. TSDf emergency response personnel receive TSDf-specific training regarding emergency response and shutdown procedures at the TSDf to which they are assigned.

#### D.2.4 Training Coordinator [20 NMAC 4.1, Subpart V, 264.16(a)(2)]

The ESH-13 Group Leader directs the LANL-wide ES&H training program. The Group Leader (or designee) serves as the Training Coordinator for LANL-wide waste management training. The Training Coordinator is trained in the operation of hazardous and mixed waste management facilities, waste management practices, and emergency procedures and is responsible for coordinating training courses.

#### D.3 EMERGENCY TRAINING [20 NMAC 4.1, Subpart V, 264.16(a)(3) and (c)]

If called upon by the EM&R Office, additional non-LANL emergency response personnel (e.g., JCNNM, PTLA) may assist the LANL Incident Commander at the scene of a hazardous or mixed waste emergency. These workers are trained in their specialties (e.g., heavy equipment operation, hazardous material cleanups, traffic control, and security). At all times during an emergency, these workers are coordinated by the Incident Commander in the Incident Command System or by the designated Emergency Manager, as appropriate. Appendix E of this document (the Contingency Plan) provides a more detailed discussion of emergency procedures, personnel, and equipment.

To ensure maximum protection of life and property and to mitigate the consequences of an emergency situation, TSDF personnel involved in waste handling and emergency response must be knowledgeable about appropriate building and operating area emergency procedures. These workers receive training in TSDF-specific emergency procedures or participate in the LANL-wide emergency training program. Group leaders and immediate supervisors are responsible for ensuring that education and training in TSDF-specific emergency procedures are provided to all personnel under their supervision. Training in TSDF-specific emergency procedures is given by the operating group. Periodic exercises may be used to familiarize workers with emergency procedures. Training may also be provided to workers through instructional displays or presentations and discussions in safety meetings.

Immediate supervisors ensure that each new or transferred worker is informed on the general and specific emergency procedures related to the work area. The immediate supervisor also ensures that each worker is advised of any changes to emergency procedures and that each worker is provided with an annual refresher of these procedures. The organization that develops and delivers TSDF-specific emergency training maintains these training records.

Specialized training is given to personnel assigned special functions or specific emergency duties. Emergency response personnel are required to attend training on the implementation of the RCRA contingency plan (Appendix E), spill response, and Occupational Safety and Health Administration (OSHA) emergency response provisions. The EM&R office provides training related to implementing LANL's EMP. In addition, TSDF waste management and handling personnel participate in a training program in which they are instructed in emergency procedures pertinent to their work areas. The operating group is responsible for providing this site-specific instruction. Personnel responsible for shipping or transporting hazardous and/or mixed waste also require supplementary training, as necessary.

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**D.4 IMPLEMENTATION OF TRAINING PROGRAMS** [20 NMAC 4.1, Subpart V, 264.16(b) and (c)]  
TSDF personnel receive instruction on appropriate topics as listed in Table D-1. All TSDF workers who handle hazardous and/or mixed waste or releases of hazardous and mixed waste at the TSDF are required to complete Waste Generation Overview and RCRA Personnel Training. They must attend annual RCRA refresher training. Line managers and group leaders also receive this training and are responsible for ensuring that personnel participate in the appropriate introductory and annual courses.

Table D-1

Los Alamos National Laboratory-Wide Training Program Outline

Courses <sup>a</sup>	TSDF <sup>b</sup> Hazardous/Mixed Waste Worker	Manager/Supervisor of TSDF Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
<b>HAZWOPER<sup>c</sup>: First Responder (Operations Level)</b> (provides an overview of hazardous materials emergency response, including recognition and identification of hazardous materials and associated risks, required actions, and relationships with other emergency responders)			X <sup>d</sup>	
<b>HAZWOPER: General Site Worker (40 hours)</b> (provides general information on hazardous waste operations and emergency response for general site workers engaged in corrective action, remediation, or decontamination and decommissioning activities)				X
<b>HAZWOPER: Refresher</b> (provides general information on hazardous waste operations)			X	X
<b>RCRA<sup>e</sup> Personnel Training</b> (includes an overview of the Code of Federal Regulations, Title 40, Parts 260-265, 268; the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (1-1-97); Department of Transportation shipping regulations; internal and external protocol for facility inspections; operating equipment, communication systems, security systems; contingency plan; and emergency equipment use, inspection, and repair)	X	X	* <sup>f</sup>	*

Courses <sup>a</sup>	TSDF <sup>b</sup> Hazardous/Mixed Waste Worker	Manager/Supervisor of TSDF Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
<b>RCRA Refresher Training</b> (includes regulatory and legislative updates, occurrence reports and lessons learned, audit findings, modification/review of the contingency plan; provides required retraining)	X	X	*	*
<b>Waste Generation Overview</b> (includes waste management regulations and policies, definition of hazardous waste, waste minimization, cycle of waste management at Los Alamos National Laboratory, storage and disposal)	X	X	X	X
<b>Respirators: Air-Purifying</b> (provides required annual retraining for operation and inspection of device, changing filters, donning and doffing)	*	*	X	*
<b>Respirators: Self-Contained Breathing Apparatus</b> (provides required annual retraining for operation and inspection, changing compressed air bottles, donning and doffing, safety features, care and cleaning, fitting)	*	*	X	*

- <sup>a</sup> Additional training courses (not listed in this attachment) may also be taken by personnel depending on the types of hazards (e.g., chemical) associated with a particular job description.
- <sup>b</sup> TSDF = Treatment, storage, and disposal facility
- <sup>c</sup> HAZWOPER = Hazardous Waste Operations and Emergency Response
- <sup>d</sup> X indicates a required course.
- <sup>e</sup> RCRA = Resource Conservation and Recovery Act
- <sup>f</sup> \* indicates that a course may be required for specific job tasks and/or work areas.

**Table D-2**  
**Outline of Facility-Specific and On-the-Job**  
**Training for**  
**Treatment, Storage, and Disposal Facility Operations**

Facility-specific and/or on-the-job training (OJT) is provided to treatment, storage, and disposal facility (TSDF) workers to ensure that operations are performed in a safe manner and that actual job tasks are conducted in accordance with safe operating procedures.

**Facility-specific training** will include, as applicable, the following topics:

- Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment
- Key parameters for automatic waste feed cut-off systems
- Communications or alarm systems
- Response to fires or explosions
- Response to groundwater contamination incidents
- Shutdown of operations.

**OJT** will include the following topics, as applicable:

- Implementation of facility-specific procedures
- Maintenance of operating records
- Reporting requirements
- TSDF-specific inspection requirements.

OJT and facility-specific training must be documented by the sponsoring organization and training records must be maintained for a minimum of three years from the date that the trainee last worked at the TSDF.

## **APPENDIX D**

### **PERSONNEL TRAINING PLAN**

(“Bold/Strikeout” format version illustrating changes to “Personnel Training Plan,”  
Appendix D, Los Alamos National Laboratory General Part B Permit Application,  
Revision 1.0, October, 1998.)

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D-1	Los Alamos National Laboratory-Wide Training Program Outline
D-2	Outline of Facility-Specific and On-the-Job Training for Treatment, Storage, and Disposal Facility Operations

## LIST OF ABBREVIATIONS/ACRONYMS

<b>E</b>	<b>Environmental Science and Waste Technology Division</b>
EDS	Employee Development System
EM&R	LANL's Emergency Management and Response <b>Office</b>
EM	Environmental Management
EMP	Emergency Management Plan
ES&H	environment, safety, and health
ESH-10	LANL's Hazardous Materials Response Group
ESH-13	LANL's ES&H Training Group
ESH-19	LANL's Hazardous and Solid Waste Group
<b>FWO</b>	<b>Facility &amp; Waste Operations Division</b>
HAZWOPER	Hazardous Waste Operations and Emergency Response
JCNNM	Johnson Controls Northern New Mexico
LANL	Los Alamos National Laboratory
20 NMAC 4.1	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
OJT	on-the-job training
OSHA	Occupational Safety and Health Administration
PTLA	Protection Technology Los Alamos
RCRA	Resource Conservation and Recovery Act
TSDF	treatment, storage, and disposal facility
USC	United States Code

## APPENDIX D

### PERSONNEL TRAINING

This section describes the personnel training program for Los Alamos National Laboratory (LANL) treatment, storage, and disposal facility (TSDF) workers. Training requirements for TSDF personnel are specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, 264.16, revised January 1, 1997 [1-1-97], "Personnel Training," and are included in this document, required by 20 NMAC 4.1, Subpart IX, 270.14(b)(12) [1-1-97]. The primary objective of the training program is to prepare personnel to operate and maintain safely those areas managing hazardous and/or mixed waste, in accordance with 20 NMAC 4.1, Subpart V, Part 264 [1-1-97]. This training program applies to all employees of the U.S. Department of Energy, the University of California, and any subcontractors who work regularly at LANL TSDFs and manage hazardous and/or mixed waste. The degree of training varies with the job duties.

#### D.1 HAZARDOUS AND MIXED WASTE MANAGEMENT/RESPONSIBILITIES

Waste management activities and responsibilities at specific hazardous and/or mixed waste management units are handled by the appropriate LANL division or group. Waste management groups within the Environmental Management (EM) Division, **Science and Waste Technology (E) and Facility and Waste Operations (FWO) Divisions** are responsible for most centralized waste management activities at LANL. The Hazardous and Solid Waste Group (ESH-19) is responsible for providing waste management regulatory guidance to all LANL personnel and operations. Other personnel at LANL that may provide assistance in various waste management activities are discussed in the following paragraph and in Appendix E of this document.

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The Emergency Management and Response **Office (EM&R) Office** provides emergency planning and response at LANL and has the overall responsibility for LANL's Emergency Management Plan

(EMP) training. The Environment, Safety, and Health Division Training Group (ESH-13) is responsible for developing and delivering LANL-wide environment, safety, and health (ES&H) training. Courses on hazardous and/or mixed waste are designed with substantial input from ~~ESH-19 and EMESH-19, the E and FWO Division~~ waste management groups, and other subject matter experts, as appropriate.

D.2 TRAINING CONTENT, FREQUENCY, AND TECHNIQUES [20 NMAC 4.1, Subpart IX, 270.14(b)(12) and 20 NMAC 4.1, Subpart V, 264.16(a), (b), (d), and (e)]

The training program instituted at LANL includes a combination of LANL-wide courses, facility-specific training, and on-the-job training (OJT). LANL-wide courses are provided internally or through external ~~vendors and are usually classroom-based.~~ **vendors. They are usually classroom-based and may be received off-site.** Facility-specific training may be developed and delivered within a particular TSDF, and OJT consists of supervised and documented training focused primarily on procedures performed by individual workers. Each of these types of training is described briefly in Sections D.2.1 through D.2.3. All LANL employees and LANL contract and support personnel who handle hazardous and/or mixed waste at TSDFs receive the appropriate level of training within six months of their date of hire or transfer for work at a TSDF. Personnel will not work in unsupervised waste handling positions at TSDFs until they have successfully completed the appropriate level of training for their positions and responsibilities.

Records of LANL-wide training currently sponsored or administered by ESH-13 are entered by that group into the Employee Development System (EDS), the official LANL training database. These records document that the required training has been successfully completed by the worker. Training records of former workers are kept for at least three years from the date that they last worked at the TSDF. It is required that records documenting successful completion of facility-specific, on-the-job, or externally provided training be kept by the sponsoring LANL organization. LANL will maintain, at a minimum, hard or electronic copies of TSDF training records for currently employed workers until the TSDF closes.

Table D-1 presents components of the LANL-wide training program as administered through ESH-13. This table includes a listing of the relevant training courses, a summary of topics, and a designation of the relevant courses for each job category. Categories of workers presented in Table D-1 include TSDF hazardous/mixed waste workers, managers and supervisors of TSDF hazardous/mixed waste workers, emergency responders, and uncontrolled area potential release site workers. Table D-2 summarizes the components of facility-specific training and OJT that

workers receive, as applicable. Each training element has been designed to ensure that every worker involved in hazardous and/or mixed waste handling operations is properly trained in the procedures relevant to the positions in which they are employed. Tracking the completion of training is possible through the EDS training plans. If a worker is no longer involved in hazardous and/or mixed waste handling operations, continued training to meet the components of the relevant hazardous waste management program is not required.

TSDF Hazardous/Mixed Waste Workers are responsible for handling hazardous/mixed wastes at a TSDF. In addition, they are responsible for assisting in TSDF spill and emergency response activities, as required.

Managers and Supervisors of TSDF Hazardous/Mixed Waste Workers are directly responsible for day-to-day operations related to TSDF waste management activities. They are also responsible for assuring that personnel safety and training requirements are met.

Emergency Responders are trained emergency response personnel (e.g., ESH-10, Technical Area 55 Emergency Response Team) that respond to emergencies (e.g., spills, fires, explosions) involving hazardous and/or mixed wastes. Emergency Responders also provide support for emergency response activities.

Uncontrolled Area Potential Release Site Workers conduct investigations and remedial activities at potential release sites. They are also responsible for proper **remediation** waste management from generation to disposal, including waste characterization, treatment, and storage.

Training materials of LANL-wide training courses are on file in the ES&H Training Center and are available for review by all hazardous/mixed waste management and handling personnel, emergency response personnel, and regulatory agencies. Course content will be reviewed annually and updated as required to remain current with hazardous waste management regulations. Alternative forms of training (e.g., paper-based self-study courses, computer-based training) may be taken to meet specific training requirements. Such alternate forms of training must be approved by ESH-13 personnel and be determined to be equivalent in content to more traditional classroom-based training courses. Files listing the requisite skills, education, and training for workers who handle hazardous and/or mixed waste and the duties and responsibilities for each job description, as well as the name of each worker filling a job description, are maintained at LANL, as required by 20 NMAC 4.1, Subpart V, 264.16(d)(2) [1-1-97].

### D.2.1 LANL-Wide Courses

Hazardous waste management courses for TSDF personnel include **Waste Generation Overview**, Resource Conservation and Recovery Act (RCRA) Personnel Training, and RCRA Refresher training, ~~and Waste Generation Overview~~. Additional LANL-wide courses may be required for specific job functions.

**An introductory course, “Waste Generation Overview,” provides information needed to identify wastes that are subject to hazardous waste regulations in 20 NMAC 4.1, Subpart II [1-1-97]. The training defines and addresses the identification of hazardous waste and hazardous constituents (including hazardous components in mixed waste). Waste minimization, storage requirements, and waste disposal are also presented.**

~~The course “RCRA Personnel Training course Training”~~ provides an overview of state and federal hazardous waste management regulations and emphasizes compliance with the RCRA requirements that apply to job-related activities, such as the safe handling of hazardous and mixed waste. Instructors are trained in hazardous and mixed waste management programs and procedures and in RCRA (*42 United States Code [USC] 6901 et seq.*). ESH-13, with guidance from ESH-19, provides an annual refresher of applicable hazardous waste management requirements.

**The course “RCRA Refresher Training” is intended to update personnel on LANL procedures and changes in RCRA (*42 USC 6901 et seq.*) provisions and 20 NMAC 4.1 regulations and to provide them with an overview of their introductory training.** TSDF personnel who handle hazardous and/or mixed waste and/or clean up spills or releases of hazardous and/or mixed waste at TSDFs and the managers and supervisors of these workers also receive instruction on appropriate topics listed in Table D-1. ~~In addition, personnel responsible for shipping or transporting hazardous and/or mixed waste require supplementary training, as necessary.~~

### D.2.2 Facility-Specific Training [20 NMAC 4.1, Subpart V, 264.16(a)(3)]

Waste-handling personnel will participate in facility-specific training at their particular work locations, as appropriate. Table D-2 addresses program requirements that ensure that hazardous and mixed waste management and handling personnel know the specific requirements for their particular facilities and are able to respond effectively to emergencies. Personnel will become familiar with emergency procedures, equipment, and systems at their particular facility, including emergency and monitoring equipment use, inspection, repair, and replacement, as appropriate. In addition, they

will receive instruction on contingency plan contents and implementation (as they apply to their particular facility) including, but not limited to, communications or alarm systems, response to fires and explosions at their facility, key parameters for automatic waste-feed cutoff systems, shutdown of facility operations, and response to groundwater contamination incidents.

#### D.2.3 On-the-Job Training

Supervised and documented OJT may be developed and delivered by supervisors or other subject matter experts who are able to evaluate worker proficiency and determine appropriate training for the procedures required of each function-specific position. OJT topics may include implementation of facility-specific procedures, maintenance of operating records, reporting requirements, and TSDF-specific inspection requirements. TSDF emergency response personnel receive TSDF-specific training regarding emergency response and shutdown procedures at the TSDF to which they are assigned.

#### D.2.4 Training Coordinator [20 NMAC 4.1, Subpart V, 264.16(a)(2)]

The ESH-13 Group Leader directs the LANL-wide ES&H training program. The Group Leader (or designee) serves as the Training Coordinator for LANL-wide waste management training. The Training Coordinator is trained in the operation of hazardous and mixed waste management facilities, waste management practices, and emergency procedures and is responsible for coordinating training courses.

#### D.3 EMERGENCY TRAINING [20 NMAC 4.1, Subpart V, 264.16(a)(3) and (c)]

If called upon by the EM&R Office, additional non-LANL emergency response personnel (e.g., JCNNM, PTLA) may assist the LANL Incident Commander at the scene of a hazardous or mixed waste emergency. These workers are trained in their specialties (e.g., heavy equipment operation, hazardous material cleanups, traffic control, and security). At all times during an emergency, these workers are coordinated by the Incident Commander in the Incident Command System or by the designated Emergency Manager, as appropriate. Appendix E of this document (the Contingency Plan) provides a more detailed discussion of emergency procedures, personnel, and equipment.

To ensure maximum protection of life and property and to mitigate the consequences of an emergency situation, TSDF personnel involved in waste handling and emergency response must be knowledgeable about appropriate building and operating area emergency procedures. These workers receive training in TSDF-specific emergency procedures or participate in the LANL-wide emergency training program. Group leaders and immediate supervisors are responsible for

ensuring that education and training in TSDF-specific emergency procedures are provided to all personnel under their supervision. Training in TSDF-specific emergency procedures is given by the operating group. Periodic exercises may be used to familiarize workers with emergency procedures. Training may also be provided to workers through instructional displays or presentations and discussions in safety meetings.

Immediate supervisors ensure that each new or transferred worker is informed on the general and specific emergency procedures related to the work area. The immediate supervisor also ensures that each worker is advised of any changes to emergency procedures and that each worker is provided with an annual refresher of these procedures. The organization that develops and delivers TSDF-specific emergency training maintains these training records.

Specialized training is given to personnel assigned special functions or specific emergency duties. Emergency response personnel are required to attend training on the implementation of the RCRA contingency plan (Appendix E), spill response, and Occupational Safety and Health Administration (OSHA) emergency response provisions. The EM&R office provides training related to implementing LANL's EMP. In addition, TSDF waste management and handling personnel participate in a training program in which they are instructed in emergency procedures pertinent to their work areas. The operating group is responsible for providing this site-specific instruction. **Personnel responsible for shipping or transporting hazardous and/or mixed waste also require supplementary training, as necessary.**

#### D.4 IMPLEMENTATION OF TRAINING PROGRAMS [20 NMAC 4.1, Subpart V, 264.16(b) and (c)]

~~An introductory course, Waste Generation Overview, provides information needed to identify wastes that are subject to hazardous waste regulations in 20 NMAC 4.1, Subpart II [1-1-97]. The training defines hazardous waste and hazardous constituents (including hazardous components in mixed waste) and addresses the identification of hazardous waste and hazardous constituents.~~

~~In addition to Waste Generation Overview, all TSDF personnel receive instruction on appropriate topics as listed in Table D-1. All TSDF workers who handle hazardous and/or mixed waste or releases of hazardous and mixed waste at the TSDF are required to complete Waste Generation Overview and RCRA Personnel Training and Hazardous Waste Operations and Emergency Response (HAZWOPER) Occasional Site Worker training. They must also attend annual RCRA and HAZWOPER refresher courses. These refresher courses are intended to update personnel on LANL procedures and changes in RCRA (42 USC 6901 et seq.) provisions and 20~~

~~NMAC 4.1 regulations and to provide them with an overview of their introductory~~ training. Line managers and group leaders **also receive this training and** are responsible for ensuring that personnel participate in the appropriate introductory and annual training courses.

Table D-1

Los Alamos National Laboratory-Wide Training Program Outline

Courses <sup>a</sup>	TSDF <sup>b</sup> Hazardous/Mixed Waste Worker	Manager/Supervisor of TSDF Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
<b>HAZWOPER<sup>c</sup>: First Responder (Operations Level)</b> (provides an overview of hazardous materials emergency response, including recognition and identification of hazardous materials and associated risks, required actions, and relationships with other emergency responders)			X <sup>d</sup>	
<b>HAZWOPER: General Site Worker (40 hours)</b> (provides general information on hazardous waste operations and emergency response for general site workers engaged in corrective action, remediation, or decontamination and decommissioning activities)				X
<del><b>HAZWOPER: Occasional Site Worker (24 hours)</b> (provides general information on hazardous waste operations and emergency response for occasional and regular site workers)</del>	X	X		
<b>HAZWOPER: Refresher</b> (provides general information on hazardous waste operations)	X	X	X	X
<b>RCRA<sup>e</sup> Personnel Training</b> (includes an overview of the Code of Federal Regulations, Title 40, Parts 260-265, 268; the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (1-1-97); Department of Transportation shipping regulations; internal and external protocol for facility inspections; operating equipment, communication systems, security systems; contingency plan; and emergency equipment use, inspection, and repair)	X	X	* <sub>f</sub>	*

Courses <sup>a</sup>	TSDF <sup>b</sup> Hazardous/Mixed Waste Worker	Manager/Supervisor of TSDF Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
<b>RCRA Refresher Training</b> (includes regulatory and legislative updates, occurrence reports and lessons learned, audit findings, modification/review of the contingency plan; provides required retraining)	X	X	*	*
<b>Waste Generation Overview</b> (includes waste management regulations and policies, definition of hazardous waste, waste minimization, cycle of waste management at Los Alamos National Laboratory, storage and disposal)	X	X	X	X
<b>Respirators: Air-Purifying</b> (provides required annual retraining for operation and inspection of device, changing filters, donning and doffing)	*	*	X	*
<b>Respirators: Self-Contained Breathing Apparatus</b> (provides required annual retraining for operation and inspection, changing compressed air bottles, donning and doffing, safety features, care and cleaning, fitting)	*	*	X	*

<sup>a</sup> Additional training courses (not listed in this attachment) may also be taken by personnel depending on the types of hazards (e.g., chemical) associated with a particular job description.

<sup>b</sup> TSDF = Treatment, storage, and disposal facility

<sup>c</sup> HAZWOPER = Hazardous Waste Operations and Emergency Response

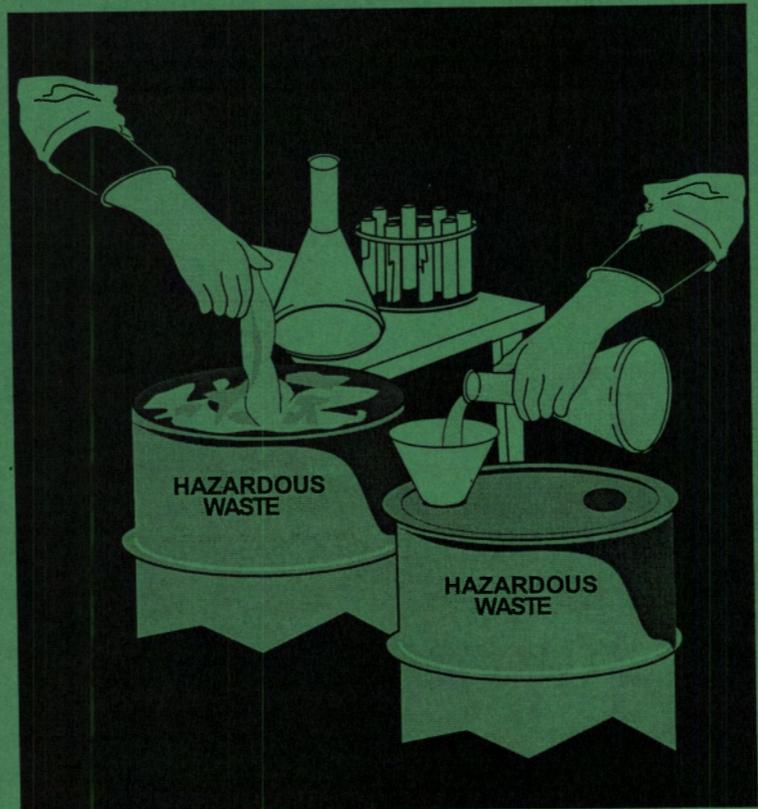
<sup>d</sup> X indicates a required course.

<sup>e</sup> RCRA = Resource Conservation and Recovery Act

<sup>f</sup> \* indicates that a course may be required for specific job tasks and/or work areas.

# Waste Generation Overview

*Student Manual*



**Los Alamos**  
NATIONAL LABORATORY

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**Instructional Design:**

Joan March, Environment Team Leader  
Joaquin Gutierrez  
Camille Bustamante

**Editing:** Kristie Neslen and Maureen Cooney

**Production:**

Becky Fernandez  
Shannon Perez  
Julie Medina

**Cover Design:** Rosalie Ott

**Viewgraph Design:** Tammy Tucker

**Technical Advisors:**

Tony Grieggs, EM-8  
John Pieniazek, EM-8  
Juan Corpion, EM-8  
Francine Vigil, EM-7  
Monica Roll, A.T. Kearney

**Additional Support:**

Marianna Ames, HRD-3  
Michelle Burns, EM-DO  
Jim Cesario, EM-7  
Ken Coop, N-2  
Micheline Devaurs, P<sup>3</sup>O  
Mike Doyon, VWR  
Shirley Fillas, HS-8  
Darryl Garcia, MST-5  
Steve Gomez, EM-7  
Joseph Gonzales, EM-7  
Kathleen Gorman-Bates, HS-5  
Bob Hayes, WX-13  
Sarah Helmick, INC-DO  
Jerry Houlton, N-2  
Jack Johnson, HS-8  
Terry Jones, HS-2

Daniel Kovnat, HS-8  
Tony Lombardo, EM-9  
Jeff Martinez, JCI  
Mary Martinez, EM-7  
Lee McAtee, HS-DO  
Brady Means, EM-7  
Julie Minton-Hughes, EM-7  
Jerrilyn Mosso, INC-DO  
Hilary Noskin, EM-DO  
Bobbi Partain, N-2  
Billy Romero, EM-7  
Matt Roybal, INC-DO  
Jim Spach, N-2  
Charles Villareal, EM-7  
Oliver Wilton, HS-DO

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## ***Introduction***

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**Notes . . .**



***Course  
Objectives***

When you have completed *Waste Generation Overview* training, you will be able to

- correctly identify the regulations and policies related to hazardous waste management;
- distinguish among waste, solid waste, and hazardous waste;
- describe the cycle of waste management and the significant players in that cycle;
- distinguish between the types of temporary on-site storage, the requirements related to each, and the consequences of regulatory noncompliance; and
- analyze a waste storage problem for corrective action.

## ***Introduction***

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**Notes . . .**



## **Module 1: Hazardous Waste Management**

### **Module 1 Objectives**

When you have completed module 1, you will be able to

- cite the basis for the Resource Conservation and Recovery Act (RCRA), identify its major principles, and discuss the major provisions that influence waste generation at the Laboratory;
- indicate the relevance of the New Mexico Hazardous Waste Management Regulations (NMHWMR);
- cite other regulatory agencies and their impact on waste management; and
- review the importance of the Laboratory's operations requirements documents, with special emphasis on the administrative requirements (ARs) and Laboratory implementation requirements (LIRs) that provide waste management requirements and guidance.

## **Module 1: Hazardous Waste Management**

### **Various Agencies Play a Role in Hazardous Waste Management**

- Environmental Protection Agency (EPA)
- State of New Mexico Environment Department (NMED)
- Department of Transportation (DOT)
- Department of Energy (DOE)
- Los Alamos National Laboratory (the Laboratory)

### **Resource Conservation and Recovery Act (RCRA)**

- Enacted in 1976 by Congress and amended in 1984 to address the problem of safe disposal of solid and hazardous waste
- RCRA regulations are promulgated and enforced by EPA

### **RCRA Goals**

- Protect human health and the environment
- Conserve energy and natural resources
- Minimize waste

## Module 1: Hazardous Waste Management

### RCRA Guiding Principles

The following table summarizes two guiding principles for controlling hazardous waste.

The principle on ...	defines ...	For example,
strict handling and treatment requirements	<ul style="list-style-type: none"><li>• where hazardous waste may be stored and for how long; and</li><li>• how hazardous waste may be inspected, transported, treated, and disposed of.</li></ul>	<ul style="list-style-type: none"><li>• storage containers must be in good condition and compatible with the waste; and</li><li>• <i>if</i> an area is operated as a &lt;90-day accumulation area, drums <i>must</i> be marked with the date accumulation began.</li></ul>
cradle-to-grave management	the documentation of hazardous material.	<p>the documentation</p> <ul style="list-style-type: none"><li>• begins the moment material becomes a hazardous waste;</li><li>• follows the hazardous waste;</li><li>• is kept on file as long as the project continues and the worker is generating the hazardous waste;</li><li>• is kept three years after the last time the hazardous waste is generated; and</li><li>• must follow the waste through treatment, storage, transportation, and disposal.</li></ul>

## ***Module 1: Hazardous Waste Management***

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### **RCRA Subtitle C Provisions**

- Hazardous waste identification
- Requirements for hazardous waste generators
- Requirements for hazardous waste transporters
- Requirements for owners/operators of treatment, storage, and disposal facilities
- Permit requirements
- Corrective action for past practices

## **Module 1: Hazardous Waste Management**

### **New Mexico Hazardous Waste Management Act**

The New Mexico Hazardous Waste Management Act (NMHWMA) was passed in 1976. For hazardous waste generators, the New Mexico state law is equivalent to federal law. If provisions of a federal law have been violated, chances are good that an equivalent state law has also been violated. This is known as *parallel implementation*. A generator may be subject to dual penalties.

The New Mexico Hazardous Waste Management Regulations (NMHWMR) are summarized in the following table.

<b>Edition</b>	<b>What It Says</b>
NMHWMR-5	It establishes the guidelines for issuing the Laboratory RCRA permit.
NMHWMR-6	Generators of hazardous waste must <ul style="list-style-type: none"><li>• receive RCRA training,</li><li>• determine whether they are dealing with solid waste or hazardous waste,</li><li>• begin the waste management documentation process, and</li><li>• prepare shipping manifests (bills of lading) with the following information:<ol style="list-style-type: none"><li>1) quantity of each hazardous waste;</li><li>2) composition of the hazardous waste; and</li><li>3) the shipper, transporter, and recipient of the hazardous waste.</li></ol></li></ul>

## **Module 1: Hazardous Waste Management**

### **Laboratory Hazardous Waste Treatment, Storage, and Disposal (TSD) Permit**

- Hazardous waste permit issued in 1989.
- Permitted requirements refer to TSD facilities only.
- Permitted TSD facilities include storage and treatment units at TA-54.
- Permit describes
  - how hazardous waste will be stored on site.
  - how hazardous waste will be treated.
  - related waste management practices.

### **Interim Status Units**

- Interim status currently applies to open burning/open detonation and mixed waste units.
- Interim status requirements (40 Code of Federal Regulations [CFR] Part 265) regulate these units until a permit is issued.
- Interim status requirements closely parallel permit requirements, and regulate hazardous and mixed waste management practices.

### **Other RCRA-Regulated Units**

- < 90-day accumulation areas and satellite accumulation areas are not permitted, but are regulated under RCRA and by NMED.
- Storage requirements are enforceable and subject to violation in case of noncompliance.

### **Penalties for Noncompliance:**

- Criminal
- Fines
- Administrative action
- Facility closure
- Shutdown of hazardous waste operations

## **Module 1: Hazardous Waste Management**

### **Other Federal Regulations**

In addition to RCRA, other federal regulations apply to hazardous waste. These regulations are summarized below. The unfamiliar terms will be explained in the following sections.

<b>The regulation promulgated by ...</b>	<b>and numbered ...</b>	<b>requires that ...</b>
DOT	49 CFR 171-180	generators of hazardous waste follow packaging regulations, such as <ul style="list-style-type: none"><li>• how the hazardous waste must be packaged,</li><li>• materials required for containers,</li><li>• the size of the containers, and</li><li>• the strength of the packaging.</li></ul>
DOE	DOE Order 5400.1	the Laboratory establish waste management and pollution prevention programs.
	DOE Order 5480.4	the Laboratory follow the standards set in 40 CFR 260–272.
EPA	40 CFR 761 Toxic Substances Control Act (TSCA)	disposal of polychlorinated biphenyls (PCBs), asbestos, and other toxic materials be specially regulated.



## **Module 1: Hazardous Waste Management**

### **Laboratory Requirements: ARs and LIRs**

The Laboratory has written requirements to carry out the federal and state laws that apply to hazardous waste. These requirements are outlined in the operations requirements documents and summarized in the table below.

<b>The AR or LIR titled ...</b>	<b>and numbered ...</b>	<b>specifies that ...</b>
Hazardous and Mixed Waste Requirements for Generators	LIR404-00-03	<ul style="list-style-type: none"><li>• generators of hazardous waste comply with NMHWMR-6, Part III, and 40 CFR 262;</li><li>• generators observe policies for storing and disposing of hazardous waste;</li><li>• generators follow waste characterization and management policies and procedures specified by the Hazardous and Solid Waste Group (ESH-19);</li><li>• generators receive both classroom and on-the-job training when appropriate; and</li><li>• formal records be kept that indicate the composition of the hazardous waste.</li></ul>
Waste Minimization	AR 10-8	<ul style="list-style-type: none"><li>• generators are responsible for the implementation of waste minimization activities and</li><li>• waste management coordinators (WMCs) must review their operations and identify ways to reduce waste on an ongoing basis.</li></ul>

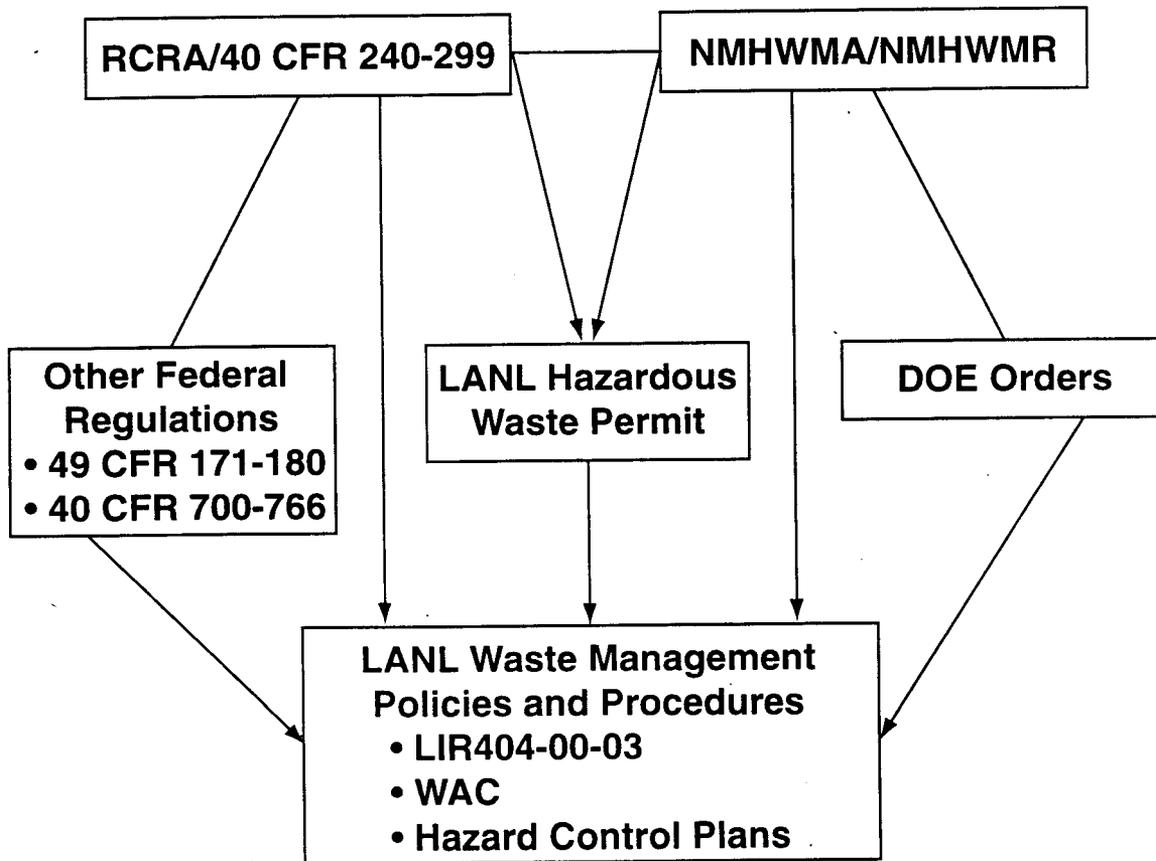
## **Module 1: Hazardous Waste Management**

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Waste Profile Form (WPF)	LIG 404-00-03	<ul style="list-style-type: none"><li>• generators should complete the WPF when waste is first generated and</li><li>• generators provide waste characterization information on the WPF so that the Solid Waste Operations Group (EM-SWO) can properly classify the mixed or hazardous waste.</li></ul>
--------------------------	---------------	---

## Module 1: Hazardous Waste Management

### Summary of Waste Management Regulations



## **Module 1: Hazardous Waste Management**

### **Module 1 Student Self-Assessment**

1. The Resource Conservation and Recovery Act (RCRA)
  - a. Is implemented by the Environmental Protection Agency (EPA)
  - b. Regulates cradle-to-grave management of hazardous waste
  - c. Regulates solid wastes
  - d. All of the above
  
2. Hazardous waste management at the Laboratory is regulated by both EPA and the state of New Mexico.
  - a. True
  - b. False
  
3. Laboratory Implementation Requirement (LIR) number \_\_\_\_\_ describes the Laboratory policy for handling hazardous waste.
  
4. In addition to the EPA, two major federal departments govern the handling of hazardous waste at the Laboratory. They are \_\_\_\_\_ and \_\_\_\_\_.
  
5. Disposal of polychlorinated biphenyls (PCBs) is regulated by EPA according to
  - a. RCRA
  - b. Toxic Substances Control Act (TCSA)
  - c. New Mexico Hazardous Waste Management Act (NMHWMA)
  - d. Hazardous and Solid Waste Amendments (HSWA)



continued

## **Module 1: Hazardous Waste Management**

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6. The Department of Transportation (DOT)
  - a. Issues regulations regarding proper hazardous waste containers and packaging
  - b. Prohibits the Laboratory from transporting waste off site
  - c. Determines the appropriate use of government vehicles
  - d. Does not play a role in hazardous waste management at the Laboratory
  
7. Which of the following is not regulated under RCRA?
  - a. Characterization and identification of hazardous waste
  - b. Remediation of past waste management areas
  - c. Procurement of chemicals
  - d. Transportation of hazardous waste

Answer Key:

1. d, 2. a, 3. 404-00-03, 4. DOE and DOT, 5. b, 6. a, 7. c

# **Module 1: Hazardous Waste Management**

**Notes . . .**



## **Module 2: Types of RCRA Waste**

### **Module 2 Objectives**

When you have completed module 2, you will be able to

- show how RCRA describes a solid waste;
- discriminate between a RCRA and non-RCRA hazardous waste;
- define the four types of listed hazardous wastes;
- explain the significance of the hazardous waste characteristics, as defined by RCRA, and why these are important to individuals in the waste generation, treatment, storage, and disposal cycle;
- explain how the mixing of hazardous and nonhazardous waste may or may not result in a hazardous waste;
- illustrate what is meant by segregation of wastes and tell why it is important;
- cite the rules regarding hazardous waste and RCRA empty containers at the Laboratory; and
- identify the waste characterization process at the Laboratory.

## Module 2: Types of RCRA Waste

### RCRA Solid Waste

RCRA has a special definition of solid. A RCRA solid waste is anything that is

- disposed of;
- burned or incinerated; or
- accumulated, treated, or stored before abandonment or recycling.

RCRA solid waste may be solid, liquid, gas, semisolid, or sludge.

**Note:** For further information about other types of waste, see 40 CFR Part 261.2, *Definition of Solid Waste*.

### Examples of RCRA Solid Wastes

#### Example 1:

You have an empty bottle you no longer need that once contained ethyl alcohol.

Is the empty bottle an example of a RCRA solid waste?      Y/N

#### Example 2:

You have certain oils that you no longer need.

Are these oils examples of RCRA solid waste?      Y/N

### Exclusions from the Definition of Solid Waste

Some materials fit the description of solid waste, but are not called solid waste by RCRA because their disposal is covered by other regulations. These materials are *excluded* from regulation under RCRA. They include the following:

- domestic sewage and sewage mixtures;
- industrial wastewater point source discharges that are regulated under a National Pollutant Discharge Elimination System (NPDES) permit;
- source, special nuclear, and byproduct materials that are regulated under the Atomic Energy Act (AEA); and
- *in situ* mining wastes.

## **Module 2: Types of RCRA Waste**

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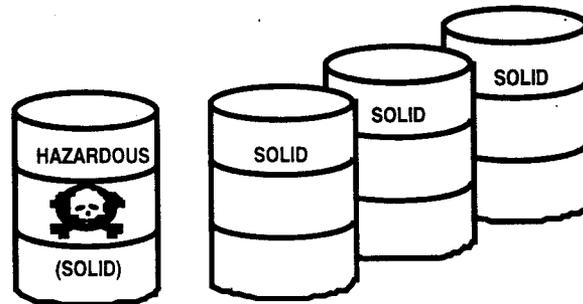
### **Identifying Hazardous Waste**

To identify hazardous waste, you must first understand waste, RCRA solid waste, hazardous waste, and how they are related.

### **Hazardous versus RCRA Solid Waste**

A hazardous waste is *always* a RCRA solid waste, but a RCRA solid waste is *not always* a hazardous waste. The following diagram illustrates this concept.

#### **RCRA SOLID WASTES**



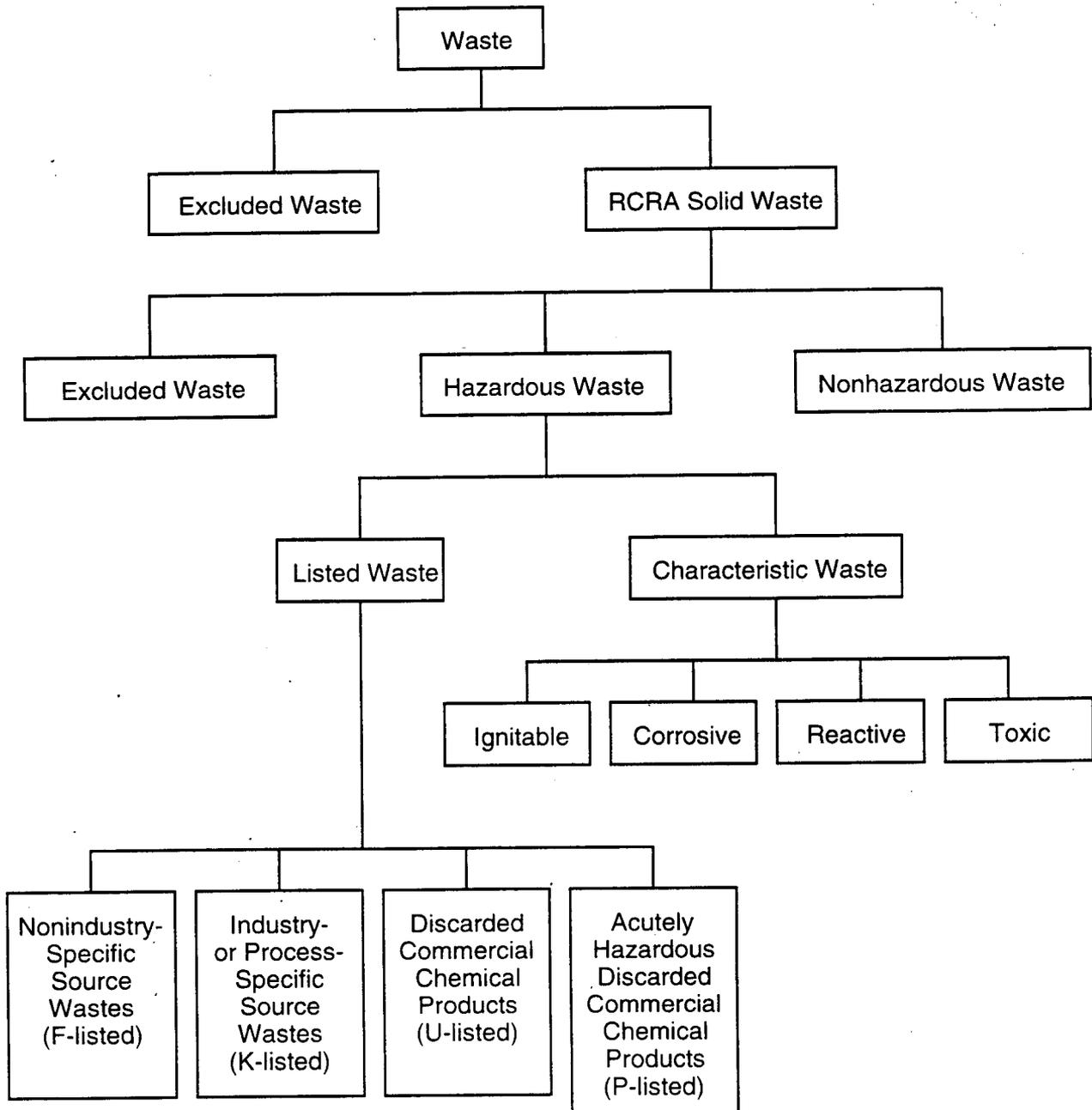
### **Exclusions from the Definition of Hazardous Waste**

Some solid wastes are specifically excluded from the definition of hazardous waste. They include the following:

- household waste,
- agricultural crops and animal manure used as fertilizer,
- certain petroleum exploration wastes, and
- certain mining wastes.

## Module 2: Types of RCRA Waste

### Waste Identification



## **Module 2: Types of RCRA Waste**

### **Categories of Listed Waste**

The following table describes the four categories of RCRA-listed hazardous waste.

<b>Wastes from the category ...</b>	<b>are listed with three digits preceded by a code letter ...</b>	<b>and come from ...</b>	<b>Examples are ...</b>
non-industry-specific source wastes	F	areas or processes that are not specific to one industry.	spent solvents used in degreasing processes.
industry-or process-specific source wastes	K	specific industries or the processes from within these industries.	wastewater treatment sludges from the manufacture and processing of explosives.
discarded commercial chemical products	U	chemical products that have been purchased, but have not been used up and need to be discarded; these wastes can be absolutely pure and still sealed in containers.	<ul style="list-style-type: none"><li>• acetone</li><li>• acrylic acid, and</li><li>• benzene.</li></ul>
acutely hazardous discarded commercial chemical products	P	the same source as above, except that they have more stringent handling and storage requirements that do not apply to other listed wastes.	<ul style="list-style-type: none"><li>• nitric oxide.</li><li>• silver cyanide, and</li><li>• beryllium.</li></ul>

## Module 2: Types of RCRA Waste

### F-Listed Wastes

Industry and EPA Hazardous Waste Number	Hazardous Waste	Hazard Code
F001	The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	(R, T)

### K-Listed Wastes

Industry and EPA Hazardous Waste Number	Hazardous Waste	Hazard Code
Explosives: K044	Wastewater treatment sludges from the manufacturing and processing of explosives	(R)
K047	Pink/red water from TNT operations	(R)

(R) = Reactive

(T) = Toxic

## Module 2: Types of RCRA Waste

### Characteristic Waste: Ignitability



<b>Ignitability</b> (usually applies to a liquid, but may also apply to a solid, a gas, or a solvent-soaked rag)	
<b>A material is ignitable if it . . .</b>	<b>Examples</b>
<ul style="list-style-type: none"><li>• has a flash point of less than 60°C, or 140°F;</li><li>• is subject to spontaneous combustion;</li><li>• is a flammable compressed gas as defined by DOT; or</li><li>• is a DOT oxidizer.</li></ul>	<ul style="list-style-type: none"><li>• ethanol</li><li>• petroleum distillates</li><li>• propane</li><li>• hydrogen peroxide</li></ul>

## **Module 2: Types of RCRA Waste**

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### **Characteristic Waste: Corrosivity**



<b>Corrosivity (generally applies to a liquid)</b>	
<b>A material is corrosive if it . . .</b>	<b>Examples</b>
<ul style="list-style-type: none"><li>• has a pH of less than or equal to 2 or greater than or equal to 12.5 as measured by a pH meter, or</li><li>• corrodes steel at a rate greater than 0.25 in. (6.35 mm) per year at a test temperature of 55°C, or 130°F.</li></ul>	<ul style="list-style-type: none"><li>• acetic acid</li><li>• nitric acid</li><li>• phosphoric acid</li><li>• sulfuric acid</li><li>• potassium hydroxide</li></ul>

## Module 2: Types of RCRA Waste

### Characteristic Waste: Reactivity



Explosive



Oxidizer



Water Reactive



Air Reactive

Reactivity	
A material is reactive if it . . .	Examples
<ul style="list-style-type: none"> <li>• can explode (normally unstable and readily undergoes violent change without detonating);</li> <li>• reacts violently when mixed with water, or generates toxic gases, vapors, or fumes in a quantity sufficient to endanger human health or the environment;</li> <li>• is capable of detonation or explosive reaction if subjected to a strong initiating force or if heated under confinement;</li> <li>• is capable of detonation or explosive decomposition/reaction at standard temperature or pressure; or</li> <li>• is a DOT Division 1.1, 1.2, or 1.3 (Class A or B explosive).</li> </ul>	<ul style="list-style-type: none"> <li>• nitroglycerin</li> <li>• chromic acid</li> <li>• cyanides</li> <li>• organic peroxides</li> <li>• silver azide</li> <li>• picric acid</li> <li>• high explosives (HE)</li> </ul>

**Note:** There is no standard test for this characteristic waste. You must know the process that was used to create the waste. If the material is a *reactive* characteristic waste, it is a hazardous waste.

## Module 2: Types of RCRA Waste

### Characteristic Waste: Toxicity



Toxicity	
A material is toxic if . . .	Examples
<ul style="list-style-type: none"><li>• it contains the minimum toxic concentrations listed in Subpart C of 40 CFR 261, in LIR404-00-03, and in LIG404-00-03; or</li><li>• it fails the Toxic Characteristic Leaching Procedure (TCLP), a test that simulates what would happen to the waste if it were put in the soil.</li></ul>	<ul style="list-style-type: none"><li>• arsenic</li><li>• mercury</li><li>• selenium</li><li>• lead</li><li>• chromium</li><li>• barium</li></ul>

**Note:** If a waste fails a TCLP test (i.e., toxic materials are found in the sample), then the waste is a *toxic* characteristic waste, which is a hazardous waste.

## **Module 2: Types of RCRA Waste**

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### **Determining Hazardous Waste Characteristics**

- It is your responsibility as the generator to properly characterize your waste.
  - You, as the generator, must provide information on the composition and characteristics of your waste.
  - EM-SWO will classify your waste (e.g., determine whether your waste is a RCRA hazardous waste).
  
- Acceptable knowledge (AK) can be used to characterize waste when you understand
  - the properties of the raw materials or products used to produce the waste and
  - the process by which the waste was created.
  
- Material safety data sheets (MSDSs) are useful in determining the characteristics of and constituents in commercial products, e.g.
  - characterizing P- and U-listed wastes (unused commercial chemical products) and
  - providing information on the raw materials that compose the waste (helps with using AK).
  
- You must conduct analyses when you cannot characterize your waste based on AK.
  - Analyses must be done according to EPA (SW-846) protocols.
  - Analyses are most often conducted for orphan and legacy wastes.
  - Wastes awaiting analysis must be properly stored and labeled (including the date analysis was requested).

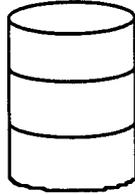


## **Module 2: Types of RCRA Waste**

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### **RCRA Empty Containers at the Laboratory**

#### **Hazardous Waste versus Nonhazardous Waste**



Empty as much material from the container as possible using a method commonly employed for the type of container.

Container and residual waste are not hazardous if as much material as possible has been emptied and

- no more than 1 in. remains in the bottom of the container, or
- less than 3% remains in a container that has a <110 gal. capacity, or
- less than 0.3% remains in a container that has a capacity >110 gal.

#### **Acutely Hazardous Empty Containers (P-listed wastes)**



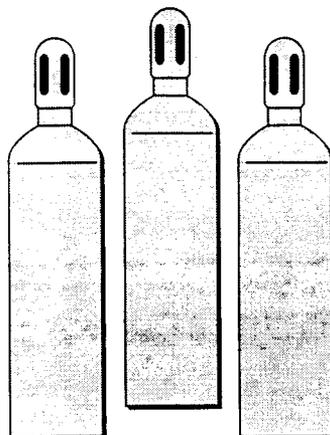
The container is always considered hazardous waste.

## ***Module 2: Types of RCRA Waste***

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### **RCRA Empty Containers at the Laboratory (continued)**

#### **Gas Cylinders**



- Obtain approval from the Industrial Hygiene and Safety Group (ESH-5), the Waste Services Team within EM-SWO, and ESH-19 before venting hazardous or mixed waste gases.
- Compressed gases are hazardous waste if they are listed or characteristic waste.

**Note:** Evaporating from rags, absorbents, or open containers to dispose of chemical compounds is prohibited.

## **Module 2: Types of RCRA Waste**

### **Waste-Identification Summary**

#### **Are you generating hazardous waste?**

Use the following table to determine if you are generating a hazardous waste.

<b>Step</b>	<b>Action</b>
1	Do you have a RCRA solid waste? <ul style="list-style-type: none"><li>• If <u>yes</u>, go to Step 2.</li><li>• If <u>no</u>, you <i>do not</i> have a hazardous waste.</li></ul>
2	Is the waste excluded from regulation? (Contact ESH-19 if you think the waste is excluded because most waste generated at the Laboratory is <i>not</i> excluded.) <ul style="list-style-type: none"><li>• If <u>yes</u>, you <i>do not</i> have a hazardous waste.</li><li>• If <u>no</u>, go to Step 3.</li></ul>
3	Is the waste listed, or is it a mixture that contains a listed waste? <ul style="list-style-type: none"><li>• If <u>yes</u>, you have a hazardous waste.</li><li>• If <u>no</u>, go to Step 4.</li></ul>
4	Does the waste exhibit any of the four characteristics (toxicity, reactivity, ignitability, or corrosivity)? <ul style="list-style-type: none"><li>• If <u>yes</u>, you have a hazardous waste.</li><li>• If <u>no</u>, you <i>do not</i> have a hazardous waste.</li></ul>

## **Module 2: Types of RCRA Waste**

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### **Mixed Waste**

Hazardous waste + radionuclide = mixed waste

### **Waste Characterization at the Laboratory**

#### **WPF**

WPF is required for

- RCRA hazardous,
- TSCA,
- Radioactive waste, and/or
- all wastes originating from Radiological Controlled Areas (RCAs).

Generator provides

- a concise description of the waste generating process and
- all the constituents that went into that process.

Information provided by the generator enables the Laboratory to properly

- classify,
- store,
- treat, and
- dispose of

hazardous and radioactive waste according to federal and state regulations.

#### **Chemical Waste Disposal Record (CWDR)**

CWDR is

- completed by the waste management coordinator (WMC) and
- used to initiate pick-up of hazardous waste by EM-SWO.

**Note:** More information on Generator and WMC requirements will be covered in module 3.

## **Module 2: Types of RCRA Waste**

### **Module 2 Student Self-Assessment**

1. Which of the following is not a Resource Conservation and Recovery Act (RCRA) solid waste?
  - a. Domestic sewage
  - b. Household garbage
  - c. Industrial process waste that is incinerated
  - d. Spent solvents
  
2. The four factors that determine characteristic waste are
  - (1) \_\_\_\_\_
  - (2) \_\_\_\_\_
  - (3) \_\_\_\_\_
  - (4) \_\_\_\_\_
  
3. A \_\_\_\_\_ is always a RCRA solid waste, but a RCRA \_\_\_\_\_ is not always a hazardous waste.
  
4. If a material is either a listed waste or a characteristic waste, then you are dealing with a \_\_\_\_\_.
  
5. An F-listed waste is a waste from a non-industry-specific source, such as spent solvents.
  - a. True
  - b. False
  
6. A waste is a hazardous corrosive characteristic waste if
  - a. It contains > 24% of a corrosive solution
  - b. It is a liquid with a PH  $\leq 2$  or  $\geq 12.5$
  - c. It is a liquid that corrodes steel at a rate greater than .25 in. per year at a temperature of 130°F
  - d. both b and c



continued

## **Module 2: Types of RCRA Waste**

7. The Toxicity Characteristic Leaching Procedure (TCLP) is designed to determine whether a waste
  - a. Meets the ignitability characteristic
  - b. Meets the reactivity characteristic
  - c. Meets the toxicity characteristic
  - d. Is a listed waste
  
8. A waste with a RCRA hazardous component and a radioactive component is called a \_\_\_\_\_.
  
9. Listed waste + nonhazardous waste = \_\_\_\_\_.
  
10. Characteristic waste + nonhazardous waste = hazardous waste if \_\_\_\_\_.
  
11. Which of the following is always a hazardous waste?
  - a. Residue from a spill of characteristic waste
  - b. A mixture of a solid waste and a characteristic waste
  - c. Ash from incineration of a listed waste
  - d. A mixture of RCRA solid waste and radioactive waste

**Answer Key:**

1. a, 2. corrosivity, ignitability, reactivity, toxicity, 3. hazardous waste, solid waste, 4. hazardous waste, 5. a, 6. d, 7. c, 8. mixed waste, 9. hazardous waste, 10. it continues to exhibit the characteristic, 11. c

## ***Module 3: The Waste Management Cycle***

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### ***Module 3 Objectives***

When you have completed module 3, you will be able to

- suggest a sequence for the waste management cycle at the Laboratory;
- identify the role of the waste generator in each aspect of the waste management cycle;
- describe the role of waste management coordinators at the Laboratory and their responsibilities in the waste management cycle;
- define a radiological controlled area (RCA), explain why RCAs were instituted at the Laboratory, and discuss their significance in the waste generation and disposal cycle;
- identify the various documentation forms related to the waste management cycle and state why they are important;
- explain the roles of various groups at the Laboratory that play a part in the waste management cycle, specifying where a generator should go for help; and
- describe the significance of waste minimization and how generators are supported at the Laboratory.

## **Module 3: The Waste Management Cycle**

### **Activity 3**

Directions: sequence the different aspects of the hazardous waste management cycle.

- \_\_\_\_\_ Disposal
- \_\_\_\_\_ Transportation
- \_\_\_\_\_ Packaging
- \_\_\_\_\_ Storage
- \_\_\_\_\_ Labeling
- \_\_\_\_\_ Generation
- \_\_\_\_\_ Treatment
- \_\_\_\_\_ Handling
- \_\_\_\_\_ Inspection
- \_\_\_\_\_ Waste minimization
- \_\_\_\_\_ Characterization

## **Module 3: The Waste Management Cycle**

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### **Hazardous Waste Management Cycle**

- Waste minimization/pollution prevention
  - Key players: waste generator and WMC
  - Help available from the Environmental Stewardship Office (ESO)
  
- Generation
  - Key player: waste generator
  
- Identification/characterization
  - Key player: waste generator
  - Help available from EM-SWO, WMC, ARs, LSs, LIRs, and 40 CFR 260-261
  
- Storage
  - Key players: inspector and WMC
  - Help available from ESH-19 and LIR404-00-03
  
- Handling
  - Key players: waste generator and WMC
  - Help available from ESH-19, EM-SWO, and LIR404-00-03

## **Module 3: The Waste Management Cycle**

### **Hazardous Waste Management Cycle (continued)**

- Labeling
  - Key players: waste generator and inspector
  - Help available from ESH-19, EM-SWO, and LIR404-00-03
  
- Inspection
  - Key player: inspector
  - Help available from ESH-19
  
- Packaging
  - Key players: waste generator, WMC, and EM-SWO
  - Help available from EM-SWO and ESH-19
  
- Transportation
  - Key players: waste generator and EM-SWO
  - Help available from the Waste Services Team within EM-SWO, and the Transportation Team within the Materials Management Group (BUS-4)
  
- Treatment
  - Key players: EM-SWO and, occasionally, the generator
  - Help available from ESH-19
  
- Disposal
  - Key player: EM-SWO

## **Module 3: The Waste Management Cycle**

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### **Things that Impact the Waste Management Cycle**

- Waste minimization/pollution prevention
  - lessens the waste management burden
  
- Training
  - Laboratory-wide
  - Facility-specific
  - On-the-job
  
- Documentation examples
  - Waste characterization and disposal forms
  - Training records
  - Shipping manifests
  - Inspection records

## ***Module 3: The Waste Management Cycle***

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### **Waste Generators and their Responsibilities**

***Definition:*** A waste generator is any person who produces chemical, hazardous, radioactive, and/or mixed wastes from any process, experiment, or other operation, or discards unused or used commercial products. According to the regulations, the Laboratory as a whole is a waste generator.

#### **Waste generator responsibilities**

- generate waste,
- characterize the waste,
- be familiar with policies and procedures,
- communicate with the WMC,
- assist in identifying waste minimization opportunities,
- ensure set-up of waste storage areas,
- comply with waste acceptance criteria (WAC), and
- notify Emergency Management and Response (EM&R) office when appropriate.

## ***Module 3: The Waste Management Cycle***

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### **Waste Management Coordinators and their Responsibilities**

- Possess organizational knowledge
- Understand the waste disposal process
- Oversee waste minimization
- Oversee waste storage and collection
- Maintain records
- Oversee generators
- Conduct training

## ***Module 3: The Waste Management Cycle***

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### **Waste Documentation Responsibilities**

For each waste stream that they generate, waste generators must

- complete and sign the WPF and
- if no WMC is assigned to the facility, complete the CWDR.

WMCs must

- sign the WPFs they review and
- complete the CWDR.

### **Training requirements**

Waste generators and WMCs who complete Laboratory waste documentation forms are required to take the following courses:

- Waste Generation Overview (course # 8477) and
- Waste Documentation Forms (course # 8504).

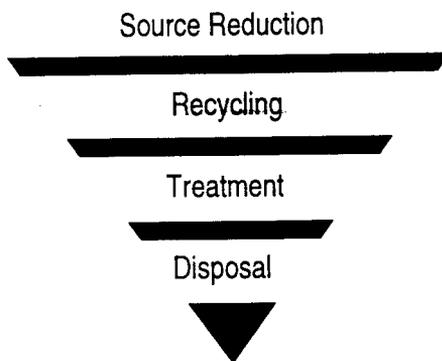
**Note:** If a WMC is assigned to the facility and signs the WPF, the generator is not required to take the Waste Documentation Forms course. However, the generator is still responsible for accurately describing the waste stream on the WPF.

## **Module 3: The Waste Management Cycle**

### **Waste Minimization and Pollution Prevention**

#### **Terms**

- **Pollution Prevention.** As defined by EPA, this is the use of materials, processes, or practices that reduce or eliminate the creation of pollutants or wastes at the source.
- **Waste Minimization.** As defined by EPA, this is the reduction of wastes at the source and the recycling of solid wastes.



#### **Steps to Take for Pollution Prevention**

1. Look at your process to determine what wastes it is releasing to land, water, or air.
2. Prepare a site-specific plan to eliminate or reduce those releases.
3. Implement the site-specific plan by applying waste minimization/pollution prevention to your process.
4. Measure your waste minimization/pollution prevention improvements and compare the waste produced before and after your site-specific plan.
5. Periodically redo your pollution prevention opportunity assessment to look for new ways to minimize waste and prevent pollution.

## **Module 3: The Waste Management Cycle**

### **Laboratory Programs**

- Chemical Exchange Assistance Program and External Recycling,
- Los Alamos Pollution Prevention Awards Program,
- Waste Type Program Support,
- Recycling Program,
- Virtual Cleaning Center, and
- Generator Set-Aside Fee Program.

You can find information on any of these programs online at <http://emeso.lanl.gov>.

### **Types of Wastes Generated at the Laboratory**

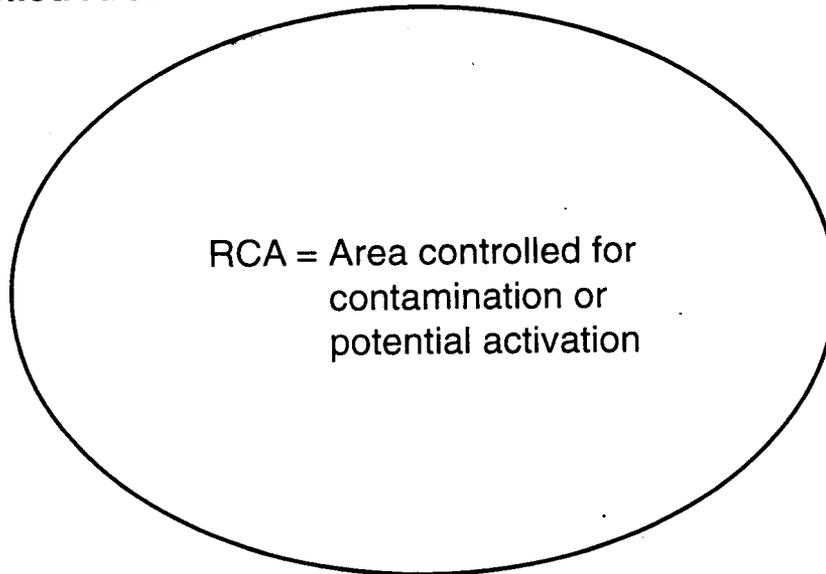
- Hazardous and mixed  
Defined in Module 2 of this document.
- Chemical  
Any chemical waste that does not fall under the RCRA but is regulated by other laws.
- Infectious/medical  
All materials defined as infectious substances or regulated medical waste.
- Controlled substances  
A drug or substance that has a high potential to be abused by the human population and can lead to substance dependency.
- Radioactive  
Solid, liquid, or gaseous material that contains radionuclides regulated under the AEA of 1954, as amended, and of negligible economic value considering the cost of recovery.

## **Module 3: The Waste Management Cycle**

### **Laboratory Requirements: Radiological Controlled Area (RCA)**

**Definition:** An RCA—radiological controlled area—is an area in which there is a reasonable potential for contamination due to the presence of unencapsulated or unconfined radioactive material or an area that is potentially exposed to beams or other sources of particles (neutrons, protons, etc.) capable of causing measurable activation.

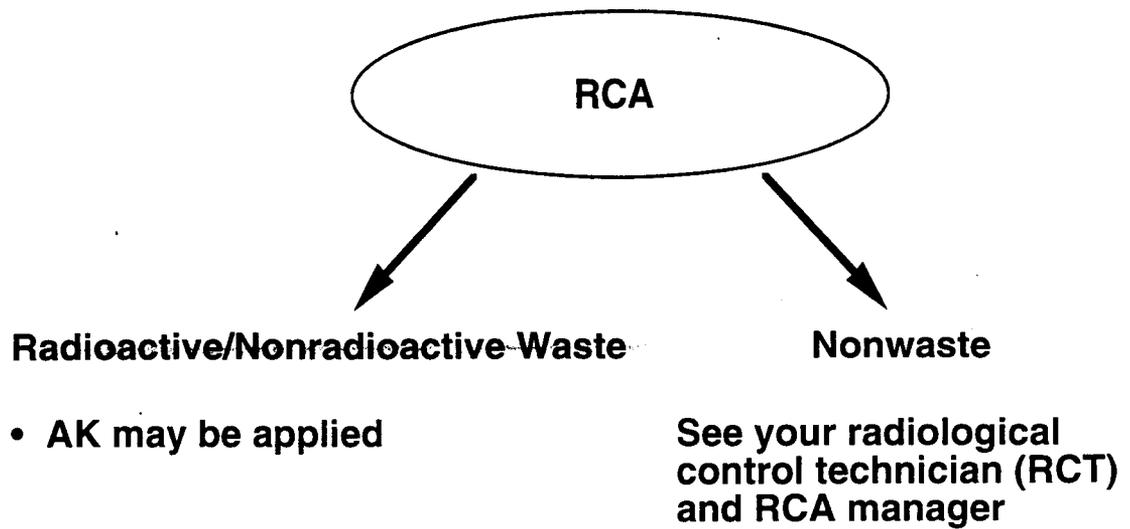
### **Uncontrolled Area**



## ***Module 3: The Waste Management Cycle***

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### **Laboratory Requirements: RCA (continued)**



## **Module 4: Hazardous Waste Storage and Disposal**

### **Module 4 Objectives**

When you have completed module 4, you will be able to

- summarize the requirements for temporary accumulation areas;
- differentiate between additional temporary storage requirements for <90-day and satellite accumulation areas;
- recognize a <90-day accumulation area and a disposal facility at the Laboratory; and
- cite recurrent areas of noncompliance at the Laboratory and the consequences of these violations.

## ***Module 4: Hazardous Waste Storage and Disposal***

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### **Setting Up a Temporary Storage Area**

#### **Preliminary Steps**

- Contact ESH-19 to set up a <90-day or satellite accumulation area in your laboratory or work area.
- For a mixed waste storage area, contact the radiological control technician (RCT) in your area or the Health Physics Operations Group (ESH-1).
- For applicable fire codes, contact the Fire Protection Group (FE-21).

#### **The Storage Areas**

- Must be free of obstacles or deterioration.
- Must be free of ignitable sources, if ignitable waste is stored there.
- Preferably are dry and sheltered.

#### **The Containers**

- Must be sealed to prevent release of organic vapors and fumes.
- Must be in good condition.
- Must be closed properly when not in use.
- Must have secondary containment.
- Drums for liquid waste must have a bung top.
- Material must be compatible with the waste generated.

#### **Segregation and Compatibility of Wastes**

- A storage container holding a hazardous waste that is incompatible with any waste or material should be stored separately from other materials.
- Incompatible wastes may be protected from each other by means of a dike, berm, wall, or other device.
- Liquids and solids may not be packaged together.

## **Module 4: Hazardous Waste Storage and Disposal**

### **Setting Up a Temporary Storage Area (continued)**

#### **Labeling**

- Containers of hazardous or mixed waste must be labeled HAZARDOUS WASTE (provided by ESH-19).
- If mixed waste is being stored, the container must be labeled RADIOACTIVE WASTE (provided by the RCT).
- Hazardous constituents must be listed.
- Other types of waste, such as PCBs, should also be labeled.

#### **Leaks and Spills**

- Hazardous and mixed waste must be cleaned up immediately.
- Cleanup material must then be treated as hazardous or mixed waste.
- Contact your supervisor or the HAZMAT Team or call 911, as appropriate. In the case of mixed waste spills, contact an RCT.

#### **Documentation**

- The generator completes the WPF when waste is first generated, has it approved by his/her WMC, and submits it to EM-SWO for approval.
- For pickup of hazardous or mixed waste by EM-SWO, the WMC completes the CWDR and submits it to EM-SWO.

## **Module 4: Hazardous Waste Storage and Disposal**

### **Types of Temporary Storage Areas**

The Laboratory operates several types of storage areas for hazardous wastes. The two that apply to you as a generator are

- <90-day accumulation areas and
- satellite accumulation areas.

#### **Which type of storage area should you use?**

Talk with your WMC when deciding which type of storage area to use. Each type has distinct advantages and disadvantages. With the WMC, you can determine which method of storage is best for you.

<b>IF it is a . . .</b>	<b>THEN there is (are) . . .</b>
<90-day accumulation area	<ul style="list-style-type: none"><li>• no quantity limit</li><li>• storage limited to 90 days</li><li>• weekly/daily inspections</li><li>• inspection recordkeeping</li><li>• training requirements</li></ul>
satellite accumulation area	<ul style="list-style-type: none"><li>• a 1-qt limit for acutely hazardous waste</li><li>• a 55-gal. total limit for all other hazardous waste</li><li>• no time limit</li><li>• no inspection requirements</li><li>• no recordkeeping requirements</li><li>• no additional training requirements</li></ul>

**Note:** You must contact ESH-19 before you store any hazardous waste.

## **Module 4: Hazardous Waste Storage and Disposal**

### **Types of Temporary Storage Areas (continued)**

#### **Generator Responsibilities in Storage Areas**

This table outlines generator responsibilities regarding both types of storage areas. See LIR404-00-03 for more information.

<b>&lt;90-Day Accumulation Areas</b>	<b>Satellite Accumulation Areas</b>
<b>You must</b>	<b>You must</b>
<ul style="list-style-type: none"><li>• register location, custodian, and types of materials stored with ESH-19;</li><li>• date the container label when storage first begins;</li><li>• mark containers HAZARDOUS WASTE;</li><li>• ensure that containers are in good condition and compatible with the waste;</li><li>• ensure that containers are closed; and</li><li>• make arrangements to have the waste hauled away or the tank/vessel pumped out within 90 days.</li></ul>	<ul style="list-style-type: none"><li>• register location, custodian, and types of materials stored with ESH-19;</li><li>• accumulate no more than 55 gal. (or 1 qt) of acutely hazardous waste at a time;</li><li>• mark containers HAZARDOUS WASTE;</li><li>• ensure that containers are in good condition and compatible with the waste;</li><li>• ensure that containers are closed;</li><li>• date the containers when they reach capacity; and</li><li>• have the waste removed within 72 hours after the containers reach capacity.</li></ul>

## **Module 4: Hazardous Waste Storage and Disposal**

### **Waste Disposal**

**TA-54, Area L**

**TA-54, Area G**

**TA-54, Area J**

**Municipal Landfill**

## **Module 4: Hazardous Waste Storage and Disposal**

### **Recurrent Problems at Laboratory Temporary Storage Areas**

#### **<90-Day Accumulation Areas**

- Containers improperly labeled
- Some containers exceed the 90-day storage limit
- Accumulation start dates are missing
- Open containers
- Nonexistent or inaccurate inspections
- Insufficient control over use of the area
- Missing/incomplete inspection records
- Lack of follow-up on noted deficiencies
- Lack of documented training for generator and/or WMC
- Holding times exceeded
- Missing emergency equipment or contingency plans
- Missing or inadequate secondary containment
- Ownership of waste difficult to trace
- Obstructions
- Warning signs missing

#### **Satellite Accumulation Areas**

- Containers improperly labeled
- Containers left open after filling/emptying
- Hazardous waste from a different or unknown site of generation found in area
- Insufficient control over use of the area
- Volume limitations exceeded
- Improper segregation of incompatible wastes
- Failure to label mixed waste as hazardous
- Obstructions

## **Module 4: Hazardous Waste Storage and Disposal**

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**Notes . . .**





## Module 4: Hazardous Waste Storage and Disposal

### Activity 5 Background Information

#### Contents of Drum 1

Date	Description	Quantity	Signature
6/21/93	Hydrochloric acid solution with elemental selenium and traces of dissolved arsenic (liquid)	5 gal.	
6/29/93	Hydrochloric acid solution with elemental selenium and traces of dissolved arsenic (liquid)	8 gal.	
7/5/93	Hydrochloric acid solution with elemental selenium and traces of dissolved arsenic (liquid)	20 gal.	
7/15/93	Hydrochloric acid solution with elemental selenium and traces of dissolved arsenic (liquid)	22 gal.	

#### Contents of Drum 2

Date	Description	Quantity	Signature
6/24/93	Spent methylene chloride with acetonitrile (rags, broken glassware)	Equal to 1 gal.	
6/27/93	Spent methylene chloride with acetonitrile (liquid)	3 gal.	

## ***Acronyms***

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AK	Acceptable Knowledge
AR	Administrative Requirements
CFR	Code of Federal Regulations
DOE	Department of Energy
DOT	Department of Transportation
EM&R	Emergency Management and Response (Office)
EPA	Environmental Protection Agency
HE	High Explosives
LIG	Laboratory Implementation Guidance
LIR	Laboratory Implementation Requirement
LS	Laboratory Standard
MSDS	Material Safety Data Sheet
NMED	New Mexico Environment Department
NMHWMA	New Mexico Hazardous Waste Management Act
NMHWMR	New Mexico Hazardous Waste Management Regulations
NPDES	National Pollutant Discharge Elimination System
PCB	Polychlorinated Biphenyl
RCA	Radiological Controlled Area
RCRA	Resource Conservation and Recovery Act
RCT	Radiological Control Technician
SOP	Standard Operating Procedure
SPCC	Spill, Prevention, Control, and Countermeasure Plan
TA	Technical Area
TCLP	Toxicity Characteristic Leaching Procedure
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, and Disposal
WAC	Waste Acceptance Criteria
WMC	Waste Management Coordinator
WPF	Waste Profile Form

## Acronyms

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Notes . . .



## ***Glossary***

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**Acceptable Knowledge (AK)**—A waste-stream characterization method that can be used to meet all or part of the waste analysis requirements appropriate for the waste media. The method may include documented process knowledge, supplemental waste analysis data, and/or facility records of analysis.

**Chemical Waste**—Any chemical or mixture of chemicals intended for disposal that is a hazardous waste or that presents a potential legal liability and thus requires special administrative control. Examples of chemical waste include waste oils, nonregulated metal-containing solutions, nonregulated solvents, and asbestos.

**Container**—Any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled.

**Disposal**—The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid or hazardous waste into or on any land or water.

**Generator**—Any person whose act produces a Resource Conservation and Recovery Act (RCRA) hazardous waste or whose act first causes a waste to become subject to regulation. Note: *Person* means an individual, association, partnership, corporation, state or federal agency, or an agent or employee thereof.

**Hazardous Waste**—As defined by the Resource Conservation and Recovery Act (RCRA), any solid waste intended for disposal that is corrosive, toxic, ignitable, or reactive, or that contains a listed hazardous constituent. Hazardous wastes commonly generated at the Laboratory include all types of laboratory research chemicals, solvents, acids, bases, carcinogens, compressed gases, metals, and other solid waste contaminated with hazardous waste (for example, compressed gas cylinders).

**High-Level Waste**—The highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid derived from that liquid, which contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation.

**Infectious Waste**—Any waste (including solid, semisolid, or liquid materials but excluding domestic sewage materials) generated in the diagnosis, treatment, or immunization of human beings or animals, or in the production or testing of biological materials. Also called medical waste, infectious waste is classified by federal and state regulations as animal waste, cultures and stocks, human blood and blood products, isolation waste, pathological waste, radiological infectious waste, and sharps (used and unused).

**Interim Status**—Requirements found in 40 CFR 265 with which a facility owner/operator must comply for existing treatment, storage, and disposal facilities prior to issuance of a RCRA operating permit.

## **Glossary**

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**Laboratory Pack**—An outerpack container which, for the purposes of safe handling and storage, contains wastes in containers that are less than 5 gal. in volume. The outer container may be from 5 to 55 gal. in volume and be constructed of polyethylene or steel.

**<90-Day Accumulation Area**—A temporary hazardous waste storage area where the generator is allowed to store RCRA hazardous waste for up to 90 days without receiving a RCRA permit, provided certain operating requirements are met.

**Low-Level Mixed Waste**—A low-level radioactive waste that is also a hazardous waste.

**Low-Level Radioactive Solid Waste**—Waste that contains radioactivity and is not classified as high-level waste, transuranic waste, or spent nuclear fuel or as 11(e) 3 byproducts material (e.g., uranium or thorium mill tailings) as defined in DOE Order 5820.2A, *Radioactive Waste Management*. Test specimens of fissionable material irradiated for research and development only and not for the production of power or plutonium may be classified as low-level waste, provided that the concentration of transuranics is less than 100 nCi/g of waste.

**Minimization**—A method that reduces or eliminates the toxicity, mass, or volume of a waste. Minimization can be applied to hazardous chemical, radioactive, mixed-process modified, and solid waste. Minimization methods include substitution, process modification, segregation and housekeeping, and reuse and recycling. These methods may be applied before or after generation of the waste.

**Mixed Waste**—Any waste containing both hazardous waste and source, special nuclear, or by-product materials subject to the Atomic Energy Act of 1954.

**Nonhazardous Waste**—Any chemical or mixture of chemical (including solid waste, soil, debris, liquids, etc.) ultimately destined for treatment or disposal that is not regulated as a hazardous waste by RCRA but may present a threat to human health or the environment and require special administrative controls. Such waste includes waste oil that has not been contaminated with a listed hazardous constituent and does not exhibit a hazardous characteristic.

**Polychlorinated Biphenyl (PCB)**—Any chemical that is limited to the biphenyl molecule and has been chlorinated to varying degrees.

**Radiological Area**—A generic term for (1) a surface contamination area, (2) a high surface contamination area, (3) an airborne radioactivity area, (4) a radiation area, (5) a high radiation area, or (6) a very high radiation area.

## **Glossary**

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**Radiological Controlled Area (RCA)**—Any area to which access is managed to protect individuals from exposure to radiation or radioactive materials. In an *RCA controlled for contamination*, a reasonable potential exists for contamination to occur at levels in excess of those in DOE Order 5400.5, Table 1, or a reasonable potential exists for an individual to receive more than 0.1 rem committed effective dose equivalent during a year for the presence of volume-contaminated materials that are not individually labeled. In an *RCA controlled for external radiation*, a reasonable potential exists for an individual to receive more than 0.1 rem during a year from external radiation fields. In an *RCA for DU shrapnel*, DU exists as a result of explosive testing.

**Satellite Accumulation Area**—A designated space for accumulating hazardous and mixed wastes where the volume of hazardous waste may not exceed 55 gallons or the volume of acutely hazardous waste may not exceed one quart. The accumulation area must be located at or near the point of generation and be under the control of the generator/operator of the process generating the waste.

**Secondary Containment**—A containment system for a hazardous waste storage facility that is designed and operated to drain and remove liquids resulting from leaks, spills, or precipitation.

**Solid Waste**—As defined by regulation promulgated under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act unless otherwise excluded, any discarded material, either abandoned, recycled, or inherently waste-like, including liquids, solids, semisolids, and contained gases. Solid waste can be simply solid or special, hazardous, nonhazardous, radioactive (including transuranic), or mixed waste. Waste consisting solely of source, special nuclear, or byproduct material, as defined by the Atomic Energy Act, is exempt from the solid waste regulations as defined by RCRA. Environmental media (e.g., soil or water) is not solid waste unless it is destined for disposal. For the more extensive definition under regulation promulgated under the New Mexico Solid Waste Act refer to 20 NMAC 9.1.105BV.

**Storage**—The holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere.

**Substitution**—Replacing a hazardous material or system with a nonhazardous or less hazardous material or system. Examples include replacing solvents and scintillation fluids with nonhazardous substitutes and using recirculating chemical systems instead of once-through chemical systems.

**Suspect Radioactive Waste**—Waste that is generated in an area where radioactive materials are present but that cannot be practically verified as being nonradioactive.

## ***Glossary***

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**Tank**—A stationary device designed to contain an accumulation of hazardous waste, which is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic, etc.) that provide structural support.

**Treatment**—Any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste.

**Transuranic (TRU) Mixed Waste**—Waste containing both hazardous and TRU waste components.

**Transuranic (TRU) Waste**—Without regard to source or form, waste that is contaminated with alpha-emitting radionuclides with half-lives greater than 20 years and concentrations greater than 100 nCi/g at the time of assay and that have atomic numbers greater than 92.

**Treatment**—When applied to hazardous waste or hazardous components of mixed waste, any method, technique, or process, including neutralization, designed to change the physical, chemical, radiological, or biological character or composition of any waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste nonhazardous, or less hazardous; safe to transport, store or dispose of; or amenable for recovery, amendable for storage, or reduced in volume.

**Universal Waste**—The following types of hazardous waste are subject to the universal waste requirements of 40 CFR 273: batteries, pesticides, and mercury thermostats. The universal waste requirements ease some of the regulatory requirements for collecting and managing these common hazardous waste types.

**Waste Acceptance Criteria (WAC)**—Criteria placed on waste form, container, radioactivity, packaging, labeling, etc., that must be met before waste is accepted for treatment, storage or disposal.

**Waste Certification Program**—A systematic, documented approach to waste management which provides reasonable assurance that the facilities' WAC are met.

**Waste Characterization**—The determination of a waste's physical, radiological, and chemical characteristics with sufficient accuracy to permit proper classification and management.

**Waste Generator**—Any individual and his/her line management (e.g., a research scientist or project manager) having direct responsibility for operations that generate waste. A waste generator may be a member of the organization responsible for the facility/site where the waste was generated. Waste generators have the responsibility for proper characterization, storage, and disposal of the waste they generate.

## ***Glossary***

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**Waste Management**—The planning, coordination, and direction of those functions related to generation, handling, treatment, storage, transportation, and disposal of waste, as well as associated surveillance and maintenance activities.

**Waste Management Coordinator (WMC)**—The individual responsible for coordinating waste management activities on behalf of waste generators, line managers, facility managers, field project leaders, the waste management groups, and other Laboratory organizations. This individual also coordinates resolution of waste management issues on behalf of his/her waste-generating organization and reviews documents pertaining to the management of waste.

**Waste Stream**—A waste or group of wastes from one or more processes or facilities with similar physical, chemical, and/or radiological characteristics.



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Instructional Design: Shirley Fillas, Training Specialist  
Joan March, Environment Team Leader

Editing: Kristie Neslen and Denise Derkacs

Production: Julie Montoya

Cover Design: Rosalie Ott

Viewgraph Design: Tammy Tucker

Technical Advice:

Tony Grieggs, EM-8

John Pierozek, EM-8

Monica Roll, A. T. Kearney

Additional Support:

Hilary Noskin, EM-DO

Joaquin Gutierrez, HS-8

## **Glossary**

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**Storage**—The holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere. Source: 40 CFR 260.10

**Substitution**—Replacing a hazardous material or system with a nonhazardous or less hazardous material or system. Examples include replacing solvents and scintillation fluids with nonhazardous substitutes and using recirculating chemical systems instead of once-through chemical systems. Source: AR 10-8

**Suspect Radioactive Waste**—Waste that is generated in an area where radioactive materials are present but that cannot be verified as being radioactive or nonradioactive. Source: AR 10-2

**Tank**—A stationary device, designed to contain an accumulation of hazardous waste, which is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic, etc.) that provide structural support. Source: 40 CFR 260.10

**Treatment**—Any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste.

**Transuranic (TRU) Mixed Waste**—Waste containing both hazardous and TRU waste components. Source: AR 10-3

**Transuranic (TRU) Waste**—Waste contaminated with alpha-emitting radionuclides that have an atomic number greater than 92 and half-lives greater than 20 years in concentrations greater than 100 nCi/g of waste. Waste contaminated with only natural or depleted uranium shall be handled as low-level radioactive solid waste. This definition is consistent with Department of Energy (DOE) Order 5820.2A, *Radioactive Waste Management*. TRU waste is contaminated with radionuclides only and does not contain hazardous waste, which is regulated under the Resource Conservation and Recovery Act (RCRA). Source: AR 10-3

## Glossary

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**Non-RCRA-Regulated Chemical Waste**—Any chemical or mixture of chemicals ultimately destined for treatment or disposal that is not regulated as a hazardous waste by the Resource Conservation and Recovery Act (RCRA), but which may present a threat to human health or the environment and requires special administrative controls. Such wastes include waste oils that have not been contaminated with a listed hazardous constituent and do not exhibit a hazardous characteristic, nonregulated chemical reagents or reactants, nonregulated heavy metals, nonregulated solvents, and asbestos. Note: These materials may be subject to regulations other than RCRA. Source: AR 10-3

**Polychlorinated Biphenyl (PCB)**—Any chemical that is limited to the biphenyl molecule and has been chlorinated to varying degrees.

**Radiological Area**—A generic term for (1) a surface contamination area, (2) a high surface contamination area, (3) an airborne radioactivity area, (4) a radiation area, (5) a high radiation area, or (6) a very high radiation area. Source: AR 10-3

**Radioactive Material Management Area (RMMA)**—An area that is specifically defined to control wastes for radiological purposes pursuant to DOE Order 5400.5, *Radiation Protection of the Public and the Environment*. This area corresponds to a contamination area or to areas that are exposed to an activating beam. The purpose of an RMMA is to ensure that there are no uncontrolled releases of radioactive solid waste or hazardous waste. Source: AR 10-3

**Satellite Accumulation Area**—Any area where a generator may accumulate up to 55 gal. of hazardous waste or 1 qt of acutely hazardous waste in containers at or near the point of generation where wastes initially accumulate. The area is under the control of the generator, who does not have a RCRA permit.

**Secondary Containment**—A containment system for a hazardous waste storage facility that is designed and operated to drain and remove liquids resulting from leaks, spills, or precipitation.

**Solid Waste**—As defined by the Resource Conservation and Recovery Act (RCRA), any discarded material, whether abandoned or recycled, including liquids, solids, semisolids, and contained gases. Solid waste can be hazardous, radioactive (including transuranic), or mixed hazardous and radioactive. Waste consisting solely of source, special nuclear, or byproduct material, as defined by the Atomic Energy Act (AEA), is not a solid waste. Source: AR 10-3

## **Glossary**

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**Infectious Waste**—Any waste (including solid, semisolid, or liquid materials but excluding domestic sewage materials) generated in the diagnosis, treatment, or immunization of human beings or animals; or in the production or testing of biological materials. Also called medical waste, infectious waste is classified by federal and state regulations as animal waste, cultures and stocks, human blood and blood products, isolation waste, pathological waste, radiological infectious waste, and sharps (used and unused). Source: AR 10-7

**Interim Status**—Requirements found in 40 CFR 265 with which a facility owner/operator must comply for existing treatment, storage, and disposal facilities prior to issuance of a RCRA operating permit.

**Laboratory Pack**—An outerpack container which, for the purposes of safe handling and storage, contains wastes in containers that are less than 5 gal. in volume. The outer container may be from 5 to 55 gal. in volume and be constructed of polyethylene or steel.

**<90-Day Storage Area**—A temporary hazardous waste storage area where the generator is allowed to store RCRA hazardous waste for up to 90 days without receiving a RCRA permit, provided certain operating requirements are met.

**Low-Level Mixed Waste**—A low-level radioactive waste that is also a hazardous waste. Source: AR 10-3

**Low-Level Radioactive Solid Waste**—Any solid waste that is derived from a radioactive material, contaminated during a process, or activated by a high-energy particle beam, excluding spent nuclear fuel, high-level radioactive waste, and transuranic (TRU) waste. Source: AR 10-3

**Minimization**—A method that reduces or eliminates the toxicity, mass, or volume of a waste. Minimization can be applied to hazardous chemical, radioactive, mixed-process modified, and solid waste. Minimization methods include substitution, process modification, segregation and housekeeping, and reuse and recycling. These methods may be applied before or after generation of the waste. Source: AR 10-8

**Mixed Waste**—Any material that is a hazardous waste (as described in AR 10-3) that also contains a radioactive component. For the purpose of this definition, the “radioactive component” includes low-level radioactive solid waste and transuranic (TRU) waste. Source: AR 10-3

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# Glossary

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**Chemical Waste**—Any chemical or mixture of chemicals intended for disposal that is a hazardous waste or that presents a potential legal liability and thus requires special administrative control. Examples of chemical waste include waste oils, nonregulated metal-containing solutions, nonregulated solvents, and asbestos. Source: AR 10-5

**Container**—Any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled. Source: 40 CFR 260.10

**Controlled Area**—Any area, as defined in the Laboratory Radiological Control Manual, to which access is controlled to protect individuals from exposure to radiation and radioactive materials. Source: AR 10-3

**Disposal**—The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid or hazardous waste into or on any land or water. Source: 40 CFR 260.10

**Generator**—Any person whose act produces a Resource Conservation and Recovery Act (RCRA) hazardous waste or whose act first causes a waste to become subject to regulation. Note: *Person* means an individual, association, partnership, corporation, state or federal agency, or an agent or employee thereof.

**Hazardous Waste**—As defined by the Resource Conservation and Recovery Act (RCRA), any solid waste intended for disposal that is corrosive, toxic, ignitable, or reactive, or that contains a listed hazardous constituent. Hazardous wastes commonly generated at the Laboratory include all types of laboratory research chemicals, solvents, acids, bases, carcinogens, compressed gases, metals, and other solid waste contaminated with hazardous waste (for example, compressed gas cylinders). Source: AR 10-3

**High-Level Waste**—The highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid derived from that liquid, which contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation. No high-level waste is generated at the Laboratory. Source: AR 10-2

## **Acronyms**

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PWA	Process Waste Assessment
RCRA	Resource Conservation and Recovery Act
RCT	Radiological Control Technician
RMMA	Radioactive Materials Management Area
SAA	Satellite Accumulation Area
SNM	Special Nuclear Materials
SOP	Standard Operating Procedure
SPCC	Spill, Prevention, Control, and Countermeasures Plan
TA	Technical Area
TCLP	Toxicity Characteristic Leaching Procedure
TRU	Transuranic
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, and Disposal
WAC	Waste Acceptance Criteria
WMC	Waste Management Coordinator
WPF	Waste Profile Form

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# Acronyms

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AA	Audits and Assessments (Office)
ACIS	Automated Chemical Information System
AR	Administrative Requirements
CFR	Code of Federal Regulations
DOE	Department of Energy
DOT	Department of Transportation
EM&R	Emergency Management and Response (Office)
EPA	Environmental Protection Agency
HE	High Explosives
KOP	Knowledge of Process
LANL	Los Alamos National Laboratory
LLMW	Low-Level Mixed Waste
MSDS	Material Safety Data Sheet
NMED	New Mexico Environmental Department
NMHWMA	New Mexico Hazardous Waste Management Act
NMHWMR	New Mexico Hazardous Waste Management Regulations
NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
PCB	Polychlorinated biphenyl

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# Introduction

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## Module 1

### RCRA Provisions

Upon completion of module 1, you will be able to identify state and federal regulations and agencies that govern the management of hazardous waste, define the goals and programs under the Resource Conservation and Recovery Act (RCRA), and list the consequences of noncompliance with RCRA regulations

## Module 2

### Inspections

Upon completion of module 2, you will be able to identify the steps required to perform inspections of hazardous and mixed waste units; identify, define, and document deficiencies; and take corrective action in compliance with inspection requirements as specified in 40 CFR 264, 265, and 270

## Module 3

### Contingency Plan

Upon completion of module 3, you will be able to identify Laboratory plans related to the management of hazardous and mixed waste, describe the purpose of the Laboratory's Contingency Plan, identify all the components of the plan, and list the conditions for implementation and activation of the plan and the activities required for follow-up to actions of the plan

# **Introduction**

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**Notes...**



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# Module 1: Provisions

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## In This Module

Upon completion of module 1, you will be able to

- Identify state and federal regulations and agencies that govern the management of hazardous waste
- Define the goals and programs under RCRA
- List the consequences of noncompliance with RCRA regulations

### **Agencies**

#### **Federal**

##### **Environmental Protection Agency (EPA)**

- Lead federal agency
- Regulates hazardous waste
- Has primary responsibility to promulgate new regulations
- Has enforcement authority at the federal level

##### **Occupational Safety and Health Administration (OSHA)**

- Sets training and worker safety requirements for hazardous waste workers

##### **Department of Energy (DOE)**

- Issues orders
- Has shutdown authority

##### **Department of Transportation (DOT)**

- Sets shipping and manifesting requirements for hazardous materials

#### **State**

##### **New Mexico Environment Department (NMED)**

- New Mexico is an authorized state with regulatory authority for hazardous waste management

## **Module 1: Provisions**

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### **RCRA Goals**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

### **Components of RCRA**

#### **The Act**

- Describes in statutory language the kind of waste management program Congress wants to establish
- Grants EPA administrative authority to implement the act

#### **The Regulations**

- Establish standards
- Impose requirements
- Published in the Code of the Federal Regulations (CFR) and the Federal Register

#### **Guidance**

- Issued by EPA
- Gives instructions for implementing the act or the regulations
- DOE guidance may clarify regulations of EPA or other agencies

#### **Policy**

- EPA statements
- Position on a topic
- Procedural instructions

### **RCRA Programs**

- Subtitle \_\_\_\_\_ Establishes a management system that regulates hazardous waste from the time of generation to the elimination or disposal
- Subtitle \_\_\_\_\_ Promotes and encourages the environmentally sound management of solid waste
- Subtitle \_\_\_\_\_ Regulates petroleum products and hazardous substances (defined in Superfund) stored in underground tanks
- Subtitle \_\_\_\_\_ Regulates medical waste from generation through destruction or disposal

### **Regulatory Components: 40 CFR Subtitle C**

- Part 260: General/Definitions
- Part 261: Hazardous Waste Listing and Identification
- Part 262: Generator Standards
- Part 263: Transporter Standards
- Part 264: Permitted Treatment, Storage, and Disposal (TSD) Standards
- Part 265: Interim Status Standards
- Part 268: Land Disposal Restrictions (LDRs)
- Part 270: Permit Program Requirements

### **Statutory and Regulatory Requirements Set by RCRA**

RCRA sets statutory and regulatory requirements for

- Definition and identification of hazardous waste
- Generators of hazardous waste
- Transporters of hazardous waste
- Owners and/or operators of TSD facilities for hazardous waste

### What is a RCRA Solid Waste?

- Any discarded material—can be solid, liquid, gas, semisolid, or sludge
- Material that has served its intended purpose
- Manufacturing or mining byproduct
- Garbage/refuse included

### Materials Excluded from the Definition of a Solid Waste

- Domestic sewage
- Irrigation return flow
- *In situ* mining waste
- Special nuclear materials

### What is a RCRA Hazardous Waste?

- Must be a RCRA solid waste
- Is not an excluded waste
- Meets one of the four hazardous characteristics
- Meets the definition of a listed waste

### Characteristic Hazardous Waste

- Ignitable—liquid with a flashpoint  $<140^{\circ}$  F
- Corrosive—aqueous material with a pH  $\leq 2$  or  $\geq 12.5$
- Reactive—reacts violently with water, is unstable, or is listed by DOT as a Class A or B explosive
- Toxic—contains specified hazardous constituents above target levels

### Listed Hazardous Waste

- F-listed: nonspecific source waste, including spent solvent wastes, from common industrial processes
- K-listed: specific source waste from wood preserving, petroleum refining, and inorganic chemical procedures
- U-listed: unused commercial chemical products
- P-listed: unused commercial chemical products that are acutely hazardous

### Excluded Hazardous Waste

- Waste that does not present a threat
- Waste currently managed under other programs
- Certain mining wastes
- Household waste
- Agricultural waste

### What is a Mixed Waste?

- Contains a RCRA hazardous waste component and a radioactive component

### Mixture Rule

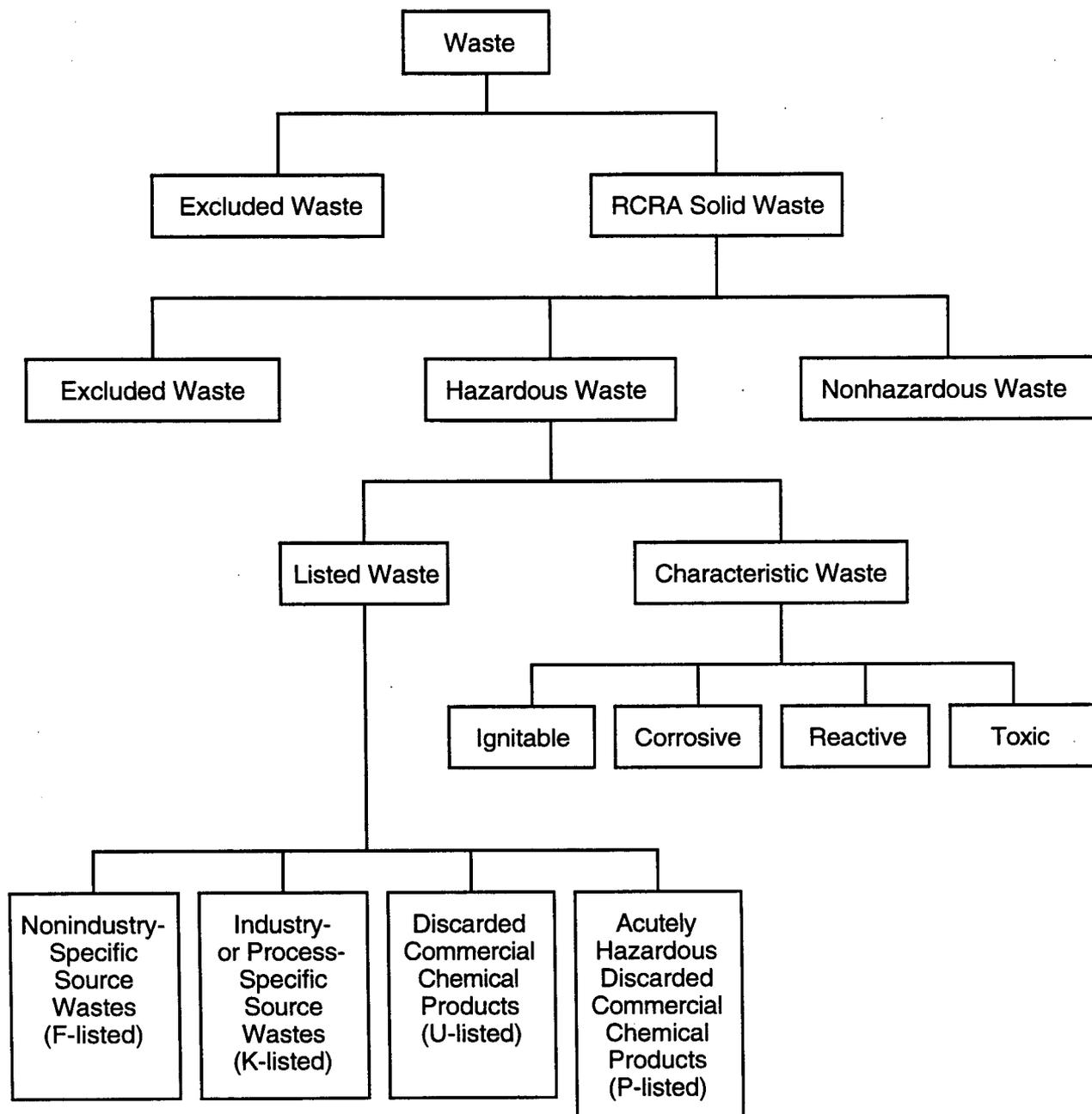
- Nonhazardous waste + listed hazardous waste = hazardous waste
- Nonhazardous waste + characteristic hazardous waste = hazardous waste if mixture still meets hazardous characteristic

### Derived-From Rule

- Waste derived from a listed hazardous waste = listed hazardous waste
- Waste derived from a characteristic hazardous waste = hazardous waste only if derived waste meets a characteristic

## Types of Waste

This chart graphically outlines the relationships of the various types of waste.



### Testing for Hazardous Waste

The generator is required to test the waste for hazardous characteristics if waste is not an F -, U-, K-, or P- listed waste, or if it cannot be identified through knowledge of process.

Standard testing methods must be used for the analysis of the waste.

Chemical Science and Technology (CST) Division is responsible for testing the waste for hazardous components at the Laboratory.

### RCRA Definition of Waste Generator

#### Broad

1. \_\_\_\_\_
2. \_\_\_\_\_

#### Specific

##### Large-Quantity Generators

- Generate >1000 kg of hazardous waste per month
- Generate >1 kg of acutely hazardous waste per month

##### Small-Quantity Generators

- Generate >100 but <1000 kg of hazardous waste per month
- Generate <1 kg of acutely hazardous waste per month

##### Conditionally Exempt, Small-Quantity Generators

- Generate <100 kg of hazardous waste per month

## **RCRA Requirements for Generator**

### **Identification**

- Obtain an \_\_\_\_\_ number

### **DOT Pretransport Handling Regulations**

- Proper packaging to prevent leakage of hazardous waste during both normal transport conditions and potentially dangerous situations
- Labeling, marking, and placarding of the packaged waste to identify the characteristics and dangers associated with transporting it

### **Accumulation of Waste**

- Large-quantity generators can accumulate waste for <90 days if waste is properly stored and marked, if a contingency plan outlining emergency procedures is in place, and if facility personnel are trained in proper handling of hazardous waste
- Hazardous waste accumulated for >90 days requires large-quantity generators to comply with TSD facility regulations under Subtitle C

### **The Shipping Manifest**

- The purpose of the manifest is to  
\_\_\_\_\_  
\_\_\_\_\_
- The manifest contains name and EPA number of the generator, the transporters, and the facility where waste is to be treated, DOT description of the waste being transported, the quantities of the waste, and the address of the TSD facility where waste is destined
- Final copy of the manifest is sent back to the \_\_\_\_\_ from the final destination point

### **Record-Keeping and Reporting**

- Large-quantity generators must report \_\_\_\_\_ to the regional administrator of EPA
- If generators do not receive a copy of the final manifest within 45 days from the date on which the initial transporter received the waste, the generator must file an \_\_\_\_\_ with the regional administrator of EPA

**RCRA Permit**

**Purpose of a RCRA permit**

- Identifies administrative and technical standards for facility operation
- Provides EPA and the state with an enforcement mechanism

**Who Needs a Permit?**

- All hazardous waste TSD facilities
- New units to be constructed
- Existing facilities in interim status

**Types of RCRA Permits**

- Treatment, Storage, and Disposal (TSD)
- Research, Development, and Demonstration (RD&D)
- Post Closure
- Permit by Rule
- Trial Burn/Land Treatment

**Reasons to modify RCRA Permits**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**Classes of Permit Modification**

- Class \_\_\_\_\_ Routine changes
- Class \_\_\_\_\_ Common or frequent changes to the operations
- Class \_\_\_\_\_ Major changes that substantially change the facility or the operation of the facility

# Module 1: Provisions

## Hazardous Waste Units at the Laboratory

6/25/93

MASTER SCHEDULE

Page: 1

TA	BLDG LOC	OPERATION TYPE	FACILITY TYPE	STATUS	INSPECTIONS	CONTACT	PHONE
3	29 BASEMENT WING 9	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	DARRYL GARCIA	7-2410
3	29 W-9, BASE	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	K.M. GRUETZMACHER	5-4356
3	29 CNR BASEMENT BY ELE	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	MARK H. WILKERSON	7-4731
3	36 SOUTH SIDE	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	GEORGE LUJAN	7-5831
3	38 PAINT SHOP/MAINTENANCE RM	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	EARL BOOKWALTER	7-4231
3	39 OUTSIDE, EAST DOCK	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	ROBERT HAYES	7-8134
3	40 OUTSIDE, NW DOCK	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	BEN MARTINEZ	7-9959
3	43 INSIDE BLDG	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	ALTON MCNEIL	7-4360
3	66 OUTSIDE P100 AREA	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	TONY MAYER	7-5268
3	102 CORNER OF LIH SHOP	CONTAINER	INTERIM S	CLOSED	DAILY/WEEKLY	ROBERT HAYES	7-4198
3	102 CORNER OF LIH SHOP	CONTAINER	LESS 90 DAY	ACTIVE	WEEKLY ONLY	RICHARD BRYANT	7-4198
3	132 INSIDE ROOM LOCKED	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	STEPHEN B. DUNAGAN	7-4584
3	379 LEAD SHACK, NE 38	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	FRED THRONAS	7-4381
3	2056 South side of 216	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	William Coulter	7-8274
3	2133 SHED	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	BOB BOLLMAN	7-3570
9	29 STORAGE RM	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	JAY STIMMEL	7-4932
9	38 PROCESS BAY	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	JAY STIMMEL	7-4932
9	39 HE MAG	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	JAY STIMMEL	7-4932
9	208 HE MAG	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	JAY STIMMEL	7-4932
14	35 DETONATION PAD	OB/OD	INTERIM T	ACTIVE	DAILY/WEEKLY	KEN UHER	7-4901
15	184 PHERMEX DETONAT. PAD	OB/OD	INTERIM T	ACTIVE	DAILY/WEEKLY	STEPHEN DEPAULA	7-4425
16	S-SITE BURNING GRND (6X)	OB/OD	INTERIM T	ACTIVE	DAILY/WEEKLY	PETE VELARDE	7-6891
16	88	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	RAY GREEN	7-7965
16	340 ASSEMBLY RM	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	JOHN KRAMER	7-6571
16	345 RESTHOUSE (SERVICE MAG)	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	ROBERT MONTOYA	7-6571
16	386 S-SITE	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	PETE VELARDE	7-6891
16	463 SERVICE MAG/RESTHOUSE	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	WAYNE KING	7-6751
16	1150 S-SITE INCINERATOR	INCINERATOR	INTERIM T	ACTIVE	DAILY/WEEKLY	PETE VELARDE	7-6891
18	110 OUTSIDE AREA/RAIN COVER	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	JERRY HOULTON	7-4905
21	61	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	TONY DRYPOLCHER	7-7391
21	209 SMALL GLOVEBOX SOUTH END	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	RON HINSLEY	7-2858
22	91 East side of bldg 91	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	BECKY GUILLEN	7-4141
22	96 EAST OF BLDG 93	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	SYLVIA TRUJILLO	7-9293
36	8 MINIE SITE DETONAT.	OB/OD	INTERIM T	ACTIVE	DAILY/WEEKLY	CARLOS MARTINEZ	7-8051
39	6 FIRING POINT	OB/OD	INTERIM T	ACTIVE	DAILY/WEEKLY	TONY VALERIO	7-6881
39	57 FIRING POINT	OB/OD	INTERIM T	ACTIVE	DAILY/WEEKLY	TONY VALERIO	7-6881
41	1	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	GARY SECREST	7-4526
50	1 CEMENTING PROCESS	CONTAINER	INTERIM TS	ACTIVE	DAILY/WEEKLY	DAVID SALAZAR	7-6904
50	1 SEE 60A	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	DAVID SALAZAR	7-6904
50	1 OUTSIDE PORTABERM	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	LAURA ORTEGA	5-5884
50	1 BWTP	ABOVE GROUND TANK	PERMITTED TS	ACTIVE	DAILY/WEEKLY	DAVID SALAZAR	7-6904
50	37 TWO WASTE FEED TANKS	ABOVE GROUND TANK	INTERIM S	ACTIVE	DAILY/WEEKLY	STAN ZYGMUNT	7-2245
50	37	CONTAINER	PERMITTED S	ACTIVE	DAILY/WEEKLY	STAN ZYGMUNT	7-7391
50	37	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	STAN ZYGMUNT	7-2245
50	37 CONTROLLED AIR INC.	INCINERATOR	PERMITTED T	ACTIVE	DAILY/WEEKLY	STAN ZYGMUNT	7-7391
50	37 CONTROLLED AIR INC.	INCINERATOR	INTERIM T	ACTIVE	DAILY/WEEKLY	STAN ZYGMUNT	7-7391
50	37	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	STAN ZYGMUNT	7-2245
50	37	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	STAN ZYGMUNT	7-7391
50	69 INSIDE SRF	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	BOBBY GONZALES	7-5397

# Module 1: Provisions

## Hazardous Waste Units at the Laboratory

6/25/93

MASTER SCHEDULE

Page: 2

TA	BLDG	LOC	OPERATION TYPE	FACILITY TYPE	STATUS	INSPECTIONS	CONTACT	PHONE
50	69	OUTSIDE	SRF	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	BOBBY GONZALES 7-5397
50	114	MODULAR	BLDG	CONTAINER	PERMITTED S	ACTIVE	DAILY/WEEKLY	DAVID SALAZAR 7-6904
50	114	MODULAR	BLDG	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	DAVID SALAZAR 7-6904
50	137	NEVER	INSTALLED	CONTAINER	PERMITTED S	ACTIVE	DAILY/WEEKLY	NEVER INSTALLED
50	138	NEVER	INSTALLED	CONTAINER	PERMITTED S	ACTIVE	DAILY/WEEKLY	NEVER INSTALLED
50	139	NOT YET	CONSTRUCTED	CONTAINER	PERMITTED S	ACTIVE	DAILY/WEEKLY	NOT INSTALLED
50	140	NOT YET	CONSTRUCTED	CONTAINER	PERMITTED S	ACTIVE	DAILY/WEEKLY	NOT INSTALLED
53	166	S	SURFACE IMPOUND.	SURFACE IMPOUNDMENT	INTERIM S	ACTIVE	DAILY/WEEKLY	CHARLES RICHARDSON 7-2295
53	166	NE	SURFACE IMPOUND.	SURFACE IMPOUNDMENT	INTERIM S	ACTIVE	DAILY/WEEKLY	CHARLES RICHARDSON 7-2295
53	166	NW	SURFACE IMPOUND.	SURFACE IMPOUNDMENT	INTERIM S	ACTIVE	DAILY/WEEKLY	CHARLES RICHARDSON 7-2295
54		AREA-L	SHAFT 37	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	ANNEMARIE GUSTAVSSON 7-7579
54		AREA-G	SHAFT 145	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	JOHNNY HARPER 7-6156
54		AREA-L	CONT/GAS CYL	CONTAINER	PERMITTED S	ACTIVE	DAILY/WEEKLY	ANNEMARIE GUSTAVSSON 7-7579
54		AREA-G	PAD 2	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	JOHNNY HARPER 7-6156
54		AREA-G	PAD 1	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	JOHNNY HARPER 7-6156
54		AREA-G	SHAFT 149	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	JOHNNY HARPER 7-6156
54		AREA-G	SHAFT 146	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	JOHNNY HARPER 7-6156
54		AREA-G	SHAFT 148	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	JOHNNY HARPER 7-6156
54		AREA-G		LANDFILL	UNDER CLOSURE	ACTIVE	WEEKLY ONLY	JOHNNY HARPER 7-6156
54		AREA-G	PAD 4	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	JOHNNY HARPER 7-6156
54		AREA-G	SHAFT 147	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	JOHNNY HARPER 7-6156
54		AREA-G	OVER PIT 30	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	JOHNNY HARPER 7-6156
54		AREA-L	CONT/GAS CYL	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	ANNEMARIE GUSTAVSON 7-7579
54		AREA L	4 TANKS	ABOVE GROUND TANK	PERMITTED T	ACTIVE	DAILY/WEEKLY	ANNEMARIE GUSTAVSON 7-7579
54		AREA-L	SHAFT 36	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	ANNEMARIE GUSTAVSON 7-7579
54	8	AREA-G	HOLDING SHED	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	JOHNNY HARPER 7-6156
54	31	AREA-L	FREE LIQUIDS	CONTAINER	PERMITTED S	ACTIVE	DAILY/WEEKLY	ANNEMARIE GUSTAVSSON 7-7579
54	32	AREA-L	FREE LIQUIDS	CONTAINER	PERMITTED S	ACTIVE	DAILY/WEEKLY	ANNEMARIE GUSTAVSSON 7-7579
54	33	WASTE	PREP (DOME)	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	JOHNNY HARPER 7-6156
54	48	AREA-G	PAD 3 (DOME)	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	JOHNNY HARPER 7-6156
54	49	AREA-G	(DOME)	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	JOHNNY HARPER 7-6156
54	68	AREA-L	MODULAR BLDG	CONTAINER	PERMITTED S	ACTIVE	DAILY/WEEKLY	ANNEMARIE GUSTAVSSON 7-7579
54	69	AREA-L	MODULAR BLDG	CONTAINER	PERMITTED S	ACTIVE	DAILY/WEEKLY	ANNEMARIE GUSTAVSSON 7-7579
54	153	AREA-G	OVER PIT 33; FRP	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	JOHNNY HARPER 7-6156
55		NEAR	BLDG 4	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	K.M. GRUETZMACHER 5-4356
55	4	BASEMENT		CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	K.M. GRUETZMACHER 5-4356
55	4	GLOVEBOX		CONTAINER	INTERIM TS	ACTIVE	DAILY/WEEKLY	K.M. GRUETZMACHER 7-2328
55	4	BASEMENT	LLW	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	K.M. GRUETZMACHER 5-4356
55	4	FLO	1	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	K.M. GRUETZMACHER 5-4356
55	4	BASEMENT	3 AREAS	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	K.M. GRUETZMACHER 5-4356
55	4	13	STORAGE TANKS	ABOVE GROUND TANK	INTERIM TS	ACTIVE	DAILY/WEEKLY	K.M. GRUETZMACHER 5-4356
55	4	BASEMENT	VAULT	CONTAINER	INTERIM S	ACTIVE	DAILY/WEEKLY	D.L. BRANDT 7-8486
55	191	OUTSIDE	NORTH SIDE COMPLE	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	PETE VALDEZ 7-9346
59	1	ACROSS	FROM SINK	CONTAINER	LESS 90 DAY	ACTIVE	DAILY/WEEKLY	CARROL THOMAS 7-3136

### **The Permit Application**

#### **Part A**

- Short standard form
- Provides general information about the facility
- Describes activities conducted at the Laboratory

#### **Part B**

- Detailed technical description of the hazardous waste activities conducted at the Laboratory
- No standard format
- Facility must use 40 CFR 264 and 270 to determine what to include in Part B application.

#### **Interim Status (40 CFR 265)**

- Standards of proper management and operation until permit is issued
- Closely parallels permitting standards (40 CFR 264)
- The Laboratory's mixed waste units are operating under interim status

### **RCRA Corrective Action Provisions**

- Hazardous and Solid Waste Amendments (HSWA) to RCRA passed by Congress in 1984 gave EPA broad new corrective action authorities
- EPA and/or authorized state can require a facility seeking a TSD permit to implement corrective actions as necessary to protect human health and the environment for all releases of hazardous waste or constituents from a solid waste management unit (SWMU)
- EPA and/or authorized states have the authority to require cleanup of past actions
- A SWMU is any unit that managed solid waste at any time over the life of the facility
- EPA has proposed, but not finalized, regulations implementing corrective action; in the meantime, EPA has implemented provisions in the absence of regulations

### Land Disposal Restrictions (LDRs) (continued)

- Part 268 lays out LDRs to ensure that waste is treated to certain standards before it is disposed of
- Standards are enforceable under RCRA
  1. \_\_\_\_\_
  2. \_\_\_\_\_
- Specific documentation is required
- Contact \_\_\_\_\_ for answers to questions regarding LDRs

### Air Emissions Standards for Process Vents and Equipment Leaks

- Developed to limit organic air emissions at TSD facilities subject to RCRA permitting
- Require reduction of total organic air emissions from process vents associated with specific operations (e.g., distillation or solvent extraction)
- Mandate leak detection and repair standards for defined equipment (e.g., valves, pumps, or compressors) at TSD facilities

### Related Laboratory Plans

- Contingency Plan
- SPCC Plan
- Emergency Management Plan
- Inspection Plan
- Waste Minimization/Pollution Prevention Awareness Plan

### Applicable Administrative Requirements (ARs)

AR\_\_\_\_\_ Hazardous and Mixed Waste

AR\_\_\_\_\_ Waste Profile Form

AR\_\_\_\_\_ Accidental Oil, Chemical, and Airborne Releases

AR\_\_\_\_\_ Waste Minimization

## Module 1: Provisions

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### Group Activity: RCRA Noncompliance Questionnaire

(Circle the Correct Answer)

- T F Fines and penalties for noncompliance with RCRA can result in both civil and criminal actions brought against the offender
- T F Fines and penalties can be retroactive
- T F Federal policy is to seek civil penalties rather than criminal ones, because of greater effectiveness
- T F A RCRA fine for a single violation may be as much as \$25,000 per day
- T F Individuals can be criminally liable for noncompliance with RCRA

Criminal violations may result in

- T F Prosecution
- T F Incarceration
- T F Facility shutdown
- T F Fines and penalties up to \$50,000 per day and/or two years in prison
- T F Laboratory workers may be dismissed for RCRA violations
- T F Congress is decreasing the severity of its penalties

Possible disciplinary action by the Laboratory:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

### **Consequences of Noncompliance with RCRA**

#### **Civil**

- Fines and penalties
- Up to \$25,000 per day per violation
- Fines can be retroactive
- \$50,000 per day per violation for chronic violations

#### **Criminal**

- Direct participation in violations
- Inadequate supervision of employees committing violations
- Inadequate corrective action efforts for violations
- Fines and penalties of up to \$50,000 per day and/or two years in prison

#### **Disciplinary Actions**

- Leave without pay
- Dismissal
- Back-charges from organization involved

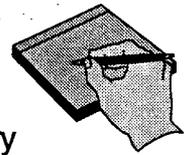
#### **Areas to monitor for trouble**

- Continued discharges or emissions of pollutants beyond levels stated in permit
- Correctness of required reports and records
- Failure to correct deficiencies identified from regulatory or self-inspections.
- Failure to perform actions specified in compliance agreements
- Failure to report releases or spills
- Failure to maintain required reports and manifests

## Module 1: Provisions

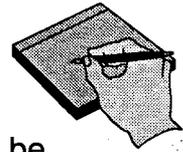
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### Module 1 Student Self-Assessment



1. \_\_\_\_\_ is the federal agency that has the primary responsibility to promulgate new regulations concerning the management of hazardous waste
2. \_\_\_\_\_ is the primary regulatory driver for the management of hazardous and mixed waste
3. T F New Mexico is an authorized state with regulatory authority over the Laboratory
4. T F Reducing and eliminating the generation of hazardous waste is one of the primary goals of the Resource Conservation and Recovery Act (RCRA)
5. Subtitle \_\_\_\_\_ is the program under RCRA that establishes a system to regulate hazardous waste from cradle to grave
6. The four characteristics of RCRA hazardous waste are  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. A facility, owner, or operator that first creates a hazardous waste is known as a \_\_\_\_\_
8. T F The Laboratory is a small-quantity generator, as defined by RCRA
9. The Laboratory's Hazardous Waste Facility Permit is a  
\_\_\_\_\_ Research, Development, and Demonstration (RD&D) Permit  
\_\_\_\_\_ Treatment, Storage, and Disposal (TSD) Permit  
\_\_\_\_\_ Trial Burn/Land Treatment Permit  
\_\_\_\_\_ Permit by Rule
10. A permit modification that substantially changes the facility or the operation of the facility is known as a Class \_\_\_\_\_ Permit Modification

**Module 1 Student Self-Assessment (continued)**



11. Standards for generators of hazardous and mixed waste can be found in AR\_\_\_\_\_
  
12. T F Civil fines for RCRA violations can be up to as much as \$25,000 per day per violation
  
13. T F The Laboratory may dismiss workers for RCRA violations
  
14. T F A liquid or a liquid-containing waste identified as having a flash-point of less than 140° F is considered an ignitability characteristic hazardous waste
  
15. T F A solution containing water with a pH balance of <12.5 but >2.0 is considered to be a corrosivity characteristic hazardous waste
  
16. T F Any waste classified as a Department of Transportation (DOT) Class A or Class B explosive is considered to be a reactivity characteristic hazardous waste
  
17. T F Waste is automatically considered to be hazardous waste if it appears on the U, P, K, or F lists as identified by RCRA

## **Module 1: Provisions**

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### **Module 1 Student Self-Assessment Answer Key**

1. EPA
2. RCRA
3. T
4. T
5. C
6. Toxicity, Ignitability, Corrosivity, Reactivity
7. Generator
8. F
9. Treatment, Storage, and Disposal (TSD) Permit
10. 3
11. 10-3
12. T
13. T
14. T
15. F
16. T
17. T

## Module 1: Provisions

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Notes...



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## **Module 2: Inspections**

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### **In This Module**

Upon completion of module 2, you will be able to

- Identify the steps required to perform inspections of hazardous and mixed waste units
- Identify, define, and document deficiencies found in the inspection process
- Take corrective action in compliance with inspection requirements as specified in 40 CFR 264, 265, and 270

### **Inspection Areas**

#### **Areas where RCRA inspections must be performed**

- TSD facilities
- <90-day storage areas
- RD&D areas

### **Inspections by External Regulatory Agencies**

#### **NMED and EPA inspections**

- Right to inspect at any given time
- No prior notification required
- Inspection of Laboratory files
- Written notices of violation (NOVs)
- Can result in fines and possible criminal charges

### **Inspections by External Nonregulatory Agencies**

#### **DOE and other nonregulatory agency inspections**

- Announce plans for inspection
- Give advance notice to Laboratory staff
- Follow-up in writing
- Cannot levy fines

### **Authority of External Inspectors**

#### **Regulatory agencies**

- Full authority to levy fines and civil and criminal charges

#### **Nonregulatory agencies**

- No legal authority
- As owner of the Laboratory, DOE has the right to shut down the Laboratory

### **Internal Inspections**

The Laboratory's record of internal inspection of hazardous waste storage areas is the primary target of audit review by external agencies

- ESH-19, the Hazardous and Solid Waste Group, conducts periodic inspections
- Audits and Assessments Office (AA) conducts periodic audits
- Designated facility inspectors conduct required RCRA daily/weekly inspections at various facilities
- Call ESH-19 for help with the Laboratory's inspection process

### **Who Can Be Designated to Perform Inspections?**

- Generator
- Waste management coordinators
- Section leaders
- Other TSD facility workers

### **Purpose of Inspection Record Form (IRF)**

- Laboratory form for RCRA inspections
- Reviewed by external inspectors/auditors
- Checklist for items to be inspected
- Documentation of problems to allow for immediate resolution
- Official documentation of inspection process
- Notation of corrective action taken

### **IRF Processing Requirements**

#### **Inspector**

- Use one form per week for both daily and weekly inspections
- Route a readable copy to ESH-19, MS K498, Attn: IRF
- Keep original IRF for three years
- Keep records orderly

#### **ESH-19**

- Houses all inspection record copies for use in Laboratory-wide review process and in response to problems resulting from inspections

# Module 2: Inspections

## HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM

1 FACILITY	2 <input type="checkbox"/> <90 DAY, GENERATOR STORAGE <input type="checkbox"/> TREATMENT, STORAGE, DISPOSAL	3 START DATE	4 END DATE
5 <input type="checkbox"/> Containers	<input type="checkbox"/> Landfill	<input type="checkbox"/> Surface Impoundment	<input type="checkbox"/> Waste Pile
<input type="checkbox"/> Incinerator	<input type="checkbox"/> Misc. Unit	<input type="checkbox"/> Tank	<input type="checkbox"/> UST
		<input type="checkbox"/> Thermal Treatment	<input type="checkbox"/> Chem/Phys/Bio. Treat.
		<input type="checkbox"/> Land Treatment	<input type="checkbox"/> Underground Inj.

PART I - Enter condition of item inspected (OK or AR\*) in column for day inspected.

ITEM	INSPECTED FOR	SUN	MON	TUE	WED	THU	FRI	SAT
6 NO USE	CHECK IF NO WASTE IS PRESENT							
7 (UN)LOADING AREA TANKS/CONTAINERS	SPILLS AND DETERIORATION							
8 COMMUNICATION EQUIPMENT (PHONE/RADIO/ALARMS)	PROPERLY FUNCTIONING							
9 TANKS (ALL ABOVE GROUND PORTIONS) MONITORING DATA	DISCHARGE CONTROLS CONDITION, LEAKS, LEVEL (6" FREEBOARD), CORROSION							
10 SURFACE IMPOUNDMENTS AND CONTAINMENT	FREEBOARD (2 ft) SUDDEN DROPS IN LEVEL							
11 PORTA BERM	LEAKS, CONDITION							
12 EYE WASH SAFETY SHOWERS	LEAKS, FUNCTIONING							
13 STRUCTURAL INTEGRITY OF CONTAINERS/TANKS, VALVES, PIPES, AND FLANGES	DETERIORATION AND LEAKS, CORROSION, DAMAGE							
14 COVER/LID OF CONTAINERS	CLOSED AND SECURED							
15 WARNING SIGNS	POSTED & READABLE (BILINGUAL)							
16 LABELS	"HAZARDOUS WASTE" PRESENT ON ALL CONTAINERS/TANKS							
17 ACCUMULATION START DATE	PRESENT ON ALL CONTAINERS, TANKS, NONE EXCEED TIME RESTRICTIONS							
18 RUN ON/OFF CONTROL (AREA L, G, H, P) LANDFILLS, DETONATION PADS	INTEGRITY, EROSION, PONDING							
19 COVER INTEGRITY (AREA L, G, H, P), LANDFILLS	EROSION, SUBSIDENCE, WATER INTRUSION							
20 SECURITY	CONDITION, FENCE/GATES/LOCKS							
21 SITE LIGHTING	FUNCTIONS PROPERLY							

Attachment 6-1  
Hazardous and Mixed Waste Facility Inspection Record Form

November 14, 1994

## Module 2: Inspections

### HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM

ITEM	INSPECTED FOR	SUN	MON	TUE	WED	THU	FRI	SAT
22 CONTAINMENT STRUCTURES	INTEGRITY, STANDING WATER, VEGETATION, EROSION							
23 AISLE SPACE, STACKING	ADEQUACY, APPROPRIATENESS							
24 MANAGEMENT OF CONTAINERS	SEGREGATED ACCORDING TO COMPATIBILITY							
25 HOSE BIBS, WATER SUPPLY	LEAKS, FUNCTIONING							
26 STORAGE SHEDS	FLOOR DAMAGE, LIQUID							
27 ROAD/WORK SURFACES	CRACKS/POTHoles							
28 WIND SOCK	DAMAGE, FUNCTIONING							
29 SHAFT COVER AND RAIL	PRESENT, DAMAGE							
30 PALLETS	INTEGRITY, DAMAGE							
31 TREATMENT TANKS	PROPER OPERATION, LEAKS							
32 REFRIGERATOR	DAMAGED CONTAINERS, PROPER OPERATION							
33 SPILL CONTROL, FIRE, AND EMERGENCY EQUIPMENT	PRESENT AND IN GOOD WORKING ORDER							
34 INCINERATOR EMERGENCY WASTE FEED CUTOFF/ALARMS	PROPER OPERATING CONDITION OF ALL SHUTDOWN CONTROLS							
35 INCINERATOR PUMPS, VALVES, PIPES, MONITORING CONTROLS	LEAKS/SPILLS/TAMPERING, OPERATING WITHIN SPECS.							
36 PRESSURE VESSELS (S-SITE)	DETERIORATION AND SAND CONDITION							
37 OIL BURN PANS (S-SITE)	DETERIORATION & LEAKS							
38 HE BURN PADS (S-SITE)	DETERIORATION, VEGETATION, SAND COND., EROSION							
39 RADIATION SAFETY	SIGNS, MONITORING ( $\alpha$ $\beta$ $\gamma$ $\text{H}$ )							
40 DATE	DATE OF INSPECTION							
41 TIME	TIME OF INSPECTION							
42 INSPECTOR	INITIALS OF INSPECTOR							

Attachment 6-1 (Continued)  
Hazardous and Mixed Waste Facility Inspection Record Form

November 14, 1994

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## Module 2: Inspections

### HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM

**PART II** - For any AR (Action Required) in PART I above, describe below: action required, action taken, date of action. Attach additional sheets if necessary.

<p>(Note: Items 43-48 must be completed for all inspections.)</p>				
<b>43 INSPECTOR</b> (Printed Name)	<b>45 Z NUMBER</b>	<b>46 GROUP</b>	<b>47 DATE</b>	<b>48 TIME</b>
<b>44 INSPECTOR</b> (Signature)				

Attachment 6-1 (Continued)  
Hazardous and Mixed Waste Facility Inspection Record Form

November 14, 1994

Document: Inspection Plan  
 Revision No.: 0  
 Date: April 2, 1992

TABLE 2

**INSPECTION SCHEDULE FOR EACH TYPE OF MIXED WASTE UNIT**  
 ALL INSPECTION REQUIREMENTS APPLY WHEN MIXED WASTE IS PRESENT AT THE UNIT.

UNIT TYPE	INSPECTION RECORD FORM
<b>CONTAINER STORAGE AREAS</b>	
DAILY for areas subject to spills and when new containers of mixed waste are placed in the storage area	Blocks 1-5, 7, 13, 14, 16, 22, 23, 38, 39-45
WEEKLY	Blocks 1-5, 7, 8, 11, 12, 13, 14, 15, 16, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31, 32, 38, 39-45
<b>TANKS</b>	
DAILY	Blocks 1-5, 7, 9, 13, 22, 32, 38, 39-45
WEEKLY	Blocks 1-5, 7, 8, 9, 12, 13, 15, 16, 20, 21, 22, 24, 26, 32, 38, 39-45
<b>SURFACE IMPOUNDMENTS</b>	
DAILY	Blocks 1-5, 10, 39-45
WEEKLY	Blocks 1-5, 8, 10, 15, 18, 20, 21, 22, 38, 39-45
<b>INCINERATOR</b>	
HOURLY when operating	Operating log entry
DAILY	Blocks 1-5, 7, 8, 9, 12, 13, 22, 33, 34, 38, 39-45
WEEKLY	Blocks 1-5, 7, 8, 9, 12, 13, 14, 15, 16, 20, 21, 22, 23, 26, 32, 33, 34, 38, 39-45
<b>THERMAL TREATMENT UNITS (HE MIXED WASTE DETONATION SITES)</b>	
DAILY	Blocks 1-5, 7, 8, 18, 38, 39-45
WEEKLY	Blocks 1-5, 7, 8, 15, 16, 18, 20, 21, 32, 38, 39-45
<b>CHEMICAL, PHYSICAL, AND BIOLOGICAL TREATMENT UNITS</b>	
DAILY	Blocks 1-5, 7, 9, 13, 38, 39-45
WEEKLY	Blocks 1-5, 7, 8, 9, 12, 13, 14, 15, 16, 20, 21, 22, 23, 32, 38, 39-45

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Inspection Schedule for Each Type of Mixed Waste Unit

### **Guidelines for Completing the IRF**

#### **General Information Section**

##### **1. Facility**

- Technical area
- Building
- Room number, if applicable
- Other descriptors may be necessary, such as TA-59-3-114 or TA-59-1-S Dock

##### **2. <90-Day, Generator Storage/Treatment, Storage, Disposal**

- Check <90-Day Generator Storage if location is intended for operation in accordance with generator requirements for storage of hazardous waste for less than 90 days
- Check Treatment, Storage, Disposal if location is listed in the Laboratory's Hazardous Waste Facility Permit or Part A or Part B of the Application as a permitted or interim status TSD facility operation

##### **3. Start Date**

- Enter date of the first inspection for the week
- Usually the first working day of the week

##### **4. End Date**

- Enter date of last inspection for the week
- Usually the last working day of the week
- If handling of hazardous waste occurs on the weekend where daily inspections are required, you must conduct weekend inspections

##### **5. Type of Unit**

- Check appropriate unit type
- Check several boxes when inspections for more than one unit type are combined on the form
- Reporting multiple unit types on one form must be preapproved by ESH-19

### **Guidelines for Completing the IRF (continued)**

#### **Part I**

#### **6. No Use**

- Check the box for each day or week that no hazardous waste was handled, stored, treated, or disposed of in the area being inspected
- For each day or week that the No Use box has been checked, leave boxes 7 through 39 blank
- Complete boxes 40 (Date), 41 (Time), and 42 (Inspector)
- If any hazardous waste is placed at the site for any reason, perform a full inspection immediately and continue daily inspections until all waste is properly disposed of

#### **7. (Un)Loading Area Tanks/Containers**

- Inspect asphalt pads, loading areas, and transfer areas daily, when in use
- Check for signs of damage or deterioration that may lead to an accident or spill

#### **8. Communication Equipment (Phone/Radio/Alarms)**

- Check that phones, radios, and alarms are working
- Consult with ESH-19 to identify equipment that should be at the site

#### **9. Tanks (All Above-Ground Portions) Monitoring Data**

- Inspect all aboveground portions daily (including ancillary plumbing) for
  - leakage
  - corrosion
  - deterioration
  - improper operation
- Check that tanks are operated with a minimum freeboard of 6 in.
- Check all controls and relevant data for proper operation within design specifications if the tank system includes
  - discharge controls
  - overtopping controls
  - tank level alarms
  - monitoring equipment
  - leak detection equipment

### **Guidelines for Completing the IRF (continued)**

#### **10. Surface Impoundments and Containment**

- Make sure surface impoundments are operating with a minimum of 24 in. (60 cm) of freeboard from the top of the dike or berm to the surface of the waste within
- Check dikes, berms, plumbing, and valves for signs of leaks, deterioration, or erosion
- Look for problematic signs including dying vegetation, gullies, and sudden changes in the environment

#### **11. Porta Berm (used as secondary containment for tanks and containers of hazardous waste)**

- Check for adequate inflation
- Check for presence of liquids indicating leaks or spills
- Check functions of monitoring and leak-detection systems

#### **12. Eye Wash Safety Showers**

- Check for proper operating conditions
- Check outside location for freezing conditions

#### **13. Structural Integrity of Containers/Tanks, Valves, Pipes, and Flanges (construction materials, seams, and auxiliary equipment)**

- Check for structural integrity
- Check for leaks, corrosion, or damage

#### **14. Cover/Lid of Containers**

- Check that lid is securely in place
- Container is not considered properly closed unless lid/cover is fastened according to manufacturer's specifications

### **Guidelines for Completing the IRF (continued)**

#### **15. Warning Signs**

- Check that required signs are readable and prominently posted
- TSD facilities must have the following signs:
  - Danger Unauthorized Personnel Keep Out (English/Spanish)
  - Hazardous Waste Storage Area
- <90-day storage areas must have the following signs:
  - Danger Unauthorized Personnel Keep Out (English/Spanish)
  - Hazardous Waste Storage Area

#### **16. Labels**

- Check that all containers and tanks are labeled Hazardous Waste and have waste descriptions on them
- Check that mixed waste also is labeled Radioactive

#### **17. Accumulation Start Date**

- For containers/tanks of hazardous waste in TSD facilities
  - ensure that containers without dates are dated upon arrival at the facility
- For containers/tanks of hazardous waste in <90-day storage areas
  - ensure that accumulation date is the date when waste is first received by the container
  - ensure that no container is stored in excess of 90 days from accumulation start date to the time of delivery to a permitted TSD facility
  - ensure that transportation is only by CST-17 or designated transporter

### **Guidelines for Completing the IRF (continued)**

#### **18. Run On/Off Control (Area L, G, H, P) Landfills, Detonation Pads**

- Inspect run on/off controls, wherever present
- Inspect the leach-collection systems, where present, for
  - proper operating condition
  - damage
  - erosion
  - containment migration and ponding
- Inspect detonator pads for
  - unburned or undetonated explosives, ordnance, or debris

#### **19. Cover Integrity (Area L, G, H, P) Landfills**

- Inspect at least weekly and after storms
- Check for
  - erosion
  - subsidence
  - water intrusion

#### **20. Security**

- Check gates, locks, and fences for
  - adequacy
  - proper condition

#### **21. Site Lighting**

- Check that lighting is adequate for night operation to take place within boundaries of hazardous waste unit
- Check that lighting is adequate to prevent accidents related to hazardous waste operations

### **Guidelines for Completing the IRF (continued)**

#### **22. Containment Structures**

- Check for proper operating condition
- Ensure that capacity is adequate for potential need
- Check for presence of standing water or hazardous waste
- For incinerators and certain TA-55 operations, inspect gloves, gloveboxes, hoods, and ventilation systems, where necessary

#### **23. Aisle Space, Stacking**

- Check for adequate space to allow for inspection and for the unobstructed movement of personnel and emergency equipment.
- Ensure that there is a minimum of 2 ft of aisle space between containers.
- Ensure that drums containing free liquids or hazardous waste (excluding mixed wastes) are not stacked over two drums high.

#### **24. Management of Containers**

- Check that containers holding incompatible hazardous materials are segregated
- Check that containers are separated by dikes, berms, or other physical barriers to prevent possible reaction

#### **25. Hose Bibs, Water Supply**

- At TSD facilities, ensure adequate water volume and pressure for fire protection
- Inspect hose bibs for proper operating condition and adequate pressure
- Check outside water supplies for freezing problems

#### **26. Storage Sheds**

- Inspect for damage
- Check for chemical compatibility
- Inspect for free liquids indicating leaks

#### **27. Road/Work Surfaces (process floors and other work surfaces)**

- Inspect for adequate secondary containment
- Inspect for damage or erosion that could lead to a spill or an accident

### **Guidelines for Completing the IRF (continued)**

#### **28. Wind Sock**

Where required, check for adequate operation

#### **29. Shaft Cover and Rail**

- Check covers of disposal shafts and retrievable storage shafts to ensure that they are securely in place
- Make sure guard rails are installed and in good condition

#### **30. Pallets**

Ensure that hazardous waste containers are stored on pallets if they are outside without a roof (TSD facilities and <90-day storage areas)

#### **31. Treatment Tanks**

- Inspect for leaks and damage before operation
- Ensure that tanks operate within design specifications, standard operating procedures, and work plans

#### **32. Refrigerator**

If used for storing samples or hazardous waste

- Inspect for proper operating condition
- Check for leaking or damaged containers stored inside

#### **33. Spill Control, Fire, and Emergency Equipment (TSD facilities and <90-day storage areas)**

- Check that fire and spill control equipment are adequate for types and volume of waste present
- Check that equipment is present, in good working condition, and appropriate for the material in question

#### **34. Incinerator Emergency Waste Feed Cutoff/Alarms**

Inspect for proper operating condition

#### **35. Incinerator Pumps, Valves, Pipes, Monitoring Controls**

- Inspect for proper working condition within design specifications
- Check for leaks, corrosion, spills, or evidence of tampering

### **Guidelines for Completing the IRF (continued)**

#### **36. Pressure Vessels (S-Site)**

- Check for signs of deterioration or damage
- Check condition of sand and loading area to ensure adequacy

#### **37. Oil Burn Pans (S-Site)**

- Inspect for deterioration, damage, or leaks
- Check for unburned explosives and debris

#### **38. HE Burn Pads (S-Site)**

- Inspect for deterioration, damage, or leaks
- Check for vegetation that might catch fire
- Check condition of sand
- Check for unburned explosives and debris

#### **39. Radiation Safety**

Make sure radioactive materials are stored within controlled areas and are labeled and placarded in accordance with AR 3-7, *Radiation Exposure Control*.

#### **40. Date**

Record the date of the daily inspection

#### **41. Time**

Record the time of the daily inspection

#### **42. Inspector**

Initial each daily inspection

### **Guidelines for Completing the IRF (continued)**

#### **Part II**

The inspector must note any difficulties next to the related fields on the IRF and explain in detail in Part II (on p. 3 of the IRF) any deficiencies noted in the inspection of the items above. Additional pages may be attached if necessary. Information must include

- type of problem
- action taken
- date and time of action taken

#### **43 Inspector (Printed Name)**

Print the inspector's name here

#### **44 Inspector (Signature)**

The inspector signs here

#### **45 Z Number**

Give the inspector's Z number

#### **46. Group**

Give the name of the group responsible for this location

#### **47. Date**

Record the date the record was completed and signed

#### **48. Time**

Record the time the record was completed and signed

## **Module 2: Inspections**

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### **Documenting Deficiencies**

RCRA regulations require all deficiencies found in the inspection process and all resulting corrective actions taken to be thoroughly and accurately documented on the IRF.

#### **Three types of documentation:**

- Individually inspected items (numbered fields)
- Part II of the IRF
- Additional documentation as required

### **Completing the Inspection Fields on the IRF**

#### **Write N/A (not applicable) for**

- Items not present in the inspection area at the time of inspection
- Items not inspected on a given day because the site was not considered to be in operation

#### **Write OK for**

- All items inspected on a given day for which no deficiencies were noted

#### **Write AR (action required) for**

- All items inspected on a given day for which a deficiency was noted
- Each subsequent inspection date until the deficiency has been corrected

### **Completing Part II of the IRF**

Additional documentation is required to clarify any ARs (actions required) noted in the individual inspection form fields

#### **Part II documentation must include**

- AR identifier (usually an assigned number for tracking)
- Date
- Time
- Description of the deficiency
- Description of action taken to correct the deficiency
- Inspector initials

#### **Additional documentation could include**

- Phone logs
- Work orders
- Small-job tickets
- Memos and letters

### **Correcting Deficiencies**

- Assess the situation
  - Threat to health
  - Threat to environment
  - Correct person to respond
- Take corrective action

## Module 2: Inspections

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### Sample Documentation for ARs Noted in the Inspection Process

(Field 16)                      AR -1                      7/26/93                      2:30 p.m.

"Hazardous waste" label missing from drum in the flammable area.  
Label was placed on drum immediately.

JG

(Field 7)                      AR-2                      7/27/93                      10:30 p.m.

Evidence of leak or spill on asphalt at loading dock. Appears to have soaked into asphalt. Work order sent to JCI to remove contaminated asphalt (see attached copy).

JG

AR-2                      7/28/93                      1:00 p.m.

Contaminated asphalt not removed yet. JCI says they will be here on Thursday (7/29/93) to remove.

JG

AR-2                      7/29/93                      2:00 p.m.

JCI replaced and evacuated contaminated asphalt at loading dock.

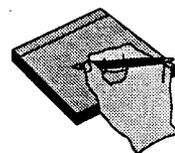
JG

**Slide Presentation:  
*Laboratory Examples***

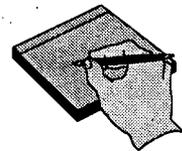
## Module 2: Inspections

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### Module 2 Student Self-Assessment



1. The three types of facilities that are subject to regular internal inspections under RCRA are
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
2. T F The New Mexico Environment Division (NMED) is required to give the Laboratory prior notice of an external inspection
3. An NOV is a \_\_\_\_\_
4. T F NOVs are usually accompanied by fines
5. T F The DOE can levy fines against the Laboratory for RCRA violations
6. T F The Laboratory's record of internal inspection is the primary source of audit review by external agencies, whether regulatory or nonregulatory
7. Questions regarding regulatory compliance with RCRA should be directed to \_\_\_\_\_
8. T F Waste management coordinators are the only workers who can be designated to perform internal RCRA inspections
9. T F ESH-19 keeps the original Inspection Record Form (IRF) and the generator keeps a copy of it
10. If a problem is detected during an internal inspection, the deficiency must be noted on the IRF; detail must include
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
11. The three main factors to be considered before corrective action is determined to remedy a noted deficiency are
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_



### **Module 2 Student Self-Assessment Answer Key**

1. TSD facilities, <90-day storage areas, RCRA-permitted RD&D areas
2. F
3. Notice of violation
4. T
5. F
6. T
7. ESH-19
8. F
9. F
10. Type of problem, action taken to correct problem, date and time action taken
11. Nature of the deficiency, threat to the environment, identification of response groups

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## **Module 3: Contingency Plan**

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### **In This Module**

Upon completion of module 3, you will be able to

- Identify Laboratory plans related to the management of hazardous and mixed waste
- Describe the purpose of the Laboratory's Contingency Plan
- Identify all the components of the plan
- List the conditions for implementation and activation of the plan and the activities required for follow-up to actions of the plan

### **Contingency Plan**

- Spells out requirements for all RCRA-permitted and interim status facilities
- Describes actions personnel must take to respond to fire, explosion, or unplanned sudden or nonsudden release of hazardous or mixed waste constituents to the air, soil, or surface water at the Laboratory
- Describes the arrangements agreed upon by local police and fire departments
- Lists provisions to be carried out immediately if there is a threat to human health or the environment

### **Spill Prevention, Control, and Countermeasures (SPCC) Plan**

- Designed to meet requirements for
  - Spill reporting
  - Spill prevention
  - Spill response
  - Spill cleanup
- Complements requirements of existing regulations pertaining to safety standards, fire protection, and pollution control
- Minimizes potential off-site oil and hazardous chemical discharges and provides a system for responding to and reporting spills
- Addresses inspection, maintenance, and training requirements

### **Emergency Management Plan**

- Describes the entire process for responding to and mitigating the potential consequences of an emergency
- Presents requirements, procedures, and information (coupled with building emergency plans) needed to ensure that any emergency at the Laboratory is mitigated in the most expeditious and effective manner
- Provides guidance to ensure safe Laboratory operation, and protection of health, the environment, and DOE property
- Assigns responsibilities in emergency response
- Guides in categorization and classification of emergencies
- Outlines emergency notification procedures
- Outlines assessment and evaluation of response to emergency situations
- Guides mitigation of hazardous materials consequences
- Outlines necessary training for emergency response personnel

### **Inspection Plans**

#### **Outline inspection requirements for**

- TSD facilities
- <90-day storage areas
- Mixed waste facilities

### **Waste Minimization/Pollution Prevention Awareness Plan**

- The Laboratory is mandated to have a plan in place to encourage generators to minimize waste
- Site-specific plans or standard operating procedures (SOPs) are required and must
  - Describe policy and procedures to be followed to ensure that waste is minimized to the maximum extent feasible
  - Describe process inputs and outflows with options for minimizing waste (can also be called a process waste assessment [PWA])
  - Describe specific techniques used to prevent pollution and minimize waste
  - Present successes in waste minimization/pollution prevention
  - Present future actions to ensure that waste minimization is continuous
  - Schedule periodic updates (at least annually) for the Waste Minimization Plan

### **Contingency Plan Details**

#### **Legal Drivers**

- New Mexico Hazardous Waste Management Regulations (NMHWMR)-6
- 40 CFR 264, 265, and 270

#### **Scope of Contingency Plan (for situations involving hazardous and mixed waste)**

- Planning
- Preparedness
- Response

#### **Contingency Plan Elements**

- Site description
- Emergency response resources
  - Internal
  - External
- Guidelines for implementation/activation
- Salvage and cleanup
- Post-Emergency Assessment
- Contingency Plan Amendment

#### **Description of the Laboratory site**

- Geographical location/description
- Principal mission of the Laboratory
- Definition of hazardous mixed waste
- Identification of hazardous and mixed waste units

### **The Contact Connection**



This sheet will help you remember the roles and responsibilities of key Laboratory personnel in responding to emergency situations involving hazardous or mixed waste. Write in the correct answer for each question in the space provided.

1. Which organization issues the Laboratory's Emergency Management Plan?
2. Which organization is responsible for closing public roads during an emergency?
3. Which organization maintains a medical facility with trained response staff at TA-3 and three satellite first aid stations at TA-53, TA-16, and TA-55?
4. Which organization maintains security at the Laboratory?
5. Which organization sets up the contamination control station at the scene of an emergency?
6. Which organization provides a 24-hour emergency manager?
7. Which organization provides fire protection and ambulance coverage for the communities of White Rock and Los Alamos, as well as for the Laboratory?

### **The Contact Connection (continued)**



8. Which designated individuals are assigned the responsibility of supporting waste generators to ensure that all hazardous wastes are correctly processed at the Laboratory?
  
9. Which organization aggressively mitigates chemical and mixed-waste emergencies?
  
10. Which organization participates in post-emergency cleanup under the direction of facility management and the Hazardous Materials (HAZMAT) Team?
  
11. Which organization evaluates radiological incidents?
  
12. Which organization provides respirators, self-contained breathing apparatus, and other personnel protective equipment?
  
13. Which organization provides guidance and assistance to Laboratory divisions for safety analysis documents and to Laboratory groups for facilities analysis?
  
14. Which organization coordinates the response to an emergency?

### **The Contact Connection (continued)**



15. Which organization determines whether injured personnel are to be treated at ESH-2 or at the Los Alamos Medical Center?
  
16. Which organization controls access to an emergency scene?
  
17. Which individuals are responsible for completing a spill report form when a hazardous material or waste is spilled at the Laboratory?
  
18. Who is responsible for completing the WPF?
  
19. Which organization is responsible for giving guidance regarding RCRA compliance issues?
  
20. Which organization provides guidance regarding the waste disposal process and the WAC?

### **Implementation of the Contingency Plan**

The decision to implement the Contingency Plan depends on whether or not an imminent or an actual incident involving the release of hazardous or mixed waste could threaten human health or the environment.

**The Contingency Plan should be implemented when any of the following conditions exist:**

#### **Spills**

- A hazardous or mixed waste spill cannot be contained with secondary containment or application of absorbents
- Precipitation threatens to move the material off site
- A hazardous or mixed waste spill causes the release of flammable material, creating a fire or explosion hazard
- A hazardous or mixed waste spill results in toxic fumes that threaten human health
- An earthquake or other natural disaster threatens containment integrity

#### **Explosions**

- An unplanned explosion involving mixed or hazardous waste material occurs
- An imminent danger exists that an explosion involving mixed or hazardous waste material could occur

#### **Fires**

- Any fire involving hazardous or mixed waste material
- Any building, grass, forest, or nonhazardous waste fire that threatens to volatilize or ignite hazardous or mixed waste

### **Emergency Notification**

If an emergency occurs during working hours, notify

- 911 or 7-6211 and
- Line management

If an emergency occurs during nonworking hours, notify

- 911 or 7-6211

See the Emergency Management Plan and the Contingency Plan for further details on the emergency notification process.

## Module 3: Contingency Plan

### Evacuation Determination and Reentry\*

Reason for Evacuation	Evacuation Determination By	Reentry Condition
fire	fire or evacuation alarm, group leader, alternate, lead engineer, senior staff member present, or emergency manager	following survey by the chief fire officer, ESH-1, ESH-10, and/or ESH-5, and R&D† supervision
explosion	same as above	same as above
loss of ventilation	group leader, alternate, senior staff member, lead engineer, or senior technician	following survey by ESH-1 and/or ESH-5 and R&D supervision
loss of electric power	same as above	same as above
extensive contamination	same as above or radiation monitor	same as above or ESH-10
airborne contamination	same as above or radiation monitor	same as above or ESH-10
escape or release of toxic or hazardous gas or fumes	group leader, alternate, senior staff member, lead engineer, senior technician, or emergency manager	same as above plus ESH-5 or ESH-10
bomb threat	EM&R or Protection Technology Los Alamos (PTLA) representative, R&D section leader, alternative, senior staff member, lead engineer, or emergency manager	following determination by EM&R or PTLA representative, and R&D supervision

\*All reentries are authorized by the incident commander

†R&D stands for Research and Development

## **Module 3: Contingency Plan**

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### **Salvage and Cleanup**

#### **Requirements**

- Visual inspection
- Sampling for existing hazards
- Decontamination

When emergency has been mitigated successfully, the incident commander will turn the remainder of the duties over to line management.

#### **Line manager's responsibilities**

- Proper handling of recoverable waste
- Cleanup—make sure incompatible wastes are not stored together
- Clean/decontaminate emergency equipment
- Visually inspect and sample equipment

### **Post-Emergency Assessment**

#### **Reason for assessment**

- Identify the cause of the emergency
- Evaluate the effectiveness of response

### **Emergency Response Reporting Requirements**

- Report in 15 days to DOE, NMED, and AA
- Affected section or group leaders must submit a report to include
  - Time of the incident
  - Date of the incident
  - Full description of the incident
  - Response measures

### **Contingency Plan Amendment**

The Contingency Plan must be revised by EM&R and ESH staff when

- Permit is revised
- Significant change is made in the design or operation of the facility
- Emergency managers change
- Drills and demonstrations prove to be inadequate
- Activation implementation proves to be inadequate

## **Module 3: Contingency Plan**

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### **Group Activity: Contingency Plan Module**

#### **Directions**

1. Read the scenario for the group activity
2. Read the Background Information Packet that contains information from the Contingency Plan that you need to know for the group activity
3. Using the information you have received in this course and the Background Information Packet, work together as a group to answer the case scenario questions
4. Select a representative from your group to share your group's answers with the entire class

#### **Scenario**

You encounter a fire in a hazardous waste storage area. The conditions in the area are as follows:

- A 55 gal. drum has burst (top of drum has split around top seam)
- The drum has caught fire (flames are visible)
- Contents of the drum are contained in a secondary containment area
- Two drums located nearby have not reacted in any way (they are not upright)
- Drums are located in an area where a "flammable" sign is posted
- The incident was first discovered at 3:00 p.m.
- An unconscious person is lying on the ground about 30 ft from the drums (the person is not on fire)

#### **Activity**

Work together as a group to identify the appropriate response to this emergency. Complete the answers to the scenario questions and be ready to discuss your ideas with the class at the end of this exercise.

### **Group Activity: Background Information Packet**

#### **Emergency Central Alarm Station**

The Central Alarm Station (CAS) is located at TA 64-1 at the Central Guard Facility. The station is manned by PTLA personnel 24 hours a day and is equipped with telephones, radios, a National Warning System (NAWAS), and an emergency power station.

All Laboratory alarms (fire and security) are connected to this station. Each 911 call made from a 667 or 665 Laboratory prefix number routes to CAS.

The CAS operator alerts PTLA, the LAFD, the LAPD, and the duty emergency manager. The emergency manager will request other Laboratory resources as required.

#### **Emergency Notification**

Immediately upon discovery of an imminent or an actual incident involving hazardous or mixed waste, on-site personnel will

In case of a fire

- Dial 911 or
- Pull a manual fire pull box alarm

During working hours, notify

- Line management (group leader) and
- EM&R Office at 7-6211

During nonworking hours, notify

- The duty emergency manager at 7-7080 or
- The CAS operator at 7-7080

In addition, automatic fire alarms will provide notification to CAS (all fire alarms alert this station), which notifies the LAFD and PTLA. For fires involving hazardous and mixed waste, the CAS operator will contact the duty emergency manager.

### **Group Activity: Background Information Packet (continued)**

#### **Contingency Plan Implementation**

The Contingency Plan will be implemented by the duty emergency manager in the following situations involving hazardous and mixed waste:

##### **Spills**

- A hazardous or mixed waste spill cannot be contained with secondary containment or application of absorbents
- Precipitation threatens to move the material off site
- A hazardous or mixed waste spill causes the release of flammable material, creating a fire or explosion hazard
- A hazardous or mixed waste spill results in toxic fumes that threaten human health
- An earthquake or other natural disaster threatens containment integrity

##### **Explosions**

- An unplanned explosion involving mixed or hazardous waste material occurs
- An imminent danger exists that an explosion involving mixed or hazardous waste material could occur

##### **Fires**

- Any fire involving hazardous or mixed waste material
- Any building, grass, forest, or nonhazardous waste fire that threatens to volatilize or ignite hazardous or mixed waste

### **Group Activity: Background Information Packet (continued)**

#### **Contingency Plan Implementation**

##### **Spills**

Sudden releases include spills of hazardous or mixed waste that pose a significant threat to human health or the environment. Spill incidents resulting in a sudden release of hazardous or mixed waste to the environment that cannot be contained or that presents a threat to human health or the environment require implementation of the Contingency Plan.

The steps to be taken for spill mitigation will be determined by the incident commander with input from the Hazardous Materials Group Supervisor and the environmental management advisor. The duty emergency manager assumes incident command and will remain near the site to inform the personnel responding of the known hazards.

##### **Explosion**

A sudden release caused by an explosion may result in a significant threat to human health or the environment. The potential exists for hazardous or mixed waste to be released during an explosion. Implementation of the Contingency Plan is required when a sudden release that cannot be contained or that presents a threat to human health or the environment occurs as a result of an explosion.

In the case of an explosion, all personnel will immediately evacuate the area. Any injured personnel may be decontaminated in the field, if required and if time allows, and transported by the LAFD ambulance to the ESH-2 Occupational Medicine facility or to LAMC. If an injury is severe and requires immediate medical evacuation, the injured person will be wrapped to contain contamination prior to transporting. The EM&R Office must be notified immediately upon notification of CAS. The duty emergency manager then will ensure that all necessary emergency response personnel are alerted. The duty emergency manager assumes incident command and will remain near the site, but at a safe distance, to inform the personnel responding to the explosion of the known hazards.

### **Group Activity: Background Information Packet (continued)**

#### **Contingency Plan Implementation**

##### **Fires**

Implementation of the Contingency Plan is required when a fire incident results in a sudden release of hazardous or mixed waste that cannot be contained or that presents a threat to human health or the environment.

Depending on the size of the fire and the fuel source, portable fire extinguishers may be used by trained personnel. However, Laboratory policy discourages the use of portable fire extinguishers by employees and encourages immediate evacuation of the area and notification of the LAFD. Fire alarms will notify CAS, which will alert all necessary emergency response personnel. The duty emergency manager will become the incident commander and will remain near the scene to advise the personnel responding to the fire of the known hazards. The emergency manager is familiar with spill response and emergency actions and, therefore, is qualified to advise fire-fighting personnel of the potential hazards involved.

##### **Exposure to Hazardous or Mixed Waste**

If a person is exposed to hazardous or mixed waste, the affected person, a coworker, or a line manager will notify the EM&R Office. The duty emergency manager will notify ESH-10.

Chemical material in the eye or on the skin will be washed with the entire contents of a portable eyewash station, or for at least 15 minutes. The eyelids will be held open during washing if possible. The injured person then will be quickly transported to LAMC or to the ESH-2 Occupational Medicine facility. If possible, the material involved in the injury will be determined and the information given to the medical staff.

Other hazardous or mixed waste exposures will necessitate evacuation under any of the following conditions:

- Irritation of the eyes, breathing passages, or skin
- Difficulty in breathing
- Nausea, light-headedness, vertigo, or blurred vision
- Unconsciousness

The affected person will be transported to the ESH-2 Occupational Medicine facility and an ESH-1, ESH-5, or ESH-10 representative will attempt to determine what type of exposure occurred and the collective measures to be taken. The duty emergency manager assumes incident command and will remain near the site to inform the personnel responding of the known hazards.

### **Group Activity: Background Information Packet (continued)**

#### **Contingency Plan Implementation**

##### **Emergency Response Records and Reports**

The details of any incident that requires implementation of the Contingency Plan must be recorded by the responsible group or section leader for the unit. This incident report must include the time, the date, and a full description of the incident.

Any emergency that requires implementation of the Contingency Plan will be reported in writing within 15 days to NMED. The report, submitted by DOE Los Alamos Area Office, will include the following:

- Name, address, and telephone number of the operator of the unit where the incident occurred
- Name, address, and telephone number of the facility
- Date, time, and type of incident (e.g., fire, explosion, spill)
- Name of material involved in incident
- Quantity of material involved in incident
- Extent of injuries, if any
- Assessment of actual or potential hazards to human health or the environment
- Estimated quantity and disposition of material recovered from the incident

## **Module 3: Contingency Plan**

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### **Group Activity: Contingency Plan Scenario Questions**

1. Would the Contingency Plan be implemented in this situation? \_\_\_\_\_

2. If yes, list all of the reasons why it should be implemented

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3. Would you respond with a fire extinguisher? Why or why not?

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4. What is the very first thing you should do in response to this incident?

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5. Who is in charge of coordinating the emergency response to this incident? \_\_\_\_\_

6. Why is this individual qualified to advise personnel of the hazards involved?

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7. What happens when the fire alarm is activated or you report the incident by calling 911?

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8. Who is alerted as the result of your call to 911 or to the activation of a fire alarm?

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**Group Activity: Contingency Plan Scenario Questions**

9. What would you do about the unconscious person?

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10. How could the contents of the affected drums be determined?

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11. What conditions would indicate exposure of the individuals in the area?

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12. Suppose you are the line manager responsible for providing a written report of the incident. What information must be in the Incident Report?

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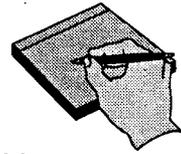
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## Module 3: Contingency Plan

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### Module 3 Student Self-Assessment



1. The \_\_\_\_\_ Plan addresses broad issues involving all manner of incidents and emergencies, including hazardous releases, radioactive releases, high-energy accidents, spill response, etc.
2. The \_\_\_\_\_ Plan emphasizes planning preparedness and response to situations involving waste containing hazardous constituents
3. \_\_\_\_\_ is responsible for coordinating a response to an emergency that occurs at the Laboratory
4. Name at least two situations in which a spill has occurred that require implementation of the Contingency Plan
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
5. After an emergency has occurred, the \_\_\_\_\_ is responsible for making sure emergency equipment is cleaned and decontaminated
6. The twofold purpose of a Post-Emergency Assessment is
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_

### **Module 3 Student Self-Assessment Answer Key**

1. Emergency Management
2. Contingency
3. EM&R
4. Any of the following:
  - A hazardous or mixed waste spill cannot be contained with secondary containment or absorbents
  - Precipitation threatens to move the material off site
  - A hazardous or mixed waste spill causes the release of flammable material
  - A hazardous or mixed waste spill results in toxic fumes
  - An earthquake or other natural disaster threatens containment integrity
5. line manager
6. Identify the cause, evaluate response effectiveness



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# Introduction

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## Course Objectives



When you have completed Resource Conservation and Recovery Act (RCRA) Refresher Training, you will be able to

- recognize Lab-wide and site-specific training requirements for RCRA facility workers;
- recognize state and federal regulations and Laboratory policies regulating the Laboratory Hazardous and Mixed Waste Program and identify any changes or updates to these regulations that impact RCRA facility workers;
- recognize the importance of compliance with state and federal regulations and the recent Laboratory policy and procedural changes that hold individuals and line organizations accountable for compliance;
- recognize the purpose and importance of the inspection process and the methods for conducting formal and informal inspections of RCRA-regulated facilities;
- recognize Laboratory policies, plans, and resources for managing emergencies in RCRA-regulated facilities;
- identify lessons learned from several incidents and propose corrective actions to mitigate the hazards involved in those incidents; and
- identify waste management roles and responsibilities at the Laboratory, waste definitions, waste storage requirements, Laboratory plans that impact waste management, and pollution prevention and waste minimization methods.

### Acronyms

AR	administrative requirement
BUS	Business Operations Division
CAS	central alarm station
CFC	chlorofluorocarbon
CFR	Code of Federal Regulations
CPR	cardiopulmonary resuscitation
DoD	Department of Defense
DOE	Department of Energy
DOT	Department of Transportation
DP	Director's Policy
DP (DOE)	Office of Defense Programs (DOE)
DTG	designated training generalist
EDS	Employee Development System
EM	Environmental Management (Program)
EM/ESO	Environmental Stewardship Office
EM/SWO	Solid Waste Operations
EM/WM	Waste Management Program
EM&R	Emergency Management and Response
EPA	Environmental Protection Agency
ESH	Environment, Safety, and Health (Division)
ESH-1	Health Physics Operations Group
ESH-2	Occupational Medicine Group
ESH-10	Hazardous Materials Response Group
ESH-13	ES&H Training Group
ESH-19	Hazardous and Solid Waste Group
ES&H	environment, safety, and health
FSR	field service representative
GWCP	Generator Waste Certification Program
HAZMAT	hazardous materials
HAZWOPER	hazardous waste operations and emergency response
HCP	hazard control plan
HMPT	hazardous materials packaging and transportation

### Acronyms—continued

HMTA	Hazardous Materials Transportation Act
HSWA	Hazardous and Solid Waste Amendments
IRF	Inspection Record Form
ISM	Integrated Safety Management
JCNNM	Johnson Controls Northern New Mexico
LAFD	Los Alamos Fire Department
LANL	Los Alamos National Laboratory
LAPD	Los Alamos Police Department
LC	Laboratory Counsel
LDR	land disposal restriction
LIG	Laboratory implementation guidance
LIR	Laboratory implementation requirements
LP	Laboratory procedure
LPR	Laboratory performance requirement
LS	Laboratory standard
MSDS	material safety data sheet
NEPA	National Environmental Policy Act
Ni-Cad	nickel-cadmium
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
OIC	office of institutional coordination
PCB	polychlorinated biphenyl
PDF	portable document format
PEL	permissible exposure limit
PNNL	Pacific Northwest National Laboratory
ppm	parts per million
PRS	potential release site
PTLA	Protection Technology Los Alamos
QA	quality assurance
RCA	Radiological Controlled Area
RCRA	Resource Conservation and Recovery Act

### Acronyms—continued

SAA	satellite accumulation area
TA	technical area
TP	training plan
TRU	transuranic
TSCA	Toxic Substances Control Act
TSD	treatment, storage, and disposal
TSDF	treatment, storage, and disposal facility
TWSR	TRU Waste Storage Record
UC	University of California
URL	uniform resource locator
WAC	waste acceptance criteria
WMC	waste management coordinator
WPF	waste profile form

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# Module 1: Training Requirements

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## Purpose of this Module



RCRA personnel—treatment, storage, and disposal (TSD) workers; <90-day accumulation area workers; universal waste area workers; and satellite accumulation area (SAA) workers—must meet certain training requirements to be in compliance with state and federal laws and regulations, the Laboratory Hazardous Waste Facility Permit, and Laboratory waste management policies. This module addresses these training requirements.

## In this Module

This module includes the following topics:

- importance of training,
- types of training for RCRA facility workers, and
- RCRA training plans.

### Importance of Training

Training is an integral part of the Laboratory Environment, Safety, and Health (ES&H) Program. Treatment, storage, and disposal facility (TSDF) and <90-day accumulation area workers have special training needs because of potential exposure to hazardous and mixed wastes in the course of day-to-day operations.

You must know your job-specific training requirements and attend all required training as specified by your line manager and/or designated training generalist (DTG).

### Types of Training

The three types of training you need to know about are

- Lab-wide training,
- general RCRA training, and
- RCRA site-specific training.

#### Lab-Wide Training

Lab-wide ES&H training requirements are specified in the *Environment, Safety, and Health Course Catalog*. Lab-wide training courses are general in nature and usually apply to all Laboratory workers regardless of their location of work. An example of this type of training is Radiological Worker Training.

You may enroll in Lab-wide ES&H training offered by the ES&H Training Group (ESH-13) by doing one of the following:

- call the ESH-13 registrar at 7-0059,
- e-mail the ESH-13 registrar at *esh-registration@lanl.gov*, or
- register online at the following URL:

*[http://eshtraining.lanl.gov/gencouraxs/owa/reg\\_welcome](http://eshtraining.lanl.gov/gencouraxs/owa/reg_welcome)* .

## Module 1: Training Requirements

### Types of Training—continued

#### General RCRA Training

RCRA facility workers are required to take the courses listed in the table below to comply with state and federal laws and regulations as well as Laboratory policy. RCRA facility workers include TSD and <90-day accumulation area workers.

Course Name	Course Number	Content
<i>Hazard Communication Introduction</i>	2398	<ul style="list-style-type: none"><li>• regulatory overview</li><li>• recognition, evaluation, and control of chemical hazards</li><li>• material safety data sheets (MSDSs)</li><li>• labeling</li></ul>
<i>Waste Generation Overview*</i>	8477	<ul style="list-style-type: none"><li>• regulatory overview</li><li>• waste characterization</li><li>• waste management process</li><li>• temporary accumulation areas</li></ul>
<i>RCRA Personnel Training†</i>	7488	<ul style="list-style-type: none"><li>• laws and regulations</li><li>• RCRA provisions</li><li>• RCRA inspections</li><li>• Hazardous and Mixed Waste Contingency Plan</li></ul>
<i>RCRA Refresher Training‡</i> (annual retraining required)	9581	<ul style="list-style-type: none"><li>• updates</li><li>• refresher activities</li></ul>

\*Waste Generation Overview is a prerequisite to RCRA Personnel Training.

†RCRA Personnel Training is a prerequisite to RCRA Refresher Training. There are no equivalencies for either RCRA Personnel Training or RCRA Refresher Training.

‡RCRA Refresher Training is included as part of the 8-hour HAZWOPER: Refresher for TSD Workers (#9575) training course. Completion of this course fulfills the annual refresher requirements for both RCRA and hazardous waste operations and emergency response activities.

### Types of Training—continued

#### Waste Generation Overview

ESH-13 has developed a series of four self-studies that you may take instead of Waste Generation Overview. To receive credit for each self-study, you must take a quiz and score 80% or better. To receive credit for Waste Generation Overview, you must successfully complete the following four self-studies:

- *Environmental Regulations Overview* (course #11492),
- *Waste Characterization Overview* (course #11490),
- *Waste Management Overview* (course #11494), and
- *Waste Storage and Disposal Overview* (course #11493).

You may obtain the self-studies by calling the ESH-13 registrar at 7-0059.

**Note:** *SAA and universal waste area workers are required to take Waste Generation Overview and Hazard Communication Introduction. The other courses listed in the table are recommended, but are not required, for SAA and universal waste area workers.*

#### **RCRA Site-Specific Training**

RCRA facility workers are required by law to have special site-specific training. The content and the method of delivery for this training may vary from site to site because the particular hazards and the types of waste handled vary as well. Consult your supervisor if you have not had training on the topics listed below.

Required topics for RCRA site-specific training include the following:

- emergency response procedures (contingency plan),
- emergency communication equipment (telephones and alarm systems),
- emergency evacuation procedures,
- emergency equipment (spill kits and eye washes),
- inspection requirements,
- hazard control plans (HCPs), and
- security.

Consult your DTG and the *Environment, Safety, and Health Course Catalog* for information about additional training requirements for your job assignment.

## Module 1: Training Requirements

### RCRA Training Plans

The Employee Development System (EDS) is the official database for tracking Laboratory worker training. Only the sponsoring organization can grant credit for course completion. Once credit is granted, EDS records indicate the course name, course number, date taken, and workers who completed training during that session.

Training plans outline training requirements for individual job functions. The plans are particularly useful when a particular job function has multiple training requirements and/or requires recurrent training. Training plans indicate the courses that workers must complete to meet part or all of the training requirements for a job function. The plans also track initial and recurrent training requirements and can be set to automatically notify workers when recurrent training is coming due. Training plans administered by ESH-13 are set to automatically send out notices 60 days prior to training expiration dates and again on the day the training expires.

#### Training Plans and the Laboratory Hazardous Waste Facility Permit

The requirements in the four training plans listed in the table below are stipulated in the Laboratory Hazardous Waste Facility Permit.

Training Plan	Description
TSDF Hazardous and Mixed Waste Workers (TP 256)	Lab-wide training requirements for those individuals who work at a TSDF and, in accordance with the Code of Federal Regulations 40 CFR 264–265 and/or the permit or permit application, are assigned to handle or manage hazardous and/or mixed wastes, to have record-keeping responsibilities, to assist in spill cleanup, etc.
<i>Supervisor of TSDF Hazardous and Mixed Waste Workers (TP 299)</i>	Lab-wide training requirements for those individuals who manage or supervise personnel at TSDFs to ensure compliance with 40 CFR 264–265 and the RCRA permit or permit application
<i>RCRA Emergency Responder (TP 294)</i>	Lab-wide training required for those individuals who respond, as members of the hazardous materials (HAZMAT) Team, to emergencies such as spills, fires, and explosions that involve hazardous and/or mixed waste TSDFs
<i>Uncontrolled Area Potential Release Site (PRS) Worker (TP 296)</i>	Lab-wide training required for those individuals who work at a PRS and are responsible for waste characterization or general waste management from waste generation to disposal

### RCRA Training Plans—continued

#### Additional Waste Management Training Plans

Several additional waste management training plans address training requirements that are not covered in the Laboratory Hazardous Waste Facility Permit.

Training Plan	Description
<i>Less-Than-90-Day Accumulation Area Worker Training (TP 293)</i>	Lab-wide training for those individuals who are responsible for a <90-day accumulation area or who manage hazardous wastes covered by the generator standards in Laboratory Implementation Requirement (LIR) 404-00-03 and/or 40 CFR 262.34 and/or 265.16, including waste characterization, management, and handling
<i>Satellite Accumulation Area Worker (TP 295)</i>	Lab-wide training required for those individuals who are responsible for an SAA and/or who characterize, store, handle or otherwise manage hazardous waste in an SAA
<i>Hazardous Waste Generator (TP 2810)</i>	training requirements for those individuals whose work involves the creation of hazardous waste as defined by RCRA
<i>Waste Management Coordinator (TP 135)</i>	minimal training requirements for Los Alamos National Laboratory (LANL) waste management coordinators (WMCs)
<i>Spill Coordinator Training Requirements (TP 134)</i>	training requirements for spill coordinators in fulfillment of Department of Energy (DOE) Order 9500.3A, 40 CFR 112 and 125, and 29 CFR 1910.120(q)

#### Training plan compliance

EDS training plans are designed to help workers and managers determine whether the worker covered by the training plan has completed and maintained the training required for a specific job function. Training plans indicate the courses that workers must complete to fulfill their training requirements and the frequency with which workers must retake the courses to meet recurrent training requirements, if any. Training plans also indicate courses that provide equivalent training to the required courses. Workers may be out of compliance with training plan requirements if

- the worker is not entered into the training plan,
- the training plan is incomplete, or
- the training plan has expired.

## **Module 1: Training Requirements**

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### **RCRA Training Plans—continued**

***Note:** Workers who are no longer performing a job function covered by a training plan and who do not intend to maintain the training required by that training plan should ask their DTG to remove them from that training plan.*

Workers may access their training records through Data Warehouse or seek assistance from their DTG.

## Module 1: Training Requirements

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Notes . . .



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## Module 2: Waste Management Regulations and Policies

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### Purpose of this Module



To be in compliance with state and federal laws and Laboratory policy, you must be informed of changes that could impact your work assignments. This module reviews regulations and Laboratory policies governing the Laboratory Hazardous Waste Management Program and addresses pertinent changes that may affect you in your role as a RCRA facility worker.

### In this Module

This module includes the following topics:

- hazardous waste management state and federal regulations,
- hazardous waste management and DOE orders,
- Laboratory Hazardous Waste Facility Permit,
- University of California (UC)/DOE Contract,
- Laboratory policies and procedures, and
- additional Laboratory waste management information.

**Hazardous Waste Management State and Federal Regulations**

New Mexico laws governing hazardous waste are equivalent to or parallel to federal laws. If provisions of a federal law have been violated, the chances are that a state law has also been violated. The Environmental Protection Agency (EPA) has authorized the State of New Mexico to implement the federal law, that is, the CFR, at the state level. The table below lists the primary state and federal regulations as well as a description of their content and applicability.

Regulation	Description
State	
New Mexico Hazardous Waste Regulations  20 New Mexico Administrative Code (NMAC) Part 4.1  (Adopts 40 CFR 260–270)	<ul style="list-style-type: none"> <li>• establishes guidelines for issuing the Laboratory RCRA Permit</li> <li>• specifies generator responsibilities, including                             <ul style="list-style-type: none"> <li>— RCRA training requirements</li> <li>— waste identification and characterization</li> <li>— waste stream documentation requirements</li> <li>— preparation of shipping manifests for transportation</li> </ul> </li> </ul>
Federal	
RCRA  40 CFR 260–280	establishes directives and guidance for the EPA to regulate solid and hazardous waste management and disposal, including <ul style="list-style-type: none"> <li>• hazardous waste characterization and classification</li> <li>• generator, transporter, and owner/operator standards</li> <li>• cradle-to-grave manifesting</li> <li>• permitting</li> <li>• interim status</li> <li>• state enforcement program authorization</li> <li>• land disposal restriction (LDR) standards</li> </ul>
Hazardous and Solid Waste Amendments (HSWA)	require corrective action cleanup of releases
Toxic Substances Control Act (TSCA)  40 CFR 761	regulates the management and disposal of <ul style="list-style-type: none"> <li>• polychlorinated biphenyls (PCBs)</li> <li>• asbestos</li> <li>• other toxic materials</li> </ul>
Hazardous Materials Transportation Act (HMTA)  49 CFR 171–180	requires generators who transport hazardous and mixed wastes to follow regulations for <ul style="list-style-type: none"> <li>• packaging waste</li> <li>• selecting container type</li> <li>• selecting container size and strength</li> </ul>

**Hazardous Waste Management State and Federal Regulations**  
**—continued**

**Universal Waste**

In May 1995, a regulation went into effect that streamlines the collection and management of certain widely generated wastes. These wastes have been labeled *universal wastes*.

The regulation, contained in 40 CFR 273, eased the regulatory requirements imposed on the waste generator for the management of universal waste by changing storage requirements and facilitating the recycling process. In response to this new regulation, the Laboratory issued a Universal Waste Policy in April 1996.

The waste types listed in the table below have been designated as universal wastes and are subject to universal-waste regulations.

<b>Waste Type</b>	<b>Regulation</b>	<b>Description</b>
battery	40 CFR 273.2	a device consisting of one or more electrically connected electrochemical cells designed to receive, store, and deliver electric energy (An electrochemical cell consists of an anode, a cathode, and an electrolyte, plus such connections [electrical and mechanical] that allow the cell to deliver or receive electrical energy.); includes an intact, unbroken battery from which the electrolyte has been removed
pesticide	40 CFR 273.3	any substance or mixture of substances intended to prevent, destroy, repel, or mitigate any pests or intended for use as a plant regulator, defoliant, or desiccant
thermostat	40 CFR 273.4	a temperature-control device that contains metallic mercury in an ampule attached to a bimetal sensing element; includes mercury-containing ampules that have been removed from these control devices in compliance with 40 CFR 272.12(c)(2) or 273.33(c)(2)

**Note:** You may find the Laboratory Universal Waste Policy, including storage requirements, at the following URL:

<http://drambuie.lanl.gov/~esh19/programs/assessments/index.html> .

### **Hazardous Waste Management State and Federal Regulations —continued**

#### **Organic Air Emission Standards**

RCRA (40 CFR, Parts 264–265, Subpart CC) requires the Laboratory to implement new standards for volatile organic air emissions caused by hazardous waste management operations. Subpart CC is intended to reduce vapors from hazardous wastes containing bulk or small quantities of volatile organics such as, toluene, methylene chloride, methyl ethyl ketone, acetone, benzene, trichloroethylene, or chloroform.

To meet Subpart CC requirements for waste containers, other than tanks and impoundments, use containers that meet Department of Transportation (DOT) regulations for the packaging of hazardous materials for transportation. Keep the containers securely closed except when it is necessary to

- add material,
- remove material, or
- perform routine activities.

After completing any of these operations, immediately close and inspect the containers to ensure that they are in good condition and operating as designed.

Special provisions apply to containers that have spring-loaded vents designed to regulate internal pressure and to containers with safety devices.

### Hazardous Waste Management and DOE Orders

DOE has the authority to shut down Laboratory operations that are not in environmental compliance. The table below lists applicable DOE orders and a description of their content.

DOE Order	Description
5400.1, <i>General Environmental Protection Program</i> (except Chapter 2, paragraphs 2, 4.d, and 5)	requires the Laboratory to <ul style="list-style-type: none"><li>• implement waste minimization and pollution prevention programs</li><li>• comply with federal and state environmental regulations, including 40 CFR 240–280 and state regulations in those states granted primacy by the EPA</li></ul>
5820.2A, <i>Radioactive Waste Management</i>	establishes minimum requirements for managing radioactive and mixed wastes

DOE orders are adopted through Appendix G of the UC/DOE Contract and the Work Smart Standards. The orders are implemented through Laboratory policy documents, including Laboratory performance requirements (LPRs) and LIRs.

### Laboratory Hazardous Waste Facility Permit

RCRA and 20 NMAC 4.1 require the Laboratory to have a permit to operate its TSDFs. All hazardous waste units have been permitted to operate by the New Mexico Environment Department (NMED) through the Laboratory Hazardous Waste Facility Permit of 1989. Recently, the NMED added several mixed waste units to that permit. The open burning/open detonation units and other mixed waste units are currently operating under interim status until they can be fully permitted.

The Laboratory permit identifies administrative and technical standards for facility operation. The Laboratory must meet the conditions of the permit or be subject to NMED fines, penalties, and compliance orders. Operating requirements for interim status units are established in 40 CFR 265.

### Laboratory Hazardous Waste Facility Permit—continued

#### Permit Modifications

If any new waste types are to be accepted, treated, or stored or if any new equipment or structures are to be purchased, relocated, or removed from the area, the Hazardous Waste Facility Permit must be modified. The permit must also be modified before a new TSD waste management unit may begin operations. The need for permit modification should be identified as early as possible in the unit or operations design process because of the length of time needed to prepare the permit application and complete the NMED review process.

#### Permit Renewal

The Laboratory Hazardous Waste Facility Permit must be renewed every 10 years. The renewal process enables both the State of New Mexico and the Laboratory to reassess waste management performance and existing requirements. The process also provides an opportunity for making major changes to the permit. Laboratory personnel have reviewed the existing permit and have submitted their suggestions to the State in the form of a proposed permit. Key points include

- removal of the Inspection Record Form (IRF) from the permit,
- reduction in the number of training requirements, and
- less-specific designation of emergency response equipment.

#### UC/DOE Contract

The Laboratory is administered by the University of California under contract to DOE. Clause 5.5 (*Laws, Regulations, and DOE Directives*) of the UC/DOE Contract stipulates that “the Contractor shall comply with the requirements of applicable federal, state, and local laws and regulations, unless relief has been granted in writing by the appropriate regulatory agency.”

Applicable DOE directives are listed in Appendix G of the UC/DOE Contract. Upon approval by DOE, these directives may be replaced, in whole or in part, by “an appropriately tailored set of standards, practices, and controls” based on an evaluation of the work and associated hazards. This process results in Work Smart Standards, which are implemented through Laboratory policy statements.

### UC/DOE Contract—continued

Waste minimization/pollution prevention is an important part of the UC/DOE Contract. In particular, Appendix F of the contract stipulates target goals for minimizing the generation of routine hazardous waste. Laboratory progress in meeting this goal is tracked by the Environmental Stewardship Office (EM/ESO) and plotted at the following URL:

<http://emeso.lanl.gov/projects/hazardous> .

### Laboratory Policies and Procedures

The Laboratory has written requirements to carry out the federal and state laws that apply to hazardous and mixed wastes. These requirements are outlined in Laboratory administrative requirements (ARs), Laboratory standards (LSs), and LIRs. These requirements are supplemented by Laboratory implementation guidance (LIG) documents.

The documents that impact Laboratory waste management operations are listed in the table below.

Requirement	Title
AR 10-6	<i>Excess Government Personal Property</i>
LIR404-00-01	<i>Waste Acceptance, Characterization, and Certification Program</i>
LIR404-00-02	<i>General Waste Management Requirements</i>
LIR404-00-03	<i>Hazardous and Mixed Waste Requirements for Generators</i>
LIR404-00-04	<i>Managing Solid Waste</i>
LIR404-00-05	<i>Managing Radioactive Waste</i>
LIR404-00-06	<i>Managing Polychlorinated Biphenyls</i>
LIR402-704-01	<i>Contamination Control</i>
LIR405-10-01	<i>Packaging and Transportation</i>
LS105-01	<i>Waste Management Coordinator Program</i>
LIG404-00-01	<i>Waste Generator Guidance for Completing the TRU Waste Storage Record (TWSR)</i>
LIG404-00-02	<i>(reserved)</i>
LIG404-00-03	<i>Waste Profile Form Guidance</i>
Notice 0022	<i>Approval for Generating Waste with No Disposal Path</i>
PLAN-WASTEMGMT-002	<i>LANL Waste Acceptance Criteria</i>

### **Laboratory Policies and Procedures—continued**

#### **New and Revised Documents**

During 1998 and early 1999, one notice and several new LIRs of interest to RCRA workers were modified or were issued as official Laboratory policy. These include the following:

- LIR404-00-02, *General Waste Management Requirements*;
- LIR404-00-04, *Managing Solid Waste*;
- LIR404-00-05, *Managing Radioactive Waste*;
- LIR404-00-06, *Managing Polychlorinated Biphenyls*;
- LIR402-704-01, *Contamination Control*;
- LIR405-10-01, *Packaging and Transportation*; and
- Notice 0022, *Approval for Generating Waste with No Disposal Path*.

The following summaries outline the key points of these documents.

#### **LIR404-00-02. General Waste Management Requirements**

This LIR is the primary waste-management document in a series of waste management LIRs. It contains no new or revised requirements; rather, it is a summary of general requirements applicable to all waste types. These general requirements include

- roles and responsibilities for
  - personnel in waste generating organizations,
  - personnel in waste management organizations, and
  - groups with oversight responsibilities for regulatory compliance; and
- standard requirements for
  - waste generators,
  - generator assistance, and
  - TSDFs.

**Note:** *Requirements in this LIR may not be indicated in waste-stream-specific documents, even if applicable.*

### **Laboratory Policies and Procedures—continued**

Major implementation requirements include

- self-assessment of waste management activities for compliance with this LIR,
- implementation of corrective actions where noncompliances are identified, and
- documentation of any corrective actions taken.

This LIR supersedes

- AR 10-8, *Waste Minimization*;
- Director's Policy (DP) 105, *Hazardous and Radioactive Waste Management and Minimization*; and
- LIR404-00-02, *Waste Management Policy and Procedure Council*.

**Note:** *This LIR does not contain technical information concerning waste form, content, packaging, or handling; such information is contained in PLAN-WASTEMGMT-002, LANL Waste Acceptance Criteria.*

*Contact: Julie Minton-Hughes (Solid Waste Operations [EM/SWO])*

#### **LIR404-00-04. Managing Solid Waste**

This LIR contains requirements unique to the management and disposal of solid wastes. Major solid wastes generated by Laboratory operations include

- chemical waste,
- commercial solid waste,
- construction and demolition debris, and
- New Mexico Special Waste, including
  - treated formerly characteristic solid waste,
  - asbestos,
  - infectious waste,
  - spill of a chemical substance or commercial product, and
  - dry chemicals, which when wetted, become characteristically hazardous.

### Laboratory Policies and Procedures—continued

Use the waste profile form (WPF) to characterize each solid waste stream. Individual waste streams may have management and disposal requirements.

**Note:** *New Mexico Special Waste shall be stored for no longer than 45 days. If there is a possibility of exceeding this deadline, contact the Hazardous and Solid Waste Group (ESH-19).*

Major implementation requirements include

- self-assessment of waste management activities for compliance with this LIR,
- implementation of corrective actions where noncompliances are identified, and
- documentation of any corrective actions taken.

This LIR supersedes AR 10-7, *Managing Infectious Waste*.

**Note:** *This LIR does not restate requirements that are not unique to solid wastes. You may find additional requirements in the following LIRs:*

- *LIR404-00-01, Waste Acceptance, Characterization, and Certification Program;*
- *LIR404-00-02, General Waste Management Requirements; and*
- *LIR405-10-01, Packaging and Transportation.*

*Contact: Debbie Finfrock (ESH-19)*

#### **LIR404-00-05, Managing Radioactive Waste**

This LIR contains requirements unique to the management and disposal of radioactive wastes. In particular, this LIR prescribes roles and responsibilities for waste management facilities, storage requirements, and requirements for transferring radioactive waste from generator sites to central waste management facilities.

This document supersedes

- AR 10-1, *Radioactive Liquid Waste;*
- AR 10-2, *Low-Level Radioactive Solid Waste; and*
- AR 10-5, *Transuranic (TRU) Waste.*

### Laboratory Policies and Procedures—continued

*Note: This LIR does not restate requirements that are not unique to radioactive wastes. You may find additional requirements in the following documents:*

- *LIR404-00-01, Waste Acceptance, Characterization, and Certification Program;*
- *LIR404-00-02, General Waste Management Requirements;*
- *LIR402-704-01, Contamination Control;*
- *LIR405-10-01, Packaging and Transportation; and*
- *PLAN-WASTEMGMT-002, LANL Waste Acceptance Criteria.*

*Contact: Julie Minton-Hughes (EM/SWO)*

#### **LIR404-00-06, Managing Polychlorinated Biphenyls**

This LIR contains requirements for the management and disposal of PCBs and PCB-contaminated materials. It provides relevant definitions and prescribes roles and responsibilities for the owners of PCB-containing or PCB-contaminated items or equipment, generators of PCB wastes, appropriate line management, and other applicable organizations.

This LIR supersedes AR 10-4, *Polychlorinated Biphenyls*.

*Contact: Ed Horst (ESH-19)*

#### **LIR402-704-01, Contamination Control**

This LIR provides requirements to ensure that radioactive contamination is minimized and controlled. It addresses the release of personnel, equipment, and materials, including waste, and provides guidelines for the unrestricted release of surface and volume contaminated materials.

You must follow facility-specific procedures to remove waste from a radiological controlled area (RCA). These procedures must describe

- the applicable waste stream,
- the methods used for waste segregation and management,
- the quality assurance (QA) program used to verify the effectiveness and accuracy of the waste segregation process, and
- applicable survey procedures and documentation.

### Laboratory Policies and Procedures—continued

This LIR supersedes

- Laboratory Procedure (LP) 107-04.2, *Releasing Material and Equipment*; and
- LS105-05, *Removing Waste from Radiological Controlled Areas*.

Contact: Bill Somers (Health Physics Operations Group [ESH-1])

#### LIR405-10-01, Packaging and Transportation

This LIR establishes the requirements for all Laboratory packaging and transportation activities, including the transportation of

- general commodities,
- hazardous materials,
- hazardous substances,
- hazardous wastes, and
- defense-program materials.

This LIR requires all packaging and transportation activities to be conducted in compliance with LIR300-00-01, *Safe Work Practices*, as well as applicable DOE orders and state and federal regulations. In particular, HAZMAT shall not be

- transported via private vehicle onsite, intrasite, or offsite;
- carried on a worker's person intrasite or offsite; or
- handcarried offsite without prior arrangement and documented approval by the Hazardous Materials Packaging and Transportation (HMPT) Office of Institutional Coordination (OIC).

**Note:** This LIR provides detailed definitions for onsite, intrasite, and offsite.

This LIR supersedes

- DP 117, *Packaging and Transportation*;
- P&T001, *Packaging and Transportation Manual*; and
- AR 3-5, *Shipment of Radioactive Materials*.

Contact: Shirley O'Rourke (Materials Management Group [BUS-4])

### **Laboratory Policies and Procedures—continued**

#### **Notice 0022, Approval for Generating Waste with No Disposal Path**

On October 1, 1998, the DOE Office of Defense Programs (DP [DOE]) assumed programmatic responsibility for waste management at the Laboratory. As part of the transition from the DOE Office of Environmental Management, DP (DOE) is implementing the following two major policy changes:

- generators of waste streams with no path forward must request approval from DP (DOE) to generate these waste streams and
- programs that are not DP (DOE) will be charged for the costs associated with management and disposal of their wastes.

Mixed wastes pose the greatest difficulty, having few or no treatment/disposal options. Examples of waste streams that may have no path forward include

- nondefense transuranic or mixed transuranic waste,
- mixed waste contaminated with tritium at high levels,
- compressed-gas cylinders with radioactive contamination,
- pressurized aerosol cans with radioactive contamination,
- explosives with radioactive contamination,
- liquid PCB with radioactive contamination,
- solid and liquid PCB waste with RCRA constituents and radioactive contamination,
- pyrophoric liquids with radioactive contamination,
- high mercury (>260 parts per million [ppm] total mercury) with radioactive contamination,
- mixed low-level waste with biohazardous material, and
- dioxin with radioactive contamination.

### Laboratory Policies and Procedures—continued

Generators must request approval from the DOE/Albuquerque Operations Area Office to generate wastes with no path forward. Approval requests must include, in part, the following:

- a description of the program and the process that generates the waste;
- the identity of the waste with no path forward and its projected volume (annual and projected over the life of the project or activity);
- relevant portions of National Environmental Policy Act (NEPA) documents addressing the generation and disposal of the waste;
- identity and summary of all documents comprising the authorization basis or authorization agreements covering the operation, if applicable;
- a summary of waste characteristics and issues that preclude treatment and disposal options;
- a summary of all efforts made to find a treatment/disposal path for this waste stream;
- a summary of all waste minimization and pollution prevention efforts addressing this waste stream;
- an estimate of life-cycle costs for storage, maintenance, and ultimate disposal of the waste; and
- a commitment from the generating program to support the storage, maintenance, and disposal costs for this waste stream.

Generators must make approval requests through the EM Program Office. Contact Ken Hargis (7-2347) or Beverly Martin (5-0714) for assistance in preparing or submitting your approval request package.

*Contact: Ken Hargis (Waste Management Program [EM/WM])*

### Additional Laboratory Waste Management Information

#### John Browne Memorandum

On November 9, 1998, Laboratory Director John Browne issued a memo to the Senior Executive Team and Laboratory division directors regarding *RCRA compliance expectations and accountability*. This memo expresses concern with the "unacceptable number of RCRA violations" that the Laboratory continues to incur. Violations from recent NMED audits were judged to be 80% repeat violations and 80% operator controllable.

To correct this situation, John Browne has mandated aggressive line-management attention and immediate implementation of corrective actions, including the following:

- division directors must communicate to their workers the Laboratory goal of zero RCRA violations;
- self-inspections of *all* RCRA accumulation and storage areas must be conducted monthly;
- self-inspection results, including a listing of any findings, must be reviewed by division directors and forwarded to Dick Burick, Deputy Laboratory Director for Laboratory Operations, by the 15th of each month; and
- division directors must hold appropriate managers and employees accountable and take any necessary corrective actions to eliminate RCRA violations.

The frequency of inspections, as mandated under this memo, may be reduced should an organization continually demonstrate zero findings through the self-assessment process. ESH-19 can provide assistance (inspection lists, training, management system assessments) in meeting this goal.

You may obtain ESH-19 checklists for determining compliance with solid and hazardous waste management requirements at the following URL:

<http://drambuie.lanl.gov/~esh19/programs/assessments> .

### Additional Laboratory Waste Management Information—continued

#### Generator Waste Certification Program

LIR404-00-01, *Waste Acceptance, Characterization, and Certification Program*, requires waste generating organizations to develop and implement a Generator Waste Certification Program (GWCP) by January 1, 1999. The program goal is to ensure correct and reliable waste characterization. In particular, the GWCP must offer sufficient detail to ensure that

- regulated constituents in waste streams are identified,
- compliance with the waste acceptance criteria (WAC) is demonstrated,
- cradle-to-grave information about a waste stream is documented, and
- an auditable program for quality control and assurance is implemented.

At a minimum, the GWCP shall include

- a facility description,
- roles and responsibilities,
- training and qualification program,
- waste minimization and segregation procedures,
- waste stream controls,
- precautions for waste handling,
- quality assurance, and
- documentation requirements.

The GWCP must be reviewed at least annually and whenever there are changes to the waste generation process. TSDF waste certification and acceptance personnel must review the initial GWCP and each GWCP revision to determine whether the GWCP is adequate.

**Note:** *TSDF personnel may withhold waste acceptance authorization if the GWCP is inadequate.*

### Additional Laboratory Waste Management Information—continued

#### Recycling Program

Recycling used materials is one important way the Laboratory can meet its Appendix F requirements to minimize waste that requires disposal. Recycling options have increased dramatically in recent years and are now available for more types of materials than ever before. Many recycling programs are available to Laboratory workers. Some of the materials covered by these programs include:

- gelled-cell batteries (Johnson Controls Northern New Mexico [JCNNM]);
- lead-acid batteries (JCNNM);
- mercury batteries (the Laboratory);
- nickel-cadmium (Ni-Cad) batteries (the Laboratory);
- cardboard (LA County);
- chemicals (the Laboratory);
- circuit boards (the Laboratory);
- containers (JCNNM);
- film (the Laboratory);
- freon (JCNNM);
- gas cylinders (the Laboratory);
- lead (JCNNM);
- light bulbs—fluorescent, high-intensity vapor lamps, incandescent bulbs, and light ballasts (JCNNM);
- mercury (the Laboratory);
- metals/scrap wire (JCNNM);
- oil (used or new) (JCNNM);
- paper (the Laboratory);
- MSA1000 (the Laboratory);
- phone books (the Laboratory);
- radioactive sources (the Laboratory);
- smoke detectors (JCNNM);
- toner—printer and copier (the Laboratory); and
- wood pallets (JCNNM).

### Additional Laboratory Waste Management Information—continued

Materials must meet specific requirements to be eligible for recycling and must be appropriately managed and stored until recycled. You can find material requirements and contact information at the following URL:

*<http://emeso.lanl.gov/recycling.htm> .*

You can find a direct link to this web site on the lower right-hand corner of the internal Laboratory homepage.

If you have questions, comments, and/or concerns about the Recycling Program or you would like waste minimization/pollution prevention assistance, send e-mail to *[wastenot@lanl.gov](mailto:wastenot@lanl.gov)* .

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## Module 3: RCRA Inspections

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### Purpose of this Module



This module identifies the various types of inspections that take place at Laboratory hazardous and mixed waste facilities and reviews the purpose and importance of the RCRA self-inspection process. This module also addresses the processing requirements for the Hazardous and Mixed Waste IRF—Inspection Record Form—and the repeat inspection problems associated with using this form.

### In this Module

This module includes the following topics:

- purpose of RCRA inspections,
- types of RCRA inspections,
- Hazardous and Mixed Waste IRF,
- correcting deficiencies,
- repeat inspection problems at the Laboratory,
- RCRA Compliance Inspection Program, and
- 1997 and 1998 NMED Inspections.

### Purpose of RCRA Inspections

RCRA inspections, whether performed by external regulatory agencies or by internal Laboratory organizations or individuals, are important because they facilitate

- the protection of human health and the environment,
- Laboratory compliance with federal and state laws and regulations and the Hazardous Waste Facility Permit and interim-status requirements, and
- identification and correction of problems in hazardous and mixed waste storage areas.

### Types of RCRA Inspections

The following table describes the various types of formal RCRA inspections that take place in Laboratory hazardous and mixed waste storage facilities.

Inspection Type	Inspectors	Inspected Facility
internal Laboratory daily/weekly self-inspections	designated inspectors such as <ul style="list-style-type: none"><li>• line managers</li><li>• waste generators</li><li>• WMCs</li><li>• others</li></ul>	<ul style="list-style-type: none"><li>• TSDFs</li><li>• &lt;90-day accumulation areas</li></ul>
periodic inspections by internal Laboratory personnel	designated inspectors such as <ul style="list-style-type: none"><li>• line managers</li><li>• waste generators</li><li>• WMCs</li><li>• others</li></ul>	<ul style="list-style-type: none"><li>• SAAs*</li><li>• universal waste areas*</li></ul>
inspections by external regulatory agencies	<ul style="list-style-type: none"><li>• EPA</li><li>• NMED</li><li>• DOE</li><li>• Department of Defense (DoD)</li></ul>	<ul style="list-style-type: none"><li>• TSDFs</li><li>• &lt;90-day accumulation areas</li><li>• SAAs*</li><li>• universal waste areas*</li></ul>

\* SAAs and universal waste areas are subject to inspection by external regulatory agencies for compliance with RCRA requirements. However, RCRA does not require formal daily or weekly inspections for either SAAs or universal waste areas as it does for TSDFs or <90-day accumulation areas. A reduced hazard is assumed for SAAs based on volume restrictions and the requirement for SAAs to be under the control of the generator. Universal waste, by its very nature, is assumed to pose minimal risk. Operators of SAAs and universal waste areas should routinely check their waste storage areas for any problems that need to be corrected to ensure compliance and the protection of human health and the environment. Contact ESH-19 for guidance in operating SAAs and universal waste areas.

### Types of RCRA Inspections—continued

Laboratory policy allows for weekly, rather than daily, formal inspections of <90-day accumulation areas, provided that

- no new waste is accepted into or removed from the accumulation area;
- no waste is handled, treated, or moved around within the accumulation area; and
- all waste is stored in closed containers.

Conduct an inspection immediately if any waste is handled, removed, or added to a <90-day accumulation area on a given day of operation.

**Note:** *If waste generators store hazardous waste in tanks for 90 days or less, inspections must be conducted daily.*

### Hazardous and Mixed Waste Inspection Record Form

The Laboratory record of the formal internal inspection process is documented on the IRF, which is a requirement of the Laboratory Hazardous Waste Facility Permit.

#### Purpose of the Inspection Record Form

The IRF

- provides formal documentation of the daily/weekly RCRA inspections performed in Laboratory TSDFs and <90-day accumulation areas,
- serves as the basis of audit review by external agencies performing inspections at the Laboratory,
- serves as a checklist for items to be inspected in the waste storage area,
- provides formal documentation of compliance or safety-related problems noted in the inspection, and
- provides for notation of corrective action taken to resolve deficiencies.

**Note:** *See Appendix A of this training manual for a copy of the IRF.*

## **Hazardous and Mixed Waste Inspection Record Form—continued**

### **General Processing Requirements for the IRF**

Inspectors must perform daily or weekly inspections, as required, and must

- use one form per week to record the results of the inspection;
- follow the ESH-19 guidelines for completing the IRF;
- keep the *original* copy of the completed IRF on file at the inspected facility for a minimum of three years after the inspection date;
- route a *readable* copy of the completed IRF to ESH-19, MS K498, Attention: IRF;
- keep records orderly; and
- take immediate corrective action on deficiencies noted during the inspection with consideration of the overall threat to human health and the environment.

ESH-19 will

- house copies of all IRFs for use in the Lab-wide review process and
- respond to problems resulting from inspections.

**Note:** See Appendix A of this training manual for Instructions for Use of the Hazardous and Mixed Waste Facility Inspection Record Form.

### Correcting Deficiencies

The overall purpose of the RCRA inspection process is to enable the Laboratory to identify deficiencies that pose a threat to human health or the environment and to correct these deficiencies as soon as they are noted. The Laboratory is accountable for being in compliance with inspection requirements and for immediate correction of any noted deficiencies.

Deficiencies found during the inspection process are known as *actions required*. Actions required must be noted on the front of the IRF and on Part II of the form. Part II requires the inspector to document the details of the deficiency found during the inspection, including

- actions required;
- number, date, and time of the inspection;
- description of the problem; and
- notation of any corrective action taken to resolve the problem.

Each deficiency or action required has a unique number for tracking purposes. An indication of the action required must be carried over from week to week by recording the action required on each successive IRF until the deficiency is corrected. The final resolution of the deficiency must be noted on the IRF that covers the period in which corrective action is completed.

### Repeat Inspection Problems at the Laboratory

Repeat inspection problems at the Laboratory include the following:

- inspections are not being conducted;
- IRFs are incomplete when submitted;
- IRFs are completed incorrectly;
- deficiencies are noted on the IRF, but corrective action is not taken or documented;
- actions required are not carried over on the IRF from week to week;
- untrained personnel are conducting and documenting inspections; and
- inspection records are not being retained for the required three years.

Contact your WMC or ESH-19 if you have questions regarding the inspection of waste storage facilities.

### **RCRA Compliance Inspection Program**

The Laboratory RCRA Compliance Inspection Program is designed to assist WMCs and waste generators in the proper storage of hazardous and mixed wastes, solid wastes, PCBs, and volatile organic wastes regulated under Subpart CC. Specific program goals include consistent application of Laboratory policy and regulations as well as increased compliance with these regulations.

Compliance inspection teams, composed of representatives from ESH-19 and other organizations, conduct walk-throughs of generator waste storage areas two to three times per year. The inspection teams may schedule additional visits based on the level of compliance achieved at individual locations.

During the compliance inspection, personnel from ESH-19 and the operating organization discuss compliance issues and make suggestions for corrective action. The WMC and affected line organizations then determine the best course of action for compliance. ESH-19 assists with the process, as needed.

This program is part of Laboratory efforts to increase accountability for overall compliance with RCRA and other federal and state laws and regulations.

#### **Inspection Checklists**

To assist with informal inspections and improve compliance, ESH-19 provides inspection checklists for

- SAAs,
- <90-day accumulation areas, and
- TSDFs.

You may find these checklists online in both Microsoft Word and portable document format (PDF) at the following URL:

*<http://drambuie.lanl.gov/~esh19/programs/assessments>* .

**1997 and 1998 NMED Inspections**

**Apparent Findings (1997)**

From August to December 1997, the NMED conducted a wall-to-wall audit of hazardous and mixed waste operations at the Laboratory. At the close of these inspections, the NMED notified the Laboratory of 57 apparent findings with as many as 25 counts per finding and over 100 counts for the total findings. The NMED has indicated that some findings may be dropped and others may be added to the list. Although apparent, this list is instructive and indicates areas of Laboratory operations that require increased vigilance.

Apparent findings from the 1997 NMED inspection include the following:

- failure to make a hazardous waste determination,
- abandonment of waste,
- failure to maintain training,
- failure to place waste in an appropriate accumulation area,
- failure to properly label waste, and
- failure to properly close a waste container.

The following table presents the apparent findings from 1997.

<b>Apparent Findings</b>	<b>Regulatory Citation</b>	<b>Counts per Finding</b>
<b>Abandonment</b>		
laboratory waste	262, 270	5 25 1 1
reactive material	262, 270	1
two 1-gallon cans	262, 270	2
drum	262, 270	1
wastes illegally stored in lieu of disposal or proper storage	262, 270	1
<b>Actions Required</b>		
failure to make required repairs	Permit	1

**1997 and 1998 NMED Inspections—continued**

<b>Apparent Findings</b>	<b>Regulatory Citation</b>	<b>Counts per Finding</b>
<b>Containers</b>		
failure to keep a hazardous waste container closed	262.34(c)(1)(i)	1
open container	262.34(c)(1)(i)	1 1
<b>Contingency Plan</b>		
failure to maintain a copy of contingency plan	264.53(a)	1
<b>Exception Reports</b>		
failure to submit an exception report	262.42(a)(2)	1
<b>Labeling</b>		
insufficient information on container labels	Permit	2
failure to properly label a container	262.34(c)(1)(ii)	1
<b>&lt;90-Day Area</b>		
no eyewash or shower at <90-day storage area	265.32(d)	1
failure to place the accumulation start date on container in a <90-day area	262.34(a)(2)	4
<b>LDRs</b>		
failure to retain LDR notice with manifest	268.7(a)(7)	1
LDRs did not have treatability groups noted on them for manifest	268.7(a)(1)(ii)	2
LDRs missing hazardous waste constituents	268.7(a)(1)(ii)	5
failure to note appropriate waste code on an LDR	268.7(a)(1)(ii)	1
failure to note proper treatment standard on an LDR	268.7(a)(1)(i)	5
<b>Manifesting</b>		
failure to date a manifest	262.20(a)	1
<b>SAA</b>		
waste not under the control of generator	262.34(c)(1)	2 1

**1997 and 1998 NMED Inspections—continued**

<b>Apparent Findings</b>	<b>Regulatory Citation</b>	<b>Counts per Finding</b>
<b>Training</b>		
failure of employee to complete annual cardiopulmonary resuscitation (CPR) refresher	Permit	1
failure to complete annual HAZWOPER refresher	264.16(b)	4
	265.16(a)(1)	1
	Pending	6
failure to complete annual RCRA refresher	264.16(b)	4
	265.16(a)(1)	1
	Pending	6
failure to provide job descriptions	Pending	4
<b>Universal Waste</b>		
universal waste battery not managed properly	273	1 1 1 1
<b>Waste Characterization</b>		
failure to perform hazardous waste determination	262.11	1 3 3 1 1 1 1
containers with unknown contents	262.11	3 1
failure to perform hazardous waste determination on contents of 5-gallon container, interim storage site	262.11	1
55-gallon containers with unknown contents	262.11	3
2-gallon bucket with unknown contents	262.11	1
failure to perform waste determination on waste solder	262.11	1
5-gallon container with unknown contents	262.11	1

**1997 and 1998 NMED Inspections—continued**

**Apparent Findings (1998)**

The 1998 NMED audit was shorter and less extensive than the 1997 audit. Nevertheless, the NMED notified the Laboratory of 35 apparent findings, many of which were similar to those reported for 1997. The following table presents the apparent findings from 1998.

<b>Apparent Findings</b>	<b>Location</b>	<b>Counts per Finding</b>
<b>Abandonment</b>		
See Waste Characterization		
<b>ARs</b>		0
<b>Containers</b>		
open container (fluorescent lamps)	SAA	1
failure to close container during storage	SAA SAA	1 1
<b>Contingency Plan</b>		0
<b>Inspections</b>		
failure to perform inspections	TSDf <90	2 1
<b>Labeling</b>		
failure to label metal can of thinner	SAA	1
failure to label enamel paint as hazardous waste	SAA	1
failure to label hazardous waste	<90	1
failure to label container	<90 SAA <90 SAA	1 5 1 1

**Module 3: RCRA Inspections**

**1997 and 1998 NMED Inspections—continued**

<b>Apparent Findings</b>	<b>Location</b>	<b>Counts per Finding</b>
<b>&lt;90-Day Area</b>		
failure to apply start date on 5-gallon plastic container	<90	2
failure to apply start date on 5-gallon lead waste	<90	1
failure to have fire control equipment near <90-day area	<90	1
failure to provide decontamination equipment	<90	1
no communication device	<90	1 1
storage exceeding 90 days	<90	2 1 3
inoperable eyewash	<90	1
failure to follow written schedule to inspect eyewash	<90	1
<b>LDR</b>		
failure to provide LDR notification on manifest	TSDf	1
failure to match waste code on LDR to manifest	TSDf	1
<b>Manifesting</b>		0
<b>Training</b>		
failure to have required annual review training on the anniversary date	TSDf <90 TSDf	1 1 3
expired RCRA Refresher	TSDf	1
expired RCRA & HAZWOPER training	TSDf	1

**1997 and 1998 NMED Inspections—continued**

<b>Apparent Findings</b>	<b>Location</b>	<b>Counts per Finding</b>
<b>Waste Characterization</b>		
failure to make an adequate waste determination on oil (chlorofluorocarbons [CFCs])	TSD	1
failure to make waste determination	<90	4
failure to make waste determination (abandoned waste—open, unlabeled baggie w/gloves and saturated wipes)	n/a (not in a storage area)	1
failure to make waste determination on abandoned waste	SAA	1
<b>Lab-Wide</b>		
failure to keep adequate operating records for the whole facility	Lab-wide	1

### 1997 and 1998 NMED Inspections—continued

#### Sample NMED Interview

During the 1997 NMED RCRA Inspection, the NMED conducted interviews with waste generators and supervisory personnel. During these interviews, NMED auditors sought to determine

- whether generators were familiar with waste management requirements and procedures,
- whether generators were managing their wastes appropriately, and
- how legacy wastes were created.

#### Supervisory Personnel

Supervisory personnel were asked questions similar to the following:

- When did you work at Technical Area (TA)-999, Building Z?
- What were the operations during that time?
- How many projects were conducted?
- Do you have organization charts and/or records of these projects?
- Were there individuals responsible for each area of the building?
- When were rooms AA and BB vacated? Who were the last occupants?
- Are there records of legacy waste locations?
- Are some of the compounds in the legacy waste directly related to individuals who worked in those rooms?
- Do you feel that the Laboratory is effectively accountable for operations?

### 1997 and 1998 NMED Inspections—continued

#### Waste Generators

Waste generators were asked questions similar to the following:

- Where did you work at TA-999?
- When did you work there?
- What kind of work did you perform?
- What chemicals did you use?
- Describe the instructions for vacating spaces in your facility. Who directed waste management?
- Who was your group leader?
- Did you ever generate or use (chemical)?
- Who else was in your laboratory?
- What kind of work did they perform?
- Did they use (chemical)?
- What did (person's name) use?
- Please look at this list of chemicals. Can you identify the ones that you used?
- How much notice did you receive before moving from your laboratory?
- (Product) was left behind when you moved. Were other people using it?
- Who else was using (product) when you left?
- At the time you moved, what waste disposition instructions did you receive and who provided those instructions?
- What was your interaction with facility personnel at the time? Did you know anyone in the area responsible for waste management?
- Did you know (person's name)?
- Was (person's name) a generator?
- Do you know what (person's name) generated?

**1997 and 1998 NMED Inspections—continued**

As might be expected, a number of inquiries have been directed to Laboratory Counsel (LC) and/or ESH Division regarding the rights and obligations of workers in their interactions with the NMED. The Laboratory encourages all workers to cooperate with NMED inspectors and to answer questions truthfully. At the same time, Laboratory workers have legal rights under Laboratory policy. In particular, workers may request that supervisory personnel and/or representatives from ESH-19 or a Laboratory environmental staff member be present during interviews regarding the management of hazardous and mixed wastes. LC has issued a memo describing worker rights as well as roles and responsibilities during the interview process.

## Module 3: RCRA Inspections

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Notes . . .



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## Module 4: Planning for Emergencies

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### Purpose of this Module



This module reviews the purpose and scope of the Hazardous and Mixed Waste Contingency Plan and the general requirements for emergency preparedness and response at TSDFs and <90-day accumulation areas.

### In this Module

This module includes the following topics:

- health and safety issues,
- contingency planning,
- purpose of the contingency plan,
- elements of the contingency plan,
- site-specific contingency planning,
- emergency equipment,
- emergency response resources, and
- emergency notification.

### **Health and Safety Issues**

The presence of hazardous and mixed wastes poses potentially serious health and safety risks for workers in RCRA-regulated waste storage areas as well as threats to the environment. For this reason, the law requires the Laboratory to develop a contingency plan to help ensure proper preparedness for and response to any emergencies that could arise. The law also requires RCRA facility workers to have training in emergency preparedness and in implementation of the contingency plan.

### **Contingency Planning**

RCRA (40 CFR Parts 264, 265, and 270) and the New Mexico Hazardous Waste Management Regulations (codified in 20 NMAC 4.1) require the Laboratory to develop and implement a Lab-wide contingency plan for all RCRA-permitted and interim-status facilities and <90-day accumulation areas in operation.

The contingency plan falls under the broader scope of the Laboratory Emergency Management Plan.

### **Purpose of the Contingency Plan**

The contingency plan

- spells out emergency response requirements for all RCRA-permitted and interim-status facilities;
- describes actions personnel must take to respond to fire, explosion, or unplanned releases of hazardous or mixed waste constituents to the air, soil, or surface water at the Laboratory;
- describes the arrangements agreed upon by local police and fire departments; and
- lists provisions to carry out immediately when there is a threat to human health or the environment.

### **Elements of the Contingency Plan**

#### **Emergency Response Resources**

The contingency plan identifies individuals and organizations that will play a key role in response to an emergency that occurs in an area where hazardous or mixed waste is stored. The list of response organizations includes groups both internal and external to the Laboratory. This module includes a review of these emergency response resources.

### Elements of the Contingency Plan—continued

#### Implementation Guidelines

You should implement the contingency plan when any of the conditions listed in the table below exist.

Type of Condition	Specific Condition
spill	<ul style="list-style-type: none"><li>• hazardous or mixed waste spills cannot be contained with secondary containment or application of absorbents</li><li>• precipitation threatens to move hazardous or mixed waste material offsite</li><li>• hazardous or mixed waste spills cause the release of flammable material, creating a fire or explosion hazard</li><li>• an earthquake or other natural disaster threatens containment integrity</li><li>• a hazardous or mixed waste spill results in toxic fumes that threaten human health</li></ul>
explosion	<ul style="list-style-type: none"><li>• an unplanned explosion involves hazardous or mixed waste material</li><li>• imminent danger exists that an explosion involving hazardous or mixed waste could occur</li></ul>
fire	<ul style="list-style-type: none"><li>• a fire involves hazardous or mixed waste material</li><li>• a building, grass, forest, or nonhazardous waste fire threatens to volatilize or ignite hazardous or mixed waste</li></ul>

#### Salvage and Cleanup Requirements

The contingency plan specifies salvage and cleanup requirements for responding to emergencies, including

- a visual inspection of the area where the emergency occurred,
- sampling for existing hazards, and
- decontamination.

When the emergency has been mitigated successfully, the incident commander will turn the remainder of duties over to line management.

Line manager responsibilities include

- proper handling of recoverable waste;
- making sure incompatible wastes are not stored together; and
- visually inspecting, cleaning, and decontaminating the emergency equipment used.

### Elements of the Contingency Plan—continued

#### Post-Emergency Assessment

When the emergency is over, the Laboratory must assess the overall emergency response efforts. The purpose of the assessment is to

- identify the cause of the emergency and
- evaluate the effectiveness of the response.

#### Emergency Response Reporting Requirements

When the contingency plan is activated, the Laboratory must file a report with DOE and the NMED within 15 days. In an emergency situation, the NMED must be notified by telephone within 24 hours of the incident. Group leaders and facility managers may be asked to submit a detailed report of the incident.

#### Contingency Plan Amendment

The contingency plan must be amended when

- the Hazardous Waste Facility Permit is revised,
- any significant change is made in the design or operation of a RCRA facility,
- emergency managers change, or
- activation and implementation of the plan proves to be inadequate.

### Site-Specific Contingency Planning

RCRA facility workers must be familiar with the contingency plan, particularly as it relates to specific facility requirements. Contact your supervisor or ESH-19 for a copy of the contingency plan. Pay particular attention to the requirements that apply to your facility.

## Module 4: Planning for Emergencies

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### Emergency Equipment

The following emergency response equipment must be in place at RCRA-regulated waste storage areas:

- spill-control equipment,
- emergency telephone and alarm, and
- eyewash and safety shower.

**Note:** If you do not know the location of the above emergency equipment at your facility, check with your supervisor immediately.

### Emergency Response Resources

Various emergency response resources, both internal and external, have roles in the event an emergency should occur at your facility. The following table lists the roles and responsibilities of key personnel in responding to emergency situations involving hazardous or mixed waste.

Organization	Responsibilities
Emergency Management and Response (EM&R) Office	<ul style="list-style-type: none"><li>• issues the Laboratory Emergency Management Plan</li><li>• provides a 24-hour emergency manager</li><li>• coordinates Laboratory response to an emergency</li></ul>
Los Alamos Police Department (LAPD)	closes public roads during an emergency
Occupational Medicine Group (ESH-2)	maintains a medical facility with trained response staff at TA-3
Protection Technology Los Alamos (PTLA)	<ul style="list-style-type: none"><li>• maintains security at the Laboratory</li><li>• controls access to emergency scenes</li></ul>
HAZMAT Team, Hazardous Materials Response Group (ESH-10)	<ul style="list-style-type: none"><li>• sets up the contamination control station at the scene of an emergency</li><li>• aggressively mitigates chemical and mixed waste emergencies</li></ul>
Los Alamos Fire Department (LAFD)	<ul style="list-style-type: none"><li>• provides fire protection and ambulance coverage for Los Alamos and White Rock as well as for the Laboratory</li><li>• determines whether injured personnel are to be treated at ESH-2 or the Los Alamos Medical Center</li></ul>
spill coordinator	<ul style="list-style-type: none"><li>• completes a spill report form when hazardous material or waste is spilled at the Laboratory</li></ul>

### Emergency Notification

Immediately upon discovery of an imminent or actual incident involving hazardous or mixed waste, onsite personnel must

- dial 911 and
- pull a manual fire alarm.

All automatic and manual fire alarms provide notification to the central alarm station (CAS). The CAS operator will then notify the EM&R Office emergency manager on duty, the LAFD, and PTLA security officers, as necessary.

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## Module 5: Lessons Learned

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### Purpose of this Module



This module presents the lessons-learned concept and addresses several RCRA lessons learned.

### In this Module

This module includes the following topics:

- purpose and concept of lessons learned,
- lessons-learned incidents, and
- accountability for compliance.

### Lessons Learned

#### Purpose

The purpose of lessons learned is to help develop a prevention-based safety culture at the Laboratory to enable workers to learn from prior experiences.

Incidents, experiences, and near misses from the Laboratory, DOE, and the private sector are used to discuss lessons learned to improve Laboratory operations.

#### Concept

A lesson learned is defined as an inference drawn from experience that leads to changed behavior.

Changed behavior comes from

- understanding what caused the events,
- making recommendations for corrective actions, and
- identifying the significance or relevance of the problem to the Laboratory.

### Lessons Learned Incident Instructions

Your instructor will divide the class into several groups and ask you to read one of the following incidents. Work together to answer the questions that follow the incident description. Be prepared to present your answers to the class.

#### Incident 1

##### Description

Based upon information provided by a waste generator at Pacific Northwest National Laboratory (PNNL), approximately 5 gallons of waste was classed as non-RCRA regulated, low-level radioactive waste. This waste was packaged and then transported as DOT hazard class 7 (radioactive) material from the Life Sciences Laboratory-II Building to the 305-B Building in 300 Area on December 10, 1997. On April 15, 1998, during waste acceptance verification in preparation for subsequent shipment of the waste to the Hanford Site Central Waste Complex, the waste was found to be corrosive in nature.

Shipping information for this waste stream had been based upon chemical constituent data recorded by the waste generator on the outside of the waste container. The waste management field service representative (FSR) supporting the waste generating organization had submitted this information when he requested disposal. The generator, however, had forgotten to log the addition of nitric acid to the waste container.

Although the waste generator was cognizant of the general requirement to record all waste constituents, he had not complied with the written PNNL-wide procedure, which requires the waste generator to maintain analytical records or documented process knowledge regarding the constituents in the waste and to maintain a waste inventory sheet for the waste package during the waste accumulation process. The omission of data was the direct and root cause for the subsequent categorization of the waste as DOT hazard class 7, radioactive material.

Before submitting the waste for disposal, the FSR checked its pH. The FSR agitated the waste for 10 seconds and the waste quickly separated into an upper noncorrosive organic layer and a lower acid-bearing aqueous layer. The pH was determined only for the top, noncorrosive layer.



### Incident 2

#### Description

On July 29, 1997, the overpressurization of two 55-gallon drums resulted in a material failure of the drum bottoms and a release of the contents of both drums (about 100 gallons) onto the bermed floor of a TSDf building. The spilled material was collected within blind sumps that were part of the facility's spill-control system and subsequently recovered. Emergency response activities were coordinated through the facility contingency plan.

The burst drums had contained phosphoric acid, never used but declared a waste, which had been repackaged within the TSDf into DOT-specified, UN1A1 steel drums. Drum selection was based upon data found in 49 CFR. Several MSDSs were used to verify that chemical compatibility of the materials was acceptable.

After repackaging, the drums were placed into an assigned storage cell. Later that evening, a PNNL staff member working within the facility heard a noise in the high bay where hazardous wastes are stored. Upon investigating the noise, he discovered the drum material failures and the resulting spill of the drum contents. Subsequent investigations determined that the phosphoric acid had reacted with the steel drums to produce hydrogen gas and the excessive internal pressure.

The only material released to the environment was hydrogen gas. Taking the size of the high bay into account, the maximum concentration of hydrogen gas in the facility was 0.035%. A stated permissible exposure limit (PEL) for hydrogen gas does not exist, and the highest possible concentration was well below the lower explosive limit (4%) for hydrogen.

**Incident 2—continued**

**Questions**

1. Summarize the incident.
2. What are the hazards and potential injuries that could result from overpressurization?
3. Which steps in the ISM five-step process would have helped prevent the mistakes made in this scenario?
4. What safe work practices could have been incorporated to prevent this incident?
5. What are the lessons learned from this incident?

### Accountability for Compliance

The Laboratory has implemented several new programs and policies in an effort to increase accountability for compliance with environmental laws and regulations, including RCRA.

#### RCRA Compliance Inspection Program

The Laboratory implemented an internal process to facilitate compliance with RCRA waste management requirements. ESH-19 and WMCs conduct periodic compliance inspections of waste storage areas to identify and correct compliance problems.

#### Waste Management Coordinator Program

LS105-01, *Waste Management Coordinator Program*, specifies the roles and responsibilities of WMCs, waste generators, facility managers, and specific waste management organizations. The program goal is to increase the accountability of key players in the waste management process.

#### Financial Accountability

Violations of environmental regulations may result in the loss of internal and external funds to the Laboratory and its facilities or operations. The magnitude of these can be significant.

#### Personal Accountability

RCRA facility workers can be subject to criminal and civil liability for violations of RCRA regulations. The Laboratory itself may impose administrative disciplinary action for such violations. These actions can include leave without pay or even termination.

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# Appendix A: Inspection Record Form

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## Instructions for Use of the Hazardous and Mixed Waste Facility Inspection Record Form

### Part I

1. **FACILITY:** Location information including TA, building, and room if applicable. Other location descriptors may be necessary. (e.g., TA-59-3-114 or TA-59-1-S. Dock)
2. **<90 Day, GENERATOR STORAGE** should be checked if this location is intended for operation in accordance with generator requirements for storage of hazardous waste for less than 90 days.  
  
**TREATMENT, STORAGE, DISPOSAL** should be checked if this location is listed in LANL's Hazardous Waste Facility Permit or Part A application as a permitted or interim status TSD operation.
3. **START DATE:** The date of the first inspection for the week on that inspection sheet. (Usually the first working day of the week)
4. **END DATE:** The date of the last inspection for the week on that inspection sheet. (Usually the last working day of the week; however, if handling of hazardous waste occurs during the weekend, inspections must be conducted.)
5. Check the appropriate box for the type of operation. Several boxes may be checked if necessary for those locations where inspections are combined on a single sheet. You must have prior approval from ESH-19 to combine inspections for more than one unit.
6. **NO USE:** May be checked if the unit did not store, treat, dispose, or otherwise handle hazardous waste for the day/week in question. The individual responsible for the inspection must then only complete boxes 40 through 48 for that day/week. If any hazardous waste is subsequently placed at the site for any reason, a full inspection must be performed immediately and every working day thereafter until all waste is properly disposed of.
7. Loading and unloading areas must be inspected daily when in use for signs of damage or deterioration that may lead to an accident or spill. This includes asphalt pads and areas where containers or tanks are handled or contents thereof are transferred.
8. Communication equipment must be inspected for proper function: Includes all telephones, two-way radios, and alarms for the area being inspected. (An initial consultation with ESH-19 prior to use of the facility/location will determine what equipment is necessary at any particular location.)
9. For tank systems used for treatment or storage of hazardous waste, all aboveground portions of the tank system, including any and all ancillary plumbing, must be inspected daily for signs of leaking, corrosion, deterioration, or improper operation. Tanks must be operated with a minimum freeboard of 6 inches. If the tank system includes discharge controls, overtopping controls, tank level alarms, or other monitoring equipment, including leak detection equipment, all controls and relevant data must be checked to ensure they are operating properly and that operation is within design specifications for the system.

## **Appendix A: Inspection Record Form**

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### **Instructions for Use of the Hazardous and Mixed Waste Facility Inspection Record Form—continued**

10. Surface impoundments must be operated with a minimum of 24 inches (60 cm) of freeboard from the top of the dike or berm to the surface of the waste therein. Inspectors must look for signs of leaks, deterioration, and erosion of dikes, berms, and any associated plumbing or valves. These could include dying vegetation, gullies, and sudden changes in level.
11. For those locations where inflatable "Porta Berms" are used as secondary containment for tanks and containers of hazardous waste, inspectors must ensure that they are adequately inflated. Inspectors must also check for the presence of liquids in the containment unit that could indicate leaks or spills of hazardous waste. All monitoring and leak detection systems must also be checked.
12. Where required, eyewash and safety showers must be inspected to ensure proper operating condition. Outside locations must be checked for freezing.
13. All containers and tanks must be checked for structural integrity, leaks, corrosion, or damage. This item includes checking condition of all construction materials, fixtures, seams, and auxiliary equipment. See Item 9 above.
14. All tanks and containers used for treating or storing hazardous waste must have the cover or lid securely in place. Containers are not considered to be closed until the lid/cover is fastened in the manner the manufacturer originally intended.
15. Required signs must be readable and prominently posted. TSD facilities and <90 day storage areas must be equipped with bilingual (English/Spanish) signs with the legend "DANGER UNAUTHORIZED PERSONNEL KEEP OUT." TSDs must be identified with signs that read "HAZARDOUS WASTE STORAGE AREA." <90 day storage areas must be identified with a sign with the legend "<90 DAY HAZARDOUS WASTE STORAGE AREA."
16. All containers and tanks must be labeled with the words "HAZARDOUS WASTE" and with other words that identify the contents. Mixed waste must also be labeled as "RADIOACTIVE."
17. All containers and tanks of hazardous waste in TSDs or <90 day storage areas must be marked with the accumulation start date. At TSDs, containers without dates must be dated when they arrive at the facility. At <90 day storage areas and TSDs, containers must be marked with the accumulation start date at the time the container first receives any waste. For <90 day storage areas, no containers may exceed 90 days from accumulation start date to the time they are delivered to a permitted treatment, storage, or disposal unit. Waste management organizations will provide transportation for these wastes.
18. Landfills and detonation pads must have run-on and runoff controls inspected wherever present. Leachate collection systems, where present, must also be inspected. Items to be inspected for are proper operating condition, damage, erosion, contaminant migration, ponding, etc. Detonation pads must be inspected for unburned or undetonated explosives, ordnance, and debris.
19. Landfill covers must be inspected at least weekly and after storms for evidence of erosion, subsidence, and water intrusion.
20. Site security must be verified. Items such as fences, gates, locks, etc., should be checked for proper condition and adequacy.
21. Site lighting must be adequate to prevent accidents related to hazardous waste operations and for any other night operations that may take place within the boundaries of the hazardous waste unit.

## **Appendix A: Inspection Record Form**

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### **Instructions for Use of the Hazardous and Mixed Waste Facility Inspection Record Form—continued**

22. Secondary containment structures for hazardous waste operations must be inspected to verify proper operating condition and to ensure adequate capacity. Structures must also be inspected for the presence of standing water or hazardous waste. For incinerators and certain operations at TA-55, secondary containment includes inspections of gloves and gloveboxes, hoods, and ventilation systems where necessary.
23. Adequate aisle space must be maintained to allow for inspection and for the unobstructed movement of personnel and emergency equipment in an emergency. All containers of hazardous waste must be stored in a manner that ensures a minimum of 2 feet of aisle space between containers. Drums containing free liquids or those holding hazardous waste (excluding mixed wastes) may not be stacked over two drums high.
24. All hazardous waste containers holding materials that may be incompatible with any other materials at that location must be separated from those materials by dikes, berms, or other physical barriers to prevent a possible reaction.
25. TSD facilities must have water at an adequate volume and pressure for fire protection available. Hose bibs should be inspected for proper operating condition and adequate pressure. Outside water supplies must be checked for freezing.
26. The storage sheds must be inspected for damage, free liquids that might indicate a leak, and chemical compatibility of materials stored therein.
27. Road and work surfaces, process floors, or other work surfaces at TSDs must be inspected for damage or erosion that could lead to a spill or accident, and for adequate secondary containment.
28. Wind socks, where required, at TSDs must be inspected to ensure that they are present and in proper operating condition.
29. Disposal shafts and shafts used for retrievable storage should have their covers securely in place and guard rails must be installed and in good condition.
30. Hazardous waste containers at TSDs and <90 day storage areas must be stored on pallets if they are stored outside without a roof.
31. Hazardous waste treatment tanks must be operated within design specifications and in accordance with SOPs and work plans. Tanks must be inspected for leaks or damage prior to operation.
32. Refrigerators used for storing hazardous waste, or samples thereof, must be inspected for proper operating condition and leaking or damaged containers.
33. Hazardous waste TSDs and <90 day storage areas must have adequate fire and spill control equipment for the types and volumes of waste present. Equipment must be present, in good working order, and appropriate for the material in question.
34. Incinerator waste feed cutoffs, emergency shutdown controls, and associated alarms or warning systems must be inspected for proper operating condition.
35. Incinerators, ancillary plumbing and equipment, and all monitoring controls must be inspected to ensure that they are in proper operating condition, and are being operated within design specifications. Inspectors must also look for evidence of leaks, corrosion, spills, or tampering.

## **Appendix A: Inspection Record Form**

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### **Instructions for Use of the Hazardous and Mixed Waste Facility Inspection Record Form—continued**

36. Pressure vessels must be inspected for signs of deterioration or damage. Condition of the sand and loading must also be checked to ensure adequacy.
37. Oil burn pans must be inspected for deterioration, damage, or leaks. Inspectors must also inspect for unburned explosives and debris.
38. HE burn pads must be inspected for deterioration, damage, leaks, or vegetation that could catch fire. Condition of the sand must also be checked. Inspectors must also inspect for unburned explosives and debris.
39. Radioactive materials must be properly placarded, labeled, and stored within controlled areas in accordance with AR-3-7. Containers should be monitored/swiped for outside contamination if suspected, and all leaks or spills must be monitored to ensure adequate cleanup.
40. Inspectors will record the date of the current inspection.
41. Inspectors will record the time of the current inspection.
42. Inspectors will initial each daily inspection.

#### **Part II**

Inspectors must explain in detail any deficiency noted above. Items to be included are: type of problem, any action taken, and the date/time of the action. Additional sheets may be attached as necessary.

43. Printed name of individual performing inspection.
44. Signature of individual performing inspection.
45. Z number of individual performing inspection.
46. Organization responsible for this location.
47. Date record was signed and completed.
48. Time record was signed and completed.

***(Note: Items 43–48 must be completed for all inspections.)***

# Appendix A: Inspection Record Form

## HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM

<sup>1</sup> FACILITY	<sup>2</sup> <input type="checkbox"/> <90 DAY, GENERATOR STORAGE <input type="checkbox"/> TREATMENT, STORAGE, DISPOSAL	<sup>3</sup> START DATE	<sup>4</sup> END DATE
<sup>5</sup> <input type="checkbox"/> Containers <input type="checkbox"/> Landfill <input type="checkbox"/> Surface Impoundment <input type="checkbox"/> Waste Pile <input type="checkbox"/> Thermal Treatment <input type="checkbox"/> Chem/Phys/Bio. Treat. <input type="checkbox"/> Incinerator <input type="checkbox"/> Misc. Unit <input type="checkbox"/> Tank <input type="checkbox"/> UST <input type="checkbox"/> Land Treatment <input type="checkbox"/> Underground Inj.			

**PART I** - Enter condition of item inspected (OK or AR\*) in column for day inspected.

ITEM	INSPECTED FOR	SUN	MON	TUE	WED	THU	FRI	SAT
<sup>6</sup> NO USE	CHECK IF NO WASTE IS PRESENT							
<sup>7</sup> (UN)LOADING AREA TANKS/CONTAINERS	SPILLS AND DETERIORATION							
<sup>8</sup> COMMUNICATION EQUIPMENT (PHONE/RADIO/ALARMS)	PROPERLY FUNCTIONING							
<sup>9</sup> TANKS (ALL ABOVE GROUND PORTIONS) MONITORING DATA	DISCHARGE CONTROLS CONDITION, LEAKS, LEVEL (6" FREEBOARD), CORROSION							
<sup>10</sup> SURFACE IMPOUNDMENTS AND CONTAINMENT	FREEBOARD (2 ft) SUDDEN DROPS IN LEVEL							
<sup>11</sup> PORTA BERM	LEAKS, CONDITION							
<sup>12</sup> EYE WASH	LEAKS, FUNCTIONING							
<sup>13</sup> STRUCTURAL INTEGRITY OF CONTAINERS/TANKS, VALVES, PIPES, AND FLANGES	DETERIORATION AND LEAKS, CORROSION, DAMAGE							
<sup>14</sup> COVER/LID OF CONTAINERS	CLOSED AND SECURED							
<sup>15</sup> WARNING SIGNS	POSTED & READABLE (BILINGUAL)							
<sup>16</sup> LABELS	"HAZARDOUS WASTE" PRESENT ON ALL CONTAINERS/TANKS							
<sup>17</sup> ACCUMULATION START DATE	PRESENT ON ALL CONTAINERS, TANKS, NONE EXCEED TIME RESTRICTIONS							
<sup>18</sup> RUN ON/OFF CONTROL (AREA L, G, H, P) LANDFILLS, DETONATION PADS	INTEGRITY, EROSION, PONDING							
<sup>19</sup> COVER INTEGRITY (AREA L, G, H, P), LANDFILLS	EROSION, SUBSIDENCE, WATER INTRUSION							
<sup>20</sup> SECURITY	CONDITION, FENCE/GATES/LOCKS							
<sup>21</sup> SITE LIGHTING	FUNCTIONS PROPERLY							

## Appendix A: Inspection Record Form

### HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM

ITEM	INSPECTED FOR	SUN	MON	TUE	WED	THU	FRI	SAT
22 CONTAINMENT STRUCTURES	INTEGRITY, STANDING WATER, VEGETATION, EROSION							
23 AISLE SPACE, STACKING	ADEQUACY APPROPRIATENESS							
24 MANAGEMENT OF CONTAINERS	SEGREGATED ACCORDING TO COMPATIBILITY							
25 HOSE BIBS, WATER SUPPLY	LEAKS, FUNCTIONING							
26 STORAGE SHEDS	FLOOR DAMAGE, LIQUID							
27 ROAD/WORK SURFACES	CRACKS/POTHOLES							
28 WIND SOCK	DAMAGE, FUNCTIONING							
29 SHAFT COVER AND RAIL	PRESENT, DAMAGE							
30 PALLETS	INTEGRITY, DAMAGE							
31 TREATMENT TANKS	PROPER OPERATION, LEAKS							
32 REFRIGERATOR	DAMAGED CONTAINERS, PROPER OPERATION							
33 SPILL CONTROL, FIRE, AND EMERGENCY EQUIPMENT	PRESENT AND IN GOOD WORKING ORDER							
34 INCINERATOR EMERGENCY WASTE FEED CUTOFF/ALARMS	PROPER OPERATING CONDITION OF ALL SHUTDOWN CONTROLS							
35 INCINERATOR PUMPS, VALVES, PIPES, MONITORING CONTROLS	LEAKS/SPILLS/TAMPERING, OPERATING WITHIN SPECS.							
36 PRESSURE VESSELS (S-SITE)	DETERIORATION AND SAND CONDITION							
37 OIL BURN PANS (S-SITE)	DETERIORATION & LEAKS							
38 HE BURN PADS (S-SITE)	DETERIORATION, VEGETATION, SAND COND. EROSION							
39 RADIATION SAFETY	SIGNS, MONITORING ( $\alpha$ $\beta$ $\gamma$ $^3\text{H}$ )							
40 DATE	DATE OF INSPECTION							
41 TIME	TIME OF INSPECTION							
42 INSPECTOR	INITIALS OF INSPECTOR							

## Appendix A: Inspection Record Form

### HAZARDOUS AND MIXED WASTE FACILITY INSPECTION RECORD FORM

**PART II** - For any AR (Action Required) in PART I above, describe below: action required, action taken, date of action. Attach additional sheets if necessary.

<p>(Note: Items 43-48 must be completed for all inspections.)</p>				
<sup>41</sup> INSPECTOR (Printed Name)	<sup>45</sup> Z NUMBER	<sup>46</sup> GROUP	<sup>47</sup> DATE	<sup>48</sup> TIME
<sup>44</sup> INSPECTOR (Signature)				

## Appendix A: Inspection Record Form

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Notes . . .



**APPENDIX E**  
**CONTINGENCY PLAN**

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## LIST OF ABBREVIATIONS/ACRONYMS

BEP	building emergency plan
CAS	Central Alarm Station
CFR	Code of Federal Regulations
CST	LANL's Chemical Science and Technology Division
DOE	U.S. Department of Energy
DX	Dynamic Experimentation
EM	Environmental Management
EM&R	Emergency Management and Response
EMP	Emergency Management Plan
EOC	Emergency Operations Center
ESH	Environment, Safety, and Health
ESH-1	LANL's Health Physics Operations Group
ESH-2	LANL's Occupational Medicine Group
ESH-5	LANL's Industrial Hygiene and Safety Group
ESH-7	LANL's Occurrence Investigation Group
ESH-10	LANL's Hazardous Materials Response Group
ESH-17	LANL's Air Quality Group
ESH-18	LANL's Water Quality and Hydrology Group
ESH-19	LANL's Hazardous and Solid Waste Group
ESH-20	LANL's Ecology Group
HAZMAT	Hazardous Materials
HMGS	Hazardous Materials Group Supervisor
IC	Incident Commander

**LIST OF ABBREVIATIONS/ACRONYMS  
(Continued)**

ICS	Incident Command System
JCNNM	Johnson Controls Northern New Mexico
LAO	Los Alamos Area Office
LACFD	Los Alamos County Fire Department
LACPD	Los Alamos County Police Department
LAMC	Los Alamos Medical Center
LANL	Los Alamos National Laboratory
LIR	Laboratory Implementation Requirement
MOU	memorandum of understanding
NAWAS	National Warning System
NIIMS	National Interagency Incident Management System
20 NMAC 4.1	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
NMED	New Mexico Environment Department
PA	public address
PPE	personal protective equipment
PTLA	Protection Technology Los Alamos
S	Security and Safeguards
S-8	LANL's EM&R Office
SM-409	ESH-2's central medical facility
TA	technical area
UCC	Utilities Control Center

## APPENDIX E CONTINGENCY PLAN

This appendix presents contingency measures applicable to all hazardous or mixed waste units at Los Alamos National Laboratory (LANL) included in technical area (TA)-specific permit applications, permit modification requests, or permit renewal documents. The contingency plan is intended to meet the requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, Part 264, Subpart D, revised January 1, 1997 [1-1-97], "Contingency Plan and Emergency Procedures," and 20 NMAC 4.1, Subpart IX, 270.14(b)(7) [1-1-97], for hazardous waste treatment, storage, or disposal facilities. In addition, this plan is consistent with the LANL Emergency Management Plan (EMP) (LANL, 1998), prepared by the LANL Emergency Management and Response (EM&R) Office. The provisions of this contingency plan will be carried out immediately to minimize hazards whenever there is a fire, explosion, or release of hazardous or mixed waste or hazardous or mixed waste constituents that could threaten human health or the environment, as required by 20 NMAC 4.1, Subpart V, 264.51(b) [1-1-97]. When necessary, additional contingency plan information will be provided in Attachment E of TA-specific permit applications, permit modification requests, or permit renewal documents. Individual facilities at LANL may have their own facility-specific emergency plans and/or procedures to follow in the event of a fire, explosion, or release of hazardous and/or mixed waste.

### E.1 HAZARDOUS AND MIXED WASTE EMERGENCY RESPONSE RESOURCES [20 NMAC 4.1, Subpart V, 264.52(c) and 264.53]

The primary resources for management of emergency incidents at LANL reside within the EM&R Office, which is part of the Security and Safeguards (S) Division. During an emergency situation, line management (i.e., the Group Leader of the affected area) works with the Duty Emergency Manager from the EM&R Office (S-8). The Emergency Manager has primary responsibility for managing emergency response operations, making appropriate notifications, activating the emergency response organizations, and proceeding to the scene. The Emergency Manager has authority to assume the role of Incident Commander (IC) during an emergency and typically assumes full responsibility for management of the emergency response operations at the scene. (Personnel from other organizations, such as the Federal Bureau of Investigation or the Los Alamos County Fire Department [LACFD], may also assume the role of IC, depending upon the type of emergency and responding organizations.) Additional LANL resources that may provide assistance in an emergency include personnel from the Environment, Safety, and Health (ESH)

Division and the Environmental Management (EM) Division at LANL. These groups are discussed in Sections E.1.2, E.1.3, and E.1.6.

Laboratory-contracted support services and other agencies are also available for assistance during emergencies. These are discussed in Section E.1.5 and include the contracted services of Protection Technology Los Alamos (PTLA) for security, Johnson Controls Northern New Mexico (JCNNM) for facility maintenance and heavy equipment operation, and the LACFD. Other outside response agencies are discussed in Section E.1.7 and include the Los Alamos County Police Department (LACPD) and the Los Alamos Medical Center (LAMC). The LACPD and the LAMC each provide assistance under a memorandum of understanding (MOU) with the U.S. Department of Energy (DOE).

Emergency response protocol at LANL is currently being modified to be consistent with the National Interagency Incident Management System (NIIMS). The NIIMS is a national standard that provides consistency in terminology/methodology and allows for an integrated emergency response both locally and nationally, if necessary. Consequently, this contingency plan may undergo further modification, when required.

The IC (e.g., Duty Emergency Manager) coordinates all groups and agencies responding to the emergency and personnel operating at the scene in what is called the Incident Command System (ICS). The general emergency notification structure, illustrated on Figure E-1, is designed to expand and contract, as appropriate, to include the response groups/agencies needed to address any particular emergency.

The IC may appoint and utilize a network of support personnel to assess, plan for, and mitigate emergencies. These personnel include, but are not limited to, a Safety Officer, a Public Information Officer, and a Liaison Officer that report directly to the IC and are responsible for issues related to safety, information, and the interaction of various groups associated with the overall emergency. Also reporting directly to the IC are an Operations Section Chief, Logistics Section Chief, Planning Section Chief, and an Administrative Section Chief. The Operations Section Chief oversees the Fire Branch and the Emergency Medical Services Branch, and is responsible for the actual emergency response. The Logistics Section Chief is responsible for providing support personnel and equipment necessary for the emergency response. The Planning Section Chief is responsible for planning the active mitigation and recovery for the emergency, and the Administrative Section

Chief is responsible for keeping records of expenditures. In some instances, one person may be assigned more than one of these positions. During an emergency at LANL, assistance may be provided to the IC and the IC's appointees by a large variety of response groups/agencies. The responsibilities and/or assistance available from the various response groups/agencies are listed in Table E-1 and discussed briefly in Sections E.1.2 through E.1.7.

A current copy of this contingency plan will be retained by each of the emergency response groups/agencies and the appropriate facility operators. LANL's Hazardous and Solid Waste Group (ESH-19) is responsible for the controlled distribution of the contingency plan. Amendments to the contingency plan are discussed in Section E.12.

E.1.1 Emergency Management and Response Office [20 NMAC 4.1, Subpart V, 264.52(d) and 264.55]

The Director of LANL has delegated the authority and responsibility for administering and implementing LANL's emergency management program to the S Division, which includes the EM&R Office. The EM&R Office coordinates and issues LANL's EMP and provides response coordination for emergencies. The EM&R Office also provides a 24-hour Duty Emergency Manager to respond to emergencies, including hazardous and mixed waste releases. The LANL Emergency Manager is the functional equivalent of the Emergency Coordinator (20 NMAC 4.1, Subpart V, 264.55 [1-1-97]). The EM&R Office maintains an Emergency Operations Center (EOC) in a ready condition, should a center be required. The primary EOC is located at TA-59, Building 1 (TA-59-1). An alternate EOC is located at TA-49-113. Should an EOC be activated during an emergency, all other emergency personnel, including the IC, fall under the control and direction of the EOC.

Assignment as the Duty (i.e., primary) Emergency Manager is rotated. The Duty Emergency Manager can be reached 24 hours a day by contacting the EM&R Office at 667-6211 or the Central Alarm Station (CAS) operator (911). Listed below is the name, address, and phone number of the current Primary Emergency Manager, as required by 20 NMAC 4.1, Subpart V, 264.52(d) [1-1-97].

George VanTiem  
197 El Viento St.  
Los Alamos, NM 87544  
Home phone number: 662-4623  
Laboratory phone number: 667-6211

The Duty Emergency Manager will respond to emergency incidents involving the release of hazardous or mixed waste to the environment, including spills, fires, and explosions. With input from the appropriate LANL groups, the Duty Emergency Manager will initially assess the possible hazards to human health or the environment and, if assuming incident command, will use whatever response personnel and/or emergency equipment necessary in order to control and contain the waste, as necessary. In the event of an emergency, the Emergency Manager typically becomes the IC with full responsibility for field activities (including logistics, planning, and operations or establishing these positions within the ICS). As described previously, the exception to this is when on-site personnel can adequately address the emergency and maintain incident command internally. At the scene of the emergency, the IC will assemble the ICS, as required, for response to the emergency.

The Duty Emergency Manager responding to an emergency will have access to a copy of the appropriate building emergency plan(s) (BEP) for the area in which the incident is occurring. These plans are maintained by the facility manager where a waste management unit is located and are available at the EM&R Office at TA-59; they are also located on site for use by emergency response personnel. The various response groups will obtain specific information relating to the facilities involved (including the layout of all affected buildings; the location of evacuation routes, equipment, and personnel; properties of the materials/wastes managed at the facility; and the hazards associated with these materials/wastes) from the BEP(s) and other site-specific information.

#### E.1.2 Hazardous Materials Response Group

The Hazardous Materials (HAZMAT) Team is comprised of personnel from the Hazardous Materials Response Group (ESH-10). The HAZMAT Team is responsible for the aggressive mitigation of chemical, radiological, hazardous waste, and mixed waste emergencies, including field decontamination of responders and response equipment. At the request of the IC, the HAZMAT Team may provide limited field decontamination support for victims. The HAZMAT Team is capable of providing a decontamination station at the scene of a hazardous material incident to process people working in a contaminated area and is prepared to perform decontamination of personnel. LANL standards require that the HAZMAT Team meet the training criteria for emergency response personnel specified in the Code of Federal Regulations, Title 29 (29 CFR), Subparts 1910.120(q)(6)(iii), (iv), and (v). The HAZMAT Team acts as part of the IC's reporting

through the HAZMAT Group Supervisor (HMGS). The LANL HMGS coordinates the HAZMAT Team and radiological field monitoring activities.

During an emergency response, ESH-10 may also provide site field monitoring to determine the nature and extent of contamination, provide information on correct handling of chemicals, make recommendations on protective clothing and equipment, and provide exposure and treatment information to responders. To operate effectively, ESH-10 may obtain resources from other ESH groups, such as the Health Physics Operations Group (ESH-1) and the Industrial Hygiene and Safety Group (ESH-5).

### E.1.3 EM and ESH Division Response Groups

At the scene, representatives and technical advisors from the EM and ESH Divisions and other response personnel are coordinated by the IC. In addition to their post-emergency duties, they may also be responsible for on-scene emergency operations such as planning. Depending on the type of emergency and the associated hazards, an individual from the most relevant group in the ESH Division will assume the position of the Environmental Safety and Health Advisor, will provide technical support, and will ensure LANL compliance with applicable federal, state, and local regulations.

#### E.1.3.1 EM Division

Subject matter experts from the EM Division may provide guidance on proper treatment, storage, and transportation of hazardous and mixed waste at LANL.

#### E.1.3.2 Air Quality Group

The Air Quality Group (ESH-17) provides field surveys of air to determine environmental impacts and dose equivalent to members of the public after a radiological emergency. In addition, ESH-17 provides expertise in meteorology to project short- and long-term environmental effects of emergency conditions.

#### E.1.3.3 Water Quality and Hydrology Group

After an emergency, the Water Quality and Hydrology Group (ESH-18) provides sampling of surface water runoff and sediments to determine environmental effects of an emergency and performs assessments for regulatory reporting requirements. ESH-18 also provides expertise in hydrogeology to establish short- and long-term environmental effects of emergency conditions.

#### E.1.3.4 Hazardous and Solid Waste Group

ESH-19 provides guidance on regulatory requirements to other LANL groups. After an emergency, ESH-19 provides field sampling (e.g., of soil, spills, or potentially hazardous waste) to determine environmental effects of exposure.

#### E.1.3.5 Ecology Group

The Ecology Group (ESH-20) provides field surveys of soil, foodstuffs, and biota to determine environmental effects of exposure after an emergency.

#### E.1.4 Other LANL Response Resources

Emergency response personnel from the Nuclear Materials Technology Division at TA-55 have been trained to respond to emergencies at that facility. Dynamic Experimentation (DX) Division personnel are responsible for the hazardous waste management units at TA-14, TA-15, TA-36, and TA-39. DX personnel responsible for these units are trained in emergency procedures and may provide information and/or assistance during emergencies involving explosive waste. Engineering Sciences and Applications Division personnel are responsible for waste management units at TA-16. These personnel are also trained in emergency procedures and may provide information and/or assistance during emergencies involving units at TA-16. Personnel from the Chemical Science and Technology (CST) Division may provide guidance on proper treatment, storage, and transportation of hazardous and mixed waste at TA-50-37, TA-60-69, and TA-54 West.

#### E.1.5 Contracted Response Groups

Contracted response groups' representatives may report directly to the IC Post, if requested. If the IC deems it necessary, the IC may designate an Operations Section Chief to aid in the coordination and direction of these groups. In addition, contracted response groups may report to a staging area, with a representative going either to the IC Post or, if activated, to the EOC.

#### E.1.5.1 Protection Technology Los Alamos

PTLA is responsible for LANL security and provides this service under contract to LANL. During an emergency, PTLA activities include maintaining security, directing traffic within LANL, and controlling access to the emergency scene. PTLA maintains the necessary equipment (such as crowd-control equipment and patrol vehicles) to perform these functions. In addition, the CAS at TA-64-1 is manned by PTLA personnel 24 hours a day.

#### E.1.5.2 Johnson Controls Northern New Mexico

JCNNM provides a maintenance support force under contract to LANL. This support force is under LANL's direction in an emergency. JCNNM also provides a representative to LANL in the event of an emergency and participates, as necessary, in post-emergency cleanup under the direction of a Recovery Manager designated by the IC. (The duties of the Recovery Manager are discussed in Section E.10.)

#### E.1.5.3 Los Alamos County Fire Department

The LACFD provides fire protection and ambulance coverage for the residential communities of Los Alamos and White Rock and for LANL. In the case of an emergency within LANL, the LACFD coordinates fire suppression and Emergency Medical Services. The IC retains overall responsibility for the emergency response effort. A copy of the contract between the DOE and the Incorporated County of Los Alamos is provided as Supplement 1 of this document.

#### E.1.6 LANL Support Groups

##### E.1.6.1 Health Physics Operations Group

ESH-1 provides field personnel to perform routine site evaluation and monitoring to determine radiological conditions in facilities. ESH-1 also provides guidance on radiological decontamination. In addition, this group augments the assessment and monitoring functions of the HAZMAT Team.

##### E.1.6.2 Occupational Medicine Group

LANL maintains its own medical facility operated by the Occupational Medicine Group (ESH-2). ESH-2 provides appropriate medical treatment for occupation-related illnesses and injuries and monitors employees to assess the effectiveness of health protection programs. In addition to promoting early identification and prevention of illnesses or injuries that may arise from exposures to hazardous or radioactive materials, ESH-2 maintains records of the health status of employees and related occupational medicine activities.

Although ESH-2 is not routinely involved with on-scene emergency response, the group maintains a central medical facility with a fully equipped emergency room and decontamination facilities at TA-3, Building 409 (SM-409). The location of this and other emergency facilities are shown on Figure E-2. Medical staff at these facilities include physicians, physician's assistants, nurses, technicians, and counselors. All full-time physicians and nurses receive radiation accident training.

ESH-2 also maintains access to a database that provides the clinical staff with timely toxic exposure and treatment information.

#### E.1.6.3 Industrial Hygiene and Safety Group

ESH-5 assists ESH-2 with its ability to obtain additional exposure and treatment information. In addition, ESH-5 maintains computer access to the National Institute of Occupational Safety and Health Technical Information Center and the Registry of Toxic Effects of Chemical Substances. During routine operations, ESH-5 performs site evaluations and field testing to determine the nature and extent of chemical contamination and specifies protective clothing and equipment.

#### E.1.6.4 Occurrence Investigation Group

Occurrence Investigation Group (ESH-7) personnel assist the facility manager in investigating all adverse environmental, safety, health, and operational occurrences (on-site and off-site), determining the causal factors, identifying the appropriate corrective actions, and assisting in the preparation of reports documenting the occurrence to DOE. This group tracks corrective actions associated with such occurrences and maintains the information in an on-site database.

#### E.1.7 Outside Response Agencies

During an emergency, outside response agencies report directly to the IC. An Operations Section Chief, designated by the IC, may aid in coordinating and directing the groups responding to an emergency.

##### E.1.7.1 Los Alamos County Police Department

The LACPD has only minimal interaction with LANL in an on-site emergency. This interaction is limited to traffic control on DOE roads with public access, handling criminal activity, and criminal investigations. A copy of the MOU between DOE and the Incorporated County of Los Alamos is included as Supplement 2 of this document.

##### E.1.7.2 Los Alamos County Emergency Management Coordinator

Los Alamos County has an agreement with LANL's EM&R Office to provide assistance in certain emergency situations. If an emergency occurs on LANL property that may affect the communities of Los Alamos and White Rock, the EM&R Office will notify the Los Alamos County Emergency Management Coordinator, who will coordinate necessary emergency actions throughout the county.

### E.1.7.3 Los Alamos Medical Center

LANL maintains a fully equipped decontamination room adjacent to the emergency room at the LAMC. In the event that a case is sent to LAMC, support for the emergency room staff is provided by ESH-2 medical personnel. ESH-1, ESH-5, and ESH-10 personnel also provide assistance to the emergency room staff; assistance from additional ESH resources are provided, as necessary. Assistance is coordinated through the EM&R Office. A copy of the MOU between the DOE and LAMC is included as Supplement 3 of this document.

## E.2 EMERGENCY EQUIPMENT AND COMMUNICATIONS [20 NMAC 4.1, Subpart V, 264.52(e)]

### E.2.1 Emergency Equipment

20 NMAC 4.1, Subpart V, Subpart D [1-1-97], requires a listing of all emergency response equipment available that can be used in the event of an emergency. Table E-2 lists emergency equipment available for use at any of LANL's hazardous or mixed waste units. The list includes emergency equipment available in the HAZMAT vehicles and trailers as well as supplemental emergency equipment maintained by the LACFD, JCNNM, and ESH-2. A list of emergency equipment available for use at specific hazardous and/or mixed waste units is presented in Attachment E of TA-specific permit applications, permit modification requests, or permit renewal documents.

### E.2.2 Emergency Communications [20 NMAC 4.1, Subpart V, 264.56(a)]

Effective emergency response at LANL requires an efficient communication system that will integrate required personnel into the emergency response. The initial phase of an emergency may involve a small number of individuals at the affected area, require notification of the Duty Emergency Manager, and utilize local communication equipment and/or systems. When responding to hazardous and/or mixed waste emergencies, the EM&R Office can provide communications between response units and emergency organizations.

#### E.2.2.1 Central Alarm Station

The LANL CAS is located at TA-64-1. This station is manned by PTLA personnel 24 hours a day and is equipped with telephones (including direct-line telephones), medium- and short-range radios, a National Warning System (NAWAS) station, and an emergency power system. The fire alarm board at the control room gives the location of automatic and manual fire alarm equipment. The CAS receives alarms from several sources and, in turn, notifies the Duty Emergency Manager of a hazardous or mixed waste emergency. Sources include:

- Telephone communication (911)
- Automatic fire alarms
- Manual pull alarms
- Computer interface (to warn of critical events at selected facilities)
- Security alarms
- Radio communications.

Upon receipt of an alarm, the CAS operator notifies the LACFD and the Duty Emergency Manager. The Emergency Manager, the EOC communicator, and/or the CAS operator may request emergency response groups to respond. Should the LANL 911 system fail, the Los Alamos County System, located at the LACPD Station, will be used to activate emergency response groups.

#### E.2.2.2 Utilities Control Center

The Utilities Control Center (UCC) is located at TA-3-223 and is maintained 24 hours a day. Alarms at this facility are connected to LANL experiments, equipment, and/or buildings to record outages and hazardous conditions. Any conditions that activate these alarms will be reported immediately to the building management or to the CAS operator for notification and response.

#### E.2.2.3 Additional Communication Systems

Internal communication systems at LANL include:

- The Centrex telephone system
- A telephone paging system
- A variety of frequency modulated very high frequency simplex repeater systems, including:
  - Multiple base stations
  - Mobile and hand-held units
  - Links to New Mexico public safety agencies
- An ultrahigh frequency radio system, including:
  - Multiple antenna sites
  - Mobile and base units
  - Links with the LACPD, the LACFD, and the State Medical System
- A 400-megahertz trunked radio system that includes a link with the LACFD
- Transmission and reception (through the EOC) for:

- Secure telephone
  - Secure fax
  - Secure still video
  - Microwave telephone communication
  - Secure videoconference system (to all DOE EOCs and DOE Headquarters)
- Access to all radio systems outlined above (through the EOC).

Off-site communications with federal, state, tribal, county, and other agencies are available through the following:

- A Centrex telephone system
- Private telephone lines (if Centrex fails)
- Two NAWAS stations
- A link to KRSN radio (local radio station)
- The local cable television
- The Community Alert Network.

The LANL EOC, maintained by the EM&R Office, operates radio systems on key LANL and off-site channels. Emergency personnel responding to on-site incidents have the benefit of wide-area radio coverage using EOC facilities. The Duty Emergency Manager is responsible for activating whatever support personnel, equipment, or services are needed 24 hours a day.

### E.3 CONTINGENCY PLAN IMPLEMENTATION [20 NMAC 4.1, Subpart V, 264.56]

The following sections discuss guidelines used to implement this contingency plan, emergency notification, emergency manager actions, and the responses to be taken in various types of emergencies.

#### E.3.1 Guidelines For Implementation [20 NMAC 4.1, Subpart V, 264.51(b) and 264.56]

The decision to implement this contingency plan depends upon whether an imminent or actual incident involving a release of hazardous or mixed waste to the environment could threaten human health or the environment. The Duty Emergency Manager or IC will use the guidelines listed below to decide whether to implement this plan.

This contingency plan will be implemented immediately in the following situations involving releases or potential releases of hazardous or mixed waste:

- Spills:
  - If a hazardous or mixed waste spill cannot be contained with secondary containment or application of sorbents
  - If precipitation threatens to move spilled material off site
  - If a hazardous or mixed waste spill causes the release of flammable material, creating a fire or explosion hazard
  - If a hazardous or mixed waste spill results in toxic fumes that threaten human health
  - If an earthquake or other natural disaster threatens containment integrity.
- Explosions:
  - If an unplanned explosion involving hazardous or mixed waste occurs
  - If an imminent danger of an explosion involving hazardous or mixed waste exists.
- Fires:
  - If a fire involving hazardous or mixed waste occurs
  - If any building, grass, forest, or nonhazardous waste fire exists that threatens to volatilize or ignite hazardous or mixed waste.

### E.3.2 Emergency Notification [20 NMAC 4.1, Subpart V, 264.56(a) and (b)]

Emergency notification shall be conducted in accordance with Laboratory Implementation Requirement (LIR) 201-00-04.0, "Los Alamos National Laboratory Incident Reporting Process." The LIR requires immediate notification of 911 or the EM&R Office upon discovery of an imminent or actual incident involving solid waste (including hazardous and mixed waste). During nonworking hours, personnel will report all imminent or actual incidents involving solid waste to the Emergency Manager or the CAS operator at 667-6211. In the case of fire involving solid waste, notification of these individuals is superseded by the LANL fire alarm system. A fire is reported by dialing 911 (from telephone exchanges 667 and 665) or 667-7080 (from all exchanges including cellular phones), activating automatic alarms, or activating a fire alarm pull box. All fire alarms alert the CAS operator, the LACFD, and PTLA, who in turn notify the Duty Emergency Manager.

Upon recognition of a hazardous or mixed waste emergency, the first arriving emergency-trained person will become the Facility Command Leader. Once the EM&R Office is notified of the emergency, the Duty Emergency Manager will proceed to the scene and be briefed by the Facility

Command Leader, building/area personnel, and/or other emergency units/teams. The Emergency Manager will then assume the position of IC. If necessary, the IC may recommend that the EOC be activated and that the necessary members of the emergency management team be determined. The IC will form an ICS and contact the HMGS. The HMGS will notify the appropriate emergency response groups. The IC may determine from the list of response groups described in Table E-1 which groups to contact in an emergency. Each response group maintains an on-call person and/or a call-down procedure to respond to emergencies.

The EM&R Office will be notified of any potential hazardous or mixed waste emergency (e.g., spills, fires, or explosions). The IC and the HMGS will use whatever means are available (including the assistance of other response groups, computer data searches, and sampling) to determine if a hazardous or mixed waste is being or has been generated and/or released.

#### E.3.3 Emergency Manager Actions [20 NMAC 4.1, Subpart V, 264.56(b-h)]

Upon notification of an incident, the Duty Emergency Manager may:

- Make an initial assessment of the incident and, in conjunction with the IC, obtain resources to determine the source, quantities, and types of hazardous or mixed waste involved and the areal extent of any released materials.
- Request resources needed and have EOC staff begin notifications.
- Proceed directly to the scene.
- Assess the nature of the incident (e.g., through communication with the IC).
- Assume incident command after a direct briefing with the Facility Command Leader.
- Based on the guidelines in Section E.3.1 of this plan, determine if implementation of this contingency plan is warranted.
- Recommend activation of the EOC, if necessary.

Upon deciding to implement this contingency plan, the IC will, when appropriate:

- Assess the hazards to human health and the environment, including both direct and indirect effects, such as generation of toxic, irritating, or asphyxiating gases and/or hazards of runoff of water or chemicals used for fire suppression. An individual designated by the IC will use the guidelines in Section E.3.1 to assess the hazards to human health and the environment. If any of the criteria under Section E.3.1 are met and

if the responsible Group or Section Leader has not already accomplished evacuation of the area, the IC will initiate shelter in place or evacuation of the immediate area.

- Direct the EOC staff to initiate protective actions and immediately notify appropriate response groups and personnel as per the EM&R checklist. The IC may activate one or more of the following community alert mechanisms: the Community Alert (telephone) Network, the KRSN radio remote input system, or the cable television capture system, sitewide area network radios, and public radio and television channels.
- In the case of fire or release of any type, confirm that all response personnel at the scene are aware of actual or imminent special hazards associated with hazardous or mixed waste.
- In emergency situations, contact the appropriate ESH representative to notify the New Mexico Environment Department (NMED) at (505) 827-9329 and the National Response Center at (800) 424-8802, reporting:
  - The name and telephone number of the ESH representative
  - The name and address of the facility
  - The time and type of incident
  - The name and quantity of material involved, to the extent known
  - The extent of injuries, if any
  - The possible hazards to human health or the environment outside the facility.
- Advise the response groups of hazards in order to minimize personnel exposure and expedite mitigation.
- When an emergency occurs at hazardous or mixed waste treatment units, ensure that appropriate LANL personnel monitor for leaks, pressure buildup, gas generation, or equipment ruptures.

Once control of the emergency is established, the IC will take all reasonable measures to minimize the occurrence, recurrence, or spread of fires, explosions, or releases. In addition, the IC will delegate cleanup and decontamination responsibilities to include:

- Arranging for site cleanup.
- Assisting with arrangements for proper handling of recovered waste, contaminated soil, or contaminated surface/groundwater.
- Assisting with arrangements for decontamination of equipment, as needed.
- Arranging for replacement and/or repair of equipment, as needed.
- Requesting that testing is conducted to verify successful cleanup.

Within 15 days of the incident, DOE Los Alamos Area Office (LAAO) will submit a report to the Secretary, NMED. The contents of this report are generated by several LANL groups responding to the emergency, as detailed in Section E.11.

#### E.4 SPILLS [20 NMAC 4.1, Subpart V, 264.56(e)]

Sudden releases may include spills of hazardous or mixed waste that pose a significant threat to human health or the environment. Spill incidents resulting in a sudden release of hazardous or mixed waste that present a potential threat to human health or the environment, as listed in Section E.3.1, require implementation of this contingency plan.

Hazardous and mixed wastes are stored on site at LANL in a variety of containers. Volumes of hazardous or mixed waste managed will vary from unit to unit. The general steps in handling hazardous and/or mixed waste spills are as follows:

- Isolate the immediate area and deny entry to all unauthorized personnel.
- Contain the spill by spreading sorbents or forming temporary dikes to prevent further migration (performed by properly trained personnel, if safe).
- Monitor the spill area and sample the spilled waste and contaminated media.
- Package the waste and contaminated media in sound containers.
- Decontaminate the area and all involved equipment and personnel (followed by testing to assure adequate cleanup).
- Remove the waste and contaminated media (performed by appropriate waste management personnel).

The IC will determine the steps to be taken for spill mitigation. If initial mitigation of the spill is necessary and can be accomplished safely (by appropriately trained personnel) before the Emergency Manager arrives, a qualified member of the affected area's operating group will serve as the Facility Command Leader.

Hazardous and/or mixed waste spills will be stabilized, if necessary, and cleaned up. During spill control and cleanup, all personnel will wear appropriate personal protective equipment (PPE). ESH-5 will conduct monitoring to ensure that chemical exposure is minimized. ESH-1 will conduct health physics monitoring whenever mixed waste is involved to ensure that radiation exposure is

also minimized. The collected material may be treated as hazardous or mixed waste, depending on the components present. Runoff from spills of listed hazardous or mixed waste that have migrated outside waste management areas must be contained and managed as hazardous or mixed waste, as appropriate. If the spill was from a characteristic hazardous or mixed waste and if it is determined that the runoff does not exhibit the characteristic (i.e., ignitability, corrosivity, reactivity, and/or toxicity), the runoff need not be managed as characteristic waste. Temporary dikes may be constructed to contain runoff.

#### E.4.1 Spill Control Procedures

When a flammable organic solvent spill, a highly acidic spill, or a highly caustic spill has been stabilized with the contents of an organic solvent spill kit, an acid spill kit, or a caustic spill kit, respectively, the resulting material may be sorbed using a nonbiodegradable sorbent. Nonbiodegradable sorbent can be used to control any spill if it is known to be compatible with the spilled material. Appropriate containers or packaging will be used to collect all spilled material and contaminated sorbent. Table E-1 of TA-specific permit applications, permit modification requests, or permit renewal documents lists emergency equipment available for spill control at specific units. The ultimate disposition of any contaminated sorbent or waste material will be determined by appropriate waste management personnel, according to hazardous waste management regulatory requirements.

##### E.4.1.1 Tank System Spill Control and Reporting

A tank system will be removed from service immediately using approved shutdown procedures if a leak or spill occurs from the tank system or its secondary containment system or if the system is determined to be unfit for use. Further addition of waste to the tank system or containment system will cease and the system will be visually inspected to determine the cause of the leak or spill. If a leak occurs from a tank system, as much of the waste as is necessary to prevent further release of waste will be removed within 24 hours after detection or as early as practicable, and the system will be inspected and repaired. All released waste will be removed within 24 hours or as soon as possible if a leak occurs to a tank's containment system.

If a spill from a tank is not immediately contained and cleaned up and exceeds a quantity of 1 pound, the release will be reported to the NMED within 24 hours of its detection in accordance with the requirements of 20 NMAC 4.1, Subpart V, 264.196(d)(1) [1-1-97]. In addition, a written report will be submitted to the NMED within 30 days describing the likely migration route of the

release; soil characteristics at the site; monitoring and sampling data relevant to the release; proximity to downgradient drinking water, surface water, and populated areas; and response actions taken or planned.

#### E.4.1.2 Tank System/Secondary Containment Repair and Closure

If the integrity of a tank system, including its secondary containment, has not been damaged by a spill, the system may be returned to service. Service may not resume until after all released waste is removed and repairs, if necessary, are made. Any tank system that cannot satisfy the criteria described above will undergo closure in accordance with the requirements of 20 NMAC 4.1, Subpart V, 264.197 [1-1-97].

#### E.4.1.3 Certification of Major Repairs

If a tank system undergoes extensive repairs (e.g., installation of an internal liner, tank system piping retrofit), the tank system will not be returned to service until a certification by an independent, qualified registered professional engineer is obtained, verifying that the repaired system is capable of handling wastes without release for the intended life of the system. This certification will be submitted to NMED within seven days after returning the tank system to use.

#### E.4.2 Decontamination Verification

Decontamination will be accomplished at the spill site. After the spilled material has been sorbed, the material will be containerized. If the spill occurs on a cemented or asphaltic concrete area, water or an appropriate solvent will be used to clean the area. Liquids (i.e., spilled material and cleaning water or solvents used to clean a spill) may be sorbed with a compatible, nonbiodegradable sorbent and containerized. If a spill is from an identifiable source, the spilled material may be characterized as a newly generated waste using acceptable knowledge or may be analyzed, as applicable, for the hazardous waste constituents known to be components of the waste managed at that unit. Analytical method(s) given in Table E-3 will be utilized, as appropriate. If the spill is from other than an identifiable source, the spilled material will be analyzed for the parameters listed in Table E-3. All personnel conducting decontamination verification will wear appropriate PPE. ESH-1 will conduct health physics monitoring whenever mixed waste is involved to ensure that radiation exposure is maintained as low as reasonably achievable. Any hazardous or mixed waste collected from decontamination activities will be handled appropriately.

In order to establish baseline data, a sample of decontamination water or solvent (and nonbiodegradable sorbent material, as applicable) will be taken prior to the start of the decontamination effort. A sample of the final washwater (or the used sorbent) will then be taken. The baseline samples and final washwater/used sorbent samples will be analyzed for the applicable parameters given in Table E-3. If the decontamination samples contain hazardous constituents that are not present in the baseline samples and the levels exceed established health-based levels, the decontamination procedure will be repeated. An alternative demonstration of decontamination may be proposed and justified to NMED, who will evaluate the proposed alternative in accordance with the standards and guidance currently in effect. If the proposed alternative is accepted, decontamination levels will meet the levels approved by NMED. Each sample will be collected with an appropriate sampling device (e.g., a thief or trier) as specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986), and approved updates, as applicable.

If a hazardous/mixed waste spill occurs on soil, any free liquid present will be collected and containerized. Liquids may be sorbed with a compatible nonbiodegradable sorbent prior to containerization. For such a spill, all contaminated soil will be excavated and containerized. ESH-5 will conduct industrial hygiene monitoring, and if mixed waste is involved, ESH-1 will conduct health physics monitoring, if deemed necessary, to minimize exposure during soil removal operations. To establish comparative background data, one or more samples will be collected from an unaffected area near the spill site. The spill site will then be characterized, and the data will be compared to the background data to ensure that all contaminated material has been removed.

If a hazardous/mixed waste spill occurs in an area with flooring, the floor will either be removed in lieu of decontamination, or the floor will be decontaminated. If the decision is made to decontaminate the floor, swipe samples or other types of sampling appropriate for the contaminant will be collected at random and characterized for decontamination verification. If, after several decontamination efforts, it is subsequently determined that the affected floor area cannot be decontaminated, the floor material will be removed. In all cases, wastes generated during the decontamination and/or removal process will be managed appropriately.

## E.5 EXPLOSION

Explosions and resultant releases may result in a significant threat to human health or the environment. The potential exists for hazardous or mixed waste to be released during an explosion. Implementation of this contingency plan is required whenever a sudden release that cannot be contained or that presents a threat to human health or the environment occurs as a result of an explosion.

In the event of an explosion at LANL, all personnel will immediately evacuate the area. Any injured personnel will be decontaminated at the site, if required and if time allows. An LACFD ambulance will transport these personnel to LAMC for treatment. If an injury is severe and requires immediate medical evacuation, the injured person will be wrapped to contain contamination, if necessary. In the case of an actual or potential explosion, on-site personnel will contact the EM&R Office immediately so that the Emergency Manager can ensure that all necessary emergency response personnel are alerted. The LACFD is notified automatically upon central alarm system activation. The Emergency Manager assumes incident command and will remain near but at a safe distance from the site in order to inform personnel responding to the explosion of the known hazards.

If a fire results from an explosion, the LACFD Senior Officer will, upon arrival at the scene, evaluate all available information and determine the appropriate firefighting methods and tactics. The LACFD Senior Officer will direct firefighting operations as the acting IC until EM&R formally assumes command.

## E.6 FIRE

Fires and resultant releases of hazardous or mixed waste may result in a significant threat to human health or the environment. Implementation of this contingency plan is required whenever a fire incident results in a sudden release of hazardous or mixed waste that cannot be contained or that presents a threat to human health or the environment.

Fire alarms will be sounded automatically or manually to alert personnel that a fire hazard exists and to evacuate the area immediately if in the vicinity. Descriptions and information related to the various fire alarms at the specific units are included in Section 2.0 and Attachment E, Table E-1, of TA-specific permit applications, permit modification requests, or permit renewal documents.

Depending on the size of the fire and the fuel source, portable fire extinguishers may be used. However, LANL policy does not encourage the use of portable fire extinguishers by employees unless properly trained. Instead, LANL policy encourages immediate evacuation of the area and notification of the CAS operator by dialing 911. For any fire, including a fire that involves hazardous or mixed waste, the responsible Group Leader and the EM&R Office must be contacted immediately. The Emergency Manager will alert the LACFD and all other necessary emergency response personnel. If the fire spreads or increases in intensity, all personnel must follow protective actions as designated by the Emergency Manager. The Emergency Manager assumes incident command and will remain near the scene to advise personnel responding to the fire of the known hazards.

Upon arrival at the scene, the LACFD Senior Officer will evaluate all available information and determine the appropriate firefighting methods and tactics. The LACFD Senior Officer will direct firefighting operations as the acting IC until EM&R formally assumes command.

## E.7 UNPLANNED NONSUDDEN RELEASES

Nonsudden releases include those incidents that, if uncontrolled, impact the environment over a long period of time. Such incidents include minor leaks from containers and loss of secondary containment integrity.

### E.7.1 Responsibility

Appropriate LANL personnel are responsible for correction of a nonsudden release from a hazardous or mixed waste unit if the correction can be performed safely with normal maintenance and management procedures. Personnel from the EM&R Office may provide assistance in mitigating releases. Any correction methods for nonsudden releases that have resulted in an impact to the environment will be coordinated with the NMED.

### E.7.2 Nonsudden Releases

In general, the response to a nonsudden release will be to contain the release, to correct the cause of the release, and to clean up any release to a level that protects human health and the environment.

Appropriate LANL personnel will conduct regularly scheduled inspections to detect failure of containment at the unit(s) addressed in TA-specific permit applications, permit modification

requests, or permit renewal documents. Secondary containment systems will be inspected regularly to ensure that the integrity of the containment systems has not deteriorated. If an inspection reveals that containers are leaking or that secondary containment has deteriorated, LANL personnel will ensure that maintenance or replacement of containment is performed, as appropriate.

### E.7.3 Nonsudden Release Surveillance

In addition to routine inspection and site-specific sampling and testing, LANL has established an areawide environmental monitoring network maintained by ESH. Monitoring and sampling locations for various types of measurements are organized into three main groups. Regional monitoring stations located within the five counties surrounding Los Alamos County are placed up to 80 kilometers (50 miles) from LANL. These stations serve to determine background conditions. Perimeter stations, located within approximately 4 kilometers (2.5 miles) of the LANL boundary, document conditions in residential areas surrounding LANL. On-site stations, most of which are accessible only to employees during normal working hours, are within the LANL boundary.

Routine surveillance conducted at these stations includes measuring radiation and collecting samples of air particulates, surface waters, groundwaters, soil, sediment, and foodstuffs for subsequent analysis. Additional samples provide information about particular events, such as major runoff events and nonroutine releases. Data from these efforts are used for comparison with standards, for determining background levels, and for radiation dose calculations.

## E.8 EXPOSURE TO HAZARDOUS OR MIXED WASTE

If a person is exposed to hazardous or mixed waste, the affected person, a co-worker, or line management will notify the EM&R Office. Appropriate first aid should be administered immediately. An EM&R Office representative will make appropriate notifications as soon as possible, so that exposure levels and decontamination requirements can be established. The affected person will then be transported to the ESH-2 medical facility or to LAMC for evaluation. If possible, the material involved in the exposure will be ascertained, and the information will be given to the medical staff.

Other potential exposures will necessitate evacuation of the area, if appropriate, or under any of the following conditions:

- Irritation of the eyes, breathing passages, or skin
- Difficulty in breathing
- Nausea, lightheadedness, vertigo, or blurred vision.

The affected person will be transferred to the ESH-2 medical facility or to LAMC. An ESH-1, ESH-5, or ESH-10 representative will attempt to ascertain what, if any, exposure occurred and what corrective measure is appropriate.

#### E.9 EVACUATION [20 NMAC 4.1, Subpart V, 264.52(f)]

A facility will be evacuated upon the voice command to evacuate the area or upon the sounding of the evacuation or fire alarm. The IC may call for sheltering in place when evacuation is impractical due to significant airborne hazards. Shelter in place may be possible in a designated area or in a building where all exterior windows and doors may be closed and outdoor air ventilation equipment turned off. Once the airborne hazard has decreased, personnel would then be evacuated.

##### E.9.1 Emergency Process Shutdown Prior To Evacuation

Personnel are instructed to shut down equipment prior to evacuating a building/area unless an immediate building/area evacuation is announced or signaled. To ensure efficient shutdown, training and exercises addressing the shutdown process are performed. In the case of an immediate evacuation, a selected team may shut down designated equipment in an evacuated area. The team will be equipped with the proper equipment, clothing, and breathing apparatus. If they are on location, ESH-1, ESH-5, and/or ESH-10 will provide advice and assistance. Process-shutdown procedures apply mainly to hazardous or mixed waste treatment units and are addressed, as appropriate, in Attachment E of TA-specific permit applications, permit modification requests, or permit renewal documents.

##### E.9.2 Evacuation Plan

Emergency situations may warrant the shutdown and evacuation of areas or buildings in order to protect personnel and property, to anticipate the emergency condition, or to enhance the appropriate response. Table E-4 lists the criteria for evacuation, persons responsible for initiating evacuations, and reentry conditions. Figures in Attachment E of TA-specific permit applications, permit modification requests, or permit renewal documents show evacuation routes and assembly/muster areas for specific hazardous and/or mixed waste management units.

To initiate the evacuation of a building/area, the evacuation or fire alarm is sounded and/or the public address (PA) system may be used. Evacuation alarms cannot be silenced and reset by site personnel. Only the Fire Alarm Maintenance Section at 667-4027 and the LACFD Battalion Chief at 667-7026 can silence and reset alarms. To evacuate a portion of a building or area, use of the PA system may be more appropriate. The PA system will notify the occupants of the area to be evacuated and will advise personnel throughout the building of the existence of a problem in a specific area. Once evacuation has been initiated and if conditions allow, personnel will turn off all equipment that could contribute to the hazard if left unattended. All personnel will then proceed from the affected area to the assembly/muster area.

In the event of evacuation of a building, an outbuilding, or an outlying work area, the responsible Group or Section Leader (or designee) will determine a control point at the closest safe location (e.g., considering wind direction). The designated area will be outside the affected area and will serve as an assembly/muster area where the Group or Section Leader (or designee) can oversee evacuation operations and work to prevent further spread of the hazard.

As personnel exit an affected building/area, a primary sweep of the building/area will be performed to ensure that all personnel have evacuated. If the building/area is evacuated, a Group or Section Leader designee will take attendance at the assembly/muster area and report personnel accountability to the IC. The evacuation procedure is as follows:

- The person discovering the accident or emergency will call 911 to ensure that line management and the EM&R Office are notified.
- Site-specific BEPs and/or emergency action procedures will be followed concerning evacuation, sweep, personnel accountability, and equipment shutdown procedures.

A responsible on-site person may direct the initial evacuation and the central alarm system may be activated. The EM&R Office will be notified immediately and will dispatch the Duty Emergency Manager. A responsible on-site person may implement the evacuation process until the Duty Emergency Manager arrives at the scene to assume that responsibility.

E.10 SALVAGE AND CLEANUP [20 NMAC 4.1, Subpart V, 264.56(g) and (h)]

Appropriate representatives from the ESH groups will survey the affected area before salvage and cleanup begin. They will conduct visual inspections and sampling of the affected area to determine whether cleanup is complete. If gases or fumes, electrical or radiological problems, or other conditions present a hazardous situation, personnel or selected teams equipped with proper breathing apparatus and protective clothing will reenter the area to perform designated decontamination tasks, repairs, and salvage to allow the return to normal operations. After an emergency, the IC will turn the operation over to a designated Recovery Manager, who will:

- Provide for proper handling of recovered waste, contaminated soil or surface water, or any other material that results from a spill, fire, or explosion. Contaminated material will be managed appropriately and temporarily stored at one of the hazardous or mixed waste storage areas at LANL. Waste management personnel will be responsible for determining the final disposition of the waste. This determination will be made in compliance with hazardous waste management regulations.
- Arrange to monitor for damage or improper operation of the unit and associated equipment as a result of the emergency or of plant shutdown in response to the emergency.
- Arrange for site cleanup procedures to be completed and ensure that no waste that may be incompatible with the released material is treated or stored in the same area.
- Ensure that emergency equipment is cleaned, decontaminated, and fit for its intended use before operations are resumed. Equipment will be inspected visually and then sampled, if necessary, to determine the type and degree of contamination and to determine appropriate cleanup measures.

Prior to resuming operations, the appropriate facility management at LANL will verify that the previously mentioned tasks have been performed. The owner/operator (DOE/LAAO) will notify appropriate state and local authorities that cleanup procedures are completed and that emergency equipment is clean and fit for its intended use.

The IC assumes the coordination of post-emergency actions (particularly during the time period immediately following the emergency) until a Recovery Manager is appointed. The Recovery Manager then assumes this coordination role. The Recovery Manager is the functional equivalent of the Emergency Coordinator for post-emergency actions. The post-emergency actions include cleanup operations, vital equipment repair, or interim hazard-removal operations (such as arranging for demolition of unstable walls). The services of affected operational organizations, ESH groups,

JCNNM, and other on-site resources will also be used to estimate cleanup costs and operational impact.

E.11 EMERGENCY RESPONSE RECORDS AND REPORTS [20 NMAC 4.1, Subpart V, 264.56(j)]

Any emergency that requires implementation of the contingency plan will be documented by the Group or Section Leader responsible for the hazardous or mixed waste unit associated with the emergency, and reported in writing within 15 days to the NMED. The incident report, submitted by DOE/LAAO, will include the following data:

- Name, address, and phone number of owner or operator
- Name, address, and phone number of the facility
- Date, time, and type of incident (e.g. fire, explosion, spill)
- Name of material(s) involved
- Quantity of material(s) involved
- Extent of injuries (if any)
- Assessment of actual or potential hazards to human health or the environment
- Estimated quantity and disposition of material recovered from the incident.

Various LANL personnel responding to the emergency will record the details of any incident requiring implementation of this plan. The CAS operator, the EOC communicator, the Emergency Manager, and/or the Group or Section Leader responsible for the hazardous or mixed waste management area in which the emergency occurred will record the date, time, location of the incident, wastes/materials involved, injuries (if any), property damage (if any), and a detailed description of the incident. This information will be maintained in the facility operating record. ESH-7 will supply information concerning any follow-up actions. Appropriate LANL personnel will provide details regarding the removal and disposition of hazardous and mixed wastes associated with the emergency.

E.12 CONTINGENCY PLAN AMENDMENT [20 NMAC 4.1, Subpart V, 264.54]

This contingency plan will be reviewed periodically by appropriate division personnel. The plan will be amended immediately if determined to be inadequate to handle releases (spills, explosions, and/or fires) and whenever:

- The facility permit is revised.

- There is change in the design or operation of the facility (e.g., quantities of waste handled and handling techniques) that increases the likelihood of an emergency and requires changes in emergency response.
- The Primary Emergency Manager changes.
- The list of emergency equipment changes significantly.

### E.13 REFERENCES

EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *EPA-SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

LANL, 1998, "Los Alamos National Laboratory Emergency Management Plan," Los Alamos National Laboratory, Emergency Management and Response Office, LA-12900 Rev. 1, LIR 403-00-01.0, Los Alamos, New Mexico.

**Table E-1**

**Response Groups and Agencies Available to the  
Emergency Management and Response Office for  
Guidance and/or Emergency Assistance**

LANL <sup>a</sup> -Controlled Response Group	Telephone	Responsibilities
ESH-1, Health Physics Operations	667-7171	Provides routine guidance on radiological decontamination. Provides routine site evaluation and monitoring to determine the nature and extent of contamination (radiological).
ESH-2, Occupational Medicine	667-7251	Provides emergency medical treatment.
ESH-5, Industrial Hygiene and Safety	667-5231	Provides guidance on industrial hygiene equipment and operational safety. Provides routine site evaluation/support field testing to determine the nature and extent of contamination (chemical).
ESH-7, Occurrence Investigation	667-0598	Reports occurrences and tracks follow-up actions.
ESH-10, Hazardous Materials Response	665-5237	Provides emergency site evaluation/field monitoring (chemical and radiological). Specifies protective clothing and equipment. Dispatches Hazardous Materials Response Team. Provides support for chemical, radiological, hazardous, and mixed waste incidents and decontamination of responders and response equipment.
ESH-17, Air Quality	665-0235	Provides information on meteorological conditions.
ESH-18, Water Quality and Hydrology	665-1859	Provides information on hydrologic conditions.
ESH-19, Hazardous and Solid Waste	667-0677	Provides guidance on regulatory requirements. Conducts field surveys to determine spread of contamination and adequacy of cleanup.
ESH-20, Ecology	665-8961	Provides information on biotic conditions.
Environmental Management Division	667-2211	Provide guidance on proper treatment, storage, and off-site shipment of hazardous and mixed waste.
PTLA, Protection Technology Los Alamos	667-4437	Provides traffic control and security.
JCNNM, Johnson Controls Northern New Mexico	667-6191	Dispatches maintenance personnel and equipment. Assists in waste cleanup under the direction of the Recovery Manager.

**Table E-1 (Continued)**

**Response Groups and Agencies Available to the  
Emergency Management and Response Office for  
Guidance and/or Emergency Assistance**

LANL <sup>a</sup> -Controlled Response Group	Telephone	Responsibilities
NMT, Nuclear Materials Technology Division	667-2556	Provides initial emergency site evaluation at Technical Area (TA) 55 and conducts activities related to the prevention, notification, and control of emergencies at TA-55. In the event of an emergency at TA-55, monitors for leaks, pressure buildup, gas generation, or equipment ruptures, if necessary. Maintains and operates TA-55 Emergency Response Team. Writes TA-55 emergency plans and procedures.
DX, Dynamic Experimentation Division	667-5653	Provides information and/or assistance during emergencies involving units at TA-14, TA-15, TA-36, and TA-39.
ESA, Engineering Sciences and Applications Division	667-4136	Provides information and/or assistance during emergencies involving units at TA-16.
Chemical Science and Technology Division	667-4457	Provide guidance on proper treatment, storage, and off-site shipment of hazardous and mixed waste.
Non-LANL <sup>a</sup> -Controlled Response Group	Telephone	Responsibilities
Los Alamos County Fire Department	911 667-7026	Dispatches firefighting personnel and equipment and provides Emergency Medical Services.
Los Alamos County Police Department	662-8222	Provides traffic control on public access roads.
Los Alamos Medical Center <sup>b</sup>	662-4201	Provides medical services. Provides and maintains Emergency Room.

<sup>a</sup> Los Alamos National Laboratory.

<sup>b</sup> Medical services related to hazardous and mixed waste injuries are provided under the direction of ESH-2.

## Table E-2

### Los Alamos National Laboratory-Wide Emergency Equipment

#### **Hazardous Materials (HAZMAT) Vehicles and Associated Emergency Equipment:**

HAZMAT vehicles and trailers are located at Technical Area (TA) 64, Building 39 (TA-64-39). They are available to the Environment, Safety, and Health (ESH) Hazardous Materials Response Group (ESH-10) for emergency response to all of the TAs at Los Alamos National Laboratory (LANL). ESH-10 is responsible for maintaining the supplies of appropriate emergency equipment in each vehicle and trailer.

The HAZMAT vehicles and trailers are equipped with safety and emergency equipment, personal protective clothing, and other supplies, which may include, but are not limited to:

- assorted personal protective equipment, T-shirts, and gloves
- safety goggles, safety glasses, and face shields
- boots and booties
- totally encapsulating suits and boots
- Level A and B suits
- flash suits
- self-contained breathing apparatus (SCBA) and SCBA bottles
- respirators and cartridges
- hazardous chemical reference books and other reference materials
- shovels
- siphon pumps
- assorted spill kits and sorbents
- chemical burn and neutralizing solutions
- two-way radios, cellular phones, and other communication equipment
- bottles of leak detector and leak repair kits
- emergency repair packs
- HAZMAT bags
- gas detectors and chemical monitoring equipment
- radiological monitoring equipment
- sponges and cleaners
- warning signs and barricade tape
- traffic control barriers
- flashlights
- cameras and film
- knives
- portable power supplies
- warning and signal horns
- harnesses and belts
- portable emergency oxygen
- decontamination equipment
- sampling equipment
- lifting equipment
- assorted tools, tape, and other supplies.

**Table E-2 (Continued)**

**Los Alamos National Laboratory-Wide Emergency Equipment**

**Supplemental emergency equipment and personnel available from the Los Alamos County Fire Department (LACFD):**

Engine companies  
Fire engines  
Mini-pumpers  
Modular ambulances  
Rescue vehicles  
Crash-Fire-Rescue (CFR) unit  
SCBA units  
SCBA air tanks  
Ladders with pumps  
Personnel with 120 hours Emergency Medical Technician training  
Personnel with Advanced Life Support training  
Water tankers

**Table E-2 (Continued)**

**Los Alamos National Laboratory-Wide Emergency Equipment**

**Supplementary emergency equipment and personnel available from Johnson Controls Northern New Mexico (JCNNM):**

**TRANSPORTATION EQUIPMENT:**

Pickups, 1/2 through 3/4 ton  
Trucks, 1 through 3 ton  
Vans, panels, and carryalls

**SPECIAL EQUIPMENT:**

Graders  
Loaders  
Snowplows and snow blowers  
Bulldozers  
Scrapers  
Semitrailers  
Chain saws  
Street flushers  
Mobile transceivers  
Generators  
Handsets (2-way)  
Pageboys (1-way)  
Welders  
Mobile site logistics support equipment/associated heavy equipment  
Fully equipped spill response unit  
Utilities equipment and emergency utility support  
Fuel trucks  
Light banks  
Dump trucks  
Backhoes  
Potable water trucks

**TRAINED PERSONNEL:**

Heavy equipment operators  
Dispatchers  
Mechanics  
Power saw operators  
Radio and telephone operators  
Truck drivers

**Table E-2 (Continued)**

**Los Alamos National Laboratory-Wide Emergency Equipment**

**Emergency equipment and personnel at the Occupational Medicine Clinic, Occupational Medicine Group (ESH-2):**

**At TA-3 (SM-409) Central Clinic:**

**PERSONNEL:**

Physicians  
Physician's Assistants  
Nurses  
X-ray Technician  
Clinical Laboratory Technicians  
Clinical Testing Technicians  
Clinical Psychologist  
Counselors

**SPECIAL EQUIPMENT-PORTABLE:**

Multichannel emergency receiver-base station  
Two-way radio on the State Med Net, the LANL Emergency Management channel, and the LANL Health-Safety Net  
Cardiac monitors and defibrillators  
Crash cart emergency equipment with E-tank oxygen (O<sub>2</sub>)  
Portable physicians' bag with medications  
Portable suction unit  
Portable stretchers (ambulance, gurney, folding)  
Wheelchairs  
O<sub>2</sub> tanks  
Manual resuscitators  
Intravenous (IV) stands  
IV solutions  
Otosopes/ophthalmoscopes  
Portable sphygmomanometers  
Stethoscopes  
Anticontamination apparel  
Eye irrigation solution  
Industrial first-aid kits  
Extrication and cervical collars, crutches, canes  
Suture sets  
Protective apparel  
Morgan lends and irrigation sets  
Decontamination equipment (portable)

**Table E-2 (Continued)**

**Los Alamos National Laboratory-Wide Emergency Equipment**

**Emergency equipment and personnel at the Occupational Medicine Clinic, ESH-2 (Continued):**

**At TA-3 (SM-409) Central Clinic (continued):**

**SUPPLIES-GENERAL:**

- Bedding/pillows
- Rescue blankets
- Burn blankets
- Thermal/icing pouches
- Multitrauma dressings, surgical and first aid supplies
- Disposable ice bags

**SPECIAL FACILITIES - NONPORTABLE:**

- Fully equipped decontamination room at the Occupational Medicine Clinic
- Completely equipped emergency room with ambulance entrance
- Emergency lighting system
- Complete X-ray suite
- Protective clothing and wound counters
- 12-lead electrocardiograph
- Fully equipped crash cart with Life Pak defibrillator/external pacer, intubation equipment, emergency medications
- Fully equipped decontamination room at Los Alamos Medical Center (LAMC) adjacent to the LAMC emergency room

**TRANSPORTATION:**

Full ambulance service is available within minutes to the central facility.

**COMMUNICATION:**

Base station on State Medical Net and Los Alamos County Fire Department trunked radio system.

**Table E-3**  
**Waste Analysis Parameters and Test Methods<sup>a</sup>**

Parameter	Test Method	Reference <sup>b</sup>
Ignitability	Pensky-Martens closed-cup method Setaflash closed-cup method Ignitability of solids	(L, S) SW1010, SW1020 (S) SW1030 (L, S) ASTM D93-80
Reactivity	Test method to determine hydrogen cyanide released from waste Test method to determine hydrogen sulfide released from waste	(L, S) SW, Section 7.3
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040B
Toxicity characteristic (TC)	Toxicity characteristic leaching procedure (TCLP) extraction	(S) SW1311
TC Metals:	Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA, manual cold-vapor technique	
Arsenic		(L, S) SW7060A <sup>c</sup> , SW7061A
Barium		(L, S) SW7080A <sup>d</sup> , SW7081 <sup>e</sup>
Cadmium		(L, S) SW7130 <sup>d</sup> , SW7131A <sup>e</sup>
Chromium		(L, S) SW7190 <sup>d</sup> , SW7191 <sup>e</sup>
Lead		(L, S) SW7420 <sup>d</sup> , SW7421 <sup>e</sup>
Selenium		(L, S) SW7740 <sup>e</sup> , SW7741A
Silver		(L, S) SW7760A <sup>d</sup> , SW7761 <sup>e</sup>
Mercury	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A <sup>c,g</sup>
Volatile organics	Gas chromatography (GC)/mass spectrometry (MS) GC/MS capillary column technique	(L, S) SW8260B
Semivolatile organics	GC/MS GC/MS capillary column technique	(L, S) SW8270C <sup>f</sup> (S) SW8275A
Organochlorine pesticides	Thermal extraction/GC/MS	(L, S) SW8081A
Chlorinated herbicides	GC	(L, S) SW8151A
Cyanide, free and total	Distillation and colorimetric ultraviolet	(L, S) SW9010B, SW9012A
Total chromium	Colorimetric method for hexavalent chromium	(L, S) SW7196A
Sulfide	Colorimetric titration	(L, S) SW9030B

**Table E-3 (Continued)**  
**Waste Analysis Parameters and Test Methods<sup>a</sup>**

Parameter	Test Method	Reference <sup>b</sup>
Total RCRA metals <sup>f</sup>	Acid digestion Inductively coupled plasma atomic emission spectroscopy	(L) SW3010A, (S) SW3050B (L, S) SW6010B
Arsenic		(L, S) SW6010B
Barium		(L, S) SW6010B
Cadmium		(L, S) SW6010B
Chromium		(L, S) SW6010B
Lead		(L, S) SW6010B
Selenium		(L, S) SW6010B
Silver		(L, S) SW6010B
Mercury		(L) SW7470A, (S) SW7471A
	Manual cold-vapor technique	
Free liquids	Paint Filter Liquids Test	(L, S) SW9095

- <sup>a</sup> At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include gross alpha, beta, and gamma screening.
- <sup>b</sup> "A" (e.g., A006) refers to U.S. Environmental Protection Agency, 1984, "Sampling and Analysis Methods for Hazardous Waste Combustion," *EPA-600/8-84-002*.  
"ASTM" refers to American Society for Testing and Materials standards.  
"SW" refers to U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.  
(L) refers to liquid waste.  
(S) refers to solid waste.
- <sup>c</sup> Method being revised per the January 1998 *SW-846* Draft Update IVA.
- <sup>d</sup> Method being integrated into Method 7000B, per the January 1998 *SW-846* Draft Update IVA.
- <sup>e</sup> Method being integrated into Method 7010, per the January 1998 *SW-846* Draft Update IVA.
- <sup>f</sup> See also atomic absorption methods. Total metals may be substituted for TCLP metals, if appropriate. RCRA = Resource Conservation and Recovery Act.

Table E-4

Evacuation Determination and Reentry Conditions

Reason for Evacuation	Evacuation Determination Made by	Reentry Conditions <sup>a</sup>
Fire	<sup>1</sup> Fire or evacuation alarm, Group Leader or alternate, Lead Engineer, Senior Staff Member present, Senior Technician, or Emergency Manager	Following survey by the person designated by the IC <sup>b</sup>
Explosion	Same as 1 above	Same as above
Loss of ventilation	<sup>2</sup> Group Leader or alternate, Senior Staff Member, Lead Engineer, or Senior Technician	Same as above
Loss of electric power	Same as 2 above	Same as above
Extensive contamination	Same as 2 above or ESH-1 <sup>c</sup> Representative	Same as above
Airborne contamination	Same as 2 above or Radiation Monitor	Same as above
Escape or release of toxic or hazardous gas or fumes	Group Leader or alternate, Senior Staff Member, Lead Engineer, Senior Technician, or Emergency Manager	Same as above
Bomb or bomb threat	EM&R <sup>d</sup> or PTLA <sup>e</sup> representative, R&D <sup>f</sup> Section Leader or alternate, Senior Staff Member, or Lead Engineer	Same as above

- <sup>a</sup> All reentries are authorized by the EM&R Incident Commander.  
<sup>b</sup> "IC" refers to the Incident Commander as defined in 29 CFR 1910.120.  
<sup>c</sup> "ESH-1" refers to the Health Physics Operations Group.  
<sup>d</sup> "EM&R" refers to the Emergency Management and Response Office.  
<sup>e</sup> "PTLA" refers to Protection Technology Los Alamos.  
<sup>f</sup> "R&D" refers to the Research and Development Section.

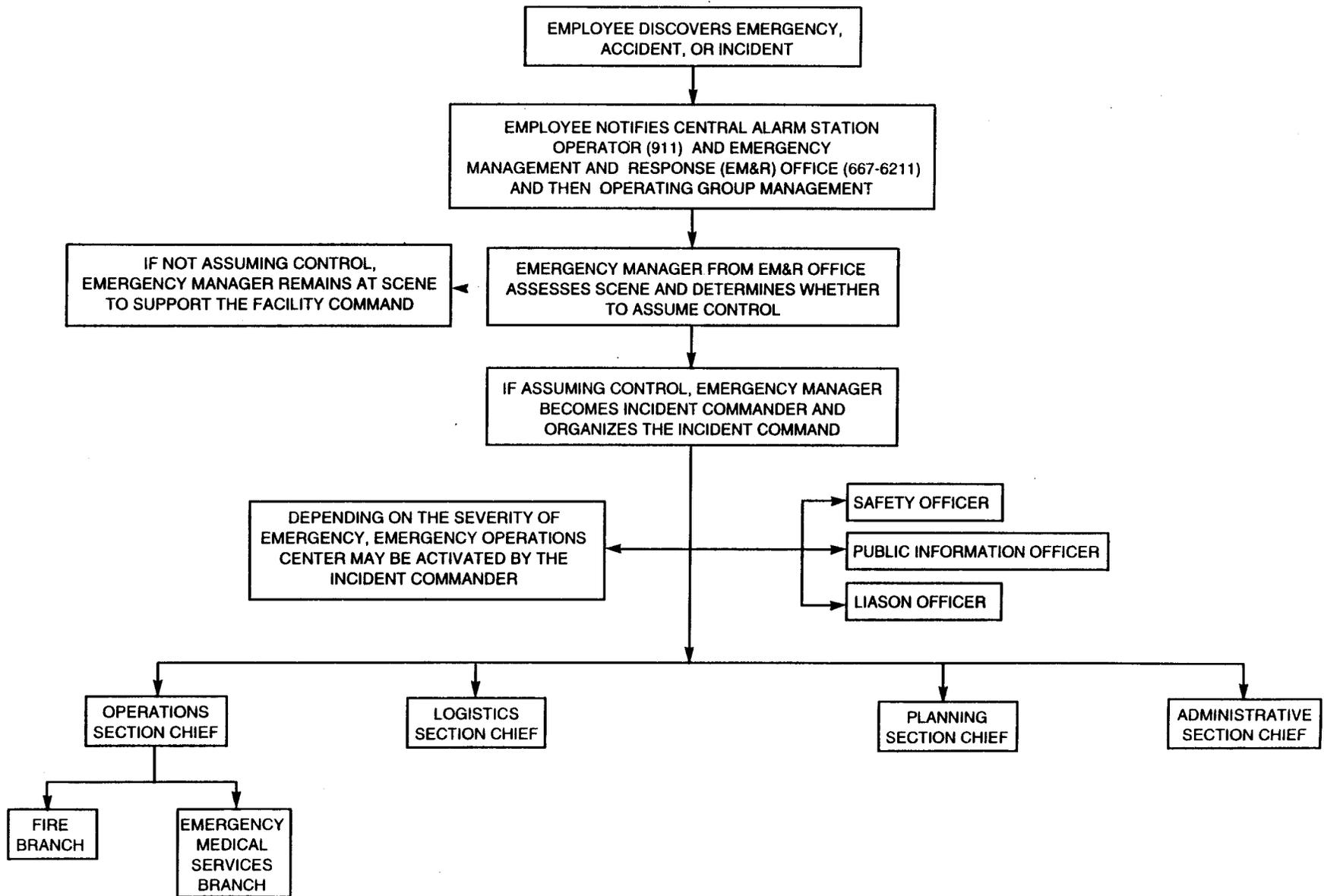
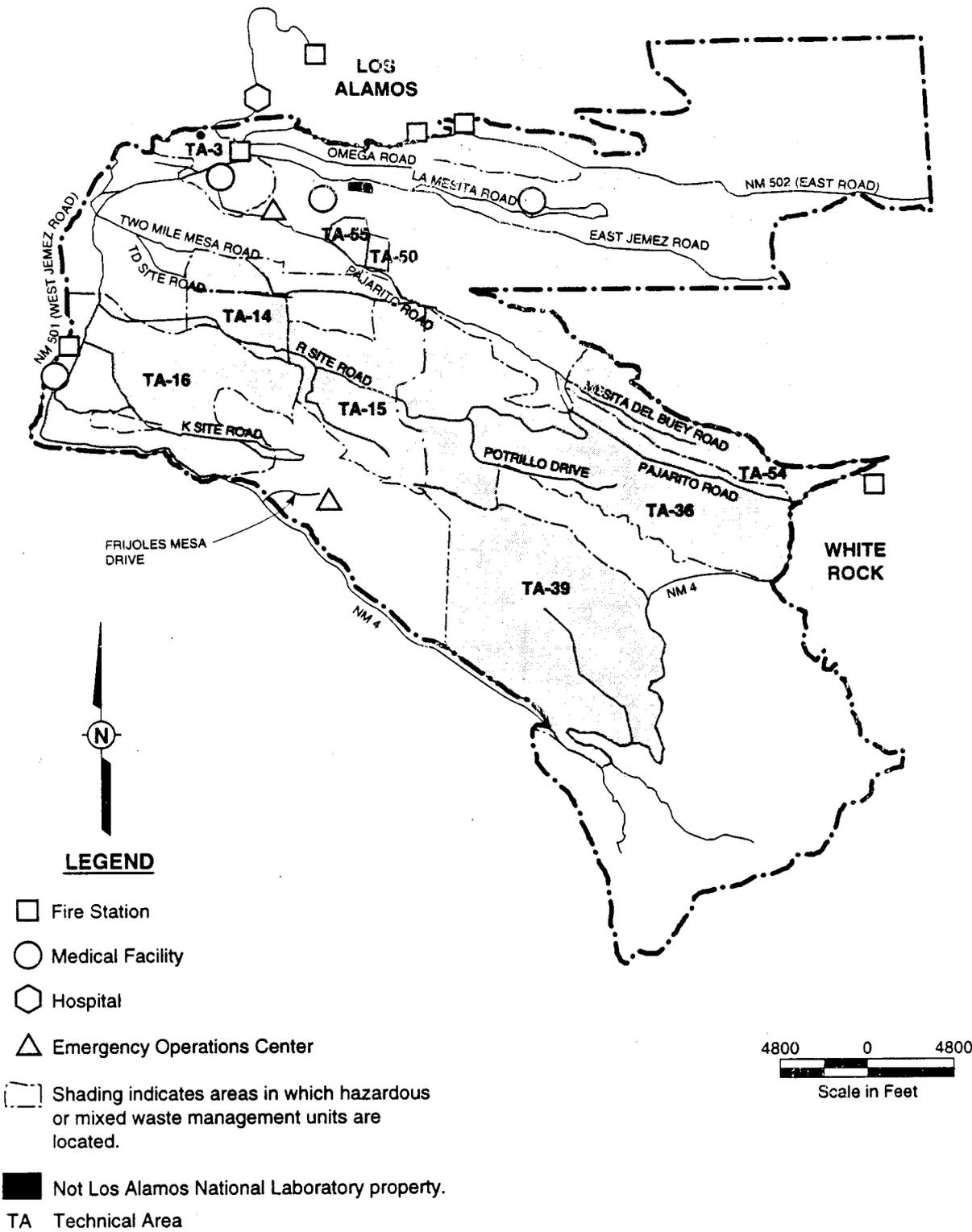


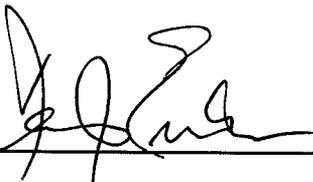
Figure E-1  
General Hazardous and Mixed Waste Emergency Notification Structure



**Figure E-2**  
 Emergency Facilities

**CERTIFICATION**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

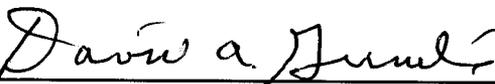


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Dennis J. Erickson  
Division Director for Environment, Safety, and  
Health Division  
Los Alamos National Laboratory  
Operator

11/19/99

Date Signed



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David A. Gurulé, P.E.  
Area Manager, Los Alamos Area Office  
U.S. Department of Energy  
Albuquerque Operations  
Owner/Operator

11/19/99

Date Signed