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*GN470075 - GUIDELINES FOR WASTE GENERATORS AT SNL/CA

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* Indicates a substantive change

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*1.0 APPLICABILITY, SCOPE, AND OWNERSHIP

*1.1 Applicability

For purposes of this document, Members of the Workforce are:

- Sandia employees.
- Sandia contractors as specified in CPR400.1.1/MN471001, [Section 1B](#), "What Is the Scope."

This document applies to Members of the Workforce who manage and generate [hazardous](#), [low-level radioactive](#), and low-level [mixed waste](#) at SNL/CA. For requirements at all other Sandia sites, see *ES&H Manual*, [Chapter 19](#), "Waste Management."

The [requirements](#) contained herein, implement regulations set forth by the U.S. Environmental Protection Agency (EPA), the California EPA, DOE Orders, and the [Hazardous Waste Facility](#) Permit issued by the State of California.

Violation of these [requirements](#) may result in illness or injury, environmental damage, property damage, regulatory violations, fines, interruption of site operations, and disciplinary action.

*1.2 Scope

These [requirements](#) are divided into five sections based on the Sandia Integrated Safety Management System (ISMS). These sections address the following:

- Plans that include the generation of hazardous, radioactive, or mixed [waste](#).
- Analysis of hazards by characterizing waste.
- Control of hazards through [containers](#), supplies, administrative measures, and [satellite accumulation area \(SSA\)](#).
- Performance of work using safe waste [accumulation](#) practices and working with the Waste Management Department to facilitate transportation and [disposal](#) of waste.



- Work improvements using customer feedback and cost reduction.

1.3 Ownership

The manager of the SNL/CA Environmental **Management** Department owns and is responsible for the content of this document. Recommendations for improvement and comments regarding the modification of this document should be directed to the Environmental **Management** Department Manager.

*2.0 RESPONSIBILITIES

*2.1 Managers

*Requirements

Managers shall ensure that:

- Waste management controls are implemented in Technical Work Documents (TWDs), including training, waste minimization, [handling](#), labeling, accumulation, and disposal.
- Members of the Workforce obtain Division 8000 Vice President authorization to generate mixed low-level waste.
- Low-level radioactive wastes are characterized by Process Knowledge Evaluations (PKEs).
- Members of the Workforce meet requirements for maintaining satellite accumulation **areas (SAA)** including resource provisions to:
 - Correct deficiencies.
 - Identify unauthorized materials in areas and spaces they are responsible for.
 - Ensure 1-year storage limits are not exceeded.
- Waste is managed through the Environmental **Management** Department.

*2.2 Waste Generators

*Requirements

Members of the Workforce who are [waste generators](#) shall:

- Follow instructions in this **document** and associated TWDs, as applicable
- Complete required training.
- Apply waste minimization, handling, labeling, and accumulation processes, as applicable.



- Notify their manager concerning waste management problems in areas and spaces they are responsible for, including:
 - Taking steps to correct deficiencies.
 - Identifying unauthorized materials.
 - Approaching waste storage limitations.
- Only generate mixed low-level waste as authorized by the Division 8000 Vice President.
- Only generate low-level radioactive as described in the appropriate PKE.

*2.3 Environmental Management Department - Waste Management

*Requirements

Waste Management shall:

- Maintaining the Waste Management and Waste Minimization Program, including [disposal arrangements](#) for SNL/CA waste streams.
- Provide assistance or answers to questions.
- Pick up identified [hazardous waste](#), low-level radioactive waste, and mixed low-level waste that is [packaged](#) and accumulated according to these [requirements](#).
- Assist characterization of low-level radioactive waste by Members of the Workforce.
- Evaluate requests to generate mixed low-level waste prior to authorization by the Division 8000 Vice President.



*2.4 Health and Safety Department - Radiation Protection

*Requirements

Radiation Protection in the Health and Safety Department is responsible for conducting radiological surveys and radiological characterization of wastes.

*3.0 PLANNING FOR WASTE GENERATION

*3.1 Planning for Waste Accumulation and Disposal

*Requirements

Members of the Workforce who are waste generators or owners shall:

- Assign accumulation points, appropriate containers, protective equipment, and emergency equipment (e.g., spill control supplies), for proper identification, handling, and accumulation of hazardous, radioactive, or mixed waste until it is accepted by Waste Management for final transportation and disposal.
- Write and maintain Technical Work Documents (TWDs) that address waste generation activities.
- **Assure the** proper disposal of hazardous or radioactive materials upon vacating or transferring work areas.
- **Determine the** cost of cleanup or restoration, as appropriate.

Waste Management shall:

- Arrange off-site shipments of hazardous or radioactive waste to [treatment](#), [storage](#), or [disposal facilities](#).

Note: Waste Management is the only SNL/CA organization authorized to arrange off-site shipments of hazardous or radioactive waste to treatment, storage, or disposal facilities (TSDFs).

- Review all manifests and shipping documents for any hazardous or radioactive waste material.

Members of the Workforce shall:

- Notify the waste generator or owner if hazardous or radioactive materials are discovered in an area for which they are not authorized.
- Notify the owner of the area or the department manager to identify the responsible owner or waste generator of the material if the waste generator or owner cannot be easily identified.

Note: Members of the Workforce shall consult CPR400.1.1/MN471001, *ES&H Manual*, [Chapter 15](#), "Emergency Preparedness and Management," for information and instructions on encountering suspicious material and unusual conditions.

*3.2 Technical Work Documents (TWDs)

*Requirements

Members of the Workforce shall:

- Prepare TWDs as described in CPR400.1.1/MN471001, *ES&H Manual*, [Chapter 21](#), "Technical Work Documents (TWDs)."

Note: CPR400.1.1/MN471001, *ES&H Manual*, Chapter 21, "Technical Work Documents (TWDs)," explains acceptable TWD formats involving hazardous or radioactive materials.

- Develop a TWD specific to their situation (e.g., Standard Operating Procedures [SOP]) or adopt an existing document (e.g., Sandia Chemical Hygiene Plan) suitable for hazardous and radioactive waste management in their area.
- Members of the Workforce shall use these **requirements** and the PHS/HA to identify important waste management steps to include in their TWD.

Note: The Preliminary Hazard Screen and Hazard Analysis (PHS/HA) [software tool](#) evaluates work hazards and anticipates any resulting hazardous or radioactive waste.

3.3 Pollution Prevention and Waste Minimization

Requirements

[Waste minimization/pollution](#) prevention reduces the amount of any hazardous waste prior to recycling, treatment, or disposal. [Waste minimization/pollution](#) prevention does not include regulated treatment processes which alter the physical, chemical, or biological characteristics or the volume of hazardous wastes.

Members of the Workforce shall incorporate waste minimization/[pollution prevention](#) into their TWDs. Examples of Waste minimization include, but are not limited to, the following activities:

- Conduct experiments and operations in a manner that reduces the toxicity and volume of any waste produced.
- Consult the Chemical Inventory System (CIS) for the existence of a needed chemical/solvent before ordering a new supply.
- Order the minimum quantity of chemicals/solvents required to conduct an activity.
- Substitute nonhazardous or less hazardous chemical/solvents, when possible.
- Reduce waste through:
 - Equipment or technology modifications.
 - Process or procedure modifications.
 - Reformulation or redesign of products.
 - Improvements in housekeeping maintenance, and training.

The SNL/CA Waste Minimization Program is maintained through the Environmental [Management](#) Department. Contact the ES&H Hotline at (925) 294-3724 for information and suggestions on waste minimization or to report successes.

*3.4 Qualifications and Training

*Requirements

Role or Work Activity	Required Training
Chemical hazardous waste generation , including handling, accumulation, transportation, characterization, sampling, treating, and packaging.	ENV112CA annually
Radioactive and mixed waste generation , including handling, accumulation, transportation, characterization, sampling, treating, and packaging.	ENV189CA biennially

Maintenance operations, including petroleum product handling, fueling, and accumulation.

[ENV203CA](#) annually

Members of the Workforce who are owners or waste generators shall:

- Successfully complete the required waste generator training courses prior to completing a Waste Description and Disposal Request (WDDR) form.
- Demonstrate familiarity with Technical Work Document(s) relevant to hazardous materials in their work area.

3.5 Radioactive Waste Process Knowledge Evaluation (PKE)

Requirements

Members of the Workforce who plan to generate radioactive waste must complete a [Process Knowledge Evaluation \(PKE\)](#). The PKE ensures that radioactive waste will meet the requirements of an off-site disposal facility.

If waste cannot be characterized by process knowledge, Waste Management and the designated waste generator will prepare a Sampling and Analysis Worksheet (SAW) to complete the characterization using laboratory analysis.

Note: Contact Waste Management for obtaining a SAW and identifying process entrance criteria.

Guidance

Members of the Workforce should contact Waste Management at 294-2145 for assistance with the PKE or SAW.

3.6 Mixed Waste Approval

Requirements

Members of the Workforce who are managers, owners, waste generators and Waste Management personnel shall use the following process to obtain approval prior to generating mixed waste:

Responsible Person	Action
Manager, waste generator, or owner	The responsible person contacts Waste Management in the Environmental Management Department at 294-2145 or via email as soon as possible and prior to mixed low-level waste generation. The responsible person shall prepare a memorandum requesting permission to generate a mixed waste with a completed Process Knowledge Evaluation (PKE) form as a technical basis.



Waste Management



Determines what disposal requirements apply to the proposed mixed waste stream and evaluates the request:

- If the request is **accepted**, Waste Management and the waste generator shall jointly submit a request for approval to generate mixed low-level waste to the Waste Management lead, manager and director of the generating organization, and the Division 8000 Vice President. Waste Management shall distribute copies of the approved request, as appropriate.
- If the request is **rejected**, the waste generator, with assistance from Waste Management, as necessary, shall re-evaluate the process.

SNL/CA Waste Management will identify treatment and disposal alternatives for approved mixed waste within the time limits required by the State of California; however, few hazardous waste treatment and disposal facilities are licensed to process radionuclides.

Guidance

Members of the Workforce who are waste generators should make every effort to eliminate or minimize the generation of mixed wastes prior to requesting vice president approval.



*4.0 HAZARDOUS WASTE

*4.1 Analyze Waste Hazards

*Requirements

Hazardous waste shall be characterized using the electronic [Waste Description and Disposal Request \(WDDR\)](#) form.

The waste tag provided within the [WDDR](#) shall be used to immediately tag and identify the waste at the beginning of waste accumulation. Hazardous wastes that are characterized (with an approved WDDR), packaged, tagged, and accumulated in accordance with these requirements are generally acceptable.

Members of the Workforce who are waste generators or owners shall:





- Compare waste properties to [Appendix A](#), "Hazardous Waste Characteristics," to determine if their waste has one or more of the following properties:
 - [Ignitable](#)
 - [Corrosive](#)
 - [Toxic](#)

- [Reactive](#)

- Determine if their waste meets the categories of [Appendix B](#), “Extremely Hazardous Waste,” or [Appendix C](#), “Acutely Hazardous Waste.”

Members of the Workforce shall follow the special handling requirements for hazardous wastes described in the following table:

Type of Waste	Requirements
 <p>Reactive Wastes</p>	<p>Reactive Wastes shall be evaluated by Waste Management prior to acceptance. The SNL/CA Hazardous Waste Treatment and Storage Facility shall not accept DOT Class 1 explosive waste.</p> <p>Note: Reactive wastes are unstable and readily undergo violent changes. See Appendix A, "Hazardous Waste Characteristics," for details. Members of the Workforce shall contact the Environmental Management Department (8516) at 294-2145 if an activity may generate unwanted reactive or explosive materials. Waste Management will evaluate the process and disposal options.</p> <p>Members of the Workforce shall consult the Explosive Safety Contact, 294-2135, for assistance with explosive labeling and storage needs.</p>
 <p>Gas Cylinders</p>	<p>Members of the Workforce shall purchase returnable gas cylinders from the appropriate SNL/CA contracted gas company and promptly return empty cylinders or residual gases to the vendor.</p> <p>If non-returnable hazardous gas cylinders are necessary, arrange disposal of the non-returnable cylinders by submitting a WDDR. The waste generator shall accumulate cylinders in their satellite accumulation area pending special offsite disposal arrangements. Waste Management will schedule cylinder pick-up no more than one day prior to offsite disposal.</p> <p>Note: Departments and Centers will incur fees for disposal arrangements by Waste Management if they:</p> <ul style="list-style-type: none"> ● Purchase non-returnable/non-refillable hazardous gas cylinders. ● Purchase hazardous gas cylinders from a vendor other than the SNL/CA contracted gas products company. ● Improperly accumulate cylinders.



Empty Containers

Containers or inner liners that previously held hazardous materials are categorized as “contaminated containers” for disposal, or “empty containers” for recycling.

Note: Rinsing hazardous material containers is a prohibited treatment process, except by specific authorization from Waste Management. Any excess material removed from a container shall be used for its intended purpose or shall be managed as hazardous waste. Emptying of containers **shall** also comply with air pollution control laws.





A “contaminated container” **shall** be disposed of through Waste Management using a [WDDR](#) that describes the contaminant(s), if the container meets **any** of the following conditions, without rinsing:




- The container is more than 5 gallons capacity.
- The container is made of wood, paper, cardboard, fabric, porous or absorbent material that had direct contact with hazardous materials.
- The container held an [Extremely Hazardous Waste](#) or [Acute Hazardous Waste](#).
- There is pourable material when the container is tilted or inverted in any direction.
- Viscous materials, solids, or sludges are remaining in the container that could be removed by physical methods like scraping and chipping.
- The container has successive layers of solidified material.
- The container originated from a Radiological Area.

Aerosol cans emptied of product and propellants to the maximum extent practicable under normal use and the internal pressure approaching atmospheric pressure **shall** be disposed of through Waste Management by the completion of a WDDR that describes the hazard type as "Other - Empty Container(s)."


Containers that **do not** meet any of the above conditions are considered “empty containers” and **shall** be recycled using the following steps:

- Review the “contaminated container” criteria, above.
- Identify “empty containers” that are not contaminated and are appropriate for recycling.
- Remove or obliterate any DOT hazard labels.
- Mark containers: “**Empty, for Recycling.**”

	<p>Call extension 4-2145 for pick-up of “empty containers,” or place the “empty containers” at the satellite accumulation area, segregated from “contaminated containers” and other hazardous waste.</p>
<p>Broken Glass/Sharp Objects</p> 	<p>Broken glass or sharps previously containing hazardous materials and that do not meet the criteria for “Empty Containers,” above, shall be tagged and managed as hazardous waste using the WDDR. Place broken glass or sharps in a rigid container that cannot be perforated and will support the weight of contents for safe handling.</p> <p>Note: Members of the Workforce shall designate a receptacle for clean broken glass and clean sharp objects, seal, and label the rigid container by contents (e.g., "GLASS") to prevent hazards to custodians.</p> <p>Note: See Biohazardous Waste for handling sharps with biohazardous waste materials.</p>
<p>Batteries</p>  	<ul style="list-style-type: none"> ● Batteries shall not be disposed in trash receptacles. ● Cover battery terminals with non-conductive tape (such as electrical, masking, or duct tape) before disposal. ● Carbon-zinc, alkaline batteries, lithium, and nickel metal hydride batteries are managed by Waste Management as a service to the site. Send these types of batteries to Mail Stop 9221 addressed to "Batteries-Waste Management." <p>Note: A WDDR and waste tag are not required if the above type batteries are intact, do not show signs of leakage or corrosivity, are immediately mailed to Waste Management, and are not accumulated at the waste generator's work area.</p> <ul style="list-style-type: none"> ● Do not send leaking batteries through the mail. Manage leaking batteries as hazardous waste per the instructions below. ● All other batteries, including, but not limited to, leaking or damaged batteries, lead-acid batteries, and mercury batteries shall be described on a WDDR, tagged, and managed as hazardous waste.
<p>Used Oil</p> 	<p>Used or waste oil shall be managed as hazardous waste or recycled by Waste Management. Arrangements shall be made with Waste Management.</p>

<p>Unknown Waste</p> 	<p>If Members of the Workforce encounter an unauthorized or unknown waste material, notify the owner to take custody of the material. If they cannot identify or notify the owner, they shall notify the manager responsible for the area and Waste Management at 294-2145.</p> <p>Note: Refer to Section 15, "Emergency Preparedness and Management," for further instructions on unknown waste identification.</p>
<p>Waste Pending Analysis or Identification</p>	<p>Sampled waste pending analysis shall be marked "Waste Pending Analysis," dated, and managed as hazardous waste until confirmation of the waste characteristics.</p>
<p>Scrap Metal</p>  	<p>The following products shall be managed as hazardous, radioactive, or mixed waste and shall not be discarded as scrap:</p> <ul style="list-style-type: none"> • Lead-acid storage batteries, waste elemental mercury, and water-reactive metals such as sodium, potassium and lithium. • Magnesium (from boring, trimming, grinding, shaving, and sanding activities; and any other forms capable of producing independent combustion). • Beryllium (from boring, trimming, grinding, shaving, and sanding activities; and any other forms capable of producing adverse health effects or environmental harm). • Any metal contaminated with a hazardous or radioactive material. • Any metal contaminated with free-flowing quantity of hazardous liquid (see "Empty Containers," above). • Metal-bearing sludges, fine powders, semi-solids and liquid solutions that are hazardous wastes. • Radioactive metals (see Section 5.2, "Controlling Radioactive Waste Hazards"). <p>Note: Other manufactured and solid metal objects, products, or metal filings that are not covered by the above definitions and neither hazardous nor radioactive waste should be accumulated in scrap bins for recycling. This includes filings from cutting, trimming, stamping, grinding, shaving and sanding activities; or solid metal residues of metal production.</p> <p>Note: Solder (lead, tin, silver, etc.) scraps and pieces should be collected and segregated according to the type of scrap, and managed as a recyclable scrap instead of hazardous waste.</p>

Members of the Workforce at the SNL/CA Hazardous Waste Treatment and Storage Facility shall not accept hazardous waste until facility permit requirements are met.



The following waste is not acceptable at the SNL/CA Hazardous Waste Treatment and Storage Facility due to safety concerns and permit requirements:

Prohibited Waste Form	Requirements
Unknown or Incompletely Documented Wastes	Waste Management shall not accept wastes without an accurate and complete WDDR and disposal tags. All wastes shall be accompanied by appropriately completed documentation.
Compressed gas cylinders (not including aerosol cans)	Gas cylinders shall not be stored at the Hazardous Waste Treatment and Storage Facility without prior evaluation and authorization by Waste Management.
Explosive Materials	Waste Management shall not accept explosive materials that meet hazard class 1 of the Department of Transportation (DOT) hazardous material classification hierarchy at the Hazardous Waste Treatment and Storage Facility, as directed by the SNL/CA facility permit.
Classified Materials	<p>Classified materials are DOE assets and shall not be disposed as waste.</p> <p>Note: The SNL/CA Waste Treatment and Storage Facility is not located within a Limited Area for storage and handling of classified.</p> <p>All unwanted materials shall be declassified before evaluating them for disposal.</p>
Chemically Active Materials	Materials undergoing continual chemical reactions, (i.e., a release of gases or exothermic reactions) are considered materials "in-process" and shall not be accepted until the chemical reactions are complete and end products are characterized.
Biohazardous Waste and Medical Waste	Members of the Workforce shall comply with SAND2003-8763, <i>Biohazardous Waste Management Plan</i> , or SAND2004-5882, <i>Medical Waste Management Plan</i> and the procedures that pertain to their materials.

Members of the Workforce shall contact Waste Management 294-2145 or the ES&H Hotline at 294-3724, if they anticipate generation of waste that is prohibited by the facility permit.

Guidance

To complete the [WDDR](#) accurately, Members of the Workforce who are waste generators or owners should use direct knowledge of the waste, information from Material Safety Data Sheets (MSDS), process data, logs, and other references to evaluate information concerning their hazardous materials and processes.

Members of the Workforce should use the following process matrix to evaluate their waste:

Select Hazardous and Radioactive Properties of the Waste:



Hazardous Properties Is the waste:

- Ignitable, toxic, corrosive, or reactive as described in [Appendix A](#)?
- Listed as Extremely or Acutely Hazardous in [Appendix B](#) or [C](#)?
- Other hazard requiring special handling under Section 4.1?

No

Yes

Radioactive Properties

Does the waste have radioactivity statistically detected above background levels or above a DOE limit?

No

Solid Waste (see *ES&H Manual*, [Section 19F](#), "Other Waste")

Hazardous Waste or other waste requiring special handling (see [Section 4.1](#), "Analyze Waste Hazards")

Yes


Low-Level Radioactive Waste (see [Section 5.0](#), "Radioactive Waste")





Mixed Waste (see [Section 6.0](#), "Mixed Waste")

*4.2 Controlling Waste Hazards

*Requirements

Members of the Workforce who are waste generators or owners shall employ the following controls for hazardous waste [packages](#):

Waste Control	Requirements
Container Selection 	<ul style="list-style-type: none"> • Containers shall be able to withstand normal use and transportation within the SNL/CA site (e.g., hand-carry, forklift handling, and truck transport, as required) without leakage or damage. • Containers shall be constructed of materials that are chemically compatible with the waste. • Liquid waste shall be collected in rigid closed-top containers, such as bottles, jugs, or closed head drums, designed to fit in a secondary containment. • Solid waste shall be placed in rigid containers, such as drums or boxes, or a sturdy non-rigid container, such as rugged and chemically-compatible 3-mil clear plastic bags. • Do not use plastic bags as containers for liquids, sharps, volatile waste, or heavy items. • Drinking water bottles, garbage bags, or custodial trash bags are not acceptable waste containers.

	<p>Note: The TWD should specify appropriate containers for waste materials. Contact Waste Management at 294-2145 for waste container recommendations. Where possible, containers should be ordered through JIT to benefit from Waste Management review of JIT product specifications.</p>
<p>Labeling</p>	<p>Use the Waste Tag provided in the WDDR to print and affix waste tags to containers as soon as they contain hazardous waste.</p>
<p>Chemical Information System (CIS) Barcodes</p> 	<p>If waste packaging will obscure CIS barcode numbers, the waste generator shall remove the CIS barcode numbers from the CIS database before requesting disposal.</p> <p>Note: Sandia uses a barcode chemical container tracking system called the Chemical Information System (CIS) to support effective facility-wide chemical management.</p> <p>If barcodes are clearly visible on waste containers, Waste Management will delete the barcodes from the CIS and no additional CIS action by the waste generator is required. See the following links for more information on removing barcodes from the CIS:</p> <p>https://webprod.sandia.gov/CIS/restricted/svBarcode?hdNext=barcodefer.html../mn471001/s06u.htm#transfer</p> <p>Note: Failure to ensure the removal of the barcode information from CIS will result in "lost" chemical inventory items, diminishing the effectiveness of the facility-wide chemical management system.</p>
<p>Location of accumulation points</p>  	<p>Waste shall be accumulated at a satellite accumulation area (SAA), as directed by the relevant TWD. The SAA shall be:</p> <ul style="list-style-type: none"> ● “At or near where the waste is generated,” where the waste is accumulated within the line-of-site of the operator of the process generating the waste OR in a locked compartment to which the generator controls access. The locked compartment may be located outside the area where the waste is directly generated. ● “Under the control of the operator of the process generating the waste,” where the accumulation container is in the line-of-sight of the operator OR in a locked compartment to which the operator controls access. ● Located to protect waste from inclement weather, traffic, combustibles, unauthorized handling, tampering, or other hazardous conditions. <p>Note: Members of the Workforce who are waste generators may accumulate waste at or near temporary field activities (i.e., field</p>

equipment maintenance) if any waste accumulated during field activities is returned to the permanent **satellite accumulation area** at the end of the work shift.

Limits for accumulation points

Members of the Workforce shall complete waste packaging and submit their **WDDR** prior to 365 days from the package "Start Date" in **satellite accumulation areas**.



Members of the Workforce shall complete waste packaging **immediately** and submit their WDDR marked "Urgent Pick Up," specifying the reason for the urgency in the following situations:

- Upon reaching 1 quart of waste listed in **Appendix B** "Extremely Hazardous Waste," or **Appendix C**, "Acutely Hazardous Waste."
- Upon reaching 55 total gallons of hazardous waste in the accumulation point. Members of the Workforce **shall** complete waste packaging, submit their **WDDR**, and have waste removed as soon as waste packages are full.



*4.3 Perform Work: Managing Hazardous Wastes

*Requirements

Members of the Workforce shall employ the following controls and requirements while managing waste packages:

Waste Management Controls	Requirements
Managing Waste Packages	<p>Members of the Workforce shall follow instructions in the respective TWD on safe handling of materials and chemicals in their work area. When accumulating these materials as waste:</p> <ul style="list-style-type: none"> • Containers shall be kept closed unless actively adding waste. • Do not combine liquid and solid waste in the same primary container. • If a container becomes damaged or develops a leak, identify the cause and transfer the contents to another suitable waste container. • Manage "empty containers" that previously held hazardous wastes in accordance with Section 4.1, "Analyze Waste Hazards." • Materials undergoing reactions generating heat or gases are considered "in process" will not be accepted until all chemical reactions have completed.





- Treatment of wastes to alter their hazardous properties is **not** permitted without specific authorization from Waste Management.

Note: Check valves with suitable area ventilation may be used when accumulating volatile or reacting materials to prevent over-pressurization of closed containers.

Managing Accumulation Points

The waste generating owner or delegate (waste generator) named on the [WDDR](#) and [Hazardous Waste ID Tag](#) is responsible for the **satellite accumulation area**, including:

- Controlling access to the area under the waste generator's direct control.
- Protecting waste, containers, and containments from deterioration, weather, and other hazards.
- Providing secondary containment for liquid waste.
- Provide appropriate protective cabinets for small quantities of acids, bases, and flammables.
- Monitoring the condition of containers, assuring containers are orderly and stored upright, maintaining secondary containment, labeling, identifying leaks or spills, cleanup and housekeeping.
- Preventing unsafe practices, including assuring incompatible wastes are kept segregated and preventing dumping of unknown or unauthorized wastes.
- Monitoring the quantity of waste to ensure that accumulation limit of a 55 total gallons of hazardous waste or 1 quart of extremely or acutely hazardous waste for three days is not exceeded.
- Monitoring the accumulation start dates and completing the WDDR for waste pick-up when containers are full and within one year.



Management of Leaks or Spills



Call 911 for emergency spill response if health, safety, or the environment is immediately threatened, if unknown hazardous materials are spilled, or if more than one gallon of flammable liquid is spilled.

Report hazardous material spills greater than one pound solid or one pint liquid to the ES&H Hotline, 294-3724.

All spilled material, absorbents, neutralizers, and contaminated personal protective equipment shall be handled as hazardous waste. When these materials are accumulated per these **requirements**, complete a WDDR to arrange pick-up.





ES&H Manual [Chapter 10E](#), "Chemical Spills," provides general instructions for spill response, notification and clean-up. The Technical Work Document shall specify spill control supplies and procedures pertaining to the materials in the area.

Note: Members of the Workforce may elect to clean up spills smaller than those specified in Chapter 10E, "Chemical Spills," if they feel comfortable doing so. Otherwise, [request](#) assistance via the ES&H Hot Line, 294-3724.

If the leak or spill was related to improper handling or damaged, defective, or incompatible containers, consult [Waste Management](#) at 294-2145 to improve practices and prevent additional leaks or spills.

Waste Pick-Up and Acceptance



Each waste pick-up [shall](#) be arranged by submittal of a [WDDR](#). Do **not** call ES&H or Waste Management to arrange for pick-up.

Each waste package scheduled for pick-up [shall](#) be sealed, in good condition for onsite transportation, free of any exterior staining or contamination, and accurately labeled according to the applicable WDDR.

Waste Management shall review the WDDR, prioritize the request, and schedule waste pick-up accordingly.

Waste Management shall inform waste generators of any deficient conditions that prevent waste pick-up.

*5.0 RADIOACTIVE WASTE

*5.1 Analyzing Radioactive Waste Hazards

*Requirements

Radioactive wastes shall be identified by radioactive material detected above background levels or exceeding a DOE limit.

The TWD and the [Radiological Protection Procedures Manual](#) specify radiological surveys and control measures to identify radioactive materials, including:

- Strict control of labeled radioactive materials and items from Radioactive Material Areas.
- Strict control of materials from Contaminated Areas or radiological processes.
- Radiological surveys of areas where radioactive materials are used, handled, or stored.


Members of the Workforce who are waste generators or owners shall:

- Characterize, or request ES&H to characterize, the radionuclide quantities in their waste on a [Radiological Characterization Form](#). Waste Management or Radiation Protection shall approve the characterization.

- Note the approved radiological characterization number on the relevant waste disposal tags.

Radioactive wastes that are characterized, packaged, tagged, and accumulated in accordance with these requirements are generally acceptable. The Process Knowledge Evaluation (see [Section 3.5](#), "Radioactive Waste Process Knowledge Evaluation [PKE]") categorizes wastes and includes steps to avoid generating prohibited materials. SNL/CA shall not accept the following prohibited materials for low-level waste disposal:

Prohibited Low-Level Radioactive Waste	Description
Mixed Waste	Radioactive waste that is mixed with any toxics, ignitables, reactives, corrosives, or material listed as hazardous waste by the EPA or State of California, is categorized as mixed waste. Mixed waste requires Division 8000 Vice President approval and special disposal provisions, and shall not be commingled with other radioactive waste. See Section 6 for more information about mixed waste management.
Transuranic Waste	Wastes with more than 100 nanocurie/gram alpha-emitting transuranic nuclides with half-lives greater than 20 years are prohibited.
High Specific Activity Waste	Waste may be prohibited if it exceeds disposal site activity limits, or other safety limits. See Appendix D - "Radioactive Waste Parcel Levels."
Liquid Waste	Wastes shall have as little free liquid as possible, and wastes with > 1% free liquid, or > 0.5% liquid after processing to a solid form, are prohibited.
Particulates	Particulates (e.g., fine dusts, powders) are prohibited unless packaged or immobilized.
Gases	Wastes packaged at greater than 1.5 atmospheres at 20° C are prohibited.
Unstable Waste	Wastes that may react during storage or shipment, generate gases or liquids, react with other waste, or react with packaging materials are prohibited.
Biological Agents	Pathogens or infectious/etiologic waste are prohibited.
Chelating Agents	Wastes with chelating agents exceeding 1% are prohibited unless immobilized.
Polychlorinated Biphenyls (PCBs)	Wastes that contained >50 ppm PCBs when originally removed from service, even if current PCB concentration is <50 ppm, shall not be accepted without specific characterization of the current PCB concentration by sampling or process knowledge and approved by Waste Management.
Explosives	Waste capable of detonation, explosive decomposition, or explosive reaction with water is prohibited.
Pyrophorics	Pyrophoric waste forms are prohibited unless processed and packaged in a nonpyrophoric form.
Sealed Sources	Sealed sources greater than 100 microcurie each are prohibited pending Waste Management approval of the radiological characterization of each individual source.
Asbestos	Friable regulated asbestos waste is prohibited pending specific handling, packaging, and labeling instructions from SNL/CA Waste Management.
Fissile Materials	Enriched uranium, 233-U, 239-Pu, 241-Pu, 242m-Am, 243-Cm, 245-Cm, 247-Cm, 249-Cf, and 251-Cf are prohibited pending criticality evaluation.
Radioactive Animal Carcasses	Animal carcasses containing, or contained in, radioactive materials and preserved with formaldehyde shall not be accepted for disposal.

 Beryllium Waste	Beryllium waste is regulated by the State of California as a toxic characteristic hazardous waste. Beryllium waste with radioactive material is therefore categorized mixed and shall not be accepted pending Division 8000 Vice President approval and special disposal arrangements.
Classified Materials	Classified materials are DOE assets and may not be disposed as waste. Declassify all materials before evaluating them for disposal.

If process knowledge is uncertain, a **Sampling and Analysis Worksheet** shall be used to determine waste properties by laboratory analysis.

Members of the Workforce who are waste generators or owners shall complete, and submit the [Radiological Characterization Form](#) to [Waste Management](#) (294-2145) for ES&H review. Waste Management (294-2145) will also assist with Radiological Characterization upon request.

Note: New characterization requests may take up to a week for processing. Radiation Protection in the Health and Safety Department (8517) may also be asked to survey or analyze the waste.

Guidance



The Process Knowledge Evaluation (PKE), TWD, and radiological surveys for the area should determine how waste items are categorized. The PKE may require some waste forms to be segregated from one another (e.g., sealed sources segregated from laboratory trash).

For waste characterization assistance, call Waste Management in the Environmental **Management** Department at 294-2145. Radiological safety questions may be directed to Radiation Protection in the Health and Safety Department, 294-1573.

*5.2 Controlling Radioactive Waste Hazards

*Requirements

Members of the Workforce who are waste generators or owners shall employ the following controls while managing radioactive waste packages:

 Radioactive Waste Hazard Control	Requirements
Segregation of hazardous and radioactive materials	Keep hazardous and radioactive materials segregated so they are not inadvertently commingled. Mixed hazardous and radioactive waste is only permitted under special authorization (see Section 3.5 , "Radioactive Waste Process Knowledge Evaluation [PKE]"). Any area where the reasonable potential exists for radioactive contamination of RCRA, TSCA, or Non-RCRA hazardous waste due to the presence of unconfined or unencapsulated radioactive material, or exposure to radiation beams or other sources of particles (neutrons, protons) capable of causing activation of hazardous waste, shall be controlled as a Radioactive Material Management Area (RMMA) pursuant to CPR400.1.1/MN471001, <i>ES&H Manual</i> , Section 19D , "Radioactive Material Management Areas (RMMAs)." 

Note: To determine 'reasonable potential' for an RMMA under CPR400.1.1/ MN471001, *ES&H Manual*, [Section 19D](#), "Radioactive Material Management Areas (RMMAs)," Members of the Workforce shall carefully evaluate areas where hazardous materials could be contaminated by unsegregated or unconfined radioactive contaminants and sources of activation.

Radioactive waste containers

- Containers shall be able to withstand normal use and transportation within the SNL/CA site (e.g., hand-carry, forklift handling, and truck transport, as required) without leakage or damage.
- Plastic bags shall be able to withstand handling and on-site transportation. Do not use plastic bags as containers for sharps or heavy items.
- Containers shall be constructed of materials that are compatible with the waste.
- Noncompactible waste shall be packaged in a rigid container (i.e., box or drum); oversized or unusually shaped items shall be wrapped in a durable material. Consult Waste Management for assistance.
- Compactible waste shall be placed in rigid or non-rigid containers, such as 3-mil clear plastic bags, as long as other container requirements are met.

Radioactive waste labeling

A Radioactive Waste and Mixed Waste Disposal Tag (LS6980-AA) shall be completed by Members of the Workforce having completed course ENV189CA and familiar with the PKE for the activity. Tags may be obtained through SNL/CA Stores.

Affix a tag to waste [parcels](#) as soon as they hold radioactive waste using a black or blue pen. Do not use felt-tip markers. Print the following information on the tag:

- Waste accumulation start date.
- Building and room where the waste is being generated.
- Type of material: radioactive or mixed waste.
- The classification shall be noted UNC, or the material shall be declassified before tagging. DOE directs that classified materials may not be accepted as waste.
- The last name, first name, organization and phone number of the responsible waste generator, qualified under course ENV189CA, "Radioactive & Mixed Waste Training for Generators."
- Waste description: describe the physical form of the items (e.g., soil, glassware, paper, plastic).
- Operation description: Enter the approved PKE number and PKE



title here.

- Enter the primary accumulated radionuclide in the appropriate waste column (e.g., Contaminated Equipment, Dry Solid, Other). Use only one column.
- **For mixed waste only:** enter the primary chemical description and concentration in the appropriate waste column.
- Enter any additional radionuclides and their activities in the Second Nuclide blank.
- Comment field: Enter the relevant Project/Task.

When the waste parcel is filled:

- Record the radioactivity level in the appropriate column using the [Radiological Characterization Form](#) approved by ES&H for the type of waste.
- Record the Characterization Form number in the Comments blank of the waste tag. Keep the Characterization Form available for future reference for multiple items from the same process.
- If the waste was analyzed, enter the Sampling Worksheet number and sample numbers relevant to the waste parcel.
- When these **requirements** are met, the responsible waste generator signs and dates the certification. The printed name and certification signature **shall** match.

Do **not** obscure other required labels with the waste disposal tag. If a waste container is too small for the tag, insert the tag in a clear packing envelope or bag and secure the envelope to the item.



Note: See an [example](#) of a completed Radioactive and Mixed Waste Disposal Tag.

Corrections to documents and waste disposal tags



To correct minor errors, make a single line through the incorrect data on waste certification documents or waste tags and note the correct data, initials, and current date immediately next to each change. Corrected information shall not be obliterated, or obscured by whiteout fluid or correction tape.

Note: Unsigned waste disposal tags may be replaced, provided the new tag includes complete and accurate data from the prior tag with any new or corrected information.

<p>Location of radioactive waste accumulation points</p> 	<p>Store and secure radioactive waste material in accordance with the Radiological Protection Procedures Manual and their TWD requirements.</p> <p>At a minimum, radioactive waste shall be accumulated in a radiologically Controlled Area. Members of the Workforce shall establish additional posting, labeling, and control as required by the Radiological Protection Procedures Manual.</p> <p>Radioactive waste accumulation points shall be located so as to protect the waste from inclement weather, traffic, combustibles, unauthorized handling, tampering, or other hazardous conditions that could endanger waste materials.</p>
<p>Limits for radioactive waste accumulation points</p> 	<p>Limit the amount of accumulated waste to comply with the contamination, radiation, and radioactivity levels specified in the relevant TWD (e.g., Radiological Work Permit) and to comply with established radiological controls.</p> <p>Prepare radioactive waste parcels in accordance with these requirements, and request pick-up by contacting Waste Management at 294-2145 within one year of the certification date.</p> <p>See Appendix D, “Radioactive Waste Parcel Limits,” to evaluate if waste may pose a problem for accumulation, handling, or shipping. Promptly notify Waste Management 294-2145 if any waste items may approach the activity limits.</p> <p>See Section 6, “Mixed Low-Level Waste,” for mixed waste quantity limits.</p>

5.3 Perform Work: Managing Radioactive Waste

Requirements

Members of the Workforce who are waste generators or owners shall package and manage low-level radioactive waste in their accumulation points by:

- Maintaining containers and accumulation points free of outer surface contamination.
- Segregating radioactive from non-radioactive materials to prevent cross-contamination.
- Segregating mixed waste and hazardous waste from low-level radioactive waste.
- Segregating powders and dusts from other waste, where practical.
- Immobilizing or double-packaging fine particulate waste.
- Segregating pyrophorics, such as uranium fines, turnings, or chips, from other waste.
- Immersing pyrophorics in a petroleum-free coolant until they are oxidized or immobilized.
- Ensuring pyrophorics are completely oxidized (inert), or immobilized in concrete prior to requesting disposal.

- Immersing cleaning materials containing chips or fines (for example, brushes, rags, gloves) in coolant during storage until immobilized.
- Placing all easily broken or sharp objects, such as pipettes, broken glass, needles, jagged scrap metal, or other items that can injure Members of the Workforce in an impenetrable container.
- Calling Waste Management at 294-2145 to arrange for pick-up when the waste is packaged and labeled as required.

*6.0 MIXED LOW-LEVEL WASTE

6.1 Analyze Mixed Waste Hazards

Requirements

Members of the Workforce who are waste generators or owners shall:



- Complete the Process Knowledge Evaluation (PKE) and seek the Vice President's approval in accordance with [Section 3](#), "Planning for Waste Generation," to ensure treatment and disposal options are available prior to generating mixed waste.
- Ensure that mixed wastes meet the SNL/CA acceptance criteria both for hazardous waste (see [Section 4](#), "Hazardous Waste") and radioactive waste (see [Section 5](#), "Radioactive Waste"), plus off-site treatment and disposal facility acceptance criteria.
- Identify and categorize both the hazardous chemical components of the waste and the radiological components of the waste on a Radioactive and Mixed Waste Disposal Tag. These components include:
 - Chemical compounds and their concentrations, determined through Process Knowledge Evaluation or laboratory analysis.
 - The activity of radionuclides, determined on the Radiological Characterization Form issued by ES&H (see [Section 5](#), "Radioactive Waste").

*6.2 Control Mixed Waste Hazards

*Requirements

Members of the Workforce who are waste generators or owners shall employ the following controls while managing mixed waste:

Mixed Waste Hazard Control	Requirements and Guidance
Mixed waste containers	Waste generators shall follow the requirements for hazardous waste containers in Section 5 , "Radioactive Waste," and requirements in the PKE when selecting containers for mixed waste parcels.

 <p>Mixed waste labeling</p>	<p>Label mixed waste containers with Radioactive Waste and Mixed Waste Disposal Tags (LS6980-AA) as soon as they hold mixed low-level waste. Tags may be obtained through SNL/CA Stores. Complete the tag as described in Section 5.2, "Controlling Radioactive Waste Hazards," with the following additional guidance:</p> <ul style="list-style-type: none"> • Add in bold letters "Hazardous Waste" at the top of the tag. • Check the box indicating mixed waste, rather than radioactive waste. • Include a "Chemical Description" and "Chemical Concentration" for each regulated hazardous material in the waste. Use the comment field to append additional chemical information, as necessary. The chemical description shall state the hazard characteristics with each constituent (e.g., toxic: lead; corrosive: sulfuric acid).
<p>Mixed waste accumulation points</p>	<p>Follow the satellite accumulation area requirements for hazardous waste in Section 4.2, "Controlling Waste Hazards." The mixed waste accumulation point shall also be radiologically-controlled as described in Section 5.2, "Controlling Radioactive Waste Hazards."</p>
 <p>Mixed waste accumulation limits</p>	<p>State and Federal hazardous waste quantity limits apply to SNL/CA mixed waste. Manage mixed waste quantities as described for hazardous waste in Section 4.2, "Controlling Waste Hazards."</p> <p>Manage radiological contamination, radiation levels, and radionuclide inventories in mixed waste accumulation points as described in Section 5.2, "Controlling Radioactive Waste Hazards."</p> <p>State and Federal hazardous waste time limits apply to SNL/CA mixed waste. Request mixed waste pick-up as soon as waste packages are completed, but no later than one year from the accumulation start date on the Radioactive and Mixed Waste Disposal Tag.</p>


*6.3 Perform Work: Managing Mixed Waste

*Requirements

Waste generators shall follow their TWD and PKE instructions for safe handling of hazardous and radioactive materials in mixed waste. Observe the packaging and accumulation point **requirements** presented for hazardous waste in [Sections 4.3](#), "Perform Work: Managing Hazardous Waste," and radioactive waste in [Section 5.3](#), "Perform Work: Managing Radioactive Wastes."


When a mixed waste parcel is filled, waste generators shall take the following steps:

Step	Action
1	Prepare a Radiological Characterization Form and submit the completed form to Waste Management for ES&H approval, or request Waste Management to provide an approved form, allowing a week for new characterization requests, surveys, or analysis.

 2	Record the radioactivity level in the appropriate column of the Radioactive and Mixed Waste Disposal Tag using the relevant Radiological Characterization Form approved by ES&H for the waste.
3	Record the Characterization Form number in the Comments blank of the waste tag. Keep the Characterization Form available for future reference for multiple items from the same process.
4	When the acceptance criteria of the requirements are met, the responsible waste generator signs and dates the certification. The printed name and certification signature shall match.
5	Call Waste Management at 294-2145 to arrange for the mixed waste to be picked up.

*7.0 FEEDBACK AND COST REDUCTION

*Requirements

 Waste generators shall identify and correct waste management problems using the following techniques:

- Noting waste management improvements and corrections in Technical Work Document updates.
- Inspecting waste accumulation points to promptly identify and correct problems.

If spills or other conditions occur that require assistance, waste generators shall contact the ES&H Hotline (294-3724), Waste Management (294-2145), or Radiation Protection (294-1573).

SNL will bill waste generating organizations according to the weight of each type of waste according to the pricing categories listed on the [Waste Operations Chargeback site](#).

Use these techniques to improve waste management practices:

- Use the source reduction and waste minimization practices in Section 4.2 to reduce waste volume and associated costs.
- Manager walk-through/assessments **shall** include inspection of waste accumulation points.
- Waste Management will inspect waste tags, packages, waste materials, and accumulation points during waste pick-ups to assure these **requirements** and permit requirements are being met. Observations will be brought to the attention of the responsible waste generator for correction.
- The SNL/CA annual assessment of state-permitted hazardous waste activities may include observations of waste accumulation points.
- The Waste Certification Official (WCO) maintains surveillance of radioactive waste management throughout the site, and quality assurance specialists conduct an annual audit of the radioactive waste management program. The WCO and quality Members of the Workforce provide feedback to waste generators and Waste Management to assure radioactive waste certification requirements are met.

Guidance

Federal, State, and local regulators regularly inspect hazardous and radioactive waste management throughout

SNL/CA, including individual laboratories and work areas. These authorities have power to levy significant fines against SNL/CA, issue Orders and Notices of Violation, and suspend privileges to store, treat, or dispose of waste. Compliance with applicable laws, permits, and these [requirements](#), is critically important to SNL/CA's success.

Waste processing chargeback fees are charged to SNL organizations. The rates established on the [Waste Management Chargeback site](#) are proportional to costs incurred for waste collection, treatment and disposal of the various waste types. Compliance with these guidelines and careful planning will assure waste can be routinely managed and will not result in additional fees for "problematic" waste that does not meet acceptance criteria.



8.0 RECORDS

Requirements

Waste generators shall retain, or have access to, these documents during waste-generating activities:

- Waste disposal tags affixed to all waste parcels in accumulation points.
- Technical Work Documents concerning the waste generating process and hazards.
- Process Knowledge Evaluations for low-level radioactive waste.
- Correspondence granting permission to generate mixed low-level waste.



9.0 RELATED HAZARDS AND ACTIVITIES

The following sections provide additional [information](#) for those hazardous substances releases that are not covered by those items identified above:

Hazards/Activities	Reference
Additional regulations for air emissions of hazardous substances.	CPR400.1.1/MN471001, <i>ES&H Manual</i> , Chapter 17 , "Air Emissions."
Sanitary sewer issues or discharges.	CPR400.1.1/MN471001, <i>ES&H Manual</i> , Section 10H , "Discharges to the Sanitary Sewer System."
Suspicious materials.	CPR400.1.1/MN471001, <i>ES&H Manual</i> , Chapter 15 , "Emergency Preparedness and Management."



10.0 REFERENCES

10.1 Requirements Source Documents

[10 CFR 835](#), *Occupational Radiation Protection*.

[40 CFR 260-270](#), *Hazardous Waste Management System: General*, through 270, EPA Administered Permit Programs: The Hazardous Waste Permit Program, (Implementing regulations for Resource Conservation and Recovery Act [RCRA]).

California Environmental Protection Agency, Title 22, California Code of Regulations (22 CCR), Division 4.5, *Environmental Health Standards for the Management of Hazardous Waste*.

California Health and Safety Code (CAHSC), Division 20, *Miscellaneous Health and Safety Provisions*, Chapters 6.1, "Medical Waste Management Act," and Chapter 6.5, "Hazardous Waste Control."

[DOE O 435.1, Chg 1](#), *Radioactive Waste Management*.

[DOE O 450.1](#), *Environmental Protection Program*.

[DOE O 460.1B](#), *Packaging and Transportation Safety*.

[DOE/NV-325](#), *Nevada Test Site Waste Acceptance Criteria*.

Envirocare of Utah, Inc., *Waste Acceptance Guidelines*.

10.2 Implementing Documents

DOE 5480.3, *Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes*.

[DOE O 5480.4, Chg. 4](#), *Environmental Protection, Safety, and Health Protection Standards*.

[RPO 04-01](#), *Radiological Surveys*.

RPO 04-403, *Radiation Survey Applications*.

SNL, [CPR400.1.1/MN471001](#), *ES&H Manual*.

SNL, CPR400.1.1.32, [MN471016](#), *Radiological Protection Procedures Manual*.

SNL, SAND2003-8763, *Biohazardous Waste Management Plan*.

SNL/CA, OP471733, *Waste Certification Program Plan*.

SNL/CA, OP471578, *Process Knowledge Evaluations*.

SNL/CA, OP471587, *Characterization of Radioactivity in Waste*.



Back to
Supplements



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CHANGE HISTORY

GN470075, *Guidelines for Waste Generators at SNL/CA*

June 19, 2006

Note: An asterisk (*) indicates a substantive change.

This section was revised to:

- **Change:** The SME from “Janet Harris” to “Mark Brynildson.”
- **Change:** In the TOC, “Attachment” to “Appendices,” and throughout the document, “Attachments” to “Appendix.”
- **Change:** Throughout the document, the term “satellite accumulation point” to “satellite accumulation area.”
- **Change:** Throughout the document, “SNL/CA Environmental Operations Department” to “SNL/CA Environmental Management Department.”
- **Change:** Throughout the document, “Environmental Operations Department” to “Environmental Management Department.”
- **Delete:** Throughout the document, the organization number, “(8516).”
- **Change:** Throughout the document, “Pollution prevention” to Waste minimization/pollution prevention.”
- ***Change:** Throughout the document, the terms used in Requirements”:
 - “cannot” to “shall not”
 - “should” to “shall”
 - “must” to “shall”



- “cannot” to “shall not”
- Under topic heading, “1.1, Applicability”:
 - ***Change:** The term “guidelines,” to “requirements.”
- Under topic heading, “1.2, Scope”:
 - ***Change:** The term “guidelines,” to “requirements.”
- Under topic heading, “2.1, Managers”:
 - **Add:** The subtopic heading, “Requirements.”
 - **Change:** “Managers are responsible for ensuring that:” to “Managers shall ensure that:”
- Under topic heading, “2.2, Waste Generators”:
 - **Add:** The subtopic heading, “Requirements.”
 - **Change:** “Members of the Workforce who are waste generators are responsible for:” to “Members of the Workforce who are waste generators shall:”
- Under topic heading, “2.3, Environmental Management Department - Waste”:
 - **Add:** The subtopic heading, “Requirements.”
 - **Change:** “Waste Operations in the Environmental Operations Department is responsible for:” to “Waste Management shall:”
 - ***Change:** In the second bullet, the term “guidelines,” to “requirements.”
- Under topic heading, “2.4, Health and Safety Department – Radiation Protection”:
 - **Add:** The subtopic heading, “Requirements.”
- Under topic heading, “3.1, Planning for Waste Accumulation and Disposal”:





- ***Change:** "Members of the Workforce are:" to "Members of the Workforce shall:"
- ***Change:** In the note, "Members of the Workforce should" to "Members of the Workforce shall."
- Under topic heading, "3.2, Technical Work Documents (TWDs)":
 - ***Change:** In the third bullet, the term "guidelines," to "requirements."
- Under the topic heading, "3.3, Pollution Prevention and Waste Minimization,":
 - **Delete:** (P2) from the subtopic "Requirements" in the second paragraph.



- Under the topic heading, "3.4, Qualifications and Training."
 - ***Change:** Under "Required Training,"
 - "ENVCA233" to "ENV112CA"
 - "ENVCA235" to "ENV189CA"
- Under the topic heading, "5.2, Controlling Radioactive Waste Hazards."
 - ***Change:** In the table, under " Radioactive waste labeling, "ENVCA235" to "ENV189CA"
 - ***Change:** In the last bullet, the term "guidelines," to "requirements."
 - ***Change:** In the table, under " Limits for radioactive waste accumulation points," the term "guidelines," to "requirements."



- Under the topic heading, "6.2, Control Mixed Waste Hazards."
 - ***Change:** In the table, under " Mixed waste containers," the term "guidelines," to "requirements."
- Under the topic heading, "6.3, Perform Work: Managing Mixed Waste."
 - ***Change:** Under " Requirements," the term "guidelines," to "requirements."

- ***Change:** In the table, in “ Step 4,” the term “guidelines,” to “requirements.”

- Under the topic heading, “7.0, Feedback and Cost Reduction.”



- ***Change:** In second set of bullets, in the third bullet, the term “guidelines,” to “requirements.”

- Under the topic heading, “9.0, Related Hazards and Activities.”

- **Change:** The term “guidelines,” to “information.”

- In Appendix D, “Radioactive Waste Parcel”:

- **Change:** “Waste Operations” to “Waste Management.”

June 29, 2005

Administrative Changes Only



This document was administratively revised to:

- **Change:** Executive Policy Sponsor from Les Shephard to Frank Figueroa

May 31, 2005

This section was revised to:

- **Change:**

- Under all subtopics, a global change from “Waste Operations” to “Waste Management,” where used as a proper name for the group.



- Under section 4.1, “ Analyze Waste Hazards, Table 1,” changed the requirements for ‘Empty Containers.’

- Under section 4.1, “ Analyze Waste Hazards, Table 2,” changed the

requirements for “Biohazardous and Medical Waste.”

- Under section 4.2, “Controlling Waste Hazards, Table 1,” changed the requirements for “Location of Accumulation Points.”

- **Add:**

- Under section 3.4, “Qualifications and Training, Table 1,” added retraining intervals to the listed courses.



- Under section 5.1, “Analyzing Radioactive Waste Hazards, Table 1,” added requirements for Polychlorinated Biphenyls (PCBs), Sealed Sources, Radioactive Animal Carcasses, and Beryllium Waste.

November 9, 2004

This section was revised to:

- **Under** the subtopic, “Applicability”:

- **Add.** Information to reflect current applicability of the section.



March 23, 2004

This supplement was substantially revised to:

- **Add:**

- Drivers for requirements that are to be included as part of the *ES&H Manual* self-assessment.
- A section concerning work planning, including technical work documents (TWDs) entitled, “Planning for Waste Generation,” with new requirements and guidance.
- A section on feedback and cost reduction that includes waste management



chargeback entitled, "Feedback and Cost Reduction," with new requirements and guidance.

- A section on associated documents concerning hazards and waste activities entitled, "Related Hazards and Activities."
- An attachment for Radioactive waste parcel levels entitled, "Radioactive Waste Parcel Levels."
- Under the section, "Hazardous Waste":

- Additional information on various waste forms requiring special handling and management.
- Additional information on waste that is not acceptable at the SNL/CA Hazardous Waste Treatment and Storage Facility.
- Additional requirements on controlling waste hazards.
- Additional guidance on waste evaluation.
- The section, "Definitions," information to the *ES&H Manual Glossary*.
- Provide guidance for use of the Waste Description and Disposal Request (WDDR).

- Under the sections, "Radioactive Waste," and "Mixed Waste":
 - Illustrations of the Radioactive and Mixed Waste Tag, with instructions and guidance for completion.
 - Additional descriptions on the radiological characterization process.



- "Requirements" and "Guidance" designations in each section.

- **Change:**

- The layout of the document using the ISMS concept.
- Under the section, "Hazardous Waste," the topics from, "Waste

Characterization,” “Waste Containers,” “Labeling,” “Satellite Accumulation Exemption,” “Waste Acceptance Criteria,” and “Waste Pickup,” to “Analyze Waste Hazards,” “Controlling Waste Hazards,” and “Perform Work: Managing Hazardous Wastes.”



- The section, “Training,” to a subsection entitled “Qualifications and Training,” under “Responsibilities.”
- The section, “General Information,” requirements and guidance to be placed under applicable portions of the section, “Planning for Waste Generation.”
- To move pollution prevention and waste minimization, and Process Knowledge Evaluation (PKE) to "Plan Work."
- The following headings:
 - From “Purpose, Scope, and Ownership,” to “Applicability, Scope, and Ownership.”
 - From “Low-Level Radioactive Waste,” to “Radioactive Waste.”
 - From “Mixed Low-Level Waste,” to “Mixed Waste.”
- References to update State, Federal, and NNSA requirements for hazardous, biohazardous/medical, recyclable, and low-level radioactive wastes.
- Attachments to update information concerning hazardous waste characteristics, Extremely Hazardous waste, and Acutely Hazardous waste.



ES&H Manual Glossary:

Additions:

- Accumulation Acute hazardous waste
- At or near the point of (waste) generation (California)
- Biohazardous Waste (California)



- Compatible
- Container
- Corrosive (RCRA)
- Declassification
- Disposal (RCRA)
- Disposal arrangements
- Disposal facility
- Extremely Hazardous Waste (California)
- Free liquid
- Handling (RCRA)
- Hazardous waste (California)
- Hazardous Waste Facility
- Ignitable Low-level radioactive waste
- Medical Waste (California) Mixed waste Package
- Parcel
- Pollution Prevention
- Reactive (RCRA)
- Satellite accumulation point (SAP)
- Storage (RCRA)
- Toxic (California)

- "Under the control of" (California)



- Waste generator (California)

Changes:

- Acute hazardous waste
- Low-level radioactive waste
- Mixed waste
- Package
- Transuranic waste
- Treatment



- Waste

August 30, 2001

This document has been revised to:

- **Add:**

To Sections 7.3 and 8.3, "Labeling, Requirements," to the rules for labeling low-level radioactive waste and mixed low-level waste:

- Use black or blue pen and press firmly. Do not use felt-tip markers.
- Make a single line through the incorrect data on documents or waste tags. Do **not** obliterate incorrect data by using whiteout fluid or correction tape. Note the correct data immediately next to the incorrect data. Enter your initials and current date next to each change.
- The responsible generator, qualified under course ENV235, "Radioactive & Mixed Waste Training for Generators," prints his name on the tag. When the



tag is complete, the responsible generator signs the certification. The printed name and certification signature must match.

June 29, 2000

This document has been revised to:



● **Delete:**

- In Section 3.1, "Managers," deleted **90-day accumulation areas**.
- In Section 5.2, "Contacts for Assistance," deleted first paragraph beginning with **For up to date...**
- In Section 6.4, "Satellite Accumulation Exemption," deleted **A 90-day accumulation area** and the entire paragraph beginning with **Within one year of reaching the initial accumulation date...**
- In Section 6.5, "90-day Accumulation Areas," deleted the entire paragraph.
- In section 8.0, "Mixed Low-Level Waste," deleted **Laboratories Services Division (7000)** from Step 4 in the table.
- In Section 10.1, "References," deleted DOE 5400.2A, *Environmental compliance Issue Coordination*, DOE 5480.1B, *Environment, Safety & Health Program for Department of Energy Operations*, and DOE 5482.1B, *Environment, Safety, & Health Appraisal Program*.



● **Add:**

- In Section 5.2, "Contacts for Assistance," added link.
- In Section 6.1, "Waste Characterization," added CA Toxic to bulleted list.
- In Section 6.4, "Satellite Accumulation Exemption," in the fourth main bullet, added **of hazardous waste or 1 quart**.
- In Section 7.2, "Waste Containers," added last bullet, **Oversized or**





unusually shaped items may be wrapped in a durable material. Consult waste management for assistance."

- In Section 7.4, "Waste Acceptance Criteria," in the sixth main bullet, added **Pyrophoric** at beginning of first sentence and or immobilized after the word (inert). Added **or double contained** to last sentence in the same bullet.

- **Change:**

- In section 4.0, "Training," under Role or Work Activity, change ENV233 to N/A under Required and N/A to ENV233 under Recommended.

- In Section 6.3, "Labeling," changed Date upon which the **waste was first generated** to Date upon which the **material is discarded**.



- In Section 7.4, "Waste Acceptance Criteria," changed NVO-325 to NTS WAC.

- In Section 8.4, "Waste Acceptance Criteria," changed DOE 5820.2A to DOE 435.1.

- In Section 10.1, "References," changed last entry to NVO WAC Rev. 1, Nevada Test Site Waste Acceptance Criteria, August 1997.

- In Section 10.2, "Implementing Documents," replaced:

SNL/CA, 1 IP-17 and, 1993 with, RPO 04-401 & 04-403 and

SNL/CA, IP-28, and 1993 with, ES&H Manual Section 190



and changed **DOE 5820.2A** to DOE 435.1 and **NVO WAC** to NTS WAC.



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GN470075 - Guidelines for Waste Generators at SNL/CA



APPENDIX A - HAZARDOUS WASTE CHARACTERISTICS


Subject Matter Expert: [Mark Brynildson](#); CA Counterpart: N/A

Contributor: [Leighton Ford](#)


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Table A-1. Hazardous Waste Characteristics



Type of Hazardous Waste	Description	Examples*
Ignitable/flammable [Title 22 CCR 66261.21]	<ul style="list-style-type: none"> ● It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has a flash point lower than 60⁰C (140⁰F). ● It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture, or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard. ● It is an ignitable compressed gas. ● Is an oxidizer. 	<ul style="list-style-type: none"> ● Acetone ● Acetylene ● Activated charcoal ● Calcium carbide ● Gasoline ● Methanol ● Oxygen ● Perchlorates ● Sodium nitrate



		<ul style="list-style-type: none"> ● Toluene
<p>Corrosive [Title 22 CCR 66261.22]</p>  	<ul style="list-style-type: none"> ● It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5 ● It is a liquid and corrodes steel at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55⁰C (130⁰F). ● It is not aqueous and, when mixed with an equivalent weight of water, produces a solution having a pH less than or equal to 2 or greater than or equal to 12.5. ● It is not a liquid and, when mixed with an equivalent weight of water, produces a liquid that corrodes steel at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55⁰C (130⁰F). 	<ul style="list-style-type: none"> ● Ammonium hydroxide ● Hydrochloric acid ● Hydrofluoric acid ● Phosphoric acid ● Sodium hydroxide ● Sulfuric acid
<p>Reactive [Title 22 CCR 66261.23]</p> 	<ul style="list-style-type: none"> ● It is normally unstable and readily undergoes violent change without detonating. ● It reacts violently with water. ● It is normally unstable and readily undergoes violent change without detonating. ● It reacts violently with water (water-reactive wastes are extremely hazardous waste). 	<ul style="list-style-type: none"> ● Sodium cyanide ● Potassium perchlorate ● Sodium metal

- It forms potentially explosive mixtures with water.
- When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.
- It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.
- It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.
- It is readily capable of detonation or explosive decomposition or reactions at standard temperature and pressure.
- It is a forbidden explosive as defined in 49 CFR Section 173.51, or a Class A explosive as defined in 49 CFR Section 173.53 or a Class B explosive as defined in 49 CFR Section 173.88.



Toxic
[Title 22 CCR
66261.24]



- A federal and state listing of metals and other organic and inorganic substances determined to be toxic above a certain concentration. [Table I, II, III of Title 22 CCR 66261.24]
- Oral LD₅₀ less than 5,000 mg/kg.
- Dermal LD₅₀ less than 4,300 mg/kg.
- Inhalation LC₅₀ less than 10,000 ppm as a gas or vapor.
- It has an acute aquatic 96-hour LC₅₀ less than 500 mg/l when measured in soft water with fathead minnows, rainbow trout or golden shiner.
- It contains any of the following substances at a single or combined concentration equal to or exceeding 0.0001 percent by weight (10 ppm).

(A) 2-Acetylaminofluorene (2-AAF)

(B) Acrylonitrile

(C) 4-Aminodiphenyl

(D) Benzidine and its salts

(E) Bis (Chloromethyl) ether (BCME)

(F) Methyl chloromethyl ether

(G) 1,2-Dibromo-3-chloropropane (DBCP)

- Benzene
- Zinc
- Selenium
- Copper
- Nickel
- Mercury
- Lead
- Cadmium
- Arsenic
- Sodium azide





(H) 3,3-Dichlorobenzidine and its salts (DCB)

(I) 4-Dimethylaminoazobenzene (DAB)

(J) Ethyleneimine (EL)

(K) Alpha-Naphthylamine (1-NA)

(L) Beta-Naphthylamine (2-NA)

(M) 4-Nitrobiphenyl (4-NBP)

(N) N-Nitrosodimethylamine (DMN)

(O) Beta-Propiolactone (BPL)

(P) Vinyl chloride (VCM)

- It has been shown through experience or testing to pose a hazard to human health or environment because of its carcinogenicity, acute toxicity, chronic toxicity, bioaccumulative properties or persistence in the environment.

*These are only some of the possible examples.



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GN470075 - Guidelines for Waste Generators at SNL/CA



APPENDIX B - EXTREMELY HAZARDOUS WASTE

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Contributor: [Leighton Ford](#)


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Requirements

A waste, or a material, is extremely hazardous if it exhibits the following characteristics:

- 
- Acute oral LD₅₀ less than or equal to 50 milligrams per kilogram.
 - Acute dermal LD₅₀ less than or equal to 43 milligrams per kilogram.
 - Acute inhalation LC₅₀ less than or equal to 100 parts per million as a gas or vapor.
 - Contains any of the substances listed in Attachment A Toxicity characteristics at a single or combined concentration equal to or exceeding 0.1 percent by weight.
 - Has been shown through experience or testing that human exposure to the waste or material may likely result in death, disabling personal injury or serious illness because of the carcinogenicity, high acute or chronic toxicity, bioaccumulative properties, or persistence in the environment of the waste or material.
 - It is water-reactive.



Any waste containing a substance listed below at a concentration equal to or exceeding its listed total threshold limit concentration:

Substance	TTLIC (Wet-Weight in mg/kg)
Aldrin	140
Arsenic and/or arsenic compounds	50,000 (as As)
Beryllium and/or beryllium compounds*	7,500 (as Be)
Cadmium and/or cadmium compounds*	10,000 (ad Cd)
Chlordane	250
2,4-Dichlorophenoxyacetic acid	10,000
Dieldrin	800
Dioxin (2,3,7,8-TCDD)	1
Endrin	20
Heptachlor	470
Kepone	2,100
Lead compounds, organic	1,300 (dry weight basis; as Pb)
Lindane	400
Mercury and/or mercury compounds	2,000 (as Hg)
Mirex	2,100
Polychlorinated biphenyls (PCBs)	5,000
Selenium and/or selenium compounds*	10,000 (as Se)
Thallium and/or thallium compounds*	70,000 (as Tl)
Toxaphene	500
2,4,5-Trichlorophenoxypropionic acid	1,000



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GN470075 - Guidelines for Waste Generators at SNL/CA



APPENDIX C - ACUTELY HAZARDOUS WASTE


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An acutely hazardous or P-listed waste is defined, as follows:




(a) Any commercial chemical product or manufacturing chemical intermediate having the generic name listed in the table below.

(b) Any off-spec commercial chemical product or manufacturing chemical intermediate that, if it met specifications, would have the generic name listed in the table below.

(c) Any residue remaining in a container or in an inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate having the generic name listed in the table below.

(d) Any residue or contaminated soil, water or other debris resulting from a cleanup of a spill into or on any land or water of any commercial chemical product or manufacturing chemical intermediate having the generic name listed in the table below, or any residue or contaminated soil, water, or other debris resulting from a cleanup of a spill into or on any land or water of any off-spec commercial chemical product or manufacturing chemical intermediate which, if it met specification, would have the generic name listed in the table below.



(e) The primary hazardous properties of these materials have been indicated by the letters T (Toxicity), and R (Reactivity). Absence of a letter indicates that the compound only is listed for acute toxicity. Toxicity is a comparative value of the LD50 factorial cause.

P-Listed Wastes (Acutely Hazardous Waste)	
Hazardous Waste No.	Substance
PO23	Acetaldehyde, chloro-
P002	Acetamide, N-(aminothioxomethyl)-
P057	Acetamide, 2-fluoro-
P058	Acetic acid, fluoro-, sodium salt
P002	1-Acetyl-2-thiourea
P003	Acrolein
P070	Aldicarb
P203	Aldicarb sulfone
P004	Aldrin
P005	Allyl alcohol
P006	Aluminum phosphide (R,T)
P007	5-(Aminomethyl)-3-isoxazolol
P008	4-Aminopyridine
P009	Ammonium picrate (R)
P119	Ammonium vanadate
P099	Argentate(1-), bis(cyano-C)-, potassium
P010	Arsenic acid H ₃ AsO ₄
P012	Arsenic oxide As ₂ O ₃
P011	Arsenic oxide As ₂ O ₅
P011	Arsenic pentoxide
P012	Arsenic trioxide
P038	Arsine, diethyl-
P036	Arsonous dichloride, phenyl-
P054	Aziridine
P067	Aziridine, 2-methyl-
P013	Barium cyanide
P024	Benzenamine, 4-chloro-
P077	Benzenamine, 4-nitro-

P028	Benzene, (chloromethyl)-
P042	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)-
P046	Benzeneethanamine, alpha,alpha-dimethyl-
P014	Benzenethiol
P127	7-Benzofuranol,2,3-dihydro-2,2-dimethyl-, methylcarbamate.
P188	Benzoic acid, 2-hydroxy-, compd. with (3aS-cis)-1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrolo [2,3-b] indol-5-yl methylcarbamate ester (1:1).
P001	2H-1-Benzopyran-2-one,4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts, when present at concentrations greater than 0.3%
P028	Benzyl chloride
P015	Beryllium powder
P017	Bromoacetone
P018	Brucine
P045	2-Butanone,3,3-dimethyl-1-(methylthio)-,O-[methylamino)carbonyl] oxime
P021	Calcium cyanide Ca(CN) ₂
P189	Carbamic acid, [(dibutylamino)-thio]methyl-,2,3-dihydro-2,2-dimethyl- 7-benzofuranyl ester
P191	Carbamic acid, dimethyl-, 1-[(dimethyl-amino) carbonyl]-5-methyl-1H- pyrazol-3-yl ester
P127	Carbofuran
P022	Carbon disulfide
P095	Carbonic dichloride
P189	Carbosulfan
P023	Chloroacetaldehyde
P024	p-Chloroaniline
P026	1-(o-Chlorophenyl)thiourea
P027	3-Chloropropionitrile
P029	Copper cyanide
P029	Copper cyanide Cu(CN)

P202	m-Cumenyl methylcarbamate
P030	Cyanides (soluble cyanide salts), not otherwise specified
P031	Cyanogen
P033	Cyanogen chloride
P033	Cyanogen chloride (CN)Cl
P034	2-Cyclohexyl-4,6-dinitrophenol
P016	Dichloromethyl ether
P036	Dichlorophenylarsine
P037	Dieldrin
P038	Diethylarsine
P041	Diethyl-p-nitrophenyl phosphate
P040	O,O-Diethyl O-pyrazinyl phosphorothioate
P043	Diisopropylfluorophosphate (DFP)
P004	1,4,5,8-Dimethanonaphthalene,1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a,-hexahydro-,(1alpha,4alpha,4abeta,5alpha,8alpha,8abeta)-
P060	,4,5,8-Dimethanonaphthalene,1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-,(1alpha,4alpha,4abeta,5beta,8beta,8abeta)-
P037	2,7:3,6-Dimethanonaphth[2,3-b]oxirene,3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-,(1aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7beta,7aalpha)-
P051	2,7:3,6-Dimethanonaphth [2,3-b]oxirene, 3,4,5,6,9,9 -hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-,(1aalpha,2beta,2abeta,3alpha,6alpha,6abeta,7beta,7aalpha)-, and metabolites
P044	Dimethoate
P046	alpha,alpha-Dimethylphenethylamine
P191	Dimetilan.
P047	4,6-Dinitro-o-cresol, & salts
P048	2,4-Dinitrophenol
P020	Dinoseb

P185	1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O-[(methylamino)- carbonyl]oxime
P085	Diphosphoramidate, octamethyl-
P111	Diphosphoric acid, tetraethyl ester
P039	Disulfoton
P049	Dithiobiuret
P050	Endosulfan
P088	Endothall
P0151	Endrin
P0151	Endrin, & metabolites
P192	Carbamic acid, dimethyl-, 3-methyl-1- (1-methylethyl)-1H-pyrazol-5-yl ester
P190	Carbamic acid, methyl-, 3-methylphenyl ester
P042	Epinephrine
P031	Ethanedinitrile
P194	Ethanimidothioc acid, 2-(dimethylamino)-N-[[[(methylamino)carbonyl]oxy]-2-oxo-, methyl ester
P066	Ethanimidothioic acid, N-[[[(methylamino)carbonyl]oxy]-, methyl ester
P101	Ethyl cyanide
P054	Ethyleneimine
P097	Famphur
P056	Fluorine
P057	Fluoroacetamide
P058	Fluoroacetic acid, sodium salt
P198	Formetanate hydrochloride
P197	Formparanate
P065	Fulminic acid, mercury(2+) salt (R,T)
P059	Heptachlor
P062	Hexaethyl tetraphosphate
P116	Hydrazinecarbothioamide
P068	Hydrazine, methyl-
P063	Hydrocyanic acid



P063	Hydrogen cyanide
P096	Hydrogen phosphide
P060	Isodrin
P192	Isolan
P007	3(2H)-Isoxazolone, 5-(aminomethyl)-
P196	Manganese, bis(dimethylcarbamodithioato-S,S')-,
P196	Manganese dimethyldithiocarbamate
P092	Mercury, (acetato-O)phenyl-
P065	Mercury fulminate (R,T)
P082	Methanamine, N-methyl-N-nitroso-
P064	Methane, isocyanato-
P016	Methane, oxybis[chloro-
P112	Methane, tetranitro- (R)
P118	Methanethiol, trichloro-
P198	Methanimidamide, N,N-dimethyl-N'-[2-methyl-4- [[methylamino) carbonyl]oxy]phenyl]-
P050	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10- hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide
P059	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro- 3a,4,7,7a-tetrahydro-
P199	Methiocarb
P190	Metolcarb
P066	Methomyl
P068	Methyl hydrazine
P064	Methyl isocyanate
P069	2-Methylactonitrile
P071	Methyl parathion
P128	Mexacarbate
P072	alpha-Naphthylthiourea
P073	Nickel carbonyl
P073	Nickel carbonyl Ni(CO) ₄ , (T-4)-
P074	Nickel cyanide



P074	Nickel cynaide Ni(CN) ₂
P075	Nicotine, & salts
P076	Nitric oxide
P077	p-Nitroaniline
P078	Nitrogen dioxide
P076	Nitrogen oxide NO
P078	Nitrogen oxide NO ₂
P081	Nitroglycerine (R)
P082	N-Nitrosodimethylamine
P084	N-Nitrosomethylvinylamine
P085	Octamethylpyrophosphoramidate
P087	Osmium oxide OsO ₄ , (T-4)-
P087	Osmium tetroxide
P088	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
P194	Oxamyl
P089	Parathion
P034	Phenol, 2-cyclohexyl-4,6-dinitro-
P128	Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate (ester)
P199	Phenol, (3,5-dimethyl-4-(methylthio)-, methylcarbamate
P048	Phenol, 2,4-dinitro-
P047	Phenol, 2-methyl-4,6-dinitro-, & salts
P202	Phenol, 3-(1-methylethyl)-, methyl carbamate
P201	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamat
P020	Phenol, 2-(1-methylpropyl)-4,6-dinitro-
P009	Phenol, 2,4,6-trinitro-, ammonium salt (R)
P092	Phenylmercury acetate
P093	Phenylthiourea
P094	Phorate
P095	Phosgene
P096	Phosphine
P041	Phosphoric acid, diethyl 4-nitrophenyl este

P039	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
P094	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
P044	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
P043	Phosphorofluoridic acid, bis(1-methylethyl) ester
P089	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
P040	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester 3
P097	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester
P071	Phosphorothioic acid, O,O,-dimethyl O-(4- nitrophenyl) ester
P204	Physostigmine
P188	Physostigmine salicylate
P110	Plumbane, tetraethyl-
P098	Potassium cyanide
P098	Potassium cyanide K(CN)
P099	Potassium silver cyanide
P201	Promecarb
P203	Propanal, 2-methyl-2-(methyl-sulfonyl)-, O-[(methylamino)carbonyl] oxime
P070	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime
P101	Propanenitrile
P027	Propanenitrile, 3-chloro-
P069	Propanenitrile, 2-hydroxy-2-methyl-
P081	1,2,3-Propanetriol, trinitrate (R)
P017	2-Propanone, 1-bromo-
P102	Propargyl alcohol
P003	2-Propenal
P005	2-Propen-1-ol
P067	1,2-Propylenimine

P102	2-Propyn-1-ol
P008	4-Pyridinamine
P075	Pyridine, 3-(1-methyl-2-pyrrolidiny)-, (S)-, & salts
P204	Pyrrolo[2,3-b]indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-, methylcarbamate (ester), (3aS-cis)-
P114	Selenious acid, dithallium(1+) salt
P103	Selenourea
P104	Silver cyanide
P104	Silver cyanide Ag(CN)
P105	Sodium azide
P106	Sodium cyanide
P106	Sodium cyanide Na(CN)
P108	Strychnidin-10-one, & salts
P018	Strychnidin-10-one, 2,3-dimethoxy-
P108	Strychnine, & salts
P115	Sulfuric acid, dithallium(1+) salt
P109	Tetraethyldithiopyrophosphate
P110	Tetraethyl lead
P111	Tetraethyl pyrophosphate
P112	Tetranitromethane (R)
P062	Tetraphosphoric acid, hexaethyl ester
P113	Thallic oxide
P113	Thallium oxide Tl ₂ O ₃
P114	Thallium(I) selenite
P115	Thallium(I) sulfate
P109	Thiodiphosphoric acid, tetraethyl ester
P045	Thiofanox
P049	Thioimidodicarbonic diamide [(H ₂ N)C(S)] ₂ NH
P014	Thiophenol
P116	Thiosemicarbazide
P026	Thiourea, (2-chlorophenyl)-
P072	Thiourea, 1-naphthalenyl-

P093	Thiourea, phenyl-
P185	Tirpate
P123	Toxaphene
P118	Trichloromethanethiol
P119	Vanadic acid, ammonium salt
P120	Vanadium oxide V ₂ O ₅
P120	Vanadium pentoxide
P084	Vinylamine, N-methyl-N-nitroso-
P001	Warfarin, & salts, when present at concentrations greater than 0.3%
P205	Zinc, bis(dimethylcarbamodithioato-S,S')-,
P121	Zinc cyanide
P121	Zinc cyanide Zn(CN) ₂
P122	Zinc phosphide Zn ₃ P ₂ , when present at concentrations greater than 10% (R,T)
P205	Ziram



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GN470075 - Guidelines for Waste Generators at SNL/CA



APPENDIX D - RADIOACTIVE WASTE PARCEL LEVELS

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Waste **Management** uses Radioactive Waste Parcel Levels to evaluate radioactive materials for appropriate storage, packaging, and disposal. Notify Waste **Management** at 294-2145 if waste items are expected to approach these parcel limits.

The parcel limits are based on:

- The Hazard Category 3 DOE nuclear facility safety limits of [DOE-STD-1027-92](#), *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports*. These limits assure radioactive material inventories do not require establishment of a DOE Nuclear Facility at SNL/CA.
- Department of Transportation Type A Package quantity limits. These limits assure radionuclides can be packaged in available DOT Type A containers.
- The maximum activity allowed by Nevada Test Site Action Levels in a small shipping container (e.g., 30 gallon).

These parcel limits are an initial facility safety level; other acceptance criteria may apply:

- Fissile-equivalent criticality limits.
- Total activity of transuranic nuclides with half lives greater than 20 years is limited




to 100 nanocurie per gram.

- Disposal facility waste profile limits.
- Disposal facility license limits.




Table of Radioactive Waste Parcel Limits

Note: * Denotes the radioactive waste is also subject to 100 nCi/gram transuranic waste limit.



Nuclide	Parcel Safety Level (mCi)
Ac-225	2.70E+02
Ac-227	5.41E-01
Ac-228	1.08E+04
Ag-105	5.41E+04
Ag-108m	1.62E+04
Ag-110m	1.08E+04
Ag-111	1.35E+04
Al-26	1.08E+04
*Am-241	5.41E+00
*Am-242m	5.41E+00
*Am-243	5.41E+00
Ar-37	1.08E+06
Ar-39	5.41E+05
Ar-41	1.62E+04
Ar-42	5.41E+03
As-72	5.41E+03
As-73	1.08E+06
As-74	1.35E+04
As-76	5.41E+03
As-77	1.35E+04
At-211	5.41E+04
Au-193	1.62E+05



Au-194	2.70E+04
Au-195	2.70E+05
Au-196	5.41E+04
Au-198	1.35E+04
Au-199	2.43E+04
Ba-131	5.41E+04
Ba-133	8.11E+04
Ba-133m	2.43E+04
Ba-140	1.08E+04
Be-10	1.35E+04
Be-7	5.41E+05
Bi-205	1.62E+04
Bi-206	8.11E+03
Bi-207	2.97E+02
Bi-210	1.35E+04
Bi-210m	8.11E+02
Bi-212	8.11E+03
*Bk-247	5.41E+00
Bk-249	2.16E+03
Br-76	8.11E+03
Br-77	8.11E+04
Br-82	1.08E+04
C-11	1.35E+04
C-14	6.22E-01
Ca-41	1.08E+06
Ca-45	2.43E+04
Ca-47	1.35E+04
Cd-109	2.70E+04
Cd-113	2.43E+03
Cd-115	1.35E+04
Cd-115m	8.11E+03
Ce-139	1.62E+05



Ce-141	1.35E+04
Ce-143	1.35E+04
Ce-144	5.41E+0
Cf-248	8.11E+01
*Cf-249	5.41E+00
Cf-250	1.35E+01
*Cf-251	5.41E+00
Cf-252	2.70E+01
Cf-253	1.62E+03
Cf-254	1.62E+01
Cl-36	2.97E+01
Cl-38	5.41E+03
Cm-240	5.41E+02
Cm-241	2.43E+04
Cm-242	2.70E+02
*Cm-243	8.11E+00
Cm-244	1.08E+01
*Cm-245	5.41E+00
*Cm-246	5.41E+00
*Cm-247	5.41E+00
*Cm-248	1.35E+00
Co-55	1.35E+04
Co-56	8.11E+03
Co-57	2.16E+05
Co-58	2.70E+04
Co-58m	1.08E+06
Co-60	1.08E+04
Cr-51	8.11E+05
Cs-129	1.08E+05
Cs-131	1.08E+06
Cs-132	2.70E+04
Cs-134	1.35E+04



Cs-134m	2.43E+05
Cs-135	7.57E+03
Cs-136	1.35E+04
Cs-137	9.19E+02
Cu-64	2.43E+0
Cu-67	2.43E+04
Dy-159	5.41E+05
Dy-165	1.35E+04
Dy-166	8.11E+03
Er-169	2.43E+04
Er-171	1.35E+04
Es-253	5.40E+02
Es-254	8.11E+01
Es-254m	1.08E+04
Eu-147	5.41E+04
Eu-148	1.35E+04
Eu-149	5.41E+05
Eu-150	1.89E+04
Eu-152	2.43E+04
Eu-152m	1.35E+04
Eu-154	1.35E+04
Eu-155	5.41E+04
Eu-156	1.35E+04
F-18	1.35E+04
Fe-52	5.41E+03
Fe-55	1.08E+06
Fe-59	2.16E+04
Fe-60	5.41E+03
Fm-255	2.16E+04
Fm-257	2.16E+03
Ga-67	1.62E+05
Ga-68	8.11E+03



Ga-72	1.08E+04
Gd-146	1.08E+04
Gd-148	8.11E+00
Gd-153	1.35E+05
Gd-159	1.35E+04
Ge-68	8.11E+03
Ge-71	1.08E+06
Ge-77	8.11E+03
H-3	1.08E+06
Hf-172	8.11E+03
Hf-175	8.11E+04
Hf-181	2.43E+04
Hf-182	8.11E+02
Hg-194	2.70E+04
Hg-195m	1.35E+05
Hg-197	2.70E+05
Hg-197m	2.43E+04
Hg-203	2.43E+04
Ho-163	1.08E+06
Ho-166	8.11E+03
Ho-166m	8.11E+03
I-123	1.62E+05
I-124	2.43E+04
I-125	5.60E+02
I-126	2.43E+04
I-129	7.84E+00
I-131	9.20E+02
I-132	1.08E+04
I-133	1.35E+04
I-134	8.11E+03
I-135	1.35E+04
In-111	5.41E+04






In-113m	1.08E+05
In-114m	8.11E+03
In-115m	2.43E+04
Ir-189	2.70E+05
Ir-190	1.89E+04
Ir-192	1.35E+04
Ir-193m	2.70E+05
Ir-194	5.41E+03
K-40	1.62E+04
K-42	5.41E+03
K-43	1.35E+04
Kr-81	1.08E+06
Kr-85	2.70E+05
Kr-85m	1.62E+05
Kr-87	5.41E+03
La-137	5.41E+04
La-140	1.08E+04
Lu-172	1.35E+04
Lu-173	2.16E+05
Lu-174m	2.16E+05
Lu-177	2.43E+04
Lu-74	1.08E+05
Mg-28	5.41E+03
Mn-52	8.11E+03
Mn-53	Unlimited
Mn-54	2.70E+04
Mn-56	5.41E+03
Mo-93	1.89E+05
Mo-99	1.35E+04
N-13	1.35E+04
Na-22	1.35E+04
Na-24	5.41E+03

Nb-92m	1.89E+04
Nb-93m	1.62E+05
Nb-94	1.62E+04
Nb-95	2.70E+04
Nb-97	1.35E+04
Nd-147	1.35E+04
Nd-149	1.35E+04
Ni-59	2.19E+04
Ni-63	6.76E+04
Ni-65	8.11E+03
Np-235	1.08E+06
*Np-236	2.70E+01
*Np-237	1.89E+00
Np-238	1.35E+04
Os-185	2.70E+04
Os-191	2.43E+04
Os-191m	1.08E+06
Os-193	1.35E+04
Os-194	5.41E+03
P-32	8.11E+03
P-33	2.43E+04
Pa-230	2.70E+03
Pa-231	1.62E+00
Pa-233	2.43E+04
Pb-201	2.70E+04
Pb-202	5.41E+04
Pb-203	8.11E+04
Pb-205	Unlimited
Pb-210	2.43E+02
Pb-212	8.11E+03
Pd-103	1.08E+06
Pd-107	3.51E+05

Pd-109	1.35E+04
Pm-143	8.11E+04
Pm-144	1.62E+04
Pm-145	1.89E+05
Pm-147	2.43E+04
Pm-148m	1.35E+04
Pm-149	1.35E+04
Pm-151	1.35E+04
Po-208	5.41E+02
Po-209	5.41E+02
Po-210	5.41E+02
Pr-142	5.41E+03
Pr-143	1.35E+04
Pt-188	1.62E+04
Pt-191	8.11E+04
Pt-193	1.08E+06
Pt-193m	2.43E+05
Pt-195m	5.41E+04
Pt-197	1.35E+04
Pt-197m	2.43E+04
Pu-236	1.89E+01
Pu-237	5.41E+05
*Pu-238	5.41E+00
*Pu-239	5.41E+00
*Pu-240	5.41E+00
Pu-241	2.70E+02
*Pu-242	5.41E+00
*Pu-244	5.41E+00
Ra-223	8.11E+02
Ra-224	1.62E+03
Ra-225	5.41E+02
Ra-226	9.73E-02

Ra-228	1.08E+03
Rb (natural)	Unlimited
Rb-81	2.43E+04
Rb-83	5.41E+04
Rb-84	2.43E+04
Rb-86	8.11E+03
Rb-87	Unlimited
Re (natural)	Unlimited
Re-183	1.35E+05
Re-184	2.70E+04
Re-184m	8.11E+04
Re-186	1.35E+04
Re-187	Unlimited
Re-188	5.41E+03
Re-189	1.35E+04
Rh-101	1.08E+05
Rh-102	1.35E+04
Rh-102m	2.43E+04
Rh-103m	1.08E+06
Rh-105	2.43E+04
Rh-99	5.41E+04
Rn-222	1.08E+02
Ru-103	2.43E+04
Ru-105	1.35E+04
Ru-106	5.41E+03
Ru-97	1.08E+05
S-35	5.41E+04
Sb-122	8.11E+03
Sb-124	1.35E+04
Sb-125	2.43E+04
Sb-126	1.08E+04
Sc-44	1.35E+04



Sc-46	1.35E+04
Sc-47	2.43E+04
Sc-48	8.11E+03
Se-75	8.11E+04
Se-79	5.41E+04
Si-31	1.35E+04
Si-32	5.41E+03
Sm-145	5.41E+05
Sm-147	Unlimited
Sm-151	1.08E+05
Sm-153	1.35E+04
Sn-113	1.08E+05
Sn-117m	5.41E+04
Sn-119m	1.08E+06
Sn-121m	2.43E+04
Sn-123	1.35E+04
Sn-125	5.41E+03
Sn-126	1.59E+00
Sr-82	5.41E+03
Sr-85	5.41E+04
Sr-85m	1.35E+05
Sr-87m	8.11E+04
Sr-89	1.35E+04
Sr-90	2.70E+03
Sr-91	8.11E+03
Sr-92	1.35E+04
Ta-178	2.70E+04
Ta-179	8.11E+05
Ta-182	1.35E+04
Tb-157	2.70E+05
Tb-158	1.89E+04
Tb-160	1.35E+04

Tc-95m	5.41E+04
Tc-96	1.08E+04
Tc-96m	1.08E+04
Tc-97	Unlimited
Tc-97m	1.08E+06
Tc-98	1.89E+04
Tc-99	2.97E+02
Tc-99m	2.16E+05
Te-118	5.41E+03
Te-121	5.41E+04
Te-121m	1.35E+05
Te-123m	1.89E+05
Te-125m	2.43E+05
Te-127	1.35E+04
Te-127m	1.35E+04
Te-129	1.35E+04
Te-129m	1.35E+04
Te-131m	1.35E+04
Te-132	1.08E+04
Th-227	2.70E+02
Th-228	1.08E+01
Th-229	8.11E-01
Th-230	2.59E-01
Th-231	2.43E+04
Th-232 (natural)	2.19E+00
Th-234	5.41E+03
Ti-44	5.41E+03
Tl-200	2.16E+04
Tl-201	2.70E+05
Tl-202	5.41E+04
Tl-204	1.35E+04
Tm-167	1.89E+05

Tm-168	2.16E+04
Tm-170	1.35E+04
Tm-171	2.70E+05
T-tritium	1.08E+06
U (depleted)	Unlimited
U (enriched < 5%)	Unlimited
U (enriched > 5%)	2.70E+01
U (natural)	Unlimited
U-230	2.70E+02
U-232	8.11E+00
U-233	2.70E+01
U-234	2.70E+01
U-235	3.24E+01
U-236	2.70E+01
U-238	1.59E+02
V-48	8.11E+03
V-49	1.08E+06
W-178	2.70E+04
W-181	8.11E+05
W-185	2.43E+0
W-187	1.35E+04
W-188	5.41E+03
Xe-122	5.41E+03
Xe-123	5.41E+03
Xe-127	1.08E+05
Xe-131m	1.08E+06
Xe-133	5.41E+05
Xe-135	1.08E+05
Y-87	5.41E+04
Y-88	1.08E+04
Y-90	5.41E+03
Y-91	8.11E+03



Y-91m	5.41E+04
Y-92	5.41E+03
Y-93	5.41E+03
Yb-169	8.11E+04
Yb-175	2.43E+04
Zn-65	5.41E+04
Zn-69	1.35E+04
Zn-69m	1.35E+04
Zr-88	8.11E+04
Zr-93	5.41E+03
Zr-95	2.43E+04
Zr-97	8.11E+03



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[Bob Goetsch, rsgoets@sandia.gov](mailto:rsgoets@sandia.gov)



GN470075 - Guidelines for Waste Generators at SNL/CA

PROCESS KNOWLEDGE EVALUATION FORM

Form instructions found at end of document.

PKE No (Assigned by ES&H): _____

Waste Profile (Assigned by ES&H): _____

SECTION I: PROCESS INFORMATION (To be completed by Lead Experimenter/Room Responsible Person/Project Supervisor)		
1. Building _____	2. Room _____	3. Workstation/Glove box/Hood _____
4. Describe activity generating waste and estimated completion date:		
5. Briefly describe the process(es) in this area:		
6. Are process procedures/instructions utilized? <input type="checkbox"/> Yes <input type="checkbox"/> No		
6.1 If yes, please list:		
7. Are any regulated RCRA or California-listed hazardous materials a part of this work station or used in or created by these processes? <input type="checkbox"/> Yes <input type="checkbox"/> No		
7.1. If yes, please list and explain how they are used:		
8. Are there procedures to control the use and disposal of regulated hazardous materials and to prevent them from commingling with radioactive material? <input type="checkbox"/> Yes <input type="checkbox"/> No		
8.1. If yes, please list:		
8.2. If no, how are regulated hazardous materials controlled to prevent them from commingling with or contaminating radioactive waste?		
9. Will this process generate mix waste (radioactive and hazardous)? <input type="checkbox"/> Yes <input type="checkbox"/> No		

10.	Will the radioactive waste contain any of the following:	<input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No																																																
	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">TRANSURANICS</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;">CHELATING AGENTS</td> <td style="width: 10%;"></td> </tr> <tr> <td>FREE LIQUIDS</td> <td></td> <td></td> <td></td> <td>PCBs</td> <td></td> </tr> <tr> <td>CLASSIFIED</td> <td></td> <td></td> <td></td> <td>EXPLOSIVE</td> <td></td> </tr> <tr> <td>PARTICULATES</td> <td></td> <td></td> <td></td> <td>PYROPHORICS</td> <td></td> </tr> <tr> <td>GASES (>1.5 Atmosphere)</td> <td></td> <td></td> <td></td> <td>SEALED SOURCES</td> <td></td> </tr> <tr> <td>REACTIVE/UNSTABLE</td> <td></td> <td></td> <td></td> <td>ASBESTOS</td> <td></td> </tr> <tr> <td>EXPLOSIVE</td> <td></td> <td></td> <td></td> <td>ANIMAL CARCASSES</td> <td></td> </tr> <tr> <td>ETIOLOGICAL</td> <td></td> <td></td> <td></td> <td>FISSILE ISOTOPES</td> <td></td> </tr> </table>	TRANSURANICS				CHELATING AGENTS		FREE LIQUIDS				PCBs		CLASSIFIED				EXPLOSIVE		PARTICULATES				PYROPHORICS		GASES (>1.5 Atmosphere)				SEALED SOURCES		REACTIVE/UNSTABLE				ASBESTOS		EXPLOSIVE				ANIMAL CARCASSES		ETIOLOGICAL				FISSILE ISOTOPES					
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11.	Will the radioactive waste exhibit the following characteristics?	<input type="checkbox"/> Yes <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> No																																																
12.	Will any resulting waste contain listed hazardous materials?	<input type="checkbox"/> Yes <input type="checkbox"/> No																																																			
12.1.	If yes, list constituents:																																																				
13.	List all radionuclides present in the waste stream:																																																				
14.	Mark all regulated waste type products produced:	<input type="checkbox"/> LLW <input type="checkbox"/> Hazardous <input type="checkbox"/> LLW RCRA Mixed <input type="checkbox"/> Biohazardous <input type="checkbox"/> LLW + CA Hazardous																																																			
15.	List all components of waste generated by the process or any other activities in this area. Indicate any that may contain hazardous materials:																																																				
16.	Comments:																																																				

NOTE: When processes are significantly changed, this form must be re-evaluated and revised as necessary.

Section II: ENVIRONMENTAL REVIEW (To be completed by Waste Evaluator)

This form documents the Authorized Components List and specific controls for the management and disposal of LLW in accordance with the SNL/CA LLW Certification Program.

17. Visually examine materials in the area. Are any of the following NTS WAC categories of materials present?

TRANSURANICS	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	CHELATING AGENTS	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
FREE LIQUIDS	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	PCBs	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
CLASSIFIED	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	EXPLOSIVE	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
PARTICULATES	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	PYROPHORICS	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
GASES (>1.5 Atmosphere)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	SEALED SOURCES	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
REACTIVE/UNSTABLE	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	ASBESTOS	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
EXPLOSIVE	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	ANIMAL CARCASSES	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
ETIOLOGICAL	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	FISSILE ISOTOPES	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No

18. Will processes involve materials exhibiting the following regulated characteristics?

CORROSIVE	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	IGNITABLE	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
TOXIC	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	REACTIVE	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No

18.1. Will processes involve listed RCRA or CA hazardous materials? Yes No

18.1A. If yes, list constituents:

NOTE: If any of the above blocks are marked **Yes**, enter appropriate controls to comply with WAC on this form for concurrence.

19. Procedures Evaluated:

20. Additional available information to support process knowledge:

21. Specify radiological characterization methods:

22. The following regulated waste types are produced:

<input type="checkbox"/> LLW	<input type="checkbox"/> Hazardous	<input type="checkbox"/> LLW RCRA Mixed
<input type="checkbox"/> Biohazardous	<input type="checkbox"/> LLW + CA Hazardous	

Instructions for Completing the Process Knowledge Evaluation Form

PKE Number: Assigned to the form by the Waste Evaluator. PKE number should correspond to the SNL/CA building number followed by a unique identifier for the process within building. The room number may be used as the unique identifier (e.g., 913-103).

Waste Profile Number: The Waste Evaluator assigns the profile number under which the waste will be shipped to the disposal facility.

Section I Process Information *(To be completed by the Lead Experimenter/Room Responsible Person/Manager)*

Item 1: Enter the Building Number or area designation.

Item 2: Enter the Room number or area designation, if applicable.

Item 3: Enter the Work Station number/glove box or area designation, if applicable.

Item 4: Provide summary of the project generating the waste and the estimated completion date on the lines shown.

Item 5: Describe the process/experiment succinctly, i.e., how materials are handled, what types of process reactions will be occurring.

Item 6: Check the appropriate box to identify whether process procedures are to be utilized.

Item 6.1: If yes, list each procedure/instruction. Process procedures include such items as SOP/OP/SWP, notebooks, instructions, etc.

Item 7: Check the appropriate box to identify whether regulated hazardous materials are used in the process/experiment generating the waste or are created in the process. See CPR400.1.1.37/GN470075, *Guidelines for Waste Generators at SNL/CA*, for guidance.

Item 7.1: If present, describe how regulated hazardous materials are to be used or created in the process/experiment (e.g., acid/base dissolution).

Item 8: List the procedures, if any, that control the use and disposal of regulated hazardous materials (e.g., SOP/OP/SWP numbers).

Item 8.1: If yes, list applicable procedures.

Item 8.2: If no, discuss how regulated hazardous materials are controlled to prevent them from commingling with or contaminating radioactive waste.

Item 9: Will this process generate mixed waste (radioactive and hazardous)? Inform waste management immediately if mixed wastes may be generated.

- Item 10: Check all applicable box(es) for each attribute exhibited by the wastes generated by the process. See CPR400.1.1.37/GN470075, *Guidelines for Waste Generators at SNL/CA*, for more guidance on these attributes.
- Item 11: Check the applicable box(es) for each RCRA characteristic that the waste will exhibit. This applies only to the non-radioactive component of the waste. See CPR400.1.1.37/GN470075, *Guidelines for Waste Generators at SNL/CA*, for more guidance on these attributes.
- Item 12: Check the appropriate box to indicate whether listed hazardous materials are contained in the waste stream. See CPR400.1.1.37/GN470075, *Guidelines for Waste Generators at SNL/CA*, for more guidance on listed wastes.
- Item 13: List all radionuclides present in the wastes generated by the process/experiment.
- Item 14: Mark all regulated waste type products produced:
- Item 15: List all components of waste resulting from processes or activities conducted in the area, (e.g., Rubber gloves, Kimwipes, wood, laboratory glassware, etc.). Provide as complete a listing as possible (including concentrations, if appropriate) to enable identification of appropriate waste streams. Add additional sheets if needed. Also include the waste code or characteristic for each component containing any regulated RCRA or California hazardous materials.
- Item 16: Enter any additional comments.

Section II **Environmental Review** (*To be completed by the Waste Evaluator*)

- Item 17: Check the appropriate box(es) to identify the categories of materials present in the area. For each "Yes", evaluate the actions taken to prevent commingling or contamination of regulated waste types and document the actions in Section II.
- Item 18: Evaluate presence of characteristic hazardous materials. For each "Yes", evaluate the actions taken to prevent commingling or contamination of regulated waste types and document the actions in Section II.
- Item 18.1: Evaluate presence of listed hazardous materials. For each listed material, evaluate the actions taken to prevent commingling or contamination of regulated waste types and document the actions in Section II.
- Item 19: List procedures evaluated for controls over the process and waste materials.
- Item 20: Identify any available additional information to support Process Knowledge, (i.e., area chemical stocks lists, detailed process evaluations, notebooks, etc.).
- Item 21: Specify the methods used by the generator to determine radioactivity in wastes.
- Item 22: Check the appropriate box(es) to identify all of the types of regulated wastes resulting from processes or activities conducted in the area.
- Item 23: Specify the acceptance criteria under which this PK is prepared (e.g., DOE/NV, Envirocare, etc)

- Item 24: For each box checked "Yes" in items 11, 12 & 13 of the Process Knowledge Evaluation form, describe the actions taken to either prevent contamination of the LLW waste stream or to comply with the WAC.
- Item 25: The waste evaluator and Waste Certification Official, in conjunction with the generator, develop an authorized components list for the LLW waste stream and enter the information.
- Item 26: Enter an estimate of the annual volume for wastes covered by this PKE for forecasting purposes.
- Item 27: Enter signature of Waste Evaluator completing Section II and the date signed.

Section III Approval Signatures

- Item 28: Enter the signature of the cognizant Lead Experimenter, Room Responsible Person or Line Manager indicating concurrence with controls and authorized components. Enter the date signed. Enter signature of the Waste Certification Official reviewing this form and the date signed.

LOW-LEVEL WASTE (LLW) RADIOLOGICAL CHARACTERIZATION FORM

Form Number (completed by ES&H): _____

Waste Item Description:

Characterized by:

Methods and Calculations:

Mass Balance Gross Measurement (verify within 1 year) Direct Measurement Other

<u>Radionuclides</u>	<u>Activity (millicurie)</u>

ES&H Review:

Date:

LS 6980-A (2-97)
S/N 699 207

SNL/CA HAZARDOUS WASTE ID TAG

For Assistance, Call 4-2145

Sandia National Laboratories, 7011 East Avenue, Livermore, CA 94550-09517

999
Building

888
Room #

WASTE SOLVENT
Item Description: Main Constituent (If Trade name, attach MSDS Sheet)

9-18-02
Start Date

9-28-02
Fill Date

Other Constituents/Concentrations: ACETONE ; ISO PROPYL ALCOHOL

Estimated Quantity: 4 LITER

Instructions: Waste must be in closed, compatible container. Call 4-2145 for pick-up. Complete all categories, attach to waste container. Generator may retain bottom copy. No Classified or Radioactive Waste Accepted.

BAR CODE NUMBER(S) *handwritten*

- HAZARDS**
- Flammable
 - Oxidizer
 - Corrosive
 - Toxic/Poison
 - CA Toxic
 - Other _____

OFFICIAL USE ONLY

CONTAINER #					DRUM #				
PICK UP DATE _____					TRANSFER DATE _____				
WEIGHT _____					DRUM WEIGHT (EST.) _____				
EPA CODE(S) _____					CA WASTE CODE _____				
HAZARD _____					STORAGE AREA _____				
pH _____		OXIDIZER _____		CHLOR _____		STATE:		SOLID LIQUID	

JOE Q. SANDIA
Generators' Name

8999
Organization

Joe Q. Sandia
Signature

49999
Phone Ext.