

SUBJECT AREA CONTENT

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Management System: Environmental Management System			
Subject Area: Hazardous Waste Management			
<input type="checkbox"/> VIEW/PRINT ALL (No Exhibits and Forms)			
Effective Date: Dec 11, 2014 (Rev 6.10) Periodic Review Due: Jan 31, 2018	Subject Matter Expert: Glen Todzia	Management System Executive: Jason Remien	Management System Steward: Gail Mattson

Introduction

This subject area describes how hazardous waste generators identify, package, label, and manage regulated hazardous wastes through the Environmental Protection Division's Waste Management Program to minimize the impact of potential spills to the environment. The following topics are discussed in this subject area:

- Generators and generator responsibilities;
- Identifying waste;
- Segregating waste;
- Packaging waste;
- Completing the [Nonradioactive Waste Control Form \(NRWCF\)](#) and the [Process Knowledge Certification Form](#);
- Labeling waste;
- Establishing, operating, and maintaining a Satellite Accumulation Area;
- Establishing, operating, and maintaining a 90-Day Accumulation Area;
- Managing PCB waste;
- Managing universal wastes;
- Managing aerosol cans;
- Managing nanomaterial wastes.

Brookhaven National Laboratory (BNL) is committed to integrating environmental stewardship into all facets of our missions. This stewardship includes the proper management of all hazardous waste streams created during the performance of the Laboratory's research programs.

On May 11, 1995, the U. S. Environmental Protection Agency (USEPA) published the final Universal Waste Rule, which established new regulations in 40 CFR Part 273 to address the management of certain widely-generated wastes identified as universal wastes. The New York State (NYS) Department of Environmental Conservation then issued regulations (6 NYCRR Part 374.3) pertaining to universal waste standards that allow NYS generators to implement the universal waste management alternatives. The rule is designed to facilitate the environmentally sound collection and increase the proper recycling

or treatment of the following hazardous wastes; (1) batteries, (2) certain pesticides, (3) mercury-containing thermostats and (4) mercury-containing fluorescent light tubes. BNL manages primarily batteries and mercury bulbs/tubes.

The regulatory relief provided in this rule benefits generators and facilitates recycling in that when managing universal wastes, the generator may keep the universal waste(s) onsite (BNL facility) for up to one year, so long as it is managed properly (e.g., proper labeling, spill prevention, containers compatible) and the waste does not have to be handled as a Resource Conservation and Recovery Act (RCRA) hazardous waste. As such, these types of waste are not subject to stringent hazardous waste accumulation and storage requirements.

Note: The NRWCF should be submitted no more than 6 months after generation of the Universal Waste to properly schedule shipments.

Contents

Section	Overview of Content (see section for full process)
<u>1. Generating Waste</u>	<ul style="list-style-type: none"> • Ensure training is current. • Place waste in compatible containers. • Label container. • Place waste in an approved accumulation area.
<u>2. Establishing a Satellite Accumulation Area</u>	<ul style="list-style-type: none"> • Position satellite area at or near the point of waste generation. • Provide secondary containment for liquid hazardous wastes. • Post satellite area with appropriate sign. • Notify ES&H Coordinator when a satellite area is either established or closed. • When processes/experiments/projects are terminated, transfer hazardous wastes from satellite areas to 90-Day Accumulation Area and/or request pickup by EPD.
<u>3. Operating a Satellite Accumulation Area</u>	<ul style="list-style-type: none"> • Keep waste containers secured. • Segregate wastes according to hazard class. • Store only compatible wastes in the same container. • Plan transfer and disposal so that quantity and storage time limits are not exceeded. • Transfer hazardous waste to 90-Day Accumulation Area within three days after reaching 55 gallons.
<u>4. Completion of Nonradioactive Waste Control Forms and Process Knowledge Certification Forms</u>	<ul style="list-style-type: none"> • Complete Nonradioactive Waste Control Form (NRWCF). • Document quantity and characterize waste. • Complete Process Knowledge Certification Form

if waste has been in a radiological area.

- Submit forms to the 90-Day Accumulation Area Manager for approval.
- Obtain approval before placing waste into the area.
- Ensure training status is up-to-date.
- Register area with the Waste Management (WM) Program.
- Locate area in appropriate shelter.
- Ensure that appropriate safety equipment is accessible.
- Post area with appropriate signs.
- Submit NRWCF and associated paperwork to WM.
- Schedule pickup and transfer waste to the WM facility.
- Inspect area weekly.
- Keep current copy of Contingency Plan in 90-Day Accumulation Area
- Ensure PCB waste is picked up by EPD within 30 days of it being declared out of service.
- Segregate, package, and label PCB waste as required.
- Take adequate spill control measures.
- Post the entrance to the accumulation area.
- Designate a person(s) who is responsible for overall management of universal waste accumulation area(s).
- Establish a universal waste accumulation area.
- Label containers with Universal Waste Label or use a container with the information preprinted on the Universal Waste Label.
- Use separate and suitable containers for different types of universal batteries, mercury-containing thermostats, and fluorescent light tubes.
- To initiate a pickup of universal waste by EPD, complete NRWCF.
- Submit NRWCF to EPD within 6 months from start date.
- Repackage and label the universal waste for pickup.
- Include necessary information in all Contingency Plans.
- Post up-to-date copies of the Contingency Plan.

5. Establishing a 90-Day Accumulation Area

6. Operating a 90-Day Accumulation Area

7. PCB Waste Management

8. Universal Waste Management

9. Contingency Plans

- Contact the Emergency Services Division at extension 911 or 2222 in the event of an emergency.
- Containerize nanowaste.
- Accumulate wastes in a hazardous waste satellite area.
- Label the outermost bag/container.
- Complete the NRWCF and Process Knowledge Certification Form.
- Transfer the waste to the 90-Day Accumulation Area.

[10. Nanomaterial Waste Management](#)

[Definitions](#)

Exhibits

[90-Day Accumulation Area Rules Sign](#)

[90-Day Accumulation Area Warning Sign](#)

[90-Day Hazardous Waste Accumulation Area Contingency Plan Sample](#)

[Examples of Incompatible Chemicals](#)

[Examples of Unacceptable Waste Containers](#)

[Examples of Waste Descriptions](#)

[Hazard Class](#)

[Hazardous Waste Generator Characterization Guidance](#)

[Hazardous Waste Label](#)

[Nanomaterial Waste Label](#)

[Photo of Hazardous Waste Storage Module and Rubber Webbing Mats](#)

[Satellite Accumulation Area Basic Rules Sign](#)

[Satellite Hazardous Waste Accumulation Area Operator Aid](#)

[Universal Waste Accumulation Area Basic Rules](#)

[Universal Waste Label](#)

Forms

[90-Day Accumulation/Satellite Drum Checklist](#)

[90-Day Hazardous Waste Accumulation Area Weekly Inspection Checklist](#)

[Hazardous Waste 90-Day Area Registration Form](#)

[Nonradioactive Waste Control Form \(NRWCF\)](#)

[Process Knowledge Certification Form](#)

Training Requirements and Reporting Obligations

This subject area contains the following training requirements (see the [BNL Training and Qualifications](#) website):

- Hazardous Waste Generator (HP-RCRIGEN3)
- RCRA 90 Day - Area Managers (HP-90DAY)

This subject area does not contain reporting obligations.

External/Internal Requirements

Requirement Number	Requirement Title
10 CFR 830, Subpart A	Energy, Nuclear Safety Management, Quality Assurance Requirements
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262 & 264-265	Resource Conservation and Recovery Act/Standards Applicable to Generators of Hazardous Waste
40 CFR 268	Land Disposal Restrictions
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302.6	Notification Requirements under CERCLA and Title III of the Superfund Amendments and Reauthorization Act of 1986
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions,
49 CFR 172	Transportation/Hazardous Materials Regulations/ Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 173	Transportation/Shippers - General Requirements for Shipments and Packagings
6 NYCRR 370	Hazardous Waste Management System: General
6 NYCRR 371	Identification and Listing of Hazardous Wastes
6 NYCRR 372	Hazardous Waste Manifests System and Related Standards for Generators, Transporters, and Facilities
6 NYCRR 373	Hazardous Waste Management Facilities
6 NYCRR 374	Standards for the Management of Special Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
6 NYCRR 374-2	Standards for the Management of Used Oil, New York State Department of Environmental Conservation
BSA Contract No. DE-SC0012704 - Clause C.4	Statement Of Work
BSA Contract No. DE-SC0012704 - Clause H.24	Allocation Of Responsibilities For Contractor Environmental Compliance Activities
BSA Contract No. DE-SC0012704 - Clause I.55	Waste Reduction Program (may 2011)
BSA Contract No. DE-SC0012704 - Clause I.62	Compliance With Environmental Management Systems (may 2011)
EO 13423	Strengthening Federal Environmental, Energy, and Transportation

	Management
O 151.1C	Comprehensive Emergency Management System
O 231.1B Admin Change 1 (Nov 28 2012)	Environment, Safety and Health Reporting
O 414.1D Admin Chg 1 (May 8, 2013)	Quality Assurance
O 456.1(May 31, 2011)	The Safe Handling of Unbound Engineered Nanoparticles
P 450.4A (Apr 25, 2011)	Integrated Safety Management Policy
Suffolk County Sanitary Code - Article 12	Toxic and Hazardous Materials Storage and Handling Controls

References

6 NYCRR Part 371, Identification and Listing of Hazardous Wastes

6 NYCRR Part 374.3, Standards for Universal Waste

40 CFR 262.11, Hazardous Waste Determination (EPA 1987)

40 CFR 273, Standard for Universal Waste Management

[Chemical Management System](#) web site

[Chemical Safety](#) Subject Area

[EM-SOP-105, Request for Sampling and Supplemental Health and Safety Plan](#)

[EM-SOP-109, Chain of Custody Procedure](#)

[EPA](#) web page

[EPA List for Acutely Hazardous Waste](#) web page

[EPA's Technology Innovation Office Clu-In](#) web page

EPA SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods

[ESD Environmental Monitoring SOPs Webpage](#)

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

[How Do I Manage This Waste?, Waste Management Program](#) web site

[Industrial Waste](#) Subject Area

[Material Safety Data Sheet \(MSDS\) Search](#), [Chemical Management System](#) web site (*Limited Access)

[Mixed Waste Management](#) Subject Area

[Nanoscale Particle ESH](#) Subject Area

[PCB Management](#) Subject Area

[Pollution Prevention and Waste Minimization](#) Subject Area

[Radioactive Waste Management Basis](#) Program Description

[Radiological Control Manual](#) Program Description

[Records Management](#) Subject Area

[Regulated Medical Waste Management](#) Subject Area

[Spill Response](#) Subject Area

[Training and Qualifications](#) Website

[Work Planning and Control for Experiments and Operations](#) Subject Area

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Standards of Performance

All staff and guests shall comply with applicable Laboratory policies, standards, and procedures, unless a formal variance is obtained.

All staff and guests shall promptly report accidents, injuries, ES&H deficiencies, emergencies, and off-normal events in accordance with procedures.

Managers shall analyze work for hazards, authorize work to proceed, and ensure that work is performed within established controls.

Managers shall ensure that work is planned to prevent pollution, minimize waste, and conserve resources, and that work is conducted in a cost-effective manner that eliminates or minimizes environmental impact.

Before waste is generated, managers shall ensure that it has a funded and available disposition pathway. Managers shall ensure that all hazardous materials and waste have an identified owner who is accountable for its proper disposition.

All staff and users shall identify, evaluate, and control hazards in order to ensure that work is conducted safely and in a manner that protects the environment and the public.

All staff and users shall ensure that they are trained and qualified to carry out their assigned responsibilities, and shall inform their supervisor if they are assigned to perform work for which they are not properly trained or qualified.

All staff and users shall ensure that environmental effluents, emissions, and wastes associated with their work are as low as reasonably achievable (also referred to as "E-ALARA")

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PROCEDURE: GENERATING WASTE

Management System: Environmental Management System		
Subject Area: Hazardous Waste Management		
1. Generating Waste		
Effective Date: Jan 31, 2013	Subject Matter Expert: Glen Todzia	Management System Executive: Jason Remien

Applicability

This information applies to all waste generators.

Required Procedure

Step 1	<p>Ensure your training status as a generator of hazardous waste is up-to-date.</p> <ul style="list-style-type: none"> To ensure you are within the one-year qualification period for the HP-RCRIGEN3 (Hazardous Waste Generator) course, consult the Training and Qualifications Web Site, or contact your Department's/Division's Training Coordinator. If your training is not current, attend training in the proper methods for handling, documenting, and disposing of hazardous waste. For further information on training, contact your Department's/Division's Training Coordinator.
Step 2	<p>Place hazardous waste in a container that is compatible with the waste's characteristics and that can be tightly closed to prevent the release of the waste.</p> <ul style="list-style-type: none"> For advice on container/waste compatibility, see the Examples of Incompatible Chemicals exhibit. Collect hazardous wastes only in containers that are in good condition, without any holes, dents, rust, or other faults that might impair proper containment, and that are made of, or lined with, a material that is compatible with the hazardous waste to be stored. The following non-suitable containers must not be used due to the potential for spills: wine bottles, juice bottles, flasks, beakers, thin plastic bags and other containers that have the potential for spilling are not appropriate waste containers. For examples of unacceptable container conditions, see the exhibit Examples of Unacceptable Waste Containers. Store waste in a suitable container that has not previously contained an incompatible substance. For nanomaterial-bearing waste streams, see the section Nanomaterial Waste Management. <p>Note: Do not evaporate or otherwise heat hazardous waste to dispose of it and/or avoid proper treatment and disposal. This is illegal and may result in substantial fines imposed against the laboratory.</p>
Step 3	<p>Immediately after containerizing the waste, I label the container with the words "Hazardous</p>

	<p>Waste" as well as with a description of the contents, including major chemical constituents (see the Hazardous Waste Label exhibit) that identifies the hazardous component of the waste (do not use generic/nonspecific nomenclature or chemical formulas). For examples of acceptable and unacceptable descriptions, see the Examples of Waste Descriptions exhibit.</p> <p>Note: The use of "nonhazardous" waste labels is restricted to those wastes that do not meet the definition of a RCRA hazardous waste (see the Environmental Compliance Representative, Waste Management Representative, or HWSA SME for guidance). Also, do NOT label reusable or in process chemicals as "WASTE." A container labeled with the word "WASTE" implies that there is no useful purpose for the chemical and that it must be managed as waste as per this subject area.</p>
<p>Step 4</p>	<p>Put the waste into either a satellite accumulation area or a 90-day Accumulation Area, and go to the appropriate section for information:</p> <ul style="list-style-type: none"> • Operating a Satellite Accumulation Area • Operating a 90-Day Accumulation Area <p>Note: Any special storage conditions/requirements that applied to the waste components before it was declared waste (i.e. store below a certain temperature, keep out of light, etc.) MUST be adhered to when placed in the SAA or 90 Day area.</p> <p>Do NOT bring wastes in from home. Household Hazardous Waste Cleanup Days sponsored by local communities are a good avenue for disposing of these types of waste.</p> <p>Conversely, do NOT take BNL wastes (wastes generated at BNL) home as it is BNL's responsibility for proper disposal of wastes generated at the site.</p>

Guidelines

If a hazardous material has any intrinsic value before declaring it as waste, the following groups should be notified of the material's availability:

- Staff within your Department/Division;
- Staff outside your Department/Division (for examples, see the Laboratory's [Chemical Management System](#) web site);
- Outside the Laboratory (for examples, see the [EPA](#) web page);

For practical advice on how to manage, recycle, or dispose of common wastes at BNL, see [How Do I Manage This Waste?](#).

References

[Chemical Management System](#) web site

[EPA](#) web page

[How Do I Manage This Waste?](#), [Waste Management Program](#) web site

[Training and Qualifications](#) Web Site

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PROCEDURE: ESTABLISHING A SATELLITE ACCUMULATION AREA

Management System: Environmental Management System		
Subject Area: Hazardous Waste Management		
2. Establishing a Satellite Accumulation Area		
Effective Date: Jan 31, 2013	Subject Matter Expert: Glen Todzia	Management System Executive: Jason Remien

Applicability

This information applies to all waste generators.

Required Procedure

Step 1	<p>Position the satellite area at or near the point of waste generation (i.e., within the same general area--room, lab, shop floor, or equivalent).</p> <ul style="list-style-type: none"> Each satellite area must be under the control of the waste generator. <p>The temperature of the stored waste must always remain above the waste's freezing point and below its auto-ignition point, which can be obtained from the material's MSDS (see the Material Safety Data Sheet (MSDS) Search).</p>
Step 2	<p>Provide adequate secondary containment for all liquid hazardous wastes. For hazardous and acute hazardous liquid wastes, secondary containment must be sufficient to hold 10% of the total volume [30% if total volume is greater than 250 gallons (33.5 cubic feet or 950 liters)] or 100% of the volume of the largest container to be stored, whichever is greater.</p>
Step 3	<p>Post the satellite area with a Satellite Accumulation Area Basic Rules Sign.</p>
Step 4	<p>Notify the ES&H Coordinator or designee when a Satellite Accumulation Area is either established or closed. The ES&H Coordinator/designee will inform the Environmental Protection Division (EPD) of any changes in the existing Satellite Accumulation Area List.</p>
Step 5	<p>When processes/experiments/projects are terminated, transfer hazardous wastes from the satellite areas to a 90-Day Accumulation Area and/or request pick-up by the EPD.</p>
Step 6	<p>If the waste contains PCBs, refer to the section PCB Waste Management.</p>

Guidelines

Dedicate a separate area for the collection of mixed and/or radioactive waste, to ensure its segregation from nonradioactive hazardous waste (e.g., taping off the area, physical barrier[s], or other equivalent means that also meets the requirements of the Radiological Control Division [refer to the [Radiological Control Manual](#) Program Description]).

ES&H Coordinators/Managers should maintain a current list of Satellite Accumulation Areas in the buildings/areas they are responsible for and report any changes to EPD.

Satellite Accumulation Areas should be checked by generators regularly for compliance with this subject area.

The base of the secondary containment should be sloped or otherwise designed to drain and remove liquids resulting from leaks and spills, unless the containers are elevated or are otherwise protected from contact with spilled liquids. Netting, for example, may be utilized, or an equivalent method/material.

All sinks and floor drains in the vicinity should be plugged when they are not in use to prevent possible spillage from entering the building's sanitary sewage system

References

[Material Safety Data Sheet \(MSDS\) Search](#), [Chemical Management System](#) web site (*Limited Access)

[Radiological Control Manual](#) Program Description

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PROCEDURE: OPERATING A SATELLITE ACCUMULATION AREA

Management System: Environmental Management System		
Subject Area: Hazardous Waste Management		
3. Operating a Satellite Accumulation Area		
Effective Date: Jan 31, 2013	Subject Matter Expert: Glen Todzia	Management System Executive: Jason Remien

Applicability

This information applies to all waste generators.

Required Procedure

Step 1	Keep all hazardous waste containers closed at all times, except when waste is being added or removed.
Step 2	Provide any special storage conditions/requirements that applied to the waste components before it was declared waste (i.e., store below a certain temperature, keep out of light, etc.) when placed in the Satellite Accumulation Area (SAA) or 90-Day Accumulation Area. Contact your Environmental Compliance Representative or Waste Management Representative if alternate arrangements are needed to store your waste safely.
Step 3	Segregate wastes according to their hazard class (see the Hazard Class exhibit). <ul style="list-style-type: none"> Ensure that incompatible hazardous wastes are safely accumulated so as to prevent any reactions by proper separation or equivalent methods. Also, ensure hazardous waste label is properly completed and includes the specific names of hazardous components (see the exhibit Hazardous Waste Label).
Step 4	Place all containers holding liquid wastes in secondary containment. For hazardous and acute hazardous liquid wastes, secondary containment must be sufficient to hold 10% of the total volume [30% if total volume is greater than 250 gallons (33.5 cubic feet or 950 liters)] or 100% of the volume of the largest container to be stored, whichever is greater.
Step 5	Store only compatible wastes in the same container AND containment tray. <ul style="list-style-type: none"> Consult the Examples of Incompatible Chemicals exhibit for advice on container/waste compatibility.
Step 6	Plan disposal so that the quantity of waste stored in the SAA does not exceed the mandatory limits. <ul style="list-style-type: none"> Do not store more than 55 gallons (7.5 cubic feet or 210 liters) of a hazardous waste or one quart (950 milliliters) of an acutely hazardous waste within a satellite

	<p>area (see the Environmental Compliance Representative/Waste Management Representative/SME for guidance, or refer to the EPA List of Acutely Hazardous Waste).</p>
Step 7	<p>Handle and store waste containers in a way that prevents leakage or spillage of the contents.</p> <ul style="list-style-type: none"> Place waste containers in an area that prevents the freezing of the contents or exposure to excessive heat. Ensure that any special handling/storage requirements (i.e., keep refrigerated) for the material are provided and maintained during the entire storage period. Wastes requiring refrigerated storage MUST be kept refrigerated. In addition, blue “Keep Refrigerated” labels must be placed on containers of such wastes. These labels are available from the Chemical Management (CMS) team. Contact your Environmental Compliance Representative or Waste Management Representative if alternate arrangements are needed to store your waste safely. Do not place waste containers in areas that block aisle/access ways/exits/electrical service panels, or cause otherwise potentially dangerous situations. Do not accumulate containers where the potential exists for leakage to enter sinks/drains/exterior areas.
Step 8	<p>Transfer the hazardous waste to the Department's/Division's 90-Day Accumulation Area within three days after reaching 55 gallons (7.5 cubic feet or 210 liters) or one quart (950 milliliters) of acutely hazardous waste. If a waste stream ceases to be generated (e.g., generator re-assigned/lab closure) contact the 90-Day Area Manager and make arrangements for transferring the wastes to the 90-Day Area in a timely manner (see the section Operating a 90-Day Accumulation Area).</p>
Step 9	<p>If more than one waste generator is contributing to a single waste container inside the satellite area, the following also applies:</p> <ul style="list-style-type: none"> Only add compatible wastes to container(s). Record each waste chemical name(s) and quantity on a container inventory (see container inventory sheet example) or equivalent.
Step 10	<p>If the waste contains PCBs, see the section PCB Waste Management for further instruction.</p>

Guidelines

Once a satellite waste container is full, regardless of its capacity, it should be moved to the 90-Day Accumulation Area. Non-empty aerosol cans may be accumulated in a container within a satellite area as long as the above requirements are met.

The purpose of a satellite area is to accumulate hazardous wastes. Therefore, any material within the satellite area is assumed to be hazardous waste and regulated as such. To avoid confusion, these areas should be kept free of stored chemicals, empty glassware, or debris such as paper. If a satellite area shares secondary containment with usable chemicals due to space constraints, the section of the secondary container that contains the waste should be clearly marked to avoid the perception of unlabeled waste being stored in the satellite area (see the exhibit [Satellite Hazardous Waste Accumulation Area Operator Aid](#)).

References

[EPA List of Acutely Hazardous Waste](#) web page

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PROCEDURE: COMPLETION OF NONRADIOACTIVE WASTE CONTROL FORMS AND PROCESS KNOWLEDGE CERTIFICATION FORMS

Management System: Environmental Management System		
Subject Area: Hazardous Waste Management		
4. Completion of Nonradioactive Waste Control Forms and Process Knowledge Certification Forms		
Effective Date: Jan 31, 2013	Subject Matter Expert: Glen Todzia	Management System Executive: Jason Remien

Applicability

This information applies to all waste generators.

Required Procedure

Step 1	<p>On the Nonradioactive Waste Control Form (NRWCF), clearly print the following information:</p> <ul style="list-style-type: none"> • Generator; • Life Number; • BNL extension; • Department/Division responsible for generating the waste; • Account number for waste disposal; • The accumulation area's building and room number, and • The date that the waste was placed into the 90-Day Accumulation Area.
Step 2	<p>Identify the quantity of waste, and include the following items:</p> <ul style="list-style-type: none"> • The number and type of packages <ul style="list-style-type: none"> ○ Only identical waste types in similar packages can be recorded on a single NRWCF. • The volume and weight of waste <ul style="list-style-type: none"> ○ Specify volume in gallons for liquid waste, or cubic feet, for solid waste. ○ Specify weight in pounds.
Step 3	<p>Characterize the waste based on your knowledge of the material/process that created it and/or utilize analytical laboratory results. For the purposes of characterization, "knowledge" means first-hand knowledge of the materials and/or processes used in creating the waste obtained by either directly working with the materials or obtaining such information from the person(s) who worked directly with the materials. If these conditions cannot be satisfied, documentation supporting the characterization information (i.e., analytical results, MSDS, manufacturer/supplier documentation) MUST be provided.</p>

	<ul style="list-style-type: none"> • Print the chemical name or description of the waste to adequately identify the contents. Do not use formulas or general descriptions. For guidance, see the Examples of Waste Descriptions exhibit. • Describe the process that generated the waste. • List the volumetric percentages of waste constituents if it is a mixture. • Check off the waste's physical state. • Answer the questions regarding the existence of PCBs in the waste, and the waste's ignitability, corrosivity, reactivity, and toxicity. • Check off any constituents known to be present in the waste that are listed on the Nonradioactive Waste Control Form's table. • List any special hazards and precautions (i.e., keep refrigerated, shock sensitive) for handling the waste in the "Precautions" section of the NRWCF AND at the top of the form (see the Material Safety Data Sheet [MSDS] Search or other material specification sheets for guidance). <p>See the Hazardous Waste Generator Characterization Guidance exhibit, or contact your Environmental Compliance Representative/Waste Management Representative for assistance.</p>
Step 4	<p>If the waste has not been in a radiological area, sign and date the certification statement at the bottom of the form. Proceed to step 7.</p> <p>If the waste has been in a radiological area, initial the space provided on the lower section of the form located beneath the "precautions" section.</p>
Step 5	<p>Transfer the NRWCF number onto the Process Knowledge Certification Form (PKCF) in the upper right-hand corner.</p>
Step 6	<p>Respond to each question on the PKCF regarding the possible radioactivity of the waste.</p> <ul style="list-style-type: none"> • If the waste has been in a radiological area, but is believed to be neither radioactively contaminated nor activated, check off the appropriate box(es), and sign the certification statement. • If the waste has been in a radiological area, or may be either radioactively contaminated or activated, analyze the waste for suspected radionuclides and/or apply process knowledge to verify that the waste is not radioactively contaminated or activated. <p>Ensure that the PKCF is reviewed and signed by a Radiological Controls Division (RCD) representative. Proceed to step 7 when the RCD representative completes the PKCF.</p>
Step 7	<p>Submit the NRWCF and PKCF (if required) to the 90-Day Accumulation Area Manager or a Department/Division-designated representative.</p>
Step 8	<p>Contact the 90-Day Accumulation Area Manager/designee before placing waste into the area.</p>

Guidelines

Staff should use only permanent blue or black ink when completing Nonradioactive Waste Control Forms and Process Knowledge Certification Forms.

References

[Material Safety Data Sheet \(MSDS\) Search](#), [Chemical Management System](#) web site (*Limited Access)

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PROCEDURE: ESTABLISHING A 90-DAY ACCUMULATION AREA

Management System: Environmental Management System		
Subject Area: Hazardous Waste Management		
5. Establishing a 90-Day Accumulation Area		
Effective Date: Jan 31, 2013	Subject Matter Expert: Glen Todzia	Management System Executive: Jason Remien

Applicability

This information applies to all managers/designees of 90-Day Accumulation Areas.

Required Procedure

Step 1	<p>Ensure your training status as both a waste generator and 90-Day Accumulation Area Manager are up-to-date.</p> <ul style="list-style-type: none"> To ensure you are within the qualification periods for the HP-RCRIGEN3 course (one year) and the HP 90-Day Area Manager course (one year), consult the Training and Qualifications Web Site or contact your Department/Division's Training Coordinator. <p>If your training is not current, then complete the required classes in the proper methods for handling, documenting, and disposing of hazardous/mixed waste. For further information on training, contact the Department/Division's Training Coordinator, or the Hazardous Waste Subject Matter Expert.</p>
Step 2	<p>Register the area with the Environmental Protection Division (EPD) by completing the Hazardous Waste 90-Day Area Registration Form and submitting the form to the Hazardous Waste SME in Bldg. 860. Additionally, draft a 90-Day Area Contingency Plan (using the exhibit 90-Day Hazardous Waste Accumulation Area Contingency Plan Sample as a template) and submit it to the Hazardous Waste SME for review.</p>
Step 3	<p>Locate the area in a fully enclosed shelter (e.g., within a building or in a Hazardous Waste Storage Module) that prevents any releases to the environment.</p> <ul style="list-style-type: none"> Containers are to be stored in an environment that will prevent the freezing of the contents or exposure to excessive heat. This new area must meet all applicable requirements referenced in this subject area, except for registration with EPD. Alternatively, contact EPD for a special pickup to prevent any releases. Areas must accommodate material handling equipment and must have unrestricted access for EPD vehicles.
Step 4	<p>Provide secondary containment for all liquid hazardous wastes.</p> <ul style="list-style-type: none"> For hazardous and acute hazardous liquid wastes, secondary containment must be sufficient to hold 10% of the total volume [30% if total volume is greater than

	<p>250 gallons (33.5 cubic feet or 950 liters)] or 100% of the volume of the largest container to be stored, whichever is greater.</p> <ul style="list-style-type: none"> • All sinks and floor drains in the vicinity must be plugged to prevent possible spillage from entering the building's sanitary sewage system. • The base of the secondary containment must be sloped or otherwise designed to drain and remove liquids resulting from leaks and spills unless the containers are elevated or are otherwise protected from contact with spilled liquids (e.g., see the Photo of Hazardous Waste Storage Module and Rubber Webbing Mats exhibit).
Step 5	<p>Ensure the area is large enough to meet the following criteria:</p> <ul style="list-style-type: none"> • Proper segregation of incompatible wastes according to hazard class (see the Examples of Incompatible Wastes exhibit). • Unobstructed access within the area by means of one or more aisles, each a minimum of thirty (30) inches (77 centimeters) wide.
Step 6	<p>Ensure the following equipment is accessible to the 90-Day Accumulation Area.</p> <ul style="list-style-type: none"> • A communication device that is immediately available (i.e., not behind a locked door or obstructed), and within sight of the area, or that can be easily found by following a sign(s). In order of preference, this device should be a telephone, fire-alarm pull-box, or hand-held, two-way radio. • A Type ABC fire extinguisher mounted within thirty feet (nine meters) of the accumulation area. A Type D fire extinguisher is also required, similarly mounted, if flammable metals are to be accumulated in the area. • Spill-control equipment appropriate to the type of waste stored in the area.
Step 7	<p>Post the 90-Day Accumulation Area with the following signs:</p> <ul style="list-style-type: none"> • 90-Day Accumulation Area Warning Sign; • 90-Day Accumulation Area Rules Sign; • "No Smoking"; • Emergency Contacts - listed in the area's contingency plan. <p>In addition, post the Contingency Plan inside and outside the accumulation area in the event emergency response personnel need to use it as a reference.</p>
Step 8	<p>If the waste contains PCBs, go to the section PCB Waste Management for instructions.</p>

Guidelines

Dedicate a separate area for the collection of mixed and radioactive waste (see the [Mixed Waste Management](#) Subject Area), to ensure its segregation from nonradioactive hazardous waste (e.g., taping off the area, physical barrier[s], or other equivalent means that also meets the requirements of the Radiological Control Division [refer to the [Radiological Control Manual](#)]).

An adequate number of staff should receive 90-Day Accumulation Area Manager training to ensure coverage in the event of the primary Accumulation Area Manager's absence. Departments should designate Alternate 90-Day Area Managers that are properly trained.

If a telephone is used to fulfill the requirements in step 6, the area's location (building and room number) should be posted adjacent to the telephone.

References

[Mixed Waste Management](#) Subject Area

[Training and Qualifications](#) Web Site

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PROCEDURE: OPERATING A 90-DAY ACCUMULATION AREA

Management System: Environmental Management System		
Subject Area: Hazardous Waste Management		
6. Operating a 90-Day Accumulation Area		
Effective Date: Jan 31, 2013	Subject Matter Expert: Glen Todzia	Management System Executive: Jason Remien

Applicability

This information applies to all Department-/Division-designated 90-Day Accumulation Area Managers/designees.

Required Procedure

Step 1	Ensure all paperwork has been properly completed before moving waste to the 90-Day Accumulation Area.
Step 2	<p>Submit the Nonradioactive Waste Control Form (NRWCF) and any applicable and associated waste characterization paperwork (e.g., MSDS, Process Knowledge Form [PKCF], waste analyses) to the Environmental Protection Division (EPD) in Bldg. 860, Attn: Waste Control Forms.</p> <ul style="list-style-type: none"> If the NRWCF is not filled out correctly, or if the waste generator has not received proper training, EPD may return copies of the NRWCF along with an Incomplete Waste Control Form Notice, which prescribes the action to be taken, to the generator and the 90-Day Area Manager.
Step 3	EPD schedules a waste pick-up.
Step 4	<p>EPD transfers the waste to the Waste Management facility.</p> <ul style="list-style-type: none"> If EPD personnel are unable to locate the waste scheduled to be transferred, EPD personnel will notify the 90-Day Area Manager/designee and reschedule the pick-up after issues are resolved.
Step 5	<p>Handle and accumulate waste containers in a way that prevents leakage or spillage of the contents.</p> <ul style="list-style-type: none"> Store containers in an environment that will prevent the freezing of the contents or exposure to excessive heat. Ensure that any special handling/storage requirements (i.e., keep refrigerated) for the material are provided and maintained during the entire storage period. Wastes requiring refrigerated storage MUST be kept refrigerated. In addition, blue "Keep Refrigerated" labels must be placed on containers of such wastes. These labels are available from the Chemical Management (CMS) team. Contact your Environmental

	<p>Compliance Representative or Waste Management Representative if alternate arrangements are needed to store your waste safely.</p> <ul style="list-style-type: none"> Do not accumulate containers where the potential exists for leakage to enter sinks, drains and/or the environment. Ensure waste containers remain in good condition, without holes, dents, or other faults.
Step 6	<p>Ensure the date that the waste arrived in the 90-Day Accumulation Area matches the "90-Day Date" shown on the Hazardous Waste Label.</p> <ul style="list-style-type: none"> Hazardous waste must not be stored for more than 90 days in a 90-Day Accumulation Area. The 90-Day Area Manager is responsible for ensuring that the waste is removed within 90 days. 90-Day Area Managers should notify EPD to remove waste at least one month before the 90-day accumulation expiration date.
Step 7	<p>Inspect the area weekly by completing the 90-Day Hazardous Waste Accumulation Area Weekly Inspection Checklist. Alternative checklists utilized must be approved by the Hazardous Waste SME. The checklists must be retained as per the Records Management Subject Area.</p>
Step 8	<p>Keep a current copy of the Contingency Plan in the 90-Day Accumulation Area and a second copy nearby (e.g., outside area).</p>
Step 9	<p>If the waste contains PCBs, see the PCB Management Subject Area for further instruction.</p>

Guidelines

Maintain copies of all Nonradioactive Waste Control Forms of the wastes that are stored in the 90-Day Accumulation Area as per the [Records Management](#) Subject Area.

Ensure containers are tightly sealed.

Previous inspection checklists must be kept in a nearby, accessible area away from the wastes. Inspection checklists must be retained for a three year period (minimum) and in accordance with the [Records Management](#) Subject Area.

Lock the 90-Day Accumulation Area or provide limited access.

Notify EPD at least one month before the 90 days expires on hazardous wastes being accumulated to expedite pick-ups.

Non-empty aerosol cans meeting the definition of a hazardous waste (see [How Do I Manage This Waste?](#) for additional information on aerosol cans) may be accumulated in a container within the building's 90-day Area providing the date the first can goes into the waste container is listed on the hazardous waste label and the rest of this subject area is followed.

References

[How Do I Manage This Waste?](#), [Waste Management Program](#) web site

[Records Management](#) Subject Area

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PROCEDURE: PCB WASTE MANAGEMENT

Management System: Environmental Management System		
Subject Area: Hazardous Waste Management		
7. PCB Waste Management		
Effective Date: Jan 31, 2013	Subject Matter Expert: Glen Todzia	Management System Executive: Jason Remien

Applicability

This information applies to all waste generators of PCB waste.

Required Procedure

Step 1	Ensure PCB waste is picked up by the Environmental Protection Division (EPD) within 30 days of it being declared out of service. <ul style="list-style-type: none"> The 30-day clock begins at the listed out-of-service date, which could be immediately after the first PCB waste is placed in a container or when a PCB article is declared waste/out-of-service.
Step 2	Completely de-energize PCB electrical devices prior to placing them in the waste accumulation area (see the Work Planning and Control for Experiments and Operations Subject Area).
Step 3	Place PCB waste that is not in its original package into one of the following DOT-approved shipping containers: <ul style="list-style-type: none"> For debris, use a 55-gallon, open-top, steel drum (BNL Stock # K-60643); For liquids, use a 55-gallon, bung steel drum (BNL Stock # K-60646); For smaller articles, use a 5-gallon poly bucket (BNL Stock #K-60632); Contact EPD for approval for other packages not listed.
Step 4	Ensure adequate spill control are present when transferring liquids containing PCBs from equipment to other containers.
Step 5	Affix the largest PCB Label on the item that will fit (the maximum label size is 6"x6").
Step 6	Mark the out-of-service date of the PCB article/PCB transformer or liquid/solid waste on the PCB Label or in a conspicuous place.
Step 7	Segregate non-leaking small capacitors (defined as capacitors that contain less than 1.36 kilograms (3 pounds) of dielectric fluid or whose total volume is less than 100 cubic inches) and non-leaking light ballasts from other PCB waste.
Step 8	Post a 6-inch PCB Label at the entrance to the waste accumulation area whenever PCB waste is stored within the area.
Step 9	Return to the section Operating a Satellite Accumulation Area or the section Operating a 90-Day Accumulation Area for more information.

Guidelines

Segregate leaking PCB articles from non-leaking articles to potentially minimize the quantity of regulated PCB waste.

References

[Work Planning and Control for Experiments and Operations](#) Subject Area

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PROCEDURE: UNIVERSAL WASTE MANAGEMENT

Management System: Environmental Management System		
Subject Area: Hazardous Waste Management		
8. Universal Waste Management		
Effective Date: Dec 11, 2014	Subject Matter Expert: Glen Todzia	Management System Executive: Jason Remien

Applicability

This information applies to all Department Chairs/Division Managers, Universal Waste Area Managers, and generators of universal waste.

Required Procedure

Although there are four types of universal waste (batteries, fluorescent light bulbs, mercury-containing thermostats, and certain pesticides), this section of the subject area is primarily concerned with the accumulation of batteries and fluorescent light bulbs containing hazardous constituents due to the large quantities generated throughout the Laboratory. Fluorescent light bulbs/tubes and mercury-containing thermostats are managed as universal wastes through the Facilities and Operations Directorate (see the [Waste Management Representative](#) for details). Pesticides covered by this ruling are restricted to those being recalled either under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) regulation or voluntarily by the manufacturer and are not used at the Laboratory. Thermostats are occasionally generated, but are not a major waste stream.

Note: Universal wastes that are broken/damaged resulting in the release/leaking of their contents (i.e., batteries with leaking fluid/electrolyte, broken fluorescent light bulbs) **MUST** be managed as hazardous waste in accordance with all applicable sections of this subject area. They are not to be packaged with intact, undamaged universal wastes.

When accumulating universal waste, all BNL waste generators must take the following steps.

Step 1	Each organization must designate a person(s) in the organization who is responsible for the overall management of the universal waste accumulation area(s) within the building. The designated person(s) may be the current 90-Day Area Manager or a designated individual. In any case, the individual must have the proper training (HP-RCRIGEN3).
Step 2	Establish a universal waste accumulation area either in the 90-Day Hazardous Waste Accumulation Area or in another area that ensures potential spills do not impact the environment. Post the Universal Waste Accumulation Area Basic Rules sign in the area.
Step 3	Place a Universal Waste Label on containers used to store universal wastes or utilize a container that has the information contained on the Universal Waste Label preprinted on it. Ensure the label/container describes the type of waste being stored (i.e., Universal Waste – Batteries, Universal Waste – Lamps).
Step 4	Use separate and suitable containers for the following different types of universal wastes: mercury thermostats, fluorescent light bulbs/tubes, mercury batteries, nickel-cadmium batteries, lead acid batteries, lithium batteries, nickel-metal hydride batteries, and mercury batteries. For batteries, ensure that the ends are taped or otherwise isolated or that they are stored in a manner that will prevent reactions due to shorting.

Step 5	Ensure storage containers of universal waste are securely closed at all times except when waste is being added.
Step 6	Record the date on the label when the first universal waste item is placed into the container. This is the start accumulation date.
Step 7	To initiate a pickup of universal waste by the Environmental Protection Division (EPD), complete a Nonradioactive Waste Control Form (NRWCF) and transfer the NRWCF number onto the Universal Waste Label . Write the word "Universal waste(s)" and the accumulation start date on the NRWCF. Submit the NRWCF to EPD within six months from the start date to allow for pickup and off-site shipment within one year and/or when the universal waste container is full.
Step 8	If universal waste collection container(s) are to remain in the universal waste accumulation area/other designated area, repackage and label the universal waste for pickup (resealable sturdy bags work well for small-quantity items).
Step 9	Ensure new/reusable universal waste container labels are dated/re-dated (respectively) when the first waste item is placed into the container.

Guidelines

Automobile type lead-acid batteries are accepted by Procurement & Property Management (PPM) for off-site recycling.

References

Insecticide, Fungicide, and Rodenticide Act (FIFRA)

[Spill Response](#) Subject Area

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PROCEDURE: CONTINGENCY PLANS

Management System: Environmental Management System		
Subject Area: Hazardous Waste Management		
9. Contingency Plans		
Effective Date: Jan 31, 2013	Subject Matter Expert: Glen Todzia	Management System Executive: Jason Remien

Applicability

This information applies to all 90-Day Hazardous Waste Accumulation Area Managers and/or Universal Waste Area Managers, and alternates/designees.

Required Procedure

Each 90-Day Hazardous Waste Accumulation Area Manager is responsible for developing and maintaining/updating (annually) the 90-Day Hazardous Waste Accumulation Area Contingency Plan when changes are made (e.g., emergency contacts, room/building location, types of waste, significant equipment) and/or the Contingency Plan fails in an emergency. In addition, annual training is required for 90-Day Hazardous Waste Accumulation Area Managers/designees. Training for the Contingency Plan is contained within the BTMS Course: HP-90-Day Area Manager, must occur annually, and include: methods that facility or emergency response personnel must employ to respond effectively to emergencies by the use of emergency procedures, emergency equipment, and emergency systems where applicable, communication/alarm systems, response to emergencies, response to groundwater contamination (as applicable), and shutdown of operations.

Step 1	<p>Include the following information in all Contingency Plans:</p> <ul style="list-style-type: none"> Names and telephone numbers (local, cell/home) of the Emergency Contacts and their designated alternatives. List of emergency equipment with locations, physical descriptions, capabilities of this equipment, and a list of decontamination equipment (if required). Also, include information and descriptions of the wastes typically present in the Hazardous Waste Accumulation Area. Local Evacuation Plan (can use existing facility Local Emergency Plan [LEP] as an appendix). Description of emergency actions that will be implemented by the EC/alternate EC and all other emergency response personnel in the event of a fire, explosion, or any unplanned release of hazardous waste(s) to the air/soil/surface water. Include arrangements with local Emergency Response Departments (e.g., Emergency Services Division/Fire Rescue) to coordinate emergency services, as applicable.
Step 2	<p>Post up-to-date copies of the Contingency Plan at the 90-Day Hazardous Waste Accumulation Area and at a nearby location for emergency responders use. See the exhibit 90-Day Hazardous Waste Accumulation Area Contingency Plan Sample. Historical Contingency Plans must be kept as per the Records Management Subject Area.</p>
Step 3	<p>In the event of any emergency involving the release of hazardous waste(s) at a 90-Day Hazardous Waste Accumulation Area, contact the Emergency Services Division by calling extension 911 or 2222 (see the Spill Response Subject Area). Personnel involved in the clean up of hazardous wastes require specific training and personnel without this training should NOT ATTEMPT to clean up any spill/release. All wastes resulting from the remediation of emergency situations must be properly managed as per this subject area.</p>

References

[Records Management](#) Subject Area

[Spill Response](#) Subject Area

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PROCEDURE: NANOMATERIAL WASTE MANAGEMENT

Management System: Environmental Management System		
Subject Area: Hazardous Waste Management		
10. Nanomaterial Waste Management		
Effective Date: Sep 12, 2014	Subject Matter Expert: Glen Todzia	Management System Executive: Jason Remien

Applicability

This information applies to waste generators who produce the following nanowaste streams:

- *Nanomaterials exhibiting a hazardous waste characteristic (see the exhibit [Hazardous Waste Generator Characterization Guidance](#) for details). **Note:** If a nanowaste contains a toxic hazardous component (e.g., cadmium, selenium), it should be characterized as a RCRA toxic waste regardless of the concentration;
- Hazardous liquids containing nanomaterials (e.g., nanotubes in sulfuric acid, nanotubes in ignitable solvents);
- Hazardous solids containing or coated with nanomaterials that can be released into the air or leach into liquids. This includes nanomaterials that can be dislodged via mechanical forces, such as scraping;
- Hazardous, commercially available chemicals containing nanoparticles;
- Non-hazardous nanomaterial wastes, i.e., not RCRA Hazardous Waste by definition, not Radioactive Waste and not Regulated Medical Waste (see below).

For mixed (hazardous and radioactive), nanomaterial wastes, radioactive nanomaterial wastes, and regulated medical nanomaterial wastes, refer to the [Mixed Waste Management](#), [Radioactive Waste Management](#), or the [Regulated Medical Waste Management](#) Subject Areas, respectively.

* All references to nanomaterials in this subject area are as defined in the [Nanoscale Particle ESH](#) Subject Area.

Required Procedure

Step 1	<p>Containerize nanowaste in a way that prevents the release of nanomaterials into the work area/environment.</p> <p>Place liquid nanowaste into a container with a top that can be firmly secured (e.g., threaded). Place solid nanowastes inside a sturdy/suitable bag (6 mil thick minimum), or a suitable container as per the above.</p> <p>Note: Steps should be taken to minimize dispersal of solid nanowaste by adding an encapsulant to the bag/container that is compatible with the waste using safe work practices.</p>
Step 2	<p>Accumulate wastes in a hazardous waste satellite area by following the procedures in the sections Generating Waste and Operating a Satellite Accumulation Area. Locate satellite accumulation areas used for solid nanowastes in an area that minimizes personnel and</p>

	environmental exposure.
Step 3	In addition to the use of hazardous waste labels, label/write on the outermost bag/container with the words "Contains Nanomaterials"(if you prefer, you may use the label in the exhibit Nanomaterial Waste Label).
Step 4	Consider any waste material (such as PPE, wipes, blotters, glassware, etc.) that is potentially in contact with hazardous nanoparticles, as hazardous nanowaste. Handle wastes that result from the decontamination of nanomaterial-contaminated equipment and work areas (e.g., cleaning solutions, rinse waters, pads, PPE) as hazardous nanowaste.
Step 5	Complete the Nonradioactive Waste Control Form (NRWCF) and Process Knowledge Certification Form and add waste information content, including nanomaterials and other hazardous constituents, as required. Note: Volumes for nanomaterials need not be listed on the forms.
Step 6	After ensuring that all outer labels are visible, and that the waste is properly contained to prevent dispersal, transfer the waste to the 90-Day Accumulation Area in accordance with the sections Operating a Satellite Accumulation Area and Operating a 90-Day Accumulation Area .

References

[Mixed Waste Management](#) Subject Area

[Nanoscale Particle ESH](#) Subject Area

[Radioactive Waste Management](#) Subject Area

[Regulated Medical Waste Management](#) Subject Area

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DEFINITIONS

Definition: Hazardous Waste Management

Term	Definition
90-Day Accumulation Area	A Resource Conservation and Recovery Act (RCRA) regulated area designated by a Department/Division as the central accumulation point for any hazardous wastes generated. Each 90-Day Accumulation Area must be established where it is convenient for the Department/Division and consistent with the requirements in this subject area. Although there is no limit as to the quantity of hazardous waste that can be accumulated in a 90-Day Accumulation Area, a waste container must not remain in the area for longer than ninety (90) days.
90-Day Accumulation Area Manager and Universal Waste Area Manager	A person appointed by the Department/Division to control and oversee the day-to-day operations of one or more of the Department/Division's 90-Day Accumulation Area(s) and/or Universal Waste Area(s). The 90-Day Manager can perform the duties of the Universal Waste Manager but this is not a requirement. Note: Universal waste may or may not be kept in the 90-Day Accumulation Area, but if area is inside the 90-Day Accumulation Area, then it must be segregated.
acutely hazardous waste	Any waste regulated under Section 371.4(d)(5) of Title 6 of the New York Codes, Rules, and Regulations (6NYCRR) or any waste regulated under Section 371.4(b) and 371.4(c) with "H" Hazard Code in 6NYCRR.
Chemical Management System (CMS)	A BNL database that tracks actively used and surplus chemicals stored across the BNL site that are available for use by others in lieu of purchasing new materials.
contingency plan	A document setting out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment.
empty containers of hazardous waste	A container is empty when all wastes have been removed from the container (using practices commonly employed to remove materials from that type of container [e.g., pouring, pumping, and aspirating]), so that no more than 3% (0.3% for containers greater than 110 gallons) by weight of the total capacity remains in the container. A good rule of thumb is that less than one inch of residue can remain in a 55-gallon drum. A cylinder including an aerosol spray can that holds a compressed gas is empty when the internal pressure approaches atmospheric pressure. Note: This definition does not apply to acutely hazardous wastes. Empty containers that held acutely hazardous wastes must be treated as hazardous unless triple rinsed.
hazard class	Classification of a hazardous material or waste as defined by the U.S. Department of Transportation's primary hazard class. Hazard classes include acids, bases, flammables, oxidizers, air reactives, water

	reactives, poisons/toxics (pesticides, inhalation hazards, cyanides), and organic peroxides. A material may meet the defining criteria for more than one hazard class, but is assigned to only one hazard class (see also the Hazard Class exhibit).
hazardous waste	A by-product of certain processes and activities that can pose a substantial or potential hazard to human health or the environment when improperly managed. A hazardous waste may be either characteristic (ignitable, corrosive, reactive, or toxic), and/or may appear on special EPA lists of chemicals.
industrial waste	See the Industrial Waste Subject Area.
mixed waste	Low-Level Radioactive Waste (LLRW) that also contains hazardous waste.
nanomaterial-bearing wastes	See the Nanoscale Particle ESH Subject Area. Nanomaterials do NOT include materials that inherently contain particle sizes.
Nonradioactive Waste Control Form (NRWCF)	A BNL on-site waste shipping, tracking, and characterization document completed by waste generators for container/package of hazardous waste and used to track hazardous waste from pickup to final disposition. NRWCFs are identified with unique, sequential serial numbers.
PCBs	Polychlorinated biphenyls. Any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees, or any combination of substances that contains such substance. In NYS, waste containing PCBs at 50 ppm or greater are considered hazardous wastes. For more information, see the PCB Management Subject Area.
point of generation	A discernible, discrete location within a process/laboratory/facility where personnel cause, by their actions, a material to go from a usable item to a non-usable waste item that can be characterized as a RCRA hazardous waste.
pollution prevention	See the Pollution Prevention and Waste Minimization Subject Area
Process Knowledge Certification Form (PKCF)	A form that is completed by waste generators for each package/container of hazardous waste to certify that the hazardous waste that has come from a Radiologically Controlled Area but the waste is nevertheless non-radioactive. This form is used as a certification that the waste is non-radioactive. The PKCF is attached to the accompanying Nonradioactive Waste Control Form (NRWCF).
Radioactive Material Control Area	An area in which the potential exists for contamination due to the presence of unencapsulated or unconfined radioactive material or an area that is exposed to beams or other sources of particles (neutrons, protons, etc.) capable of causing activation.
Resource Conservation and Recovery Act (RCRA)	The Federal law originally passed in 1976 and amended in 1984 that, in part, addressed the generation, treatment, storage, and disposal of hazardous wastes in order to protect human health and the environment.
Satellite Accumulation Area	A RCRA-regulated area designated as the initial point of generation for any hazardous wastes generated. Each Satellite Accumulation Area must be located at or near the point in a process or facility where hazardous waste is generated. No more than a total of 55 gallons (7.5 cubic feet or 210 liters) of hazardous waste or one quart (950 milliliters)

	of acutely hazardous waste shall be stored within each satellite area. Each waste stream resulting from a specific process may have its own Satellite Accumulation Area.
segregation of waste	The process of separating, or keeping separate, individual incompatible waste types (e.g., acids - bases, reactives - acids, ignitables - acids) and forms in order to prevent hazardous reactions and to facilitate their cost-effective treatment, storage, or disposal. See the Chemicals, Working With Subject Area for additional information.
universal waste	Waste batteries containing hazardous constituents such as mercury/lithium/lead/NiCd/Nickel-Metal Hydride, certain pesticides, and mercury-containing thermostats and fluorescent light bulbs/tubes.
waste generator	Any person whose act first causes a hazardous waste to become subject to the requirements of this subject area and subsequently produces a hazardous, acutely hazardous waste, or characteristic hazardous waste. The generator certifying the characterization information on a Waste Control Form must have first-hand knowledge (i.e., created the material or obtained the information from the person who created it) of the materials and/or the processes used to create the waste.
waste minimization	See the Pollution Prevention and Waste Minimization Subject Area.
weekly	Once within every seven-day cycle, starting Sunday to Saturday

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Standards-Based Management System



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90-Day Accumulation Area Rules Sign

Effective Date: **Jan 31, 2013**

The [90-Day Accumulation Area Rules Sign](#) is provided as a PDF.

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Contacts

- SBMS Staff
- Management System Contact List
- MS Roles/Responsibilities
- Subject Matter Expert List

Lab-wide Contacts

- Contact List (Laboratory Roles)
- Employee Role Lookup

Help

- SBMS Help Desk
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90-DAY
ACCUMULATION AREA
BASIC RULES**

1. ALL WASTE MUST BE PROPERLY CONTAINERIZED

- UNCONTAINED WASTES CANNOT BE ACCUMULATED
- LIQUIDS MUST HAVE ADEQUATE SECONDARY CONTAINMENT (10% OF TOTAL AGGREGATE VOLUME IF <250 GALLONS, OR 100% OF LARGEST CONTAINER)

2. ALL CONTAINERS MUST BE CLOSED

- EXCEPT WHEN ADDING OR REMOVING WASTE

3. ALL CONTAINERS MUST BE PROPERLY LABELED

- “HAZARDOUS WASTE”
- CHEMICAL CONTENTS OF THE CONTAINER
- DATE THAT THE WASTE ARRIVED AT THE 90-DAY AREA

4. TIME LIMITATIONS ON WASTE ACCUMULATION

- 90 DAYS FOR HAZARDOUS WASTE
- 30 DAYS FOR PCB WASTE (FROM OUT-OF-SERVICE DATE)

5. SEGREGATE INCOMPATIBLE WASTES

- PREVENT POTENTIAL REACTIONS
- KEEP ACIDS AWAY FROM BASES
- KEEP CYANIDES AWAY FROM ACIDS
- KEEP OXIDIZERS AWAY FROM COMBUSTIBLES

6. INSPECT AREA WEEKLY (MINIMUM)

- USE 90-DAY WEEKLY INSPECTION CHECKLIST

7. PREVENT WASTE CONTAINERS FROM DAMAGE

- EXPOSURE TO FREEZING CONDITIONS
- EXPOSURE TO EXTREME HEAT
- PHYSICAL HAZARDS

**8. REPORT ALL SPILLS/RELEASES TO EMERGENCY SERVICES
ON x2222/x911.**

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90-Day Accumulation Area Warning Sign

Effective Date: Jan 31, 2013

This sign is available from the [Waste Management Administrative Assistant](#).

Hazardous Waste 90-Day Accumulation Area

DANGER

Unauthorized Personnel Keep Out

The only official copy of this file is the one on-line in SBMS.

Before using a printed copy, verify that it is the most current version by checking the *effective date*.

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90-Day Hazardous Waste Accumulation Area Contingency Plan Sample

Effective Date: **Jan 31, 2013**

The [90-Day Hazardous Waste Accumulation Area Contingency Plan Sample](#) is provided as a PDF.

The only official copy of this file is the one on-line in SBMS.

Before using a printed copy, verify that it is the most current version by checking the *effective date*.

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BROOKHAVEN NATIONAL LABORATORY ABC Directorate	Bldg. XYZ	Revision: 1
	Effective: 01/01/DD	Page 1 of 11
Subject: CONTINGENCY PLAN 90-DAY WASTE ACCUMULATION AREA BUILDING XYZ		
Prepared by:	Approved by:	

1.0 PURPOSE

The purpose of this document is to provide working guidelines for the 90-Day Area Manager and Building XYZ personnel in the event of a spill, fire, or other emergency involving this waste accumulation area. Response plans for small scale spills, fires and medical emergencies are provided in Section 6. This plan is NOT intended as a substitute for emergency response training. Respond to emergencies, spills, or fires ONLY to your level of training/experience. Please refer to the Brookhaven Training Management System (BTMS) training requirements for emergency response personnel prior to performing any clean-up/emergency response actions. Information on release clean-ups for small-scale spills, fires, and medical emergencies are provided in Section 6.

2.0 NOTIFICATION

For all incidents that cannot be handled by the building personnel, the primary responsibility of the building personnel is to IMMEDIATELY contact the individuals listed in Table 1.

Table 1 EMERGENCY CONTACT NUMBERS 90-DAY ACCUMULATION AREA, BUILDING XYZ			
Position	Name	Office Phone	Home Phone
Police Superior Officer	Emergency Number	2222 (24 hr.) or Ext. 911	--
Fire Superior Officer	Emergency Number	2222 (24 hr.) or Ext. 911	--
90-Day Area Manager Alternate 90-Day Area Manager			
Environmental Compliance Representative			
Directorate ES&H Coordinator			
FSS Representative			
Directorate Facility Mgr.			

Date Prepared: _____

Frequency of Review: Annual

Date Reviewed

Reviewed By

Review Type/Changes Made

3.0 IMPLEMENTATION OF THE CONTINGENCY PLAN

This Hazardous Waste Contingency Plan will be implemented whenever there is a threat or actual incident of fire, explosion, spill or other release of hazardous waste. In the event of a simple/complex incident and/or an incident beyond the response capabilities of the 90-Day Hazardous Waste Mgr., the Emergency Services Division (ESD) will be notified via Ext. 2222/Ext. 911. Once the Incident Commander (IC) arrives, he/she will decide the level of response. Usually, the Contingency Plan will be implemented in the event an incident occurs involving the uncontrolled release of any hazardous waste or hazardous waste constituents in which an emergency response is required. Incidents are classified as simple or complex according to the following criteria.

Simple Incident (must meet all of the following criteria):

- Involves the release of a moderate amount of material to the environment
- Does not involve injuries requiring medical attention
- Is not a potential danger to employees, contractors, or the public
- Can be cleaned up within a 24-hour period, weather permitting
- Is not a fire potentially involving PCBs
- Is not a spill affecting an exterior waterway or an exterior catch basin

Complex Incident (must meet at least one of the following criteria):

- Involves injury or illness to company employees, contractors or the public that requires medical attention
- Requires evacuation of employees, contractors, or the public
- Is assessed to be an immediate health impact on employee, contractors or the public
- Involves a fire potentially involving PCBs
- Involves releases to an exterior catch basin/sewer or exterior waterway
- Clean-up requires more than a 24-hour period

4.0 SITE DESCRIPTION

4.1 SITE MAP

Figure 1 is a site map of the 90-day waste accumulation area showing the location of waste, emergency/safety equipment, and exterior exits.

4.2 EMERGENCY/SAFETY EQUIPMENT

Emergency/safety equipment at this accumulation location (as shown in Figure 1) includes the items indicated below (items marked with an * are required)

- ✓ ABC fire extinguisher and Class D fire extinguisher (air reactives)
Halon fire extinguisher * (only required for electrical fires)
- ✓ Spill Control equipment/supplies * (90-Day Area)
- ✓ Telephone and/or two-way radio * (in D-2, Ext. 3240)
Fire detection system
- ✓ Fire alarm pull box (South exterior wall of bldg., opposite 90-Day Area)

Sprinkler system, water or CO₂

- ✓ Shower (South exterior wall of bldg., opposite 90-Day Area)
- ✓ Eye wash
- ✓ Gloves (90-Day Area)
- ✓ Eye and face protection (90-Day Area)

The following list includes emergency equipment available to properly trained personnel in the event of an incident involving hazardous wastes:

- X *Fire extinguishers* – Type ABC suitable for use on fires involving combustibles, flammables, fuel oils and electrical equipment (see Figure 1 for general locations). Also, a Class D fire extinguisher is also available for fires involving combustible metals - magnesium, sodium, potassium, sodium-potassium alloys, and powdered aluminum.
- *Building public address system* – used as a general alarm to alert facility personnel of emergency incidents or drills. Directions for the entire building's occupants to evacuate can be made using this system.
- *Spill Kits* - Minor (see definitions in Section 4) chemical releases can be cleaned through the use of chemical/material-specific spill kits located throughout the lab. There are spill kits for mercury, general solvents, acids, caustics, and oils. Prior to cleaning up any chemical/oil release, the Incident Commander (IC) must follow appropriate work control procedures including reviewing the MSDS for the chemical(s)/oil spilled and the training qualifications for all response personnel to ensure the correct level of training. Appropriate PPE must be utilized before any clean ups may begin. The following equipment is available to properly trained personnel:
 1. *Mercury HAZMAT Spill Response Kit* contain specially designed liquid and vapor absorptive materials, appropriate Personal Protective Equipment (PPE) (e.g., gloves, etc.), material recovery devices (e.g. scoops, aspirators, sponges, spatulas, polyethylene bags, etc.), containers for recovered material, indicator material for detection, and other associated materials. To facilitate spill material recovery, HEPA vacuums can be used with vapor suppression materials (available from Plant Engineering).
 2. *HAZMAT Spill Response Kit*- contains a 20-gallon poly DOT-approved container, hazardous material bags for waste, and spill adsorbent pigs for chemical and/or oil spills.
 3. *Acid spill kits* contain appropriate instructions, appropriate PPE (e.g., nitrile gloves, safety goggles, etc.) sorbents, material recovery devices (e.g., scoops, brushes, etc.), neutralizers for most commonly used lab acids except for hydrofluoric acid (HF), organic acids, fuming acids, or any other reactive acids (*Note: there are specific spill kits for HF concentrations up to 48% vol.*), material recovery bags and other associated materials. This kit can be used for commonly used lab acid releases (e.g., nitric, acetic, hydrochloric, hydroiodic, perchloric, phosphoric, sulfuric, sulfurous, etc.) of up to one (1) liter. The neutralizer contains a colorimetric indicator. See kit instructions for # of grams of neutralizer needed for varying amounts of chemical releases.

4. *Caustic spill kits* contain appropriate instructions, appropriate PPE, sorbents, material recovery devices (e.g., scoops, brushes, etc.), neutralizers for most commonly used alkaline lab chemicals (e.g., ammonium hydroxide, potassium hydroxide, sodium hydroxide, etc.) except for hypochlorite solutions, or any other cyanide/sulfide containing solutions, material recovery bags and other associated materials. This kit can be used for commonly used lab base releases of up to one (1) liter. The neutralizer contains a colorimetric indicator. See kit instructions for # of grams of neutralizer needed for varying amounts of chemical releases.
5. *Gloves* – Silver-Shield, Solvex, and Neoprene or others as specified in MSDSs for chemicals stored
6. *Eye/face protection* – ANSI-approved safety glasses

5.0 TYPES OF POTENTIAL WASTES AND HAZARDS

5.1 WASTE TYPES

- X Flammable liquids (e.g., lab solvents such as: ethyl ether, concentrated ethanol, xylene, toluene) and non-empty aerosol cans (ignitable propellants)
- X Corrosives- Acids and Bases (e.g., hydrochloric acid, nitric acid, sodium hydroxide, etc.) and lead-acid batteries (Universal Wastes)
- X Oxidizer/Reactives (e.g., potassium permanganate, nitric acid, sodium perchlorate, concentrated hydrogen peroxide), reactive metals.
- X Toxic substances including various labpack waste chemicals (small chemical containers, various hazard classes, nickel-cadmium/mercury batteries – Universal Wastes)
- X Non-hazardous used oil and associated rags/wipes
- X Nanowaste (nanomaterials defined in the SBMS Interim Procedure Approach to Nanomaterial ESH in the Interim Procedures Subject Area)

5.2 GENERAL HAZARDS

Personnel should read the Material Safety Data Sheet (MSDS) for any chemical product before handling or use. Regulations require that copies of the MSDS for a product containing hazardous components be made available to users. MSDSs can be obtained on-line at the Chemical Management System (CMS) webpage or via the CMS/MSDS Group at Ext. 2028

Personal protective equipment (PPE) specified for a particular substance may be used by on-site personnel if they have been properly trained in its use, as appropriate.

The mixing of incompatible substances in the same container is forbidden. Containers holding incompatible materials must be physically segregated.

5.3 FLAMMABLE LIQUIDS

Flammable liquids may be readily ignited at ambient room temperatures. These compounds may generate substantial quantities of flammable vapors in air at ambient temperatures. If the vapor concentration in air exceeds a critical percentage, the vapors can be easily ignited. Ignition can be caused by heat, friction, static electricity, or the operation of

electrical switches/apparatus. Always ensure adequate ventilation to prevent the buildup of vapors and avoid contact with oxidizers.

Flammable solvents may be absorbed through and/or cause defatting of the skin. Absorption of solvents or inhalation of the vapors generated by them is harmful and may cause both short term effects and permanent physical damage.

5.4 CORROSIVES - ACIDS/BASES

Acids and bases are strong tissue irritants. The effect of skin exposure can vary from dermatitis through complete destruction of tissues (i.e., chemical burns). The vapors of acids and bases can cause damage to soft body tissues such as the eyes and the respiratory tract. Corrosives can generate toxic vapors or gases by themselves (i.e., hydrochloric acid, phosphoric acid, ammonium hydroxide) and by reaction with other chemical substances (i.e., cyanides, sulfides). Some acids such as nitric and sulfuric are oxidizers as well as corrosives.

5.5 OXIDIZERS/REACTIVES - ACIDS

These materials react vigorously with other chemicals and may self decompose when heated. Personnel should become familiar with the MSDS specific to the material and handle accordingly, as appropriate.

5.6 USED OIL

Although oil products (e.g., vacuum pump oil, silicone oil, gear oil, motor oil) are combustible, they normally require exposure to direct flame or high heat to cause ignition. Avoid contact of oil and oil waste products with oxidizers. The contact may cause or increase the ease of ignition. Most used oils Personnel should follow all recommendations listed in the Material Safety Data Sheet and, minimally, wear protective gloves to prevent skin irritation.

5.7 BATTERIES

Many different chemistries are used to produce electricity: automotive battery cells and "gel" cells contain lead compounds (toxic) and sulfuric acid (corrosive); standard dry cells contain small quantities of mercury (toxic); rechargeable dry cells usually contain cadmium and nickel compounds (toxic); and high energy dry cells may contain lithium/nickel metal hydride (flammable and water reactive).

Normally these hazardous substances will be contained within the cells and not pose any significant risk. They only become dangerous when the cell integrity is damaged or the cell is exposed to fire conditions. Familiarize yourself with the MSDS specific to the battery cells used, as appropriate and handle accordingly.

5.8 TOXIC SUBSTANCES (wastes containing RCRA metals-arsenic, barium, cadmium, lead, mercury, selenium, and silver> NYSDEC regulatory levels)

Most chemical substances will initiate a toxic response if a sufficient dosage is experienced. For some substances the symptom-causing dosage is small or the material may accumulate in the body over a period of time before producing a toxic effect.

Different types of toxic chemicals can generate unique toxic effects. Acute or immediate symptoms pose the highest short-term risk, but many substances can cause permanent damage to organs and tissues. The MSDS for a toxic substance should be read and understood as appropriate prior to handling any toxic substance.

Toxic substances can enter the body through one or more routes of entry. Inhalation of vapors or particulate matter is the most common route of entry. Direct absorption or diffusion through the skin can produce toxic effects for many substances. Ingestion of material from contaminated hands, food, drink, or smoking materials is another possible route of entry.

Avoid all physical contact with toxic substances. Use the PPE appropriate to the particular substance after training in its use has been completed, as appropriate.

5.9 COMPRESSED GASES

Compressed gas cylinders and aerosol cans contain large quantities of material under pressure. The pressure in the container will increase in direct proportion to any increase in temperature. If the pressure in the container exceeds the design limits of the container, the gas will release either explosively or, as in the case of many cylinders, through a pressure relief mechanism. Mechanical damage such as puncture or crush damage can also release the compressed gas.

The release of gas from a container may cause the container to act as a projectile, fragment into several projectiles, or create a fire or toxic hazard emergency. Additionally, the propellants are usually ignitable (e.g., contain butane).

5.10 NANOMATERIAL WASTES CONTAINING VARIOUS RCRA AND NON-RCRA REGULATED MATERIALS

Nanomaterial wastes (see SBMS Interim Procedure Approach to Nanomaterial ESH in the Interim Procedures Subject Area for a complete definition of nanomaterials) in the form of the following are included in this category:

- liquid nanomaterial solutions containing ANY RCRA-regulated metal (e.g., cadmium, lead, selenium);
- liquids nanomaterial solutions containing ANY nanomaterial (non-RCRA regulated material - e.g., zinc, carbon);
- solid nanomaterials and mixtures of solid nanomaterials including RCRA and/or non-RCRA regulated materials. (Note: solid nanomaterials MUST be encapsulated to prevent dispersal into undesignated work areas);
- PPE, debris, wipes, etc., contaminated with nanomaterials;

6.0 EMERGENCY RESPONSE ACTION PLANS for TRAINED/QUALIFIED PERSONNEL

6.1 SPILLS

6.1.1 General Procedural Recommendations

- Notify the 90-Day Area Manager as appropriate as soon as possible when a spill occurs/is discovered. For spills beyond your capabilities/knowledge call 2222 or Ext. 911 for guidance/assistance (Emergency Services Division).
- If practicable, no spill cleanup should be performed without at least one other person available to provide assistance. Do not attempt to clean up any spill greater than the quantity recommended for the hazard category and/or in amounts that will require a Work Planning and Control permit.
- When performing a spill cleanup, always wear PPE as prescribed by Facility Support, Industrial Hygiene, or other qualified personnel, and as directed by the IC. This may consist of eye protection, splash apron, and the correct type of respiratory protection and gloves for the particular type of material spilled.
- Do not allow any spilled material to contact the skin or eyes.

- Do NOT respond to any spills of an unknown type; treat unknowns as toxic materials.

6.1.2 Flammable Liquids

Local Response Maximum Recommended Quantity: 1 liter (generally)

Spill Cleanup

Remove all sources of ignition prior to any clean up. Use an inert absorbent material to clean up the spill. The use of rags or paper towels is not recommended. Place the cleanup-generated waste into a metal vapor-tight container and treat it as a hazardous waste. Notify the 90-Day Area Manager of any waste generated during spill cleanup.

Flammable liquids may be readily ignitable at ambient room temperatures. These compounds may generate substantial quantities of flammable vapors in air at ambient temperatures. If the vapor concentration of the compound in air exceeds a critical percentage (lower flammability limit) the vapors can ignite. Ignition can be caused by heat, friction, static electricity, or the operation of electrical switches/apparatus. Always ensure adequate ventilation is present to prevent the buildup of vapors and avoid contact and accumulation of flammables next to oxidizers.

Flammable solvents may be absorbed through and/or cause defatting of the skin. Absorption of solvents or inhalation of the vapors generated by them is harmful and may cause both short-term (acute) and chronic effects and could lead to long-term permanent physical damage. Therefore, inform nearby building occupants of the release and have them evacuate the area as required to prevent a chemical overexposure.

Always contact applicable ESH&Q (RCD) personnel for any incident(s) involving mixed waste prior to clean up, as RWPs and/or Work Control Permits may be necessary.

Protective Equipment

Goggles or face shield, splash apron, butyl or silver shield gloves, and air purifying respirator with organic vapor cartridges as appropriate and as per the MSDS.

6.1.3 Corrosives - Acids/Bases

Local Response Maximum Recommended Quantity: 2 liters (generally unless highly concentrated and/or HF involved)

Spill Cleanup

Use an inert absorbent material to clean up the spill. Do not use rags or paper towels that may react with the spill. Place the cleanup-generated waste into a glass or plastic vapor-tight container and treat it as a hazardous waste. Notify the 90-Day Area Manager of any waste generated during spill cleanup. Neutralize the area with a wash of sodium carbonate for acids or weak acid solution (acetic or citric acids) for alkaline spills, if available.

Protective Equipment

Goggles or face shield, splash apron, neoprene or silver shield gloves, or air purifying respirator with acid mist cartridges as appropriate and as directed as per MSDS.

6.1.4 Oxidizers/Reactives - Acids

Local Response Maximum Recommended Quantity: 2 liters (generally)

Spill Cleanup

Use an inert absorbent material to clean up the spill. Do not use rags or paper towels that may react with the spill. Place the cleanup-generated waste into a glass or plastic vapor-tight container and treat as a hazardous waste. Notify the 90-Day Area Manager of any waste generated during spill cleanup.

NOTE: Many oxidizer solutions (e.g., chromic acid) are also corrosive; check the guidelines for acids/bases prior to cleanup.

Protective Equipment

Goggles or face shield, splash apron, neoprene or silver shield gloves, or air purifying respirator with acid gas/organic vapor cartridges as appropriate and as per the MSDS.

6.1.5 Oil

Local Response Maximum Recommended Quantity: 10 gallons (indoors only/no sewer lines involved)

Spill Cleanup

Oil spills always pose a moderate fire risk. Remove all sources of ignition prior to any cleanup. Use an inert absorbent material to clean up the spill. The use of rags or paper towels is not recommended. Place the cleanup-generated waste into a metal vapor-tight container and treat it as a hazardous waste. Notify the 90-Day Area Manager of any waste generated during spill cleanup.

Protective Equipment

Goggles or face shield, splash apron, butyl or silver shield gloves, or air purifying respirator with organic vapor cartridges as appropriate and as per the MSDS.

6.1.6 Toxic Substances

Local Response Maximum Recommended Quantity: No amounts – call Ext. 2222/Ext. 911

Spill Cleanup

Do NOT attempt to clean up spills of these materials. Immediately call Ext. 2222, or Ext. 911. Contact the 90-Day Area Manager and the Environmental Safety and Health Coordinator. Isolate the spill area until cleanup has been performed.

6.1.7 Nanomaterial Waste Materials (non-radioactive)

The response to an emergency involving nanomaterial wastes will depend on the nature of the material(s) involved including the solvent media being used if liquid nanomaterials are involved. Therefore, the Incident Commander, in coordination with the BNL-designated Nanomaterial SME, will manage the response efforts as per the BNL Emergency Management Plan. In no case should emergency response actions cause an increase in the quantity of airborne nanomaterials released into the work area so as to cause potential employee exposures. Releases of this waste type into the environment should also be minimized and should be consistent with Safety and Industrial Hygiene goals for personnel safety. Follow the SBMS Interim Procedure Approach to Nanomaterial ESH in the Interim Procedures Subject Area for spill cleanup guidelines.

6.2 FIRES

DO NOT attempt to fight fires of ANY size if you have not been trained in the use of the available extinguishing agents. A fire that is improperly handled will not extinguish and may increase in intensity.

Immediately notify the Fire Superior Officer (Ext. 2222, or Ext. 911), the 90-Day Area Manager, and the ES&H Coordinator/Facility Support Representative in the event of a fire of any size.

Do not fight any fire where the base of the fire exceeds approximately 1 square foot or where additional flammable materials may be at immediate risk of ignition. Leave the area immediately.

6.2.1 Flammable Liquids and Oil

Do not use water to extinguish flammable liquid or oil fires. Use only a **dry chemical ABC** or **AB** fire extinguisher for flammable liquid and oil fires.

6.2.2 Corrosives - Acids/Bases

Acids and bases generally will not support a fire but may react with other materials involved in the fire, potentially increasing the risk of toxic decomposition products.

6.2.3 Oxidizers/Reactives - Acids

Oxidizers generally will not burn but will support the combustion of organic materials and some metals. Fires involving oxidizers will burn with greater than normal intensity. Do not attempt to fight fires involving oxidizers. **Call Ext. 2222, or Ext. 911.**

6.2.4 Toxic Substances

Do NOT attempt to fight fires when toxic materials are present. Dangerous levels of toxic materials may be present in these cases. **Call Ext. 2222, or Ext. 911.**

6.2.5 Compressed Gases

When compressed gas cylinders and aerosol cans are brought into contact with fire, there is a high risk of explosion. Do NOT attempt to fight fires when compressed gases are present; evacuate the area immediately, and **call Ext. 2222, or Ext. 911.**

6.3 CHEMICAL CONTAMINATION EMERGENCIES

SEEK MEDICAL ASSISTANCE IMMEDIATELY – Call Ext. 2222, or Ext. 911

When an individual has been contaminated with hazardous materials, it is important to remove as much of the material from the person as quickly as possible. When assisting an individual contaminated with hazardous materials, use caution to prevent contaminating yourself with the hazardous material.

6.3.1 Eye Contact

If any hazardous material contacts the eyes, immediately flush the eyes with cold or lukewarm water, holding the eyes open to irrigate under the lids. Maintain the flush for at least 15 minutes. Seek medical attention.

6.3.2 Skin Contact

For hazardous material contact with the skin, remove any contaminated clothing and immediately flush the affected area with large volumes of water continuously for at least 15 minutes. For all materials except bases, wash the area with soap and water. Seek medical attention.

6.4 EVACUATIONS

6.4.1 Local/Building

If an evacuation from the Building and/or the HAZSTOR Shed is required, as indicated by alarms or other signals, leave the HAZSTOR Shed/Bldg. XYZ and notify personnel in nearby labs/areas of the potential hazard, immediately. Then, leave the building in accordance with existing building-specific (Bldg. XYZ Local Evacuation Plan) local emergency plans.

6.4.2 Facility/Site

Facility evacuation alarms and procedures, as documented in the BNL Emergency Response Plan, are as follows:

- The BNL Complex has a site-wide 'Plectron' system with multiple alarms for emergencies involving radioactive and hazardous materials. Additionally, there is an Emergency Services Division (ESD) that has staff situated on-site (Bldg. 599) 24-hours per day and 7-days per week. In the event of a release of hazardous materials/wastes, ESD automatically sends out an emergency page for assistance from members of the Environmental and Waste Management Services Division (EWMSD) Spill Response team.
- Continuous sounding of the site sirens for 5 minutes: Proceed immediately to the building assembly area. Await instructions, which may include the nature of the emergency, the type, sequence, and routes for evacuation,
- Intermittent sounding of the site sirens for 5 minutes: Evacuate the site immediately. Car pools will convene in the usual manner unless otherwise noted.

7.0 ADVERSE WEATHER/EMERGENCY INCIDENT ACCUMULATION AREA

In the event that ambient conditions (e.g., cold temperatures, wind-storm, other) and/or an area emergency occurs that necessitates the temporary re-location of the existing, unheated accumulation area noted in this plan, the following location shall be used:

Lab ABC

During the time period that this temporary area is used, all of the above requirements shall be met (e.g., spill equipment, nearby phone/fire-alarm, required postings, secondary containment, weekly inspections, etc.). The weekly inspection checklist should note that the Adverse Weather/Emergency Incident location was utilized during the period of use.

8.0 CONCLUSION

The accumulation area(s) referenced in this document is/are part of the Brookhaven National Laboratory Complex (EPA I.D. No. NY7890008975) located just north of the Long Island Expressway (Rte. 495) and the main access gate is just off the William Floyd Pkwy (eastern side), in Upton, New York. This complex has controlled access and the access gates are manned 24-hours per day, 7-days per week. The accumulation area(s) referenced in the plan are for either laboratory satellite accumulation areas and/or maintenance related satellite accumulation areas. These labs are typical labs similar to those in universities and some labs may have: laboratory sinks, flammable/corrosive cabinets, laboratory hoods with underside chemical accumulation cabinets, electronics benches where soldering may be performed, lab-counters where

chemical synthesis/formulations are done, various experimental, small-scale set-ups involving chemical processes (e.g., distillation, solvent extraction, hot plates and mixers and other research-related equipment). Generally, the wastes generated are small lab-pack quantities and the containers used are usually less than 5 gallons.

This Contingency Plan has been prepared as per the requirements of 6 NYCRR Subpart 373-2.4 – Contingency Plan and Emergency Procedures. The purpose of this document is to minimize the hazards to human health and the environment from fires, explosions, or any releases of hazardous waste to the environment.

Certain events may require plan amendments and examples could include the following: plan fails in an emergency; major changes in facility/room design, construction, operation, etc.; list of emergency coordinators changes; list of emergency equipment changes significantly; or applicable governmental regulations change.



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Examples of Incompatible Chemicals

Effective Date: Jan 31, 2013

(Chemicals listed in Column A should not be stored with or used near items in Column B.)

Column A	Column B
Acetic acid	Chromic acid, nitric acid, hydroxyl compounds, glycol, perchloric acid, peroxides, permanganates
Acetone	Concentrated nitric and sulfuric acid mixtures
Acetylene and monosubstituted acetylene (R-C≡CH)	Chlorine, bromine, copper, fluorine, silver, mercury
Alkali and alkaline earth metals such as powdered magnesium, sodium, potassium	Water, carbon tetrachloride or other chlorinated hydrocarbons, carbon dioxide, the halogens
Ammonia (anhydrous)	Mercury, halogens, calcium hypochlorite, hydrofluoric acid (anhydrous).
Ammonium nitrate	Acids, metal powders, flammable liquids, chlorates, nitrites, sulfur, finely divided organic combustible material
Aniline	Nitric acid, hydrogen peroxide
Arsenical materials	Any reducing agent
Azides	Acids
Calcium oxide	Water
Carbon, activated	All oxidizing agents, calcium hypochlorite
Chlorates	Ammonium salts, acids, metals powders, sulfur, finely divided organic or combustible material
Chromic acid and chromium trioxide	Acetic acid, alcohol, camphor, glycerol, naphthalene, flammable liquids in general
Chlorine dioxide	Ammonia, methane, phosphine, hydrogen sulfide
Copper	Acetylene, hydrogen peroxide
Cumene hydroperoxide	Acids (organic or inorganic)
Cyanides	Acids
Flammable liquids	Ammonium nitrate, chromic acid, hydrogen peroxide, nitric acid, sodium peroxide, the halogens
Fluorine	All other chemicals
Hydrocarbons (e.g., butane, propane, benzene)	Fluorine, chlorine, bromine, chromic acid, sodium peroxide
Hydrocyanic acid	Nitric acid
Hydrofluoric acid (anhydrous)	Ammonia (aqueous or anhydrous)

Hydrogen sulfide	Fuming nitric acid, oxidizing gases
Hypochlorites	Acids, activated carbon
Iodine	Acetylene, ammonia (aqueous or anhydrous), hydrogen
Mercury	Acetylene, fulminic acid, ammonia
Metal Hydrides	Acids, water
Nitrates	Acids
Nitric acid (concentrated)	Acetic acid, aniline, chromic acid, hydrocyanic acid, hydrogen sulfide, flammable liquids, flammable gases, copper, brass, any heavy metals
Nitrites	Acids
Nitroparaffins	Inorganic bases, amines
Oxalic acid	Mercury, silver
Oxygen	Oils, grease, hydrogen; flammable liquids, solids, or gases
Perchloric acid	Acetic anhydride, alcohol, bismuth, paper, wood, grease, oils
Permanganates	Concentrated sulfuric acid
Peroxides, organic	Acids (organic or mineral), avoid friction, store cold
Phosphorus (white)	Air, oxygen, alkalies, reducing agents
Potassium	Carbon tetrachloride, carbon dioxide, water
Potassium chlorate	Sulfuric and other acids
Potassium perchlorate (see also chlorates)	Sulfuric and other acids
Potassium permanganate	Glycerol, ethylene glycol, benzaldehyde, sulfuric acid
Silver	Acetylene, oxalic acid, tartaric acid, ammonium compounds, fulminic acid
Sodium	Carbon tetrachloride, carbon dioxide, water
Sodium nitrate	Ammonium nitrate and other ammonium salts
Sodium peroxide	Ethyl or methyl alcohol, glacial acetic acid, acetic anhydride, benzaldehyde, carbon disulfide, glycerin, ethylene glycol, ethyl acetate, methyl acetate, furfural
Sulfuric acid	Chlorates, perchlorates, permanganates

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Examples of Unacceptable Waste Containers

Effective Date: Jan 31, 2013

[Unacceptable Waste Containers](#) is provided as a Word file.

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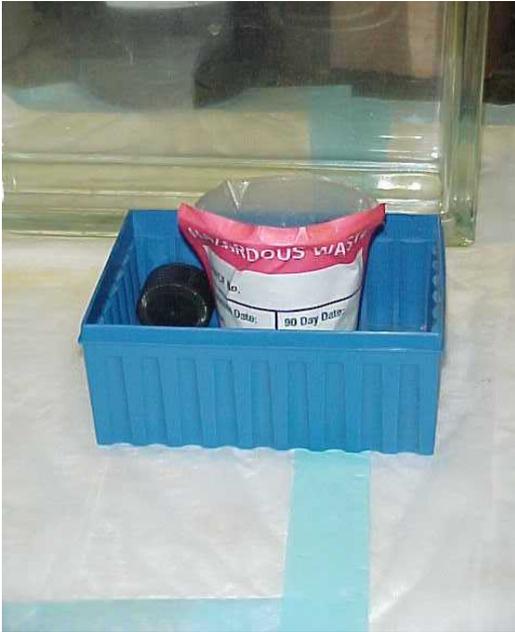
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Unacceptable Waste Containers



Open/Unsealed Container



Heavy Rust on Drum Chimes



Rust and Flaking Metal on
Bottom Rim of Drum



Rust/Flaking Paint on Lid



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Examples of Waste Descriptions

Effective Date: Jan 31, 2013

Examples of Waste Descriptions	
Acceptable	Unacceptable*
Methylene chloride, trichloroethane, trichloroethylene	Halogenated solvents
Benzene, methanol	Non-halogenated solvents
Lead-containing solution	Degreaser/mold release
Degreaser containing hexane and acetone	LPS Degreaser (Tri Super Cleaner)
Nitric acid with cadmium, selenium, and chromium	Nitric acid with trace metals
HACH solution containing mercuric nitrate	HACH solution
Phosphoric acid solution with lead and cadmium	AC500 coolant
Chloroform, phenol solution	Type #1
Lead, cadmium, and chromium metal debris	Heavy metals
Solvent containing perchloroethylene	Leak test
Cleaning solution with hydrochloric acid	Corr shield
Isobutane, pentane, octane solution	Hydrocarbons C4-C8
Methanol, isopropyl alcohol, and Carbon-14	Mixed wastes
Glass contaminated with mercury	Glass debris
Paint filters with toluene	Paint debris
Waste methanol and acetonitrile	Wastewater
Acetone and chloroform solution	Legacy waste
Isopropanol and hydrofluoroether	Smith's solvent
<p>* General descriptions such as these do not provide any information with respect to the associated hazard/properties or constituents of the waste and must not be used. Specific chemical descriptions are required by WM to complete associated documentation (NYSDEC Part 373 Permit).</p>	



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Hazard Class

Effective Date: Jan 31, 2013

Class No.	Division No. (if any)	Name of class or division	49 CFR reference for definitions
None		Forbidden materials	173.21
None		Forbidden explosives	173.54
1	1.1	Explosives (with a mass explosion hazard)	173.50
1	1.2	Explosives (with a projection hazard)	173.50
1	1.3	Explosives (with predominately a fire hazard)	173.50
1	1.4	Explosives (with no significant blast hazard)	173.50
1	1.5	Very insensitive explosives; blasting agents	173.50
1	1.6	Extremely insensitive detonating substances	173.50
2	2.1	Flammable gas	173.115
2	2.2	Non-flammable compressed gas	173.115
2	2.3	Poisonous gas	173.115
3		Flammable and combustible liquid	173.120
4	4.1	Flammable solid	173.124
4	4.2	Spontaneously combustible material	173.124
4	4.3	Dangerous when wet material	173.124
5	5.1	Oxidizer	173.127
5	5.2	Organic peroxide	173.128
6	6.1	Poisonous materials	173.132
6	6.2	Infectious substance (Etiologic agent)	173.134
7		Radioactive material	173.403
8		Corrosive material	173.136
9		Miscellaneous hazardous material	173.140
None		Other regulated material: ORM-D	173.144

[Amdt. 173-224, 55 FR 52606, Dec. 21, 1990, as amended at 57 FR 45460, Oct. 1, 1992; Amdt. 173-234, 58 FR 51531, Oct. 1, 1993]



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Hazardous Waste Generator Characterization Guidance

Effective Date: Jan 31, 2013

The [Hazardous Waste Generator Characterization Guidance](#) exhibit is provided as a Word file

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Hazardous Waste Generator Characterization Guidance

Contents

- 1.0 Hazardous Waste Defined
 - 2.0 Process Knowledge
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 - Tools for Characterizing Hazardous Waste
 - Ignitable Characteristics
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 - Reactive Characteristics
 - Toxic Characteristics
 - 3.0 Sampling and Analysis
 - Chain of Custody and Analytical Instructions (COC)
 - Sampling Methods
 - 4.0 Documentation
 - Characterization Documentation
 - Material Safety Data Sheet (MSDS)
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1.0 Hazardous Waste Defined

Waste contaminated with RCRA-regulated constituents is hazardous waste.

All hazardous waste must be characterized and accepted for transfer to a Waste Management (WM) facility and/or approved by WM for shipment to an offsite treatment, storage, and disposal facility. Your characterization will allow WM to safely handle, segregate, store, treat, and ship your waste off-site for disposition. Waste that is not properly characterized may be subject to rejection by WM.

To determine if your waste needs to be sampled and analyzed, contact your [Waste Management Representative \(WMR\)](#), [Environmental Compliance Representative \(ECR\)](#), or the [WM Hazardous Waste Program Manager](#) for assistance.

A generator must know in advance that the process being used will create hazardous waste, in accordance with BNL's [Work Planning and Control](#) Management System Description, and as required by the [Work Planning and Control for Experiments and Operations](#) Subject Area. Contact your [Environmental Compliance Representative \(ECR\)](#) for assistance with planning work activities that may generate hazardous wastes.

2.0 Process Knowledge

Hazardous wastes that are generated at BNL can be primarily characterized by the waste generators through their knowledge of the process that generated the waste. To help determine if you have generated a hazardous waste, see [Tools for Characterizing Hazardous Waste](#). If process knowledge is not adequate for characterizing your waste, you must arrange to have your waste sampled and analyzed by an approved offsite testing laboratory. An ECR or Waste Management Representative (WMR) should be contacted for assistance.

Waste must be fully characterized before it can be transported to a WM facility. Your characterization will allow WM to safely handle, segregate, store, treat, and dispose of the waste according to its operating permit requirements. See [Sampling and Analysis](#) for use of the CES Chain of Custody and Analytical Instructions (COC).

Hazardous waste that is generated at BNL may be characterized by waste generators through their knowledge of the process that generated the waste. There are circumstances where the U.S. Environmental Protection Agency (EPA)/Ecology protocol sampling and analysis are not feasible or necessary for characterization of hazardous constituents (40 CFR 262.11, "Hazardous Waste Determination" [EPA 1987]). Under these circumstances, techniques that rely primarily on documented knowledge of raw materials, processes and material balances can be employed to characterize wastes. Such techniques may be employed when one or more of the following conditions are met.

- The waste stream is difficult to sample because of physical form. This primarily applies to pieces of metal (e.g., shielding) that contain hazardous constituents in their composition rather than as a residue that could be removed for testing or in a decontamination process.
- Waste is too variable to be characterized by one set of samples (e.g., drums containing contaminated protective clothing, rags, and absorbent).
- Process knowledge is available and sufficiently documented to provide a complete characterization of the waste stream (e.g., MSDS, mass balances, etc.).

Process knowledge will not be accepted by WM unless it can be shown that the process producing the waste is rigidly controlled, such as through procedures governing waste segregation of input materials procurement. Through an understanding of the material input to a process and manner in which the material is manipulated or handled, the waste may be characterized by use of a model that accounts for the quantities which will be included in the waste from that process. Appropriate documentation must accompany the request to show that the use of process knowledge is appropriate. Examples of appropriate documentation include:

- Interview information
- Logbooks
- Procurement records
- Qualified analytical data
- Process flow charts
- Inventory sheets
- Vendor information
- Mass balance from an uncontrolled process (e.g., spill cleanup)

- Procedures and/or methods of accomplishment
- Mass balance from a process with variable inputs and outputs (e.g. washing/cleaning methods).
- Material Safety Data Sheets

This information is documented on a [Nonradioactive Waste Control Form \(NRWCF\)](#) and/or [Process Knowledge Certification Form \(PKCF\)](#), including supporting documentation, in accordance with the requirements of the [Hazardous Waste Management](#) Subject Area.

If you are performing a new process that will generate hazardous waste, contact your area WMR, who can help you determine the appropriate documentation to complete.

Random Verification

A minimum of ten percent of all incoming waste is randomly selected for verification, by sampling and analysis in accordance with WM's Waste Analysis Plan (WAP). Hazardous waste must be characterized in accordance with [Title 40 of the Code of Federal Regulations \(CFR\), Part 264.13, General Waste Analysis](#); and New York State Environmental Rules and Regulations, [6 NYCRR Part 371, Identification and Listing of Hazardous Wastes](#). BNL has a Waste Analysis Plan as required by 40 CFR 264.13, which determines the hazard class of wastes received by WM from BNL generators to ensure the wastes are stored safely prior to offsite disposal.

The Waste Management Program maintains verification databases to track:

- rate, frequency, location, type, and trends of verification failures;
- Nonconformance Reports (NCRs).

A reportable failure requires an NCR if:

1. There is a characterization change outside that provided on the NRWCF.
2. There are additions or deletions of a waste characteristic effecting: toxicity; ignitability; corrosivity; or reactivity, or
3. A condition adversely affecting Safety, the Waste Management Facilities authorization basis, or the Waste Management Program's Standard Operating Procedures.

Note: Conservative characterization by the waste generator will be considered and in general will be exempt from the NCR process.

Tools for Characterizing Hazardous Waste

EPA and New York State Department of Environmental Conservation (NYSDEC) lists of hazardous waste, as well as knowledge of the hazardous properties of your waste can be used as tools for characterizing your waste.

The EPA (40 CFR 261) has divided hazardous wastes into a number of lists. In addition, NYSDEC has its own list of hazardous wastes (see [6 NYCRR Part 371, Identification and Listing of Hazardous Wastes](#)).

If the hazardous components of your waste are not on these lists, then determine if it exhibits any of the four hazardous properties as defined by EPA or NYSDEC and summarized below:

- Ignitable
- Corrosive
- Reactive
- Toxic

Ignitable Characteristics

Ignitable wastes may be:

- Liquids (other than a water solution containing less than 24% alcohol by volume) with a flash point of less than 60° C (140° F).
- Nonliquids that can spontaneously burn or can be ignited by friction or absorption of moisture at ambient conditions.
- Compressed gases that burn.
- Anything solid that burns in the presence of oxygen in the atmosphere and that releases large quantities of energy. Strong oxidizers almost always contain multiple oxygen atoms.

Examples of ignitable wastes include:

- Alcohol (>24% by volume as defined by law)
- Finely powdered iron, nickel, and aluminum
- Benzoyl peroxide
- Potassium nitrate

Corrosive Characteristics

Corrosive wastes may be liquids, gases, or solids that exhibit any of the following properties:

- Aqueous with pH ≤ 2 or ≥ 12.5
- A liquid that corrodes steel at rates exceeding 0.25 inches per year at a test temperature of 130° F using a specified test method

- Solid wastes meeting either of these criteria when mixed in equal parts with water

Examples of corrosive wastes include:

- Acid solutions ($\text{pH} \leq 2$)
- Alkaline solutions ($\text{pH} \geq 12.5$)
- Ferric chloride solution
- Caustic alkaline solids

Reactive Characteristics

Reactive wastes may be liquids, gases, or solids that exhibit any of the following properties:

- Reacts violently with water
- Forms potentially explosive mixtures with water
- Normally unstable and readily undergoes violent change without detonating
- Generates toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment when mixed with water or another chemical, such as acid

Examples of reactive wastes include:

- Hetero-nitro (containing multiple nitro groups)
- Lithium hydride
- Sodium metal
- Cyanide- or sulfide-bearing wastes which evolve toxic cyanide or sulfide gases when exposed to a change in pH between 2 and 12.5
- Waste with a cyanide concentration of >250 parts per million or a sulfide concentration of >500 parts per million which evolve toxic cyanide or sulfide gases when exposed to acidic conditions of $\text{pH} < 2$

Toxic Characteristics

Toxic wastes may be gases, liquids, or solids that exhibit any of the following properties:

- Carcinogenicity, mutagenicity, or teratogenicity
- Acute or chronic health effects

Waste is deemed toxic if it exhibits any of the following criteria:

- Contains specific hazardous constituents above specified regulatory limits
- Is toxic to test animals by a oral, dermal, or inhalation route
- Is toxic to aquatic life
- Contains specific carcinogenic materials above the regulatory limits

This toxicity characteristic can be determined by analytical measurements of concentrations of the toxic material that are:

- Dissolved in a liquid waste
- Leachable by acidic water (pH 5) from a solid waste
- A combination of the above

Examples of toxic wastes include:

- Water-soluble compounds of listed heavy metals such as nickel or silver
- Listed chlorinated and nonchlorinated solvents such as trichloroethylene and toluene
- Listed pesticides such as Chlordane
- Coolants with or without listed metals or oil

3.0 Sampling and Analysis

Sampling and analysis may be required if:

- Process knowledge is not available or adequate to completely characterize the waste, and/or
- You are uncertain as to whether regulated hazardous materials may be present.

An approved offsite laboratory will do the analyses in accordance with the generator defined sampling plan. Your WMR will provide assistance to determine the type of analysis required to characterize your waste and provide guidance on characterization procedures for unknown wastes.

You should provide the sampling personnel as much information about the composition of your waste as possible. Before collecting the sample, the sampling technician or WMR reviews the sampling method and strategy to determine if they are safe and appropriate for the waste.

If radioactive constituents above are contained in your hazardous waste, then the waste must be characterized as mixed waste (see the [Mixed Waste Generator Characterization Guidance](#) exhibit in the [Mixed Waste Management](#) Subject Area).

There are several sampling methods for the various kinds of waste. The sampling method and devices used to sample a container of waste depend on the generator-supplied information. Requests for sampling are in accordance with Environmental Services Division procedure [EM-SOP-105, Request for Sampling and Supplemental Health and Safety Plan](#), or an equivalent approved facility- or activity-specific procedure.

Sampling and analysis of waste is done according to a pre-approved sampling and analysis plan.

Chain of Custody and Analytical Instructions (COC)

If your waste requires analysis, you are responsible for requesting that it be sampled and analyzed. Your WMR or ECR will assist you in filling out a COC, taking samples, and arranging for the appropriate analysis.

Waste samples used for the analytical characterization of the waste streams will be submitted to the onsite Analytical Services Laboratory (ASL) for screening for radioactivity (if required), or will be shipped to an approved contract laboratory for analysis. [EM-SOP-109, Chain of Custody Procedure](#) defines requirements for documenting the possession (custody) of samples from the point of collection to receipt of the sample by the analytical laboratory. This procedure also allows for providing waste analysis instructions. The NRWCF number and/or the container serial number for each waste package sampled will be recorded so that the sample is traceable to a specific waste parcel or container.

Sampling Methods

Provide the sampling personnel as much information about the composition of your waste as possible. This exchange is important because, before collecting the sample, the sampling technicians or WMR will select a sampling method and strategy that is safe and appropriate for the waste.

There are several sampling methods for the various kinds of waste. The sampling method and device used to sample a waste depend on the generator-supplied information based on knowledge of the waste. Sampling must meet EPA SW-846 industry standards, or equivalent standards. EPA publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, is a compilation of analytical and sampling methods that have been evaluated and approved for use in complying with the RCRA regulations. SW-846 functions primarily as a guidance document setting forth acceptable sampling methods. Information about other methods and analytical technologies may be accessed through the [EPA's Technology Innovation Office Clu-In](#) web page.

The ability to characterize waste adequately is based on obtaining enough samples to ensure that a representative population of samples is collected. The EPA has guidance documents and methods are based on media being sampled. If a small amount of waste must be sampled such as a drum one sample may be all that is necessary as long as the waste is known to be

homogeneous. Larger waste streams, such as soil piles, will require numerous samples. The Environmental and Waste Management Services (EWMS) Division maintains the [Environmental Monitoring SOPs](#) web page providing sampling guidance for environmental media, which should be followed if applicable to your waste.

To ensure that each waste stream is characterized properly and that the analytical data is truly representative in nature the following table should be used for characterizing the different waste streams. The number of samples per waste stream is based on statistical methods and an acceptable deviation between the samples. A statistical analysis tool has been developed by WM (see Appendix A - Request for Use of Non-DOE Facility for Disposal of Radioactive Waste in the BNL [Waste Certification Program Plan \(WCPP\)](#) in the [Radioactive Waste Management Basis](#) Program Description, and must be used to determine the number of samples needed for bulk waste streams such as soil. Preliminary data used for cleanup-level purposes may be used for screening, however, unless all required hazardous constituents have been accounted for, further characterization samples will be mandatory.

4.0 Documentation

Characterization Documentation

Before hazardous waste can be transferred from the generator's facility to WM, a documentation package must be completed.

A documentation package contains information about the waste that enables WM to properly manage and track the waste and is required before transport to a WM facility.

The documentation package consists of:

- [Nonradioactive Waste Control Form \(NRWCF\)](#)
- [Process Knowledge Certification Form \(PKCF\)](#)
- Sampling and analysis plan (if applicable)
- Analytical data (if applicable)

Instructions for preparing the required waste characterization documentation are provided in the [Hazardous Waste Management](#) Subject Area.

Contact your area WMR, who can provide assistance in preparation of the appropriate documentation.

Material Safety Data Sheet (MSDS)

An MSDS is a basic source of information about hazardous chemicals. Each MSDS must list several characteristics of the chemical including:

- Chemical identity as used on the container label;

- Chemical and common names of all hazardous ingredients;
- Physical and chemical characteristics of the hazardous ingredients;
- Physical and health hazards of the hazardous ingredients, including exposure symptoms;
- OSHA permissible exposure limit (PEL) and other exposure limits.

An MSDS is a useful tool in helping to characterize surplus manufacturers' products because they should contain detail regarding hazardous components, physical data, ignitability, reactivity, health hazards, etc. However, if the product has been mixed or contaminated with other materials, the MSDS information may not apply.

Contact your ECR or WMR if you cannot locate an MSDS. Keep all MSDSs for product material you replace for use in disposal of your waste. Refer to the BNL [Material Safety Data Sheet \(MSDS\) Search](#) in the [Chemical Management System \(CMS\)](#) web site for additional information.



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Hazardous Waste Label

Effective Date: **Jan 31, 2013**

The [Hazardous Waste Label](#) is provided as a PDF. This is an example of a properly completed label.

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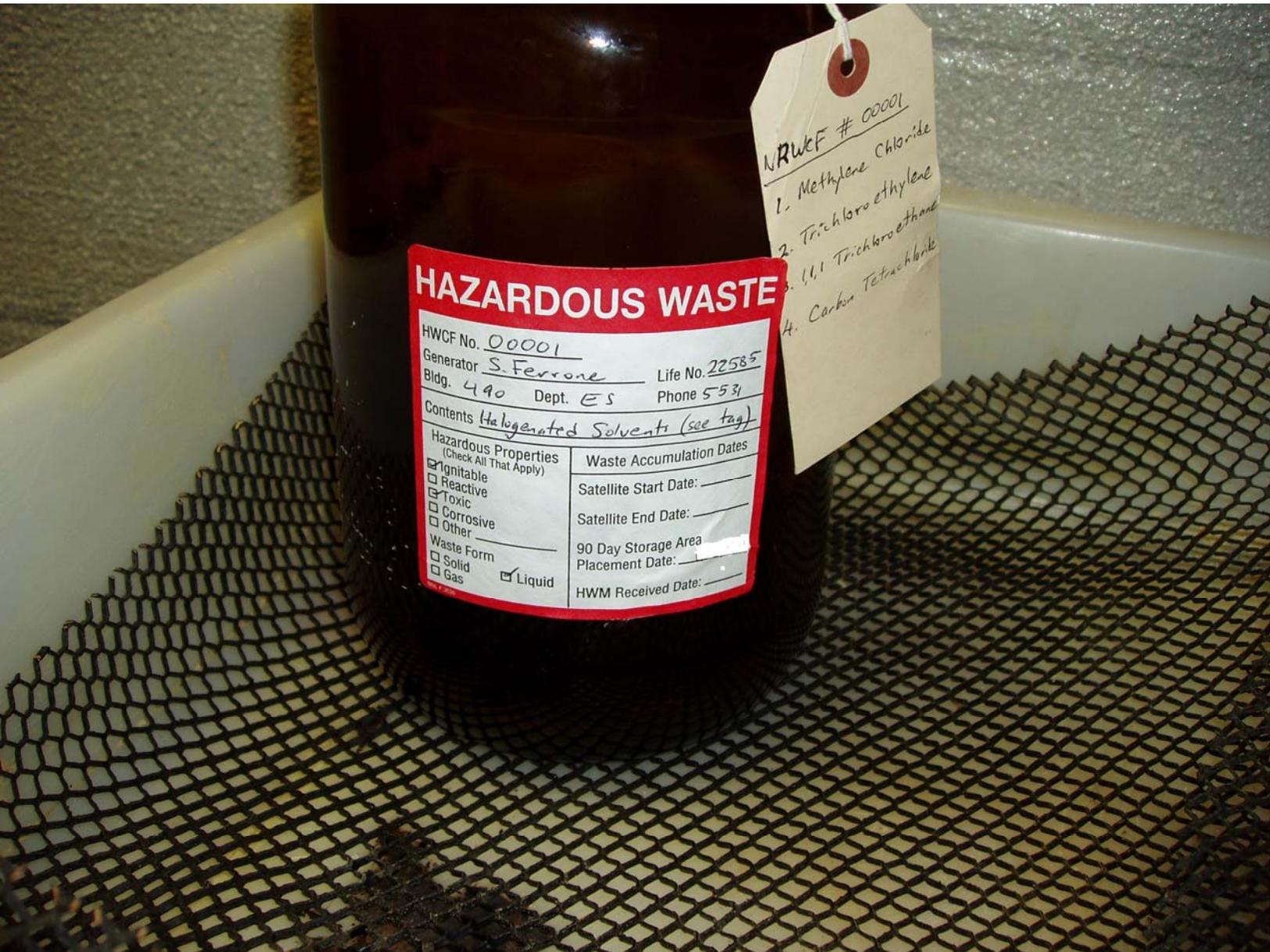
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Nanomaterial Waste Label

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Photo of Hazardous Waste Storage Module and Rubber Webbing Mats

Effective Date: Jan 31, 2013

Rubber Webbing Mats



Hazardous Waste Storage Module



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Satellite Accumulation Area Basic Rules Sign

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HAZARDOUS WASTE SATELLITE ACCUMULATION AREA BASIC RULES

1. CONTAINERIZE ALL WASTE

- DO NOT ACCUMULATE UNCONTAINERIZED OR UNPACKAGED/LOOSE WASTE (USE PROPER CONTAINERS)

2. CLOSE ALL WASTE CONTAINERS

- EXCEPT WHEN ADDING OR REMOVING WASTE

3. LABEL ALL CONTAINERS

- “HAZARDOUS WASTE”
- IDENTIFY HAZARDOUS CONSTITUENTS OF CONTAINER (NO PRODUCT/TRADE/GENERIC NAMES)
- DO NOT WRITE DATE ON THIS LABEL (NON-PCB WASTES)

4. STORE CONTAINERS OF LESS THAN 55 GALLONS (7.5 ft³ or 210 liters) OR ONE QUART (950 milliliters) OF ACUTELY HAZARDOUS WASTE

- AT 55 GALLONS OR AT ONE QUART OF ACUTELY HAZARDOUS WASTE, MOVE WASTE TO THE 90-DAY ACCUMULATION AREA/WASTE MANAGEMENT FACILITY
- THE GENERATOR IS RESPONSIBLE FOR THE MOVEMENT OF WASTE TO THE 90-DAY ACCUMULATION AREA
- TRANSFER FULL WASTE CONTAINERS TO THE 90-DAY ACCUMULATION AREA
- TRANSFER CONTAINERIZED WASTES FROM DISCONTINUED PROJECTS/EXPERIMENTS/CLEANOUTS/ONE-TIME RUNS TO THE 90-DAY ACCUMULATION AREA

5. ESTABLISH SATELLITE AREA AT OR NEAR THE POINT OF WASTE GENERATION

6. CONTROL THE WASTE

- IF MORE THAN ONE GENERATOR SHARES THE SAME SATELLITE AREA, EACH GENERATOR IS RESPONSIBLE FOR THEIR OWN WASTE(S)

QUESTIONS?

Contact the [Hazardous Waste SME](#) or [Mixed Waste SME](#).



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Satellite Hazardous Waste Accumulation Area Operator Aid

Effective Date: Jan 31, 2013

The [Satellite Hazardous Waste Accumulation Area Operator Aid](#) is provided as a PDF.

The only official copy of this file is the one on-line in SBMS.

Before using a printed copy, verify that it is the most current version by checking the *effective date*.

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KEEP CONTAINER CLOSED!!!

**Use secondary containment for
Liquid wastes**

LIST Chemical NAME(S)

LIST Chemical Hazards

LIST Phase

HAZARDOUS WASTE

NRWCF No. _____
Generator S. Ferrone Phone x5-531
Building 129 Dept. Code EP
Hazardous Contents (must include chemical name(s))
Methanol, benzene, o-xylene,
acetone, methyl ethyl ketone
NO FORMULAS! NO GENERIC NAMES!
NO SECRET FORMULAS!

Hazardous Properties (check all that apply)
 Ignitable Toxic
 Reactive Corrosive
 Other _____

Waste Form
 Solid Liquid
 Gas

90-Day Accumulation Area Placement Date _____
Out-of-Service Date _____
(PCBs ONLY)
WM Received Date _____

DO NOT add this date UNTIL
item is transferred to the local
90-Day Haz Waste Accum. Area

List this date only for PCB's

**Satellite Hazardous Waste
Accumulation Area Operator Aid**

Name: _____

Date: _____



Standards-Based Management System



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Universal Waste Accumulation Area Basic Rules

Effective Date: Jan 31, 2013

[Universal Waste Accumulation Area Basic Rules](#) is provided as a PDF.

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Universal Waste Accumulation Area Basic Rules

1. **CONTAINERIZE** all Universal Wastes and use container(s) compatible with waste accumulated.
2. Keep Universal Waste container(s) **CLOSED** (i.e., lid fastened/top installed/cardboard box securely closed)
 - Except when adding/removing wastes
3. **LABEL** Universal Waste container(s):
 - “Universal Waste-batteries”, “Universal waste-mercury thermostats”, “Universal waste-lamps (mercury)” and
 - Date when first item went inside container
4. **ACCUMULATION PERIOD** for Universal Wastes:
 - Within **6 MONTHS** from placement date of first item into container, send completed Nonradioactive Waste Control Form(s) to EWMSD
5. **INSPECT** area regularly
 - Ensure mismanagement does NOT occur (non-leaking batteries must be placed into closed containers)

For batteries only:

6. Only batteries containing hazardous constituents should be accumulated (e.g., lithium, mercury, Nickel-Metal-Hydride, Ni-Cd, silver, lead-acid)
7. Segregate different battery types
 - Facilitates recycling
 - Ensures wastes are compatible

Leaking universal waste and associated clean up debris must NOT be handled as universal waste (characterize appropriately).

**Questions?
Call Hazardous Waste/Mixed Waste SME or call EWMSD**

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Universal Waste Label

Effective Date: **Jan 31, 2013**

The Universal Waste Label is available through the Waste Management Program.

UNIVERSAL
WASTE –
BATTERIES

Date First Battery was
Placed in Container

____/____/____

Battery type



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90-Day Accumulation/Satellite Drum Checklist

Effective Date: Jan 31, 2013

[90-Day Accumulation/Satellite Drum Checklist](#) is provided as a Word file.

The only official copy of this file is the one on-line in SBMS.

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90-Day Hazardous Waste Accumulation Area Weekly Inspection Checklist

Effective Date: Jan 31, 2013

The [90-Day Hazardous Waste Accumulation Area Weekly Inspection Checklist](#) is provided as a Word file.

The only official copy of this file is the one on-line in SBMS.

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90-Day Hazardous Waste Accumulation Area Weekly Inspection Checklist

Location: _____

S (or ✓) = Satisfactory

U = Unsatisfactory (details required)

N/A = Not applicable

Date															
Initials															
Area Signs															
Hazardous Waste															
'90-Day Area Rules'															
'No Smoking'															
Emergency Contacts															
Bar Coded Area															
Label/Container															
"Hazardous Waste" on Label															
Accumulation Start Date on Label															
Hazardous Contents Identified															
Proper & Compatible Material															
Good Condition															
Properly Closed/Handled/Stored															
Wastes															
Segregated by Hazard Class and incompatibles separated															
Liquids in Secondary Cont. – 10% of all volumes (30% of total volume if 250 gals.) /100% of largest container, whichever is greater															
# of Haz. Waste Containers > 90 Days															
# of Haz. Waste containers > 60 days*															
Total # of Haz. Waste Containers*															
Total # of Non-Haz Waste Containers*															
Emergency															
Sinks, Floor Drains Plugged															
Emergency Communication Available – telephone/pull-box/2-way radio (line-of-sight/sign)															
Fire Extinguisher Available < 30' (Type A/B/C or D) as required															
Spill Control Equipment Available															
Contingency Plan Available in area and in an adjacent area															
PCBs															
Largest PCB Label on Container															
Out of Service Date < 30 Days															
6" by 6" PCB Sign Posted															
# of PCB wastes >20 Days*															
Total # of PCB Wastes*															

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Hazardous Waste 90-Day Area Registration Form

Effective Date: **Jan 31, 2013**

The [Hazardous Waste 90-Day Area Registration Form](#) is provided as a Word file.

The only official copy of this file is the one on-line in SBMS.

Before using a printed copy, verify that it is the most current version by checking the *effective date*.

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Hazardous Waste 90-Day Area Registration Form

Fill in the required information and send the form to Waste Management.

Department:

Building:

Location within building:

Area manager:

Phone extension:

Type(s) of waste to be stored in area*:

Location of entrance to area and accessibility restrictions:

***Note: Examples of types of waste include Liquids, Drums, Compactible and Non-Compactible.**

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Nonradioactive Waste Control Form (NRWCF)

Effective Date: Jan 31, 2013

A sample [Nonradioactive Waste Control Form \(NRWCF\)](#) is provided as a PDF. The controlled, numbered forms are available from the Environmental Protection Division (EPD).

The only official copy of this file is the one on-line in SBMS.

Before using a printed copy, verify that it is the most current version by checking the *effective date*.

[Questions/Comments](#)

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Nonradioactive Waste Control Form

WCF# _____

WM Use Only

Reviewed by: _____

Form Rec'd _____ EPA Codes _____

Waste Code _____ Storage Location _____

DOT Hazard Class _____

GENERAL INFORMATION

PLEASE PRINT USING BLUE OR BLACK INK

Generator Name _____ Life/Guest # _____ Ext. _____

Dept./Div. _____ Bldg. Of Waste Origin _____ Rm. # _____ Accumulation Area Bldg.# _____

Date waste was placed in 90-Day Area _____ / _____ / _____ Account # for waste disposal _____

WASTE QUANTITY Number of **Identical** Packages _____ Type of pkg. _____ (jar, drum, carboy, etc.)

Please use decimals Total volume of waste _____ ft³ Solid OR _____ gal. Liquid Total weight of waste _____ lbs.

WASTE CHARACTERIZATION Chemical Name _____ CMS# _____

Describe process that generated waste: _____ Check to return pkg. _____

Provide percent by volume of constituents for mixtures: (no. & size for PCB items) Check if unused, unopened chemical _____

_____	_____ %	_____	_____ %	_____	_____ %
_____	_____ %	_____	_____ %	_____	_____ %

List additional constituents on back.

Physical State Check only one: Solid Liquid Gas YES NO

PCBs Does the waste contain PCBs? If yes, _____ ppm
 For articles/equipment containing PCBs, provide date item was removed from service _____ / _____ / _____
 For drummed ballasts, capacitors, and transformers, provide number of pieces and individual weights in boxes above, or attach separate inventory sheet.

IGNITABILITY Is the flashpoint **less than 140° F (60° C)**?
 Is the waste an **Oxidizer**?

CORROSIVITY For **aqueous wastes**:
 Is the pH **less than or equal to 2.0 OR greater than or equal to 12.5**? _____ pH

REACTIVITY Is the waste **unstable, air or water reactive, or explosive**? If so, list in PRECAUTIONS
 Will the waste **liberate cyanide or sulfide**? If so, list in PRECAUTIONS

GENERAL Is the waste from a spill clean-up? Provide spill # if applicable. _____
Was the waste used as a solvent or degreaser? If so, which? _____

TOXICITY Based on your knowledge of the process and the information available to you (MSDS, manufacturer's specs, etc.) does the waste contain any of the following materials?

Arsenic	Chlorobenzene	Cresol	Endrin	Lindane	Pyridine	2,4,5-Trichlorophenol
Barium	Chloroform	2,4 D	Heptachlor & epoxide	Mercury	Selenium	2,4,6-Trichlorophenol
Benzene	Chromium	1,4 Dichlorobenzene	Hexachlorobenzene	Methoxychlor	Silver	2,4,5 TP (Silvex)
Cadmium	o-Cresol	1,2 Dichloroethane	Hexachlorobutadiene	Methyl Ethyl Ketone	Tetrachloroethylene	Vinyl Chloride
Carbon Tetrachloride	m-Cresol	1,1 Dichloroethylene	Hexachloroethane	Nitrobenzene	Toxaphene	
Chlordane	p-Cresol	2,4 Dinitrotoluene	Lead	Pentachlorophenol	Trichloroethylene	

PRECAUTIONS Note any special hazards: _____ (e.g., shock sensitive, water/air reactive)
Initial here if waste has been in a Radiological Area. If waste has been in a Radiological Area, a Process Knowledge Certification Form (PKCF) shall be attached to this WCF to define waste specific parameters.
Wastes Decayed in Storage (DIS) at the Point of Generation must be managed in accordance with BNL's Radioactive Waste Management Subject Area. DO NOT document DIS Wastes on this form.

CERTIFICATION I certify that, to the best of my knowledge, the information provided on this form is true and complete and that I am minimizing all the waste generated to the best of my ability. I also certify that no radioactivity has been added to this waste.

Generator's Signature _____ Date _____

BNL F2974C 6/00

Additional Constituents

INSTRUCTIONS:

General Information

Generator Information Name of person knowledgeable of and responsible for generation of waste. Generator's training in RCRIGEN3 must be current at the time of generation for waste to be picked up. Must also provide BNL Life/Guest number; Dept./Div. responsible for waste; building and room where originated; and date waste was placed in 90-Day Storage Area.

Waste Quantity Indicate separately the **number of identical packages** and the **type of package**. Provide the **quantity of the waste** by listing gallons for liquids and cubic feet for solids. The weight must be provided for all wastes in pounds.

Waste Characterization Provide the name of the waste and the process that generated it. If the waste is a mixture or listed as a trade name, list all constituents in the spaces provided. A Material Safety Data Sheet (MSDS) may also be attached to provide information on the waste's constituents. Check off all of the appropriate boxes pertaining to the waste's physical state and characteristics.

Precautions List any special hazards that should be considered when picking up and transporting waste (i.e., shock sensitive, unstable).

Process Knowledge Statement This form is only intended for use on wastes that have not had radioactivity added to them at any time. If the form is initialed to indicate the waste has been in a Radiological Area, a Process Knowledge Certification Form (PKCF) must be completed and attached to this form indicating that no radioactivity has been added to this waste.

For wastes that have never been in a radiological area, a PKCF does not have to be attached to this form.

Certification The certification at the bottom of the Waste Control Form must be signed by the waste generator. It certifies that all information provided is true and complete; that waste is being minimized to the extent possible; and that no radioactivity has been added to this waste.

The following web sites are also available to help simplify Waste Management and provide information on Pollution Prevention.

www.bnl.gov/wmd

The Waste Management Program home page provides a link to "How Do I Manage This Waste Stream," the BNL hazardous and radioactive waste pick-up schedule, contacts, and services available to BNL to assist with waste management needs.

www.bnl.gov/esd/pollutionpreve/

Environmental Services/Pollution Prevention home page provides information on BNL Pollution Prevention projects, funding opportunities, recycling information, as well as links to "How Do I Manage This Waste Stream" and other P2 resources.

Management System: [Environmental Management System](#)

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Process Knowledge Certification Form

Effective Date: Jan 31, 2013

A sample [Process Knowledge Certification Form](#) is provided as a PDF. This form is available from the [Waste Management Administrative Assistant](#).

The only official copy of this file is the one on-line in SBMS.

Before using a printed copy, verify that it is the most current version by checking the *effective date*.

[Questions/Comments](#)

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PROCESS KNOWLEDGE CERTIFICATION FORM

NOTE: If the waste is known to have added radioactivity, then quantify that activity using a Radioactive Waste Control Form (RWCF) in lieu of a Process Knowledge Certification Form (PKCF) and a Non-Radioactive Waste Control Form (WCF).

Check the appropriate box for the type of Radiological Area that the waste has been in, as defined in the BNL Radiation Control (RadCon) Manual.

List potential nuclides

- Contamination Area _____
- Radiation Area _____
- Airborne Radioactivity Area _____
- Radioactive Material Area _____

Yes No **Was this waste ever exposed to a beam or other source of particles (e.g., neutrons, protons, etc.) capable of causing activation?**
If YES, please give details of the exposure process.

Yes No **Was this waste ever in an area where the potential existed for contamination due to the presence of unencapsulated or unconfined radioactive material?**
If YES, please give details of the exposure process.

CERTIFICATION

Based on my knowledge of the origin, storage, use, potential exposure of the waste, and /or analysis, I certify that radioactivity has **NOT** been added to the waste, I also certify that, to the best of my knowledge, the information provided on the accompanying WCF is true and complete and that I am minimizing all waste to the best of my ability.

Signature of Waste Generator

Life #

Date

Attach this form to the WCF, transfer the WCF number to this form, and send both to your Facilities Support Services (FSS) Representative

Material Survey Log

FSS Representative

If waste is from an Radiological Area, survey the container for surface contamination utilizing BSS-SOP-1090, and check the appropriate box (Releasable or Unreleasable per DOE Order 5400.5).

Releasable **Unreleasable**

Document survey on reverse side