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## **Medical Waste Management Plan**

Todd Lane and Victoria VanderNoot

Prepared by  
Sandia National Laboratories  
Albuquerque, New Mexico 87185 and Livermore, California 94550

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## **Medical Waste Management Plan**

Todd Lane and Victoria VanderNoot  
Chemical and Radiation Detection Laboratory  
Sandia National Laboratories  
P.O. Box 969  
Livermore, CA 94551-0969

### **Abstract**

This plan describes the process for managing research generated medical waste at Sandia National Laboratories/California. It applies to operations at the Chemical and Radiation Detection Laboratory (CRDL), Building 968, and other biosafety level 1 or 2 activities at the site. It addresses the accumulation, storage, treatment and disposal of medical waste and sharps waste. It also describes the procedures to comply with regulatory requirements and SNL policies applicable to medical waste.

# MEDICAL WASTE MANAGEMENT PLAN

Chemical and Radiation Detection Laboratory  
Sandia National Laboratories/California

UNCLASSIFIED

May 2004

Author/Contact Person: Todd Lane

_____	Org. 8141	Phone 4-2057	Date
Signature			

Author/Contact Person: Victoria VanderNoot

_____	Org. 8141	Phone 4-2057	Date
Signature			

Approved by Owner: Malin Young

_____	Org. 8141	Phone 4-2949	Date
Signature			

Approved by: Len Napolitano

_____	Org. 8100	Phone 4-2615	Date
Signature			

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## **1.0 GENERAL**

### **1.1 Purpose**

This plan describes the process for managing research generated medical waste at SNL/California. It also describes the procedures to comply with applicable Federal and State laws and regulations and SNL policies applicable to medical waste, specifically the Medical Waste Management Act of the California Health and Safety Code. It covers CRDL activities that produce medical waste and sharps waste and does not pertain to the handling of medical waste generated in the on-site medical facility or by medical personnel.

### **1.2 Scope**

This plan applies to all CRDL activities that produce medical waste and sharps medical waste, generally limited to Building 968. This plan does not apply to the SNL/California Medical Services.

### **1.3 Ownership**

The manager of Department 8141 owns this plan.

## **2.0 RESPONSIBILITIES**

The protocols established in this plan apply to all personnel who generate or handle medical waste in the course of research activities at SNL/California.

### **2.1 Generators**

The generator of the medical waste is responsible for the proper management of medical waste he/she generates. These responsibilities include:

- Completing the SNL/California Hazardous Waste Generators training, completing the SNL/Bloodborne Pathogen training and understanding the contents of this plan as well as the Biohazardous Waste Management Plan, the SOP and OP for the autoclave and its operation
- Characterizing and segregating medical waste,
- Properly storing, treating and disposing of the waste, and
- Arranging for timely pickup of the waste, if required.

### **2.2 Managers**

The Department Managers will assure that personnel have the required training and are competent in the practices for managing their waste streams. Manager with projects that generate medical waste will make sure their staff is aware of the contents of this plan.

### **2.3 Department 8141**

As owner of this plan, the Manager of Dept. 8141, shall assure it remains current and complete. The owner certifies that the information is correct and complete. The owner shall update this plan as necessary.

Department 8141 has responsibility for the oversight, procedures and record-keeping for the plan. Department 8141 has responsibility to notify the Department of Health Services within 90 days from the effective date of implementing the medical waste management program and will continue to implement that program until the local governing body (Department 8141) terminates the election by resolution or ordinance or the Department of Health Services revokes the authority of the local agency to administer a medical waste management program. The local agency shall file the notice of termination with the department at least 180 days prior to the termination date. Department 8141 shall maintain a program that is consistent with Section 117820 and the regulations adopted pursuant to that section. With the approval of the Department of Health Services, the local agency may administer or enforce this part with respect to any person.

Department 8141 will undertake registration of the small medical waste generation. This registration is valid for 2 years and application for renewal of the registration will be made on or before the expiration date. The department shall maintain individual treatment, and tracking records, if applicable, for three years and shall report or submit to the enforcement agency, upon request, both of the following:

- (a) Treatment operating records.
- (b) An emergency action plan complying with regulations adopted by the department.

The medical waste management program shall include, but not be limited to, all of the following:

- Processing and reviewing the medical waste management plans and inspecting onsite treatment facilities in accordance with Chapter 4 (commencing with Section 117925) (for small quantity medical waste generators)
- Conducting an evaluation, inspection, or records review for all facilities or persons issued a large quantity medical waste registration pursuant to Chapter 5 (commencing with Section 117950)
- Inspecting medical waste generators in response to complaints or emergency incidents, or as part of an investigation or evaluation of the implementation of the medical waste management plan.
- Inspecting medical waste treatment facilities in response to a complaint or as part of an investigation or emergency incident
- Taking enforcement action for the suspension or revocation of medical waste generating activities
- Referring or initiating proceedings for civil or criminal prosecution of violations specified in Chapter 10 (commencing with Section 118335)
- Reporting in a manner determined by the Department of Health Services so that the statewide effectiveness of the program can be determined



## 3.0 CONTACT PERSONS

### 3.1 Primary Contact Person

Todd Lane, Department 8141 (Phone: 294-2057)

### 3.2 Backup Contacts

Victoria VanderNoot, Department 8141 (Phone: 294-1287)

David Brekke, Department 8517 (Phone: 294-2233)

Joe Schoeniger, Department 8141 (Phone: 294-2955)

### 3.3 Emergency or After-Hours Contact

In the event of any emergency or perceived emergency, call **911** (on a land line).

This will put the person in contact with the SNL/California Central Alarm Station (CAS).

For any after-hours concerns, contact the CAS directly at **4-2300**.

## 4.0 TYPES OF MEDICAL WASTE GENERATED

Sandia National Laboratories/California generates “small quantities” of sharps waste; laboratory wastes; waste containing human or animal bodily fluids (including, but not limited to, blood, serum and saliva) and other types of waste defined for the purposes of research into the diagnosis, treatment and/or immunization of humans or animals. **No medical wastes containing recognizable anatomical remains** will be produced and as a result, procedures to handle these types of waste are not addressed in this Plan. **No pathology and chemotherapeutic medical wastes** will be produced and as a result, procedures to handle these types of waste are not addressed in this Plan. **Estimated generation will be less than 50 pounds per month.** As such, Sandia National Laboratories/California’s CRDL does generate medical waste (small quantity generator per section 117760 of the Medical Waste Management Act) and is subject to the California Medical Waste Management Act of the California Health and Safety Code.

## 5.0 DEFINITIONS

"Medical Waste bag" means a disposable red bag marked with the international biohazard symbol and the word "Biohazardous Waste", which is impervious to moisture and has a strength sufficient to preclude ripping, tearing, or bursting under normal conditions of usage and handling of the waste filled bag. A biohazard bag shall be constructed of material of sufficient single thickness strength to pass the 165-gram dropped dart impact resistant test as prescribed by Standard D 1709-85 of the American Society for Testing and Materials and certified by the bag manufacturer. Upon autoclaving the word “autoclaved” shall appear on the bag.

"Medical waste" means waste that meets **both** of the following criteria:

1) The waste is composed of waste that is generated or produced as a result of any of the following actions:

- a) Diagnosis, treatment or immunization of human beings or animals
- b) Research pertaining to the activities in a)
- c) The production or testing of biologicals
- d) The accumulation of properly contained home-generated sharps waste that is brought by a patient, a member of a patient's family or by a person authorized by the enforcement agency, to a point of consolidation approved by the enforcement agency
- e) Removal of a regulated waste as defined in Section 5193 of Title 8 of the California Code of Regulations, from a trauma scene waste management practitioner.

2) The waste is either of the following:

- a) Biohazardous waste
- b) Sharps waste

"Common storage facility" means any designated accumulation area that is onsite and is used by small quantity generators otherwise operating independently for the storage of Medical waste for collection by a registered hazardous waste hauler.

"Container" means the rigid container in which the medical waste is placed prior to transporting for purposes of storage or treatment.

"Highly communicable disease" means diseases, such as those caused by organisms classified by the federal Centers for Disease Control and Prevention as Biosafety Level IV organisms, which, in the opinion of the infection control staff, the department, local health officer, attending physician and surgeon, or attending veterinarian merit special precautions to protect staff, patients, and other persons from infection.

"Highly communicable diseases" does not include diseases such as the common cold, influenza, or other diseases not representing a significant danger to non-immunocompromised persons.

"Infectious agent" means a type of microorganism, bacteria, mold, parasite, or virus, which normally causes, or significantly contributes to the cause of, increased morbidity or mortality of human beings.

"Medical Waste Permit" means a permit issued by the enforcement agency to a medical waste treatment facility.

"Medical waste registration" means a registration issued by the enforcement agency to a medical waste generator.

"Medical Waste Treatment Facility" means all adjacent land and structures, and other appurtenances or improvements on the land, used for treating medical waste or for associated handling and storage of medical waste. Medical waste treatment facilities are

those facilities treating waste pursuant to subdivision (a) or (c) of Section 118215. A medical waste treatment method approved pursuant to subdivision (d) of Section 118215 may be designated as a medical waste treatment facility by the department. (b)

“Adjacent,” for purposes of subdivision (a), means real property within 400 yards from the property boundary of the existing medical waste treatment facility.

“Mixed waste,” means mixtures of medical and non-medical waste. Mixed waste is medical waste, except for all of the following:

- (a) Medical waste and hazardous waste is hazardous waste and is subject to regulation as specified in the statutes and regulations applicable to hazardous waste.
- (b) Medical waste and radioactive waste is radioactive waste and is subject to regulation as specified in the statutes and regulations applicable to radioactive waste.
- (c) Medical waste, hazardous waste, and radioactive waste is radioactive mixed waste and is subject to regulation as specified in the statutes and regulations applicable to hazardous waste and radioactive waste.

"Offsite" means any location, which is outside the SNL/California boundaries.

"Onsite" means a medical waste treatment facility on the SNL/California site.

"Sharps container" means a rigid, puncture-resistant container which, when sealed, is leak resistant and cannot be reopened without great difficulty.

"Sharps waste" means any device having acute rigid corners, edges, or protuberances capable of cutting or piercing, including, but not limited to, all of the following:

- (a) Hypodermic needles, hypodermic needles with syringes, blades, needles with attached tubing, Pasteur pipettes, etc.
- (b) Broken glass items.

“Small quantity generator” means a medical waste generator that generates less than 200 pounds of medical waste per month.

"Storage" means the holding of medical wastes at a designated accumulation area.

"Treatment" means any method, technique, or process designed to change the biological character or composition of any medical waste so as to eliminate its potential for causing disease.

## 6.0 MEDICAL WASTE SEPARATION AND ACCUMULATION

*Principal Investigator/Supervisor is ultimately responsible for ensuring proper handling, storage, treatment, and disposal of all medical waste generated in their facility.*

Medical wastes and hazardous wastes are separated by laboratory personnel (see Definitions, Section 5). There are four basic waste types addressed in this plan:

- Solid Medical Waste
- Liquid Medical Waste
- Combined Medical Waste
- Sharps Waste

Each laboratory engaged in medical waste generation will have at least one medical waste container and a medical waste sharps container if these types of waste are generated. All containers will be appropriately labeled as to what materials can and cannot be discarded in each container and will clearly discriminate between medical waste and only biohazardous waste.

### 6.1 Solid Medical Waste

Solid medical waste, except for sharps capable of puncturing or cutting, shall be contained during accumulation and prior to treatment and disposal in *red* biohazard bags. During accumulation of waste, these biohazard bags will be placed in secondary containers that are rigid, leak-proof with tight-fitting lids. The secondary containers will be labeled with “Medical Waste” and “Biohazardous” or “Biohazard” and the International Biohazard Symbol. These marking will be clearly visible. Prior to autoclaving, the bags will be tied to prevent spillage during transport.

### 6.2 Liquid Medical Waste

Liquid medical waste will be contained separately at the point of generation using appropriate containers to collect the liquid waste. Liquid waste will be stored in a container with a lid and then autoclaved or chemically disinfected prior to disposal. The liquid waste containers will be labeled with “Medical Waste” and “Biohazardous” or “Biohazard” and the International Biohazard Symbol on the lid and/or sides to assure they are visible from any lateral direction.

### 6.3 Combined Medical Waste

*Every effort will be made to avoid generating waste that contains both a RCRA hazardous and medical components. The Biosafety Officer and the Hazardous Waste Management Group shall be notified prior to the generation of this waste.*

In the course of research and testing activities at the Chemical and Radiation Detection Laboratory (CRDL) or elsewhere on site, it is possible to generate waste containing both a RCRA regulated component and a medical component. In such cases, the RCRA component of the waste takes precedence. Waste management considerations must be

taken into consideration during the planning stages of the experiment. There must be an approved path for disposal of every waste type anticipated prior to commencing work.

The key to managing combined waste is to not generate it in the first place. If at all possible the experimental protocol should incorporate a final decontamination step to inactivate the biological component of the matrix. This may employ standard methods such as chemical disinfection or steam sterilization. These common lab practices prevent cross contamination of other work and thus become part of the experimental protocol--not waste treatment. This will eliminate the biological agent/toxin and, therefore, preventing the formation of combined waste. This practice does not require any approval.

If there is no practical way to avoid producing a solid or liquid waste that contains hazardous and/or radioactive components as well as medical components, it must be segregated from other medical waste. This waste must be collected in a separate container, labeled for both the biohazard and other hazardous component. The same requirements accumulation and storage apply as for medical waste. An electronic hazardous waste tag (WDDR) will accompany this waste beginning at the time of initial generation.

#### **6.4 Sharps Waste**

Due to the inherent hazard, particular attention shall be paid to sharps. Waste sharps will be collected at the site of generation.

- Medical sharps waste shall be contained in approved sharps containers labeled with the International Biohazard Symbol and the word "Biohazard." These shall be leak-proof puncture resistant containers that are labeled "Sharps Waste."
- Chemically contaminated sharps waste also must be collected in rigid sharps containers. These containers do not need to have the biohazard markings.

All sharps containers must possess an electronic waste tag (WDDR).

#### **6.5 Storage**

**Medical waste will not normally be stored for extended periods. Waste will be autoclaved in a timely fashion as soon as the containers become full or at least once every 7 days.**

If it becomes necessary to store medical waste, the following guidelines will be adhered to.

##### **Maximum Storage Times for Medical Waste:**

Medical waste and filled medical sharps containers shall not be stored for more than 7 calendar days at a temperature above 32 degrees Fahrenheit or zero degrees Celsius. This 7-day period begins when any waste has been placed in the container (or upon filling a sharps container). Medical waste may be stored for a maximum of 90 days at or below

32 degrees Fahrenheit or 0 degrees Celsius. The 90-day period begins when any waste has been placed in the container. If the materials are stored at or below 32 degrees Fahrenheit or 0 degrees Celsius the freezers will have the temperature checked weekly to ensure that they are functioning properly.

### **Security and Placarding of Medical and Medical Waste Storage Facilities**

The storage area used to store medical waste for accumulation must be secured to prevent access by unauthorized persons. Warning signs, stating in English that “Caution-Biohazardous Waste Storage Area- Unauthorized Persons Keep Out” and in Spanish, “Cuidado—Zona De Residuos—Biologicos Peligrosos—Prohibida La Entrada A Personas No Autorizadas,” must be posted on entry doors. Signs must be readily legible during daylight from a distance of at least 25 feet. Storage areas must be secure to deny access to unauthorized persons, animals, insects, wind and rain.

## **7.0 ONSITE TREATMENT AND DISPOSAL**

Medical waste generated by Sandia National Laboratories, California will be treated on-site primarily in the autoclave located in Building 968 (Room 114). The autoclave in Room 114 as well as the second site autoclave, located in Room 125, will be certified pursuant to Section 117930. The autoclaves and accumulation sites are subject to a biennial inspection by the Department of Health Services pursuant to Section 117938.

Once the storage containers are full or reached the allowable storage time, the medical waste will be taken to the autoclave in Building 968 for treatment using procedures described in the Autoclave Operating Procedure (Document # OP471801) and the Autoclave Standard Operating Procedure (Document #SP473533). Points addressed in these documents include:

- **Recording or indicating thermometers** shall be checked during each complete cycle to ensure the attainment of **121\* Centigrade** (250\* Fahrenheit) for **at least one-half hour**, depending on the quantity and density of the load, to achieve sterilization of the entire load. Thermometers shall be checked for calibration annually.
- **Heat-sensitive tape**, or another method acceptable to the enforcement agency, shall be used on each biohazard bag or sharps container that is processed onsite to indicate the attainment of adequate sterilization conditions.
- The **biological indicator** *Bacillus stearothersophilus*, or other indicator of adequate sterilization as approved by the department, shall be placed at the center of a load processed under standard operating conditions at least monthly to confirm the attainment of adequate sterilization conditions.
- The **type and amount of medical waste will be recorded** for each treatment cycle.
- Records pertaining to medical waste treatment and calibration shall be maintained as part of the facility's files and **records for a period of three years**

Only trained, approved personnel may operate the autoclave. Access to the autoclave rooms is controlled. The entrances to Building 968 are locked and under badge reader control at all times. The door to rooms 114 and 125 are automatically locked after normal working hours.

The procedure and information related for autoclaving waste is provided in treatment using procedures described in the Autoclave Operating Procedure (Document #OP471801) and the Autoclave Standard Operating Procedure (Document # SP473533).

### **7.1 Solid Medical Waste**

Solid medical waste will be autoclaved and disposed of in the municipal trash. The waste will remain in the red bag when autoclaved and discarded.

Select Agents: Waste that contains biotoxins on the select agent list will be autoclaved first and then disposed of as chemically hazardous waste, per SOP (SP473267).

### **7.2 Liquid Medical Waste**

Treated medical waste in liquid or semi-liquid state can be discharged to the sanitary sewer if it is not a mixed waste containing radioactive, hazardous, or untreated medical waste. A medical waste of the following types (Subdivision (a) of Section 117635) may be treated by a chemical disinfection if the medical waste is liquid or semi-liquid and the chemical disinfection method is recognized by National Institutes of Health, the Centers for Disease Control and Prevention, or the American Biological Safety Association. The medical waste that may be treated by chemical disinfection includes, but not limited to, the following:

- Cultures and stocks of infectious agents from research and industrial laboratories.
- Wastes from the production of bacteria, viruses, and spores, discarded live and attenuated vaccines used in human health care or research, and discarded animal vaccines.

**Only hypochlorite bleach has been pre-approved for disposal down the drain for discharge into the public sewer system. All other chemical disinfectants or waste with any additional hazardous properties must be picked up by ES&H for disposal as hazardous waste, unless otherwise approved.**

Other disinfectants may be approved on a case-by-case basis. It should be verified that the disinfectant is a certified, approved method. The default mode of disposal (for disinfectants other than bleach) is as chemical hazardous aqueous waste. Prior approval must be obtained prior to disposing of these solutions down the sink.

Select Agents: Liquid medical waste containing biotoxins on the select agent list will be autoclaved and then disposed of as chemically hazardous waste, per SOP (SP473267).

### **7.3 Combined Medical Waste**

As stated in Section 6.3, every effort should be made to avoid generating combined medical waste via the experimental protocol.

If there is not feasible way to prevent the production of a combined waste, the benchtop treatment rule (California AB 966; California Health and Safety Code Section 25200.3.1) may be employed. This rule allows small quantities of laboratory waste to be treated by established practices without permitting or other regulatory involvement. The following criteria must be met.

- Maximum of five gallons or 18 kilograms of waste (per batch)
- Laboratory hazardous waste (RCRA or non-RCRA)
- Treatment must be performed at a location that is as close as is practical to the location where the laboratory hazardous waste is generated
- Treatment is conducted within 10 calendar days after the date the laboratory hazardous waste is generated
- The laboratory hazardous waste treated shall be from a single procedure, or set of procedures that are part of the same laboratory process
- Treatment shall be by an established prudent practice
- The person performing the treatment must have knowledge of the waste, its hazards and the treatment method
- Treatment and training records for all persons performing treatment shall be maintained for a minimum of three years.

The investigator must demonstrate that the disinfection step of the experimental protocol or any benchtop treatment of waste is safe and effective. Specifically, the investigator must provide assurance that the addition of disinfectant does not result in an adverse chemical reaction, producing toxic gases or other hazardous conditions. **Approval must be obtained from the CRDL Facility Manager and Hazardous Waste Management Group prior to conducting benchtop treatment.**

Under no circumstances shall combined medical waste be autoclaved without prior approval.

Once the medical component of the waste is eliminated, the hazardous waste will be managed as RCRA waste.

## **7.4 Sharps Waste**

### **7.4.1 Medical Sharps Waste**

Medical sharps waste must be collected at the site of generation, accumulated, and stored in leak-proof, puncture-resistant sharps containers. These containers must be approved for sharps waste and be labeled for biohazard and sharps. An electronic waste tag (WDDR) must accompany the container as soon as the first item is placed in it.

Once the container of sharps waste has been autoclaved, the biohazard labeling must be defaced (made unrecognizable) and the word “Autoclaved” must be placed on the container (either by initial application of autoclave tape or marking the container by hand afterward). The sharps (remaining in the sharps container) will then be disposed of as hazardous waste.



#### **7.4.2 Non-Medical Sharps Waste**

Non-medical (chemically hazardous) sharps waste must be collected in a leak-proof, puncture-resistant-approved sharps containers. However, no special color or biohazard labeling is necessary. An electronic waste tag must accompany the container as soon as the first item is placed in it. Once the container is full, it is disposed of as regular hazardous waste.

### **8.0 RECORD RETENTION**

All tracking documents, treatment records, and other required documentation will be maintained for at least 3 years.

### **9.0 CLOSURE PLAN**

Upon closure of the facility, all equipment, facilities, and non-disposable items used in the operation of the treatment process will be decontaminated either by steam sterilization or by disinfection with a commercial quaternary ammonium salt disinfectant, mixed and used per the manufacturer's directions.

### **10.0 EMERGENCY ACTIONS**

General guidelines for cleaning up medical spills are provided in Appendix A.

#### **10.1 Personnel Exposures or Contamination**

- Remove the exposed or contaminated personnel from the contaminated area, unless it is unsafe to do so due to the medical condition of the victim or potential hazard to the rescuer
- If the incident occurs during normal working hours, notify ES&H the SNL Medical Center
- Administer first aid as appropriate
- Remove any contaminated clothing
- Proceed to the nearest emergency eyewash/shower to flush contamination from the eyes and skin
- Stand by to provide emergency information.

In the event of a spill, unplanned release, or potential release of medical waste to the environment, the ES&H Hotline (4-3724) will be contacted immediately. If the event occurs after normal business hours, notification should be made to the CAS at 4-2300. The CAS will make the necessary notifications and initiate necessary actions to mitigate or remediate the situation.

## **10.2 Contamination of Equipment and Facilities**

- DO NOT attempt any cleanup or decontamination procedures alone or without wearing Personal Protective Equipment (PPE), including respiratory protection if respiratory pathogens may be present. Unless the spill is minor and well defined do not clean up the material without ES&H approval.
- Avoid spreading contamination by limiting access to the contaminated equipment or area only to individuals who are properly protected and trained to respond to all types of hazards that exist (e.g., biological, radioactive, and chemical).
- Report details and request assistance by contacting ES&H (ES&H Hotline, 4-3724) if the incident is during normal working hours. If the incident occurs after hours contact the CAS immediately at 4-2300.
- If the spill involves a liquid, place absorbent material on the spill and decontaminate with an approved disinfectant for a minimum of a 30-minute contact time.
- If sharps are involved, pickup using a mechanical means, such as tongs, forceps, or dustpan and broom. Do not use your hands to pickup any sharp items, even if gloves are worn.
- Decontaminate the equipment and area under ES&H direction using appropriate methods.
- Stand by to provide emergency information and assistance to Emergency Response Personnel.

## **10.2 Release to the Environment (air, water, soil)**

- Stop the release, if safe to do so.
- Follow procedures described above for contamination of equipment and facility.
- Make immediate notifications.

## **10.4 Equipment Failure**

There are two autoclaves in building 968: rooms 114 and 125. If the primary equipment in Room 114 fails, medical waste will be handled by one of the following methods:

- a) Complete the sterilization at the other autoclave in the building (Room 125)
- b) Medical waste can be stored at temperatures greater than 32 °F (0°C) for up to 7 days prior to treatment.
- c) The medical waste may also be stored frozen for up to 90 days. Attempts will be made to complete repair within this time.

## **10.5 Natural Disasters**

In the event of a natural disaster, all research generating medical waste will be suspended until adequate medical waste treatment becomes available.

SNL/California autoclaves use electrical power to generate steam. Building 968 has auxiliary generators to provide backup power to autoclaves. In the event of an electrical or other problems related to natural disasters, the lab users need to coordinate with the

Hazardous Waste Management Group (contact through the ES&H Hotline, 4-3724) to address waste handling and disposal options.

In the event of a spill, the medical material will be disinfected using 10% bleach solution or another approved disinfectant for a 30-minute contact time and cleaned. Response to significant spills or releases of medical agents will be coordinated with ES&H (4-3724).

Personnel performing disinfection procedures shall be equipped with the appropriate personal protective equipment (PPE) for the situation, but at a minimum shall wear chemical eye protection and latex gloves. Protective clothing, shoes, and a face shield may be required for large quantities of medical materials. The Industrial Hygiene Group should be consulted for guidance on proper PPE.

### **10.6 Decontamination of Reusable Secondary Containers**

Reusable secondary containers (garbage cans, bins, etc.) should be decontaminated each time they are emptied unless they are protected from contamination by disposable liners, bags, or other devices removed with the waste. These containers should be maintained in a clean and sanitary manner.

Approved methods of decontamination include, but are not limited to, agitation to remove visible soil combined with one of the following procedures:

- Exposure to hot water of at least 82 °C (180 °F) for a minimum of 15 seconds
- Exposure to chemical sanitizer by rinsing with, or immersion in, one of the following for a minimum of 3 minutes:
  - Hypochlorite solution (500 ppm available chlorine)
  - Phenolic solution (500 ppm of active agent)
  - Iodoform solution (100 ppm available iodine)
  - Quaternary ammonium solution (400 ppm active).

## **11.0 TRAINING PLAN**

Personnel handling medical waste must be properly trained. Personnel are required to annually complete Hazardous Waste Generator Training (ENV 233) and Biosafety Training for SNL/CA (BIO 105 – CA). Specific training pertaining to medical waste handling operations will cover:

- Definitions
- Regulatory requirements
- Biosafety levels
- Exposure control plan
- Methods of compliance
  - o Universal precautions
  - o Engineering controls & work practices
  - o Laboratory practices
  - o Personal protective equipment

- Post exposure evaluation
- Sharps injury log
- Emergency response
- Medical waste management
- Decontamination of media.

#### **Medical Waste Training:**

- Definition of medical waste
- SNL Medical Waste Management Plan review
- Safe work practices
- Selection and use of personal protective equipment (PPE)
- Signs and labels
- Collection, treatment and disposal of medical waste
- Sterilization and disinfection techniques.

#### **Safe Work Practices**

- Use appropriate personal protective equipment (PPE)
- Follow Standard Operating Procedures
- Use good personal hygiene.

## APPENDIX A

### GENERAL PROCEDURES FOR SPILL CLEANUP

*DO NOT attempt any cleanup or decontamination procedures alone or without wearing Personal Protective Equipment (PPE), including respiratory protection if respiratory pathogens may be present. Unless the spill is minor and well defined do not clean up the material without ES&H approval. Notify ES&H (4-3724) immediately of any spills that have the potential for serious health or safety implications.*

1. Determine the nature and the extent of the spill—what has been spilled (i.e., the chemical or biological agent), its concentration, quantity, and location.
2. Evacuate the area immediately (if necessary to prevent exposure of additional persons to a particularly toxic or virulent agent).
3. Provide immediate medical treatment to those exposed (if warranted by the nature of the exposure).
4. Secure and post the spill area to prevent additional exposures and spread of the spill.
5. Put on appropriate personal protective equipment (PPE).
  - a. Always: glasses, gloves, lab coat or apron, shoe coverings.
  - b. As appropriate (depending on the nature of the spill): face shield or goggles, respirator, boots.
6. Contain the spill (e.g., by dyking or ringing with absorbent material).
7. Decontaminate the spilled material if warranted (i.e., it is often prudent to decontaminate the spilled material before it is picked up). Disinfect using 10% bleach solution or another approved disinfectant (see section 10.6) for a thirty-minute contact time.
8. Pick up the spilled material:
  - a. Solids:
    1. Pick up by mechanical means (e.g., pan and brush, forceps).
    2. Discard as medical, hazardous, or radioactive waste as appropriate.
  - b. Liquids:
    1. Absorb the spill with absorbent material as appropriate (e.g., paper towels, vermiculite).
    2. Discard as medical, hazardous, or radioactive waste as appropriate.
  - c. Broken glass and other sharps:
    1. Pick up by mechanical means (e.g., forceps, pan and brush), never by hand.

2. Dispose as sharps.
9. Decontaminate the area using an appropriate disinfectant (see Section 10.6).
10. Rinse/clean the area (if necessary) and absorb and collect waste materials.
11. Dispose of collected material and cleanup materials as medical, hazardous, or radioactive waste as appropriate.
12. Decontaminate reusable items (such as dust pans, brushes, forceps).
13. Remove personal protective equipment (PPE).
  - a. Discard disposable items as medical, hazardous, or radioactive waste as appropriate.
  - b. Decontaminate reusable items (such as heavy rubber gloves, boots, aprons, gowns) before cleaning or laundering.
14. Wash all exposed skin thoroughly.
15. Perform medical treatment and follow up as appropriate for the particular type of material.

### **Spill Outside of Building 968**

If medical material is spilled outside Building 968, immediately notify the CAS (4-2300), ES&H (4-3724) and the Biosafety Officer. If the Biosafety Officer is not available, notify the contacts in Section 3 of this plan.

## REFERENCES

- 1) Environment, Safety, and Health Manual, MN471001, Latest Edition  
<http://www-irn.sandia.gov/corpdata/esh-manuals/mn471001/m001toc.htm>
- 2) ES&H SOP GN470094 “Handling Chemicals at SNL/CA” Bldg 968  
<http://www-irn.sandia.gov/corpdata/esh-manuals/gn470094/g094.htm>
- 3) ES&H OP471697 “Chemical and Radiation Detection Laboratory (CRDL)” Bldg 968
- 4) Biosafety in Microbiological and Biomedical Laboratories (BMBL) 4th Edition, Center for Disease Control  
<http://www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm>
- 5) 29 CFR 1910.1450, “Occupational Exposure to Hazardous Chemicals in Laboratories”  
[http://www.osha-slc.gov/OshStd\\_data/1910\\_1450.html](http://www.osha-slc.gov/OshStd_data/1910_1450.html)
- 6) 32 CFR 627, “The Biological Defense Safety Program, Technical Safety Requirements”  
<http://www.jya.com/cwm/32cfr627.txt>
- 7) LLNL FSP-360.01 “Working with Biohazardous Materials,” 11/92  
Room 133, Bldg MO51
- 8) Guidelines for Waste Generators at SNL/CA, GN470075  
<http://www-irn.sandia.gov/corpdata/esh-manuals/gn470075/g075.htm>
- 9) Medical Waste Management Act, California Health and Safety Code  
[http://www.dhs.cahwnet.gov/ps/ddwem/environmental/Med\\_Waste/medwasteindex.htm](http://www.dhs.cahwnet.gov/ps/ddwem/environmental/Med_Waste/medwasteindex.htm)
- 10) Autoclave Operation and Safety (Standard Operating Procedure #SP473533) and Operation and Maintenance of the Consolidated Model SR24C Electrically Heated Sterilizer (Operating Procedure #OP471801)

## **Distribution**

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