Medical Waste Manual

California State University, Chico

The Department of Environmental Health and Safety
February 4, 2014

TABLE OF CONTENTS

Section Page

1.0 Introduction 1-1

2.0 Containment, Storage, and Disposal of Biohazardous Waste 2-1
- 2.1 Waste Containment 2-1
- 2.2 Storage Methods 2-3
- 2.3 Storage Times and Temperature 2-3
- 2.4 Disposal 2-3
- 2.5 Special Handling Requirements 2-4
- 2.6 Disinfection and Spill Procedures 2-5
- 2.7 Reusable Containers 2-5
- 2.8 Waste Accumulation Area Signs 2-5

3.0 Treatment of Biohazardous Waste 3-1
- 3.1 Treatment Methods 3-1
- 3.2 Recordkeeping 3-2
- 3.3 Training 3-3
- 3.4 Compacting/Grinding Waste Materials 3-3
- 3.5 Hypodermic Needles 3-3
- 3.6 Infectious Animal Waste 3-3
- 3.7 Preserved Specimens 3-3
- 3.8 Emergency Action Plan 3-3

4.0 Glossary 4-1

5.0 Attachments 5-1
- Attachment 1 Registration and Certification 5-2
- Attachment 2 Waste Hauler and Disposal Facility Information 5-3
- Attachment 3 Medical Waste Autoclave Procedures and Log 5-4
- Attachment 4 Campus Autoclave Operators 5-6

List of Figures

Figure 2-1 Medical (Biohazardous) Waste Disposal Flow Chart 2-2
Figure 2-2 Guidelines for Disposal of Biomedical Waste 2-4

1.0 INTRODUCTION

The California Medical Waste Management Act requires generators of medical waste to develop a plan that specifies the procedures that are utilized in handling, storing, treating, transporting, and disposing of medical waste. This plan describes California State University, Chico's (the University's) policies and procedures to comply with the Act.

The Department of Environmental Health and Safety (EHS) is responsible for developing and implementing the Medical Waste Management Plan. Environmental Health and Safety will apply for the required permits, pay fees, develop contracts for disposal services and transportation, and provide assistance to the departments to insure compliance (Attachment 1 contains CSU, Chico's current Registration and Certification). Each department is responsible for complying with all the handling, containment, and storage of wastes that are generated by their department.

For the purpose of this plan the following information is provided:

Responsible Person:	Marvin Pratt, RSO, CHMM
Business Address:	400 West First Street, Chico, CA 95929-0019
Type of Business:	4-year University, SIC code - 8221
Estimated Monthly Waste Amount:	320 pounds
Types of Wastes Generated:	Biohazardous waste, medical waste, sharps waste pathological waste, and pharmaceutical waste.

NOTE: For the purposes of the manual the term biohazardous waste will be synonymous with medical waste.

2.0 CONTAINMENT, STORAGE AND DISPOSAL OF BIOHAZARDOUS WASTE

2.1 Waste Containment

All medical wastes are contained in sharps containers or biohazardous bags before being placed in a secondary container. Each biohazardous waste stream generated on campus will follow the flow chart entitled "Medical Waste Disposal Flow Chart" in Figure 2-1 (see page 2-2).

To containerize or store medical waste, the University shall do all of the following:

- Medical waste shall be contained separately from other waste at the point of origin in the producing facility. Sharps containers may be placed in biohazard bags or in containers lined with biohazard bags.

- Biohazardous waste shall be contained in a red biohazard bag and conspicuously labeled with the words "Biohazardous Waste" or with the international biohazard symbol and the word "Biohazard."

- Sharps waste shall be contained in a sharps container.

- Biohazardous waste shall be segregated to insure proper treatment of the waste pursuant to Section 3.1 of this document.

2.1.1 Biohazard Bags

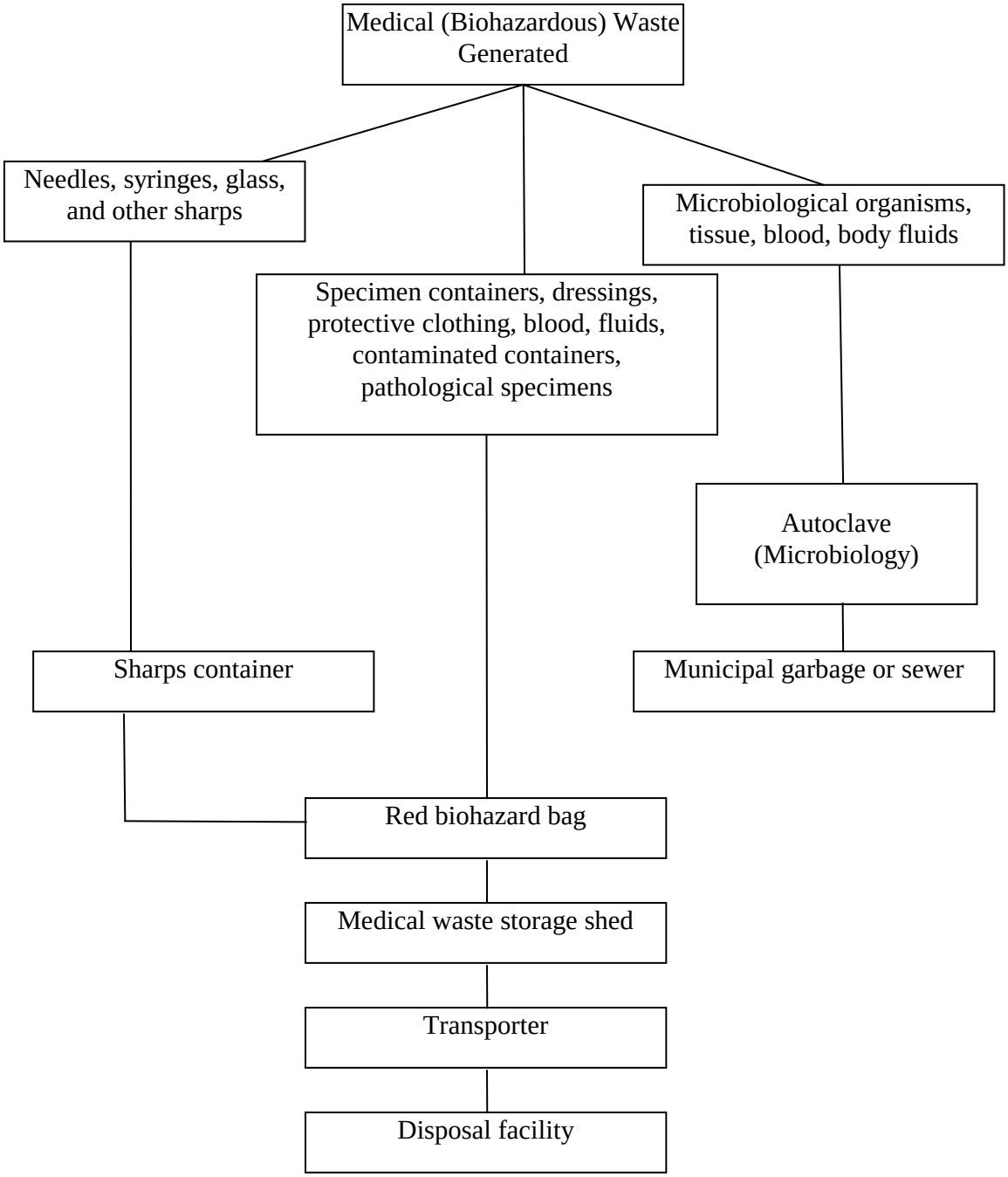
To containerize biohazardous waste in a biohazard bag, a person shall do all of the following:

- The bags shall be tied or taped to prevent leakage or expulsion of contents during all storage, handling, and transport.

- Biohazardous waste shall be bagged in accordance with these guidelines and placed for storage, handling, or transport in a rigid container which may be disposable, reusable, or recyclable. Containers shall be leak resistant, have tight-fitting covers, and be kept clean and in good repair. Containers may be recycled with the approval of the enforcement agency. Containers may be of any color and shall be labeled with the words "Biohazardous Waste" or with the international biohazard symbol and the word "Biohazard" on the lid and on the sides so as to be visible from any lateral direction. Containers meeting the requirements specified in Section 66840 of Title 22 of the California Code of Regulations, of December 31, 1990, may also be used until the replacement of the containers is necessary or existing stock has been depleted.

- Bagged biohazardous waste shall not be removed from the biohazard bag until treatment is completed, except to eliminate a safety hazard. Biohazardous waste shall not be disposed of in a landfill before being treated as prescribed by one of the methods in Section 3.1.

Figure 2-1, Medical (Biohazardous) Waste Disposal Flow Chart



2.1.2 Sharps Containers

To containerize sharps, a person shall do all of the following:

- Place all sharps waste into an approved sharps container.
- Label sharps containers with the words "Sharps Waste" or with the international biohazard symbol and the word "Biohazard."
- Tightly tape the lids of full sharps containers closed, ready for disposal, to preclude loss of contents.
- Store sharps containers ready for disposal for no more than seven (7) days.

2.2 Storage Methods

The wastes generated on campus are to be placed immediately in a biohazard bag or a sharps container. At the end of each day, the biohazard bags are to be sealed by the appropriate staff or faculty member. These bags are to be moved to and placed in a secondary container located in the medical waste storage shed (see Section 2.3 for storage times). Sharps containers remain in the labs until they are full and they are then sealed and placed in a biohazard bag.

2.3 Storage Times and Temperatures

Biohazardous waste shall not be contained or stored above 0 degrees Centigrade (32 degrees Fahrenheit) for more than seven (7) days without the written approval of the enforcement agency. A person may store biohazardous waste at or below 0 degrees Centigrade for not more than 90 days before treatment with the written approval of the enforcement agency. If the facility is unable to control the odor from its stored waste and the odor poses a public nuisance, the Department of Health Services (DHS) may require more frequent removal.

2.4 Disposal

Figure 2-2, next page, is a guideline for disposal of the various types of biomedical wastes. If a waste material is not listed in Figure 2-2, and you are unsure how to properly dispose of it, please contact EHS at extension 5126 for further guidance. All of the medical waste generated on campus, except for waste in departments that are permitted to perform treatment, is transported to a permitted disposal facility.

Figure 2-2, Guidelines for Disposal of Biomedical Waste

Waste Type	Method of Disposal		
	Biohazard Bags	Sharps Containers	Municipal
Blood, blood elements, vials of blood, specimens for microbiologic culture, used culture plates, and used culture tubes	X		
Infectious animal waste	X		
Containers of SCF, synovial, pleural, peritoneal, pericardial, and amniotic fluid	X		
Fluid-filled container from patients	X		
Surgical pathological specimens	X		
Needles/syringe units, needles, scalpels, suture needles, etc.		X	
Glass slides and pipettes		X	
Empty urine cups, empty stool containers, and other empty specimen containers, empty urinary drainage bags, empty bedpans	X		
Dressings, bandages, cotton balls, peripads, diapers, cotton swabs, etc.	X		
Used gloves, aprons, masks, shoe and head covers	X		
Paper towels for hand washing			X
Paper packaging materials			X
Materials used to clean-up decontaminated or non-hazardous spills			X

2.5 Special Handling Requirements

2.5.1 Anthropology

The Anthropology Department generates human tissue. As the waste is generated, it is placed in a biohazard bag and stored in a freezer at 0 degrees Centigrade or less until arrangements are made to transport the waste to the medical waste storage shed.

Once accumulated in a frozen state and bagged, the waste is transferred to a rigid, lined plastic secondary pathological waste container and moved to the medical waste storage shed.

2.5.2 Agriculture, Anthropology, and Biological Sciences

The departments of Agriculture, Anthropology, and Biological Sciences handle animal specimens that may potentially carry infectious diseases. These animals are road kills or may have been trapped or shot by the Department of Fish and Game or by another entity. A specimen believed to carry a pathological disease will not be accepted by the University. The EHS Department advises that all students, faculty, and staff use prudent precautions when handling donated animals, including the use of gloves and other protective clothing. While these prudent precautions may mirror Universal Precautions, other hazards need to be considered as well.

2.6 Disinfection and Spill Procedures

All secondary containers are lined with biohazard bags; therefore, disinfecting is not normally required. However, if there is a spill or if for some reason disinfecting is necessary, the procedures listed below shall be followed:

- A person shall thoroughly wash and decontaminate reusable rigid containers for medical waste by a method approved by the enforcement agency each time they are emptied, unless the surfaces of the containers have been completely protected from contamination by disposable liners, bags, or other devices removed with the waste. These containers shall be maintained in a clean and sanitary manner.

Approved methods of decontamination of containers or spilled waste 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 degrees Centigrade (180 degrees Fahrenheit) for a minimum of 15 seconds.
- Exposure to chemical sanitizer by rinsing with, or immersion in, one of the following for a minimum of three (3) minutes:
    - Hypochlorite solution (500 ppm available chlorine).
    - Phenolic solution (500 ppm active agent).
    - Iodoform solution (100 ppm available iodine).
    - Quaternary ammonium solution (400 ppm active agent).

2.7 Reusable Containers

A person shall not use reusable pails, drums, dumpsters, or bins used for medical waste or for containment of solid waste for other purposes, except after being decontaminated by the procedures specified above and removal of all medical waste labels.

2.8 Waste Accumulation Area Signs

- Waste containers shall be secured so as to deny access to unauthorized persons and shall be marked with warning signs on, or adjacent to, the exterior of entry. Any enclosure or designated accumulation area used for the storage of medical waste containers shall be secured so as to deny access to unauthorized persons and shall be marked with warning signs on, or adjacent to, the exterior of entry doors, gates, or lids. The storage area may be secured by use of locks on entry doors, gates, or receptacle lids.

- Warning signs shall state the following in English,

  "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"

  or in another language, in addition to English, determined to be appropriate by the University or the Department of Health Services (DHS). Warning signs shall be readily legible during daylight from a distance of at least 25-feet.

- Any enclosure or designated accumulation area shall provide protection of the medical waste from animals and natural elements, and shall not provide a breeding place or a food source for insects or rodents.

- A person shall not use a trash chute to transfer medical waste.

3.0 TREATMENT OF BIOHAZARDOUS WASTE

3.1 Treatment Methods

There are two treatment methods utilized at the University: autoclaving, which takes place in the Microbiology Department; and sewage discharge, which is used for liquid and semi-liquid wastes that meet the requirements of this section.

A person generating or treating medical waste shall ensure that the medical waste is treated by one of the following methods, thereby rendering it solid waste, which is not otherwise hazardous, prior to disposal:

3.1.1 Incineration

There is currently no medical waste being incinerated at the University.

3.1.2 Sewage Discharge

- Medical waste may not be discharged to a public sewage system unless the waste has been reviewed with EHS prior to discharge.

- Medical waste discharge shall be consistent with the waste discharge requirements placed on the public sewer system by the California Regional Water Quality Control Board.

3.1.3 Autoclaving

Autoclaving is steam sterilization at a permitted medical waste treatment facility or by other sterilization, in accordance with all of the following operating procedures for steam sterilizers or other sterilization:

- Standard written operating procedures shall be established for biological indicators, or for other indicators of adequate sterilization approved by the department, for each steam sterilizer, including time, temperature, pressure, type of waste, type of container, closure on container, pattern of loading, water content, and maximum load quantity. (See Attachment 3 for the Medical Waste Autoclave Procedures and Log.)

- Recording or indicating thermometers shall be checked during each complete cycle to ensure the attainment of 121 degrees Centigrade (250 degrees Fahrenheit) for at least one-half hour, depending on the quantity and density of the load, in order to achieve sterilization of the entire load. Thermometers shall be checked for calibration annually. Records of the calibration checks shall be maintained as part of the facility's files and records for a period of three (3) years or for the period specified in the regulations, whichever is longer.

- Heat-sensitive tape, or another method acceptable to the enforcement agency, shall be used on each container that is processed to indicate the attainment of adequate sterilization conditions. When the heat sensitive tape does not change color after a charge has been autoclaved, the operator shall process the charge again to verify adequate treatment.

- The biological indicator, Bacillus Stearothermophilus, or other indicator of adequate sterilization as approved by the DHS, shall be placed at the center of a load and processed under standard operating conditions at least monthly to confirm the attainment of adequate sterilization conditions. Any time that conditions are not adequate for sterilization, the operator shall repeat the process to verify that sterilization has occurred.

- Records of the procedures specified in this section shall be maintained by the department that is performing the operation for a period of not less than three (3) years.

3.1.4 Closure Plan

Inoperable autoclaves shall be marked with a sign indicating that the autoclave is not to be used for sterilization. If an autoclave breaks down and cannot be repaired within a seven (7) day period, the operator shall contact EHS at extension 5126 for guidance on disposal of medical waste items. During this time of repair, wastes should be disposed of through the campus medical waste hauler.

3.1.5 Other Treatment Methods

- Other alternative medical waste treatment methods must meet the following guidelines:

  - Approved by the DHS.
  - Result in the destruction of pathogenic microorganisms.
  - Any alternative medical waste treatment method proposed to DHS shall be evaluated by DHS and either approved or rejected pursuant to the criteria specified in the Medical Waste Management Act.

- Recognizable human anatomical remains, with the exception of teeth not deemed infectious by the attending physician and surgeon or dentist, shall be disposed of by incineration or interment unless otherwise hazardous.

3.2 Recordkeeping

All departments that autoclave waste, must comply with the Medical Waste Act by retaining treatment records for a period of three (3) years or more.

3.3 Training

The Exposure Control Plan contains the University's training program for Medical Waste Management.

3.4 Compacting/Grinding Waste Materials

Compactors or grinders shall not be used to process medical waste until after the waste has been treated and rendered solid waste, unless the grinding or compacting is an integral part of the treatment method and approved by the DHS.

Medical waste in bags or other disposable containers shall not be subject to compaction by any compacting device, and shall not be placed for storage or transport in a portable or mobile trash compactor.

3.5 Hypodermic Needles

Hypodermic needles shall be either incinerated and disposed of as solid waste (incineration is not permitted on campus), or otherwise rendered non-infectious, encased in a solid or semisolid material, and disposed of as solid waste. Disposal of this waste as solid waste shall be permitted if the waste is not otherwise hazardous. Except in rare, pre-approved instances, hypodermic needles will be treated as sharps waste as specified in previous sections.

3.6 Infectious Animal Waste

Notwithstanding the Food and Agricultural Code, animals that die from infectious diseases shall be incinerated if, in the opinion of the attending veterinarian or local health officer, the carcass presents a danger of infection to humans.

3.7 Preserved Specimens

Preserved specimens used for anatomical study will be managed as a pathological waste and the disposal method will be incineration unless the chemical preservative used warrants managing the preserved specimens and preservative as a chemical waste.

3.8 Emergency Action Plan

The University has developed an Emergency Action Plan describing the actions that need to be implemented in the event of a release of a hazardous substance. The campus has contracted with a firm that will respond to hazardous materials incidents, including unauthorized releases of biohazardous wastes.

In addition, the University will adhere to the following procedures during a medical waste emergency:

- Evacuate the area if necessary;

- Contact Campus Police at 911;
- Clean-up the spill according to the procedures listed in Section 2.6 of this plan and according to guidelines listed in the Exposure Control Plan;
- EHS will contact the medical waste hauler to dispose of any wastes that cannot be held due to volume or that pose a potential health threat;
- Environmental Health and Safety will contact an alternate hauler if the hauler under contract (Attachment 2) cannot respond;
- If the seven (7) day storage limit is exceeded or if the medical waste cannot be properly stored, contact the Department of Environmental Health and Safety immediately at extension 5126.

4.0 GLOSSARY

Biohazard Bag

A disposable red bag 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 testing procedures prescribed by the American Society for Testing and Materials and certified by the bag manufacturer.

Biohazardous Waste

- Laboratory waste, including, but not limited to, all of the following:

  - Human or animal specimen cultures from medical and pathological laboratories.
  - Cultures and stocks of infectious agents from research and industrial laboratories.
  - Wastes from the production of bacteria, viruses, or the use of spores, discarded live and attenuated vaccines used in human health care or research, discarded animal vaccines, including only Brucellosis, Contagious Ecthyma, and other animal vaccines, as identified by the department, and culture dishes and devices used to transfer, inoculate, and mix cultures.

- Waste containing any microbiologic specimens.

- Human surgery specimens or tissues removed at surgery or autopsy, which are suspected by the attending physician and surgeon or dentist to be contaminated with infectious agents known to be contagious to humans.

- Animal parts, tissues, fluids, or carcasses suspected by the attending veterinarian to be contaminated with infectious agents known to be contagious to humans.

- Waste, which at the point of transport from the generator's site, at the point of disposal, or thereafter, contains recognizable fluid blood, fluid blood products, containers, or equipment containing blood that is fluid or blood from animals known to be infected with diseases which are highly communicable to humans.

- Waste which is hazardous only because it is comprised of human surgery specimens or tissues which have been fixed in formaldehyde or other fixatives, or only because the waste is contaminated through contact with, or having previously contained, trace amounts of chemotherapeutic agents, including, but not limited to, gloves, disposable gowns, towels, and intravenous solution bags and attached tubing which are empty.

Common Storage Facility

A designated accumulation area which is on-site and is used by small generators otherwise operating independently, for the storage of medical waste for collection by a registered hazardous waste hauler.

Container

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

Medical Waste

Waste which meets both of the following requirements:

- The waste is composed of waste which is generated or produced as a result of any of the following:

  - Diagnosis, treatment, or immunization of human beings or animals.
  - Research.
  - The production or testing of biologicals made from living organisms and their products, including, but not limited to, serums, vaccines, antigens, and antitoxins.

- The waste is any of the following:

  - Biohazardous waste.
  - Sharps waste.

Medical Waste Generator

Any person, whose act or process produces medical waste. All of the following are examples of businesses which generate medical waste:

- Medical and dental offices, clinics, hospitals, surgery centers, laboratories, research laboratories, unlicensed health facilities, those facilities required to be licensed, and education and research facilities.
- Veterinary offices, veterinary clinics, and veterinary hospitals.

Medical Waste Management Plan

A document which is completed by generators of medical waste describing the proper procedures for generating, handling and disposing of medical waste.

Medical Waste Permit

A permit issued by the enforcement agency to a medical waste treatment facility.

Medical Waste Treatment Facility

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 permitted by agency having jurisdiction.

Sharps Container

A rigid puncture-resistant container which, when sealed, is leak resistant and cannot be reopened without great difficulty.

Sharps Waste

Any device having acute rigid corners, edges, or protuberances capable of cutting or piercing, including, but not limited to, all of the following:

- Hypodermic needles, hypodermic needles with syringes, blades, and needles with attached tubing, syringes contaminated with biohazardous waste, acupuncture needles, and root canal files.

- Broken glass items, such as Pasteur pipettes and blood vials contaminated with biohazardous waste.

Storage
The holding of medical wastes at a designated accumulation area.

Treatment
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.

5.0 ATTACHMENTS

Attachment 1 Registration and Certification 5-2

Attachment 2 Waste Hauler and Disposal Facility Information 5-3

Attachment 3 Medical Waste Autoclave Procedures and Log 5-4

Attachment 4 Campus Autoclave in Operation 5-6

ATTACHMENT 1

REGISTRATION AND CERTIFICATION

(On File in the Department of Environmental Health and Safety)

ATTACHMENT 2

Department of Environmental Health & Safety

Waste Hauler and Disposal Facility Information

Waste Hauler

Barnett Medical Services, Inc.
30620 San Antonio St.
Hayward, CA94544
(510) 429-9911

Disposal Facility (Autoclave)

Barnett Medical Services, Inc.
2385 Arch Road, #200
Stockton, CA 95215
(510) 429-9911

Disposal Facility (Incineration)

Healthcare Environmental
1420 40th Street NW
Fargo, ND 58102
(701) 282-7373

ATTACHMENT 3

Department of Environmental Health & Safety

Medical Waste Autoclave Procedures and Log

PROCEDURES FOR AUTOCLAVING MEDICAL WASTE

1. Loading shall follow the manufacturer's specifications.
2. Maximum load quantity shall not exceed the manufacturer's specifications.
3. Water content shall not exceed the recommendations of the manufacturer.
4. The recording thermometer must be installed and operating.
5. Heat-sensitive tape must be used on each container to indicate sterilization conditions.
6. Bacillus stearothremophilus shall be placed in the center of the load on a monthly basis to verify adequate sterilization conditions.
7. The temperature must reach at least 121 degrees Centigrade (250 degrees Fahrenheit) for 30 minutes or more.
8. The thermometers must be calibrated annually and records retained for three (3) years.

Department of Environmental Health & Safety

Autoclave Log

Date	Time Begin	Time End	Type of Waste	Load Size	Indicator	Operator's Initials
Date	Time Begin	Time End	Type of Waste	Load Size	Indicator	Operator's Initials

ATTACHMENT 4

Department of Environmental Health & Safety

Campus Autoclaves in Operation *

DEPARTMENT	LOCATION	USE	AUTOCLAVE TYPE
Biology	Holt Hall 325	Medical Waste	Amsco Eagle Series 3041

* While there may be multiple autoclaves used to sterilize equipment, the autoclave mentioned above is the only one which is used to treat medical waste.