MEDICAL WASTE MANAGEMENT PLAN

California Polytechnic State University
San Luis Obispo, CA 93407

Environmental Health & Safety

(805) 756-6662

September, 2007
TYPE OF FACILITY

California Polytechnic State University (Cal Poly) is a four year university.

CONTACT PERSON:

The primary contact person is David Ragsdale, Director of Environmental Health and Safety, phone (805) 756-6662.

The backup contact person is Thomas Featherstone, Chemical Hygiene Officer, Environmental Health & Safety, phone (805) 756-6661.

After hours or emergency contact should be directed to University Police at (805) 756-2281.

TYPES OF MEDICAL WASTE GENERATED

Cal Poly generates sharps waste; laboratory wastes; waste containing microbiologic specimens; animal parts, tissues, and fluids; waste containing recognizable fluid blood; and other types of waste defined as medical waste in section 25020.5 of the California Health and Safety Code. The University generates between 200 pounds and 500 pounds of medical waste per month for offsite transportation and disposal. The Biological Sciences Department within the University generates approximately 450 pounds of medical waste per month for onsite treatment, including a large amount of glassware that will be re-used after treatment.

DEFINITIONS

“Biohazard Bag” means 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 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.

“Biohazardous waste” means any of the following:

- 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 of being contaminated with infectious agents known to be contagious to humans.

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

Waste, which at the point of transport from the generators 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 containing discarded materials contaminated with excretion, exudate, or secretions from humans who are required to be isolated by the infection control staff, the attending physician and surgeon, the attending veterinarian, or the local health officer, to protect others from highly communicable diseases or isolated 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. A biohazardous waste which meets the conditions of this subdivision is not subject to Chapter 6.5 (commencing with Section 25100). These wastes shall be managed as medical waste in accordance with the applicable provisions of this chapter and shall be disposed of in accordance with subdivision (a) of Section 25090.

For purposes of this subdivision, “chemotherapeutic agent” means an agent that kills or prevents the reproduction of malignant cells.

For purposes of this subdivision, a container, or inner liner removed from a container, which previously contained a chemotherapeutic agent, is empty if the container or inner liner removed from the container has been emptied by the
generator as much as possible, using methods commonly employed to remove waste or material from containers or liners, so that the following conditions are met:

(A) If the material which the container or inner liner held is pourable, no material can be poured or drained from the container or inner liner when held in any orientation, including, but not limited to, when tilted or inverted.

(B) If the material which the container or inner liner held is not pourable, no material or waste remains in the container or inner liner that can feasibly be removed by scraping.

“Common storage facility” means any designated accumulation area which 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 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 nonimmunocompromised 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” means waste which meets both of the following requirements:

(1) 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 pertaining to the activities specified in subparagraph (A).

   The production or testing of biological

(2) The waste is any of the following:

   (A) Biohazardous waste.
(B) Sharps waste.

Medical waste may contain infectious agents.

For purposes of this section, “biologica"s means medical preparation made from living organisms and their products, including, but not limited to, serums, vaccines, antigens, and antitoxins.

Medical waste which has been treated in accordance with Article 9 (commencing with Section 25090) and which is not otherwise hazardous, shall thereafter be considered solid waste as defined in Section 40191 of the Public Resources Code and not medical waste.

Medical waste does not include any of the following:

- Waste containing microbiological cultures used in food processing and biotechnology and any containers or devices used in the preparation and handling of these cultures, that is not considered to be an infectious agent pursuant to Section 25022.5.

- Urine, feces, saliva, sputum, nasal secretions, sweat, tears, and vomitus, unless they contain fluid blood, except as defined in subdivision (f) of Section 25020.5.

- Waste which is not biohazardous, such as paper towels, paper products, articles containing nonfluid blood, and other medical solid waste products commonly found in the facilities of medical waste generators.

- Hazardous waste, radioactive waste, or household waste.

“Medical waste generator” means any person, whose act or process produces medical waste and includes, but is not limited to, a provider of health care as defined in subdivision (a) of Section 56.05 of the Civil Code. All of the following are examples of operations which generate medical waste:

- Medical and dental offices, clinics, hospitals, surgery centers, laboratories, research laboratories, unlicensed health facilities, those facilities required to be licensed pursuant to Division 2 (commencing with Section 1200), chronic dialysis clinics, as regulated pursuant to Division 2 (commencing with Section 1200), and education and research facilities

- Veterinary offices, veterinary clinics, and veterinary hospitals.

- Pet shops.
“**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 25090. A medical waste treatment method approved pursuant to
subdivision (d) of Section 25090 may be designated as a medical waste treatment
facility by the department.

“**Mixed waste**” means mixtures of medical and nonmedical 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 not onsite.

“**Onsite**” means a medical waste treatment facility, or common storage facility on the
same or adjacent property as the generator of the medical waste being treated.

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

“**Person**” means an individual, trust, firm, joint stock company, business concern,
corporation, including, but not limited to, a government corporation, partnership, and
association. “Person” also includes any city, county, district, commission, the State or
any department, agency, or political subdivision thereof, the Regents of the University of
California, any interstate body, and the federal government or any department or
agency thereof to the extent permitted by law.

“**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, syringes contaminated with biohazardous waste, acupuncture needles, and root canal files.

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

“Storage” means the holding of medical wastes at a designated accumulation area, as specified in Article 8, Division 20, H&SC (commencing with Section 25080).

“Tracking document” means the medical waste tracking document specified in Section 25063, H&SC.

“Transfer station” means any offsite location where medical waste is loaded, unloaded, or stored by a registered hazardous waste hauler during the normal course of transportation of the medical waste. “Transfer station” does not include common storage facilities, large quantity generators used for the purpose of consolidation, or onsite treatment facilities.

“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, as specified in Article 9, Division 20, H&SC (commencing with Section 25090).

WASTE SEPARATION

Medical wastes and non-medical wastes are separated by University personnel per the definition of medical waste in Article 2, Chapter 6.1, Division 20, of the California Health and Safety Code

MEDICAL WASTE DESIGNATION

Medical waste, except for sharps capable of puncturing or cutting, shall be contained for storage and disposal in biohazard bags. Sharps waste shall be contained in sharps containers.

Microbiological specimens generated by the Biological Sciences Department will be taken by Biological Sciences staff to the autoclave facility in Fisher Hall, room 466, for treatment using procedures described in the attached autoclave operations plan.

Recognizable human anatomical remains, with the exception of teeth not deemed infectious by the attending physician, surgeon, or dentist, shall be disposed of by incineration or interment unless otherwise hazardous (see previous definitions of medical waste in this Plan). Remains in this category shall be segregated from other medical waste.
MEDICAL WASTE STORAGE

Medical waste shall be stored in rigid, leakproof containers with tight-fitting lids which have been labeled with a label which is marked with the international biohazard symbol and the word “Biohazard.” Medical waste shall be transported from the point of generation to the storage area in rigid, covered containers. Storage facilities are located at the following locations:

- Cal Poly Health Services loading dock.
- Science North loading dock.
- Cal Poly Veterinary Clinic behind the clinic.
- Facilities Services next to the custodial stores warehouse.
- Building 41 (Engineering III) Courtyard

MEDICAL WASTE PICK-UP AND TRANSPORTATION

Medical waste shall be picked up and transported for disposal, at least once every seven (7) days, by:

Stericycle, Inc.
28161 N. Keith Dr.
Lake Forest, IL  60045
Transporter Registration #3400
Phone:  (559) 275-0992

MEDICAL WASTE DESTRUCTION

Medical waste will be transported by the above transporter to the following facility for destruction:

Stericycle, Inc.
4135 W. Swift Avenue,
Fresno, California.
MWTF Permit #10-8-P
Phone:  (559) 275-0992

ON-SITE MEDICAL WASTE TREATMENT
Microbiological specimens generated by the Biological Sciences Department are treated on-site in an autoclave located in Fisher Hall (building 33), room 466.

Ingress and egress to the treatment facility are via doors leading into the building main hallway and into adjacent rooms. All doors have locks with controlled key access (i.e. the Biological Sciences Department must approve issuance of keys to these locks and they must be issued through the campus key control center).

The average monthly quantity of medical waste to be treated on site is 450 pounds.

The rated capacity per operational cycle of the autoclave is approximately 6 cubic feet of material. The autoclave is operated a maximum of 8 hours per day and an average of 2 hours per day. The autoclave is operated a maximum of 5 days per week and an average of 2 days per week.

The type of waste being treated is live bacterial cultures from a university microbiology educational laboratory.

**On-Site Treatment Procedures**

**Decontamination of Biohazardous Material Containing Live Bacteria**

Each student laboratory will have two bacterial waste containers (coffins) and a biohazard sharps container. All three will be appropriately labeled with signs above the containers as to what materials can and can not be discarded in each container.

One coffin will be for the discard of test tubes, flasks and other glassware that can be autoclaved, rewashed, and used again. This glassware will contain empty tubes and flasks that originally contained sterile solid media which was melted and poured into petri dishes and/or other glassware containing discarded broth or solid culture media with live bacteria. This coffin will be plainly marked as biohazardous material which will eventually be autoclaved, rendering the material inside sterile and killed. After proper sterilization this glassware will be washed in a commercial dishwasher, dried, and reused again.

The second coffin will be lined inside with an autoclavable biohazardous red bag. Into this coffin will be placed all plastic ware such as petri dishes which may or may not contain live bacteria. This coffin will be autoclaved appropriately and the contents discarded in a waste container in the bacteriological prep room. This material will eventually find its way to the municipal sanitary land fill. Each plastics coffin will have a computer generated label designating the material a biohazard which will be properly autoclaved on site and discarded accordingly after sterilization.

The biohazard red sharps container will contain any and all material that may pose a threat to a person by cutting or puncturing an individual’s skin. This container will contain microscope slides, broken glass, broken pipets, etc. It will contain broken glassware which may or may not contain live bacteria. This container, when full, will be
disposed of in the Bio-hazardous waster container on the loading dock of Science North.

Procedure for autoclaving the above containers:

1. When a container in the laboratory is full, place it on a cart and roll it into the prep room for sterilization. Use the designated autoclave in the prep room for all sterilization of bacteriological waste material. Usually the autoclave will not be run unless two coffins are ready for sterilization. Place autoclave tape on each coffin in a manner to show that the coffin has been sterilized by the presence of black diagonal stripes on the tape.

2. Note the date on the autoclave chart recorder. Record the sterilization time showing the beginning of a cycle and the amount of time the autoclave was at sterilization temperature using the autoclave recorder.

3. Autoclave at least 30 minutes after the autoclave has reached a minimum of 121 degrees centigrade (15 p.s.i.).

4. After sterilization is complete, the operator shall initial the recorder chart, verifying the time, temperature, and that the indicator tape showed sterilization took place. The operator shall also note any discrepancies in the chart and document an explanation for them. The operator shall also note on the chart the types of materials sterilized, using the following codes:
   
   1 = Reusable Glassware
   2 = Discardable Plastics

5. In the event that sterilization is not completed correctly (does not reach temperature, does not hold for sufficient time, or indicator tape does not change), the following actions will be taken:

   Sterilization procedures will be shifted to the other autoclave in the room.
   These procedures will be followed in using that autoclave.

   Repair of the primary autoclave will immediately be effected by the Biological Sciences Department.

6. After the proper sterilization time and temperature have been achieved, coffins will be handled according to the paragraphs above. Reusable glassware will be washed in a commercial glassware washer, dried and used again. Discarded plastics will be placed in 30 gallon garbage cans and treated as regular non-biohazardous waste to be removed by the custodian.

7. Full red biohazard sharps containers will be removed from the laboratory and placed in the larger biohazardous containers on the loading dock of Science North.
To avoid possible mishandling of coffins, Bob Ward will autoclave all biohazardous material. Should he be on vacation or absent from the preproom for one or more days, another person designated by him will carry out the procedure, following the guidelines above.

**Procedure for Use of Kilit Ampule**

Kilit Ampules containing a live culture of Bacillus stearothermophilus and purchased from BBL will be used in this test of autoclave effectiveness. The test is to be performed monthly.

Two Kilit Ampules will be used, one placed in the autoclave to determine effectiveness of steam sterilization and total death of all bacteria involved. The other Kilit Ampule will not be autoclaved but used as a control.

The Kilit Ampule is to be placed in the middle of a bacteria waste container taken from the laboratory and full of test tubes (some containing live bacterial cultures) and ready for autoclaving.

The Kilit Ampule is to be placed in an area of highest density of tubes. The ampule should be placed midway between the top and the bottom of the test tubes filling the coffin.

**Procedure:**

1. Tie a string to the neck of the sealed Kilit Ampule.
2. Place the Kilit ampule in the middle of the coffin.
3. Run a normal cycle of the autoclave containing the Kilit ampule.
4. Note on the autoclave chart recorder that this particular sterilization contains a Kilit bacterial test for steam sterilization.
5. Autoclave the material for a minimum of 30 minutes or greater at a minimum temperature of 121 degrees centigrade (15 p.s.i.) (note that usual autoclave times used in our laboratory are not less than 30 minutes but usually at least 45 minutes.)

6. After the normal autoclave cycle, remove the Kilit Ampule from the sterilized waste container by pulling it out of the coffin by the string and placing it with the unautoclaved control in a 55 degree centigrade incubator for 24 hours. Both ampules will be label accordingly before incubation.

7. Examine both ampules after 24 hours of incubation for growth and pH change.

   a. The unautoclaved control will show both turbidity and a color change from purple, before incubation, to yellow after incubation.

   b. The autoclaved control will not show turbidity and the broth will remain purple in color.

The results of this monthly test will be kept in a log book next to the autoclave.
In the event that the test shows sterilization to be unsatisfactory, the sterilization procedure will be transferred to the other autoclave in the same room pending repair, calibration, and successful testing of the primary autoclave.

**Calibration of Autoclaves**

This procedure is to be performed in Fisher Science 466

On a yearly basis the autoclave used for decontamination of biohazardous materials must be checked for correct autoclave temperatures. This is done using a digital thermister.

The thermister will be calibrated by placing the probe in boiling water and adjusting the digital read-out to read 100 degrees Centigrade.

The probe, which consists of a thin insulated wire is wrapped several times at the point it will be placed between the door gasket and autoclave with tape. This creates a seal at the point the probe enters the autoclave when the door is closed and secured. The sensor end of the probe is placed in the center of the autoclave, the door is closed and the autoclave turned to steam. The final temperature is reached when the thermister read-out fails to climb for 10 minutes.

The final temperature and time required to reach equilibrium will be noted in a log kept next to the autoclave.

This procedure will be done on an annual basis at the beginning of each calendar year.

**HANDLING OF PRESERVED TISSUES**

Preserved tissues are handled as hazardous waste, based on the characteristics of the preservatives used.

**RECORD RETENTION**

All tracking documents, treatment records, and other required documentation will be maintained in the Environmental Safety Office, Public Safety Services, Building 80, for at least three (3) years.

**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. Any items that are not to be retained will be disposed of as medical waste to our contracted medical waste disposal company. It is estimated that closure will cost less than $1000.00.

TRAINING PLAN

Staff who operate the treatment process have extensive professional backgrounds and experience in operating autoclaves for sterilization. Attachment A to this Medical Waste Management Plan includes resources and an outline for our staff training program in bloodborne pathogens.

EMERGENCY ACTIONS

In the event of a spill, unplanned release, or potential release of medical waste to the environment, Cal Poly University Police Dispatch shall be contacted immediately, 24 hours a day, using the emergency phone number 911. The dispatcher on duty will contact the Environmental Health & Safety Manager by phone or pager, and the EH&S manager shall take the necessary actions to mitigate or remediate the situation.

Spills of biohazardous materials shall be decontaminated using one of the following methods:

- Exposure to hot water of at least 82 degrees Centigrade (180 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 minutes:
  1. Hypochlorite solution (500 ppm available chlorine)
  2. Phenolic solution (500 ppm active agent)
  3. Iodoform solution (100 ppm available iodine)
  4. Quaternary ammonium solution (400 ppm active agent)

Personnel performing disinfection procedures shall be equipped with the appropriate personal protective equipment 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 biohazardous materials.

In the event that the transporter listed above cannot collect the medical waste at the required interval, the Environmental Health and Safety Manager shall contact another licensed medical waste transport and disposal company to provide service until the transporter listed above can resume service. In the event that services cannot be obtained for a period of time, the Office of Environmental Safety shall prepare long-term storage for the campus’ medical waste. This will include transfer of the medical waste
to rigid, leakproof, tightly sealed containers, proper labeling, and transfer and storage of
these containers in the Environmental Safety Hazardous Waste Storage Facility.

The alternative transport and disposal company referenced above will be:

Medical Waste Environmental Engineers, Inc.
221 Town Center West #271
702 “B” S. Depot Street
Santa Maria, CA 93458
Phone: (805) 925-6633

In the event that the Biological Sciences autoclave becomes inoperative, medical waste
generated by the Biological Sciences Department will be handled, stored, transported
and destroyed in the same manner as all other medical waste on campus, as described
in the above sections.

CERTIFICATION

I hereby certify that to the best of my knowledge and belief the statements made herein
are correct and true.

Signature: ________________________________ Date: __________
   David O. Ragsdale, R.E.H.S.
   Environmental Health and Safety Director