

SafetyNet #116 - Principal Investigator's Training Responsibilities For Animal Care and Use



For updated information on this topic, please visit:

<http://safetyservices.ucdavis.edu/IACUC/policies/training-responsibilities/training-responsibilities/training-responsibilities>

Individual Training Record

Starting Date: _____

Name:	PI:
Title:	Department:
Work Location:	

A. I have:	Initial	Trainer	Date	Refresh	Refresh	Refresh	Refresh
1. Submitted my Occupational Health forms to Employee or Student Health Services							
B. I have attended the following courses or received instruction in:							
1. Animal Care and Use 101							
2. Animal Care and Use 101-R (on-line exam)							
3. Aseptic Surgical Technique							
4. Lab Animal Skills							
5.							
6.							
7.							
C. I have received training/information on the following:	Initial	Trainer	Date	Refresh	Refresh	Refresh	Refresh
1. Animal Bite Instructions (Must be reported to supervisor)							
2. The content and purpose of the Injury and Illness Prevention Plan (IIPP)							
3. The emergency action plan for my work area (in IIPP).							
4. Potential zoonotic diseases which I may be in contact in my work area. Including:							
5. Notification of my responsibility to contact my supervisor for training/information before I perform any task for which I am not trained							
6. Personal hygiene in the workplace							
7. The use of the EH&S website with regard to the Risk Assessment Tool							
8. Location of the emergency shower & eye wash							
9. Animal records with regard to pre, peri, and post-op monitoring							
10. Aseptic technique							
11. Animal carcass disposal and handling							
12. Identifying pain and discomfort in the animal(s) I am working with							
13. Cold sterilization procedures							

14. Anesthesia monitoring							
15. Safe Handling of anesthetic gases including scavenging procedures							
16. Controlled drug records and requirements (P & P 290-70)							
17. Chemicals in the lab and location, content and use of the Material Safety Data Sheets (MSDS's) (SafetyNet 45)							
18. Animal handling and husbandry							
19. Reporting Animal Care and Use Concerns							
D. I have reviewed the following SafetyNets (see EH&S website for additional SafetyNets)	Initial	Trainer	Date	Refresh	Refresh	Refresh	Refresh
• Minimizing Aerosol Exposure (#21)							
• Effective Use of Autoclaves (#26)							
• OSHA Bloodborne Pathogen Standard Worker Information (#36)							
• Partial List of Incompatible Chemicals (#4)							
• Guidelines for Chemical Spill Control (#13)							
• Guidelines for Disposal of Chemical Waste (#8)							
• Guidelines for Disposal of Sharps, Biological and Medical Waste (#3)							
• Electrical Safety Guidelines (#20)							
• Emergency Medical Care (#52)							
• Eye and Face Safety Protection for Laboratory Workers (#5)							
• Guidelines for the Safe Use of Formaldehyde (#11)							
• Compressed Gas Safety (#60)							
• Lifting (#46)							
• Guidelines for Mercury Spill Control (#16)							
• Glossary of MSDS (Material Safety Data Sheet) Terms (#45)							
• Needle and Syringe Safety (#62)							
• Steps You Can Take To Limit Your Exposure To Radiation (#10)							
• Radiation and Human Health (#71)							
• Respiratory Protection Program (#88)							
• Health and Safety Hazards: A Students Right to Know (#40)							

Training Classes

<http://ehs.ucdavis.edu/train/classes/index.cfm>

New- The eLearning Online Training through UC Davis Learning Management System (LMS) <http://lms.ucdavis.edu> offers many training classes that employees can take at their convenient time.

SafetyNets

<http://ehs.ucdavis.edu/sftynet/snanimal.cfm>

Occupational Health and Animals

<http://ehs.ucdavis.edu/animal/health/index.cfm>

SafetyNet #26 - Effective Use of Autoclaves



Autoclave Use

Autoclaves (steam sterilizers) are metal pressure vessels that are used for steam sterilization of media, instruments, and lab ware, and for decontamination of biological waste. Autoclaves function by pressurizing steam in an airtight chamber, which increases the steam temperature significantly. The superheated steam kills all microorganisms and degrades most macromolecules rapidly. Autoclaves are generally easy to use but they are ineffective and potentially very hazardous if operated incorrectly, especially if the door is opened too soon or too rapidly after a run is completed. Autoclave waste packaging, treatment, and handling are also subject to regulations which carry substantial penalties if waste is handled incorrectly. This SafetyNet provides a review of proper use of autoclaves to ensure that these devices are used safely, effectively, and in compliance with applicable regulations.

Factors in autoclave function

Steam. The energetics of steam makes it far more efficient for sterilization and decontamination than dry heat at the same temperature. Effective steam sterilization depends on the interaction of temperature, pressure, and time, but additional conditions inside the autoclave chamber such as materials, containers, container placement, and total volume of the materials also influence sterilization success. Each of these factors must be controlled within a narrow range of values or conditions:

- **Pressure/temperature relationship:** Pressurization to 15 psi typically "superheats" steam to about 121°C (250°F), which is adequate to kill all microorganisms and to decontaminate or sterilize in reasonable time.
- **Time:** Other factors being equal, autoclave loads up to about 2.0 ft³ in volume require 30-60 minutes to sterilize at 15 psi and 121°C. Larger loads and tightly packed materials may require much more time.
- **Contact:** To sterilize or decontaminate uniformly, superheated steam must contact all areas of the load.
- **Volume:** "Dense" materials such as media in bottles to be treated in the autoclave should occupy no more than half of the autoclave chamber volume, so that steam can circulate completely around and into the load. Less dense materials such as bagged waste can occupy somewhat more space but should never contact the autoclave chamber wall.

Dry heat. Some autoclaves offer dry heat cycles, which are useful for sterilizing laboratory supplies such as KimWipes that can withstand high temperatures but would be damaged by steam. The necessary exposure times for dry heat vary considerably depending on materials composition, packaging, load volume, and possibly other factors, and may be more than triple the time needed for steam sterilization at the same temperature. Because the required times for successful dry heat sterilization vary so much the user may need to experiment extensively with appropriate times and temperatures to develop a consistently successful dry heat sterilization protocol.

Containers:

Primary Containers

- **Autoclave waste bags** — Autoclave waste bags are used for bulk dry disposable materials such as paper towels, plastic centrifuge tubes, bundled serological pipettes, and plastic petri dishes (with or without agar-based culture media). Autoclave bags are made of translucent, colorless, steam resistant plastic film, usually with a pre-applied "sterilization indicator" and often printed with the universal biohazard symbol. If the waste being autoclaved is *not* contaminated with animal infectious agents or certain high hazard plant pathogenic agents the biohazard symbol is inappropriate and should be defaced before use. ***Autoclave bags should be loosely taped or tied during decontamination to allow steam to penetrate into the bag. Air pockets in tightly sealed bags may cause localized sterilization failure.***
- **Medical waste bags** — In California bags for medical waste (human cells, cell lines, tissues, or body fluids, or microbial agents pathogenic to humans) are red with a preprinted universal biohazard symbol, manufactured to California medical waste management regulation specifications. Medical waste can only be treated terminally by inactivation processes that are monitored and inspected by the California Department of Public Health (CDPH), such as in a CDPH-registered autoclave. However, no CDPH registered autoclave is available for general use at UC Davis. Instead, most UC Davis medical waste is taken from the laboratories to accumulation sites, and is transported by vendors to approved medical waste treatment facilities without being autoclaved first. **Exception:** medical waste generated in Biosafety Level 3 laboratories is generally autoclaved within the laboratory and then disposed through the medical waste stream.
- **Bottles** — Glass bottles with screw tops are used for autoclaving liquids such as water, some buffers, and culture media. Always loosen the screw top so that it barely engages the threads on the neck of the bottle. Do not attempt to autoclave liquids in plastic bottles. Always verify that the plastic caps and seals used on your media bottles are heat-resistant before using them in an autoclave.
- **Hard-walled plastic sharps** containers should **not** be autoclaved (except sharps from BSL3 laboratories), but should instead be disposed through the sharps waste stream. For any type of sharps you can request a sharps container pickup on the EH&S website: <http://safetyapps.ucdavis.edu/EHS/wasterequest/sharps.cfm>. Alternatively, filled and closed red medical waste sharps containers can be transported to a medical waste accumulation site.
- **Miscellaneous** — Steam and heat-resistant pouches are commonly used to sterilize surgical instruments. Metal cans with snug-fitting metal lids may be used to sterilize glass serological pipettes (although this is less common nowadays because disposable pipettes are widely used).

Secondary Containers

Autoclave bag contents may spill out or liquefy, block internal ports, and seriously damage the autoclave during the autoclave cycle, so it is critically important to place autoclave bags in secondary containers during decontamination cycles. Likewise, liquid media bottles must always be autoclaved in leakproof tubs. Polypropylene plastic or stainless steel tubs with 6-12 inch sides are commonly used to contain material in the autoclave. Do not use polyethylene or any other type of plastic tub except polypropylene because many other plastics will melt or distort permanently in the autoclave. Repeated autoclaving will eventually crack polypropylene—watch for this and replace these tubs at the first sign of "crazing" or other deterioration. Stainless steel containers with leakproof

seams are durable and good conductors of heat, and may be good alternatives to polypropylene tubs.

Indicators are used to validate the sterilization/decontamination process.

- **Chemical indicators** change color after being exposed to 121°C (250°F), but most provide no information on how long they remained at that temperature.
- **Tape indicators** can only be used to verify that the autoclave reached normal operating temperatures for decontamination. Like most chemical indicators they provide no information on time at that temperature.
- **Biological indicators** including spore strips or ampoules are the "gold standard" — they verify that the autoclave is performing correctly and is capable of killing microorganisms. A load test using *Geobacillus stearothermophilus* for steam cycles should be performed at least monthly, and more often for autoclaves that are routinely used to inactivate infectious agents. Biological indicators for dry heat cycles usually use *Bacillus atrophaeus* (= *Bacillus subtilis* DSM 675 or 2277). Spore strips typically require incubation for up to seven days after the run, but many ampoule tests only require 48 hours. Place the spore strip or ampoule in the center of the load and retrieve it for completion of the test after the load is processed in the autoclave. If the load is a single bag, the strip should be tied or autoclave-taped to a length of cotton string or a wire and placed in the center of the bag contents with the string or wire extending out of the bag opening (some indicators are manufactured with an attached string). The string or wire is used to retrieve the spore strip after the run. When using biological indicators be sure to follow all instructions meticulously for use and post-run treatment. Avoid using spore strips in bags with disinfectant-soaked materials, because contact with the disinfectant may kill the strip agents and yield a potentially false negative test.

Exhaust: Always use slow exhaust when autoclaving liquids. If you use fast exhaust the media will boil out of the bottles as the steam exits the chamber. Fast exhaust may be used for bagged or other dry material. If slow exhaust or a specific cycle intended for liquids is not available on your autoclave, do not attempt to treat liquids in that unit.

Recordkeeping: Records of maintenance, logs, chart recorders, calibration results and biological indicator load tests should be kept for at least three years.

Service: A professionally trained service provider should inspect the autoclave according to the autoclave manufacturer's recommendations for inspection intervals and service. Most such recommendations are based on cumulative hours of use rather than specific calendar intervals. Autoclave gauges should be calibrated at least annually. If an autoclave fails to function correctly or a user finds a problem between scheduled inspections, the unit must be professionally serviced. **Do not resume operation of an autoclave until it has been inspected and repaired.**

Training: All individuals who use autoclaves must be trained. Autoclave users should understand the time, temperature, and pressure requirements and should also understand the correct loading procedure, the appropriate type of exhaust for the materials, and the correct method for opening the autoclave after a run. Users and facility managers must also be able to verify that the autoclave is functioning correctly, by using indicators or by monitoring the run parameters. Training must be renewed at least annually, and supervisors must maintain permanent training records.

Best Practices:

- Wear proper personal protective equipment, including heat resistant gloves, eye protection and a lab coat, when opening or unloading the autoclave.
- Do not pack dry material tightly in autoclave bags.
- Do not pack bags or other materials tightly into the autoclave chamber — leave some space between bags or bottles in the autoclave.
- **Never place tightly sealed containers such as screw-capped glass bottles in an autoclave — they will very likely explode during the autoclave cycle.** Bottles with narrow necks can also explode if filled with too much liquid.
- Do not autoclave solvents, volatile or corrosive chemicals such as phenol, trichloroacetic acid, ether, chloroform, bleach, or any radioactive materials. Call EH&S (530-752-1493) if you have questions regarding chemical waste disposal.
- After loading and starting the autoclave, processing time starts after the autoclave reaches normal operating conditions of 121°C (250°F) and 15 psi pressure.
- Sterilization/decontamination conditions vary with type of load, and therefore processing times will vary. A minimum of 30 minutes is needed to decontaminate an average load of biological waste.
- For best results use biological indicators to validate overall autoclave performance and to validate specific runs when necessary.
- At the end of a cycle verify that the chamber pressure is less than 1.0 psi before opening the door. Open a hinged autoclave door just 2-3 inches and allow the steam to escape from within the autoclave before opening the door all the way. Stand well back from the autoclave door. Wear long-cuffed heat resistant gloves (or autoclave gloves) to protect your hands and forearms. Sliding type autoclave doors usually cannot be opened at all until the steam is evacuated from the chamber. Always open the door as slowly as possible.
- Allow materials inside the autoclave to cool for at least 10 minutes with the door open before unloading the autoclave. Removing contents too soon may heat stress the component material.
- After treatment in the autoclave, biotechnology and plant pathogen waste can be disposed as solid waste in the lab waste stream. At UC Davis animal pathogen waste (from the School of Veterinary Medicine) is usually disposed through the medical waste stream without prior autoclaving.

Regulated medical waste must be treated in accordance with the Medical Waste Management Act requirements:

<http://www.cdph.ca.gov/certlic/medicalwaste/Pages/LawsRegs.aspx>

For additional information, contact EH&S at 752-1493 or e-mail to biosafety@ucdavis.edu.

SafetyNet #36 - Bloodborne Pathogen Standard



The Cal OSHA Bloodborne Pathogen Standard ([Title 8 CCR, Section 5193](#)) provides guidance to eliminate or minimize occupational exposure of employees to human bloodborne pathogens (BBP). A key component of the standard, which became effective July 1999, was the inclusion of hepatitis C virus (HCV) with HIV and HBV as a specified bloodborne pathogen.

The BBP standard applies to all employees working in job classifications with a potential for occupational exposure to human blood or other potentially infectious materials (OPIM). The potential for an occupational exposure is determined by identifying tasks that may result in eye, mucous membrane or perenteral contact with human blood or other OPIMs. Anyone working in areas where they may come in contact with any of the items listed below, is required to obtain annual BBP training.

Bloodborne pathogens and OPIMs include the following:

- Human blood, human blood components and products made from human blood.
- Semen, vaginal secretions and saliva in dental procedures.
- All human cerebrospinal, synovial, pleural and amniotic fluids.
- Any body fluid visibly contaminated with blood (e.g., saliva, vomitus).
- All body fluids in situations where it is difficult or impossible to differentiate between body fluids (e.g., emergencies).
- Any unfixed human tissue.
- HIV containing cell or tissue cultures.
- HIV, HBV or HCV containing culture medium or other solutions.
- Blood, organs or other tissues from experimental animals with HIV, HVB, HCV.

Included in the BBP Standard is the requirement for employees to use needleless systems or devices with “engineered sharps injury protection” when performing a procedure involving a potential exposure to bloodborne pathogens or using a needle or any other sharp. Please read [SafetyNet #62](#) “Needle and Syringe Safety” for further information.

The Bloodborne Pathogen Standard text can be accessed via the Internet at:
<http://www.dir.ca.gov/title8/5193.html>.

For additional information, contact EH&S at 752-1493 or ehsdesk@ucdavis.edu.

Reviewed/Revised. 02/2003
SC

SafetyNet #6 - Can This Go Down the Drain?



UC Davis Local Limits Program Update- January 2007

Forty Five Thousand People Generate a Lot of Wastewater

With over 30,000 students and 15,000 faculty/staff members on the campus, UC Davis generates over 2 million gallons of wastewater each day. The campus wastewater is treated at the University Wastewater Treatment Plant off Old Davis Road and then discharged either to the North Fork or the South Fork of Putah Creek.

Much of the wastewater generated on the campus is domestic sewage from restrooms and dormitories. However, wastewater from laboratory drains and other non-domestic wastewater sources also go to the wastewater treatment plant. Discharge of inappropriate materials into the sanitary sewer can damage sewer pipes, jeopardize the health of maintenance workers, and cause adverse environmental impacts. Accordingly, the University has developed the Local Limits program to help prevent inappropriate sewer disposal.

The Local Limits Program

Essentially, the program is designed to provide specific guidance to the answer the question, "Can this go down the drain?" The goal of the Local Limits program is to educate users and prevent problematic constituents from being discharged into the sewer before they create problems. As part of the program, the University has developed a comprehensive sewer disposal policy with specific sewer discharge limits for over 100 constituents of concern.

Compliance with the New Discharge Permit is Top Priority

The Regional Water Quality Control Board mandates maximum discharge limits for several constituents in the campus wastewater treatment plant permit. Currently, the constituents of greatest concern for the campus are salts (measured as total dissolved solids or electrical conductivity), copper, aluminum, and cyanide. The wastewater treatment plant has historically experienced permit violations for these pollutants. Accordingly, the campus community is urged to be especially vigilant in following sewer disposal policies for these constituents. The following sewer discharge limits are in place

- Electrical Conductivity: Wastewater shall not cause or contribute to permit violations at the wastewater treatment plant. Any sewer discharges that exceed 900 umhos/cm and any new proposed water softeners (or other water treatment devices that discharge waste brine) must be approved by David Phillips at 530-754-8214.
- Copper: No added copper allowed.
- Aluminum: Wastewater shall not contain greater than 87 parts per billion.
- Cyanide: Wastewater shall not contain greater than 20 parts per billion.

Other limits that are also closely monitored include:

- Lead – 21 µg/l
- Iron – 3.0 mg/l
- Methylene chloride--100 µg/l
- Silver – 1.2 µg/l

- Hexachloroethane--2.6 µg/l
- Bis(2-ethylhexyl)phthalate – NO ADDED Discharge
- Tributyltin – NO ADDED Discharge
- Mercury – NO ADDED Discharge

If your waste contains any of these constituents at concentrations above the local limits, please contact EH&S to arrange for collection and proper disposal of the waste.

UC Davis has a Local Limits Web Page

The entire [sewer disposal policy](#), with numeric discharge limits, is available on line. If you do not see a limit for a chemical you are interested in, please contact Mindy Boele at 530-754-5819 or boelem@pplant.ucdavis.edu to make sure drain disposal is acceptable prior to pouring your solution down the drain.

Sink Labels Now Available

Bright yellow & red sink labels to educate the campus about sewer disposal are now available. If you have sinks that have not been labeled contact EH&S at 530-752-1493 or researchsafety@ucdavis.edu.

For More Information

If you have any questions about the program, please contact Mindy Boele at 530-754-5819 or boelem@pplant.ucdavis.edu or David Phillips, Facilities Management, at 530-754-8214 or dxphillips@ucdavis.edu.

Reviewed/Revised 05/2011

CL

SafetyNet #3 - Guidelines for Disposal of Sharps, Biological, and Medical Waste



Sharps

Sharps waste is composed of instruments used to puncture, cut, or scrape body parts, that when disposed of can cause punctures or cuts. Sharps improperly handled or disposed can represent an obvious injury hazard but can also be a source of infectious, chemical, or radiologic aerosol and surface contamination. Before using sharps or potential sharps (glassware) in your experiments, perform a risk assessment that includes careful consideration of alternatives. With some thought and modifications of engineering controls and work practices you may be able to eliminate this very significant hazard completely from your research. If sharps use is still necessary, you can avoid injuries and exposure to contaminants from sharps completely if you handle and dispose sharps correctly. The four rules of safe sharps handling are:

Never bend, shear, break, recap, or remove a needle from a disposable syringe, or otherwise manipulate a needle by hand before disposal. This avoids the generation of aerosols and also eliminates unnecessary handling that could cause sharps injury

Place used disposable needles and syringes in conveniently located puncture-resistant containers designed for sharps disposal.

Transport non-disposable sharps in a hard walled container to a processing area for decontamination, preferably by autoclaving.

Do not handle broken glassware directly. Instead, use a brush and dustpan, tongs, or forceps to remove broken glassware. Substitute plasticware for glassware whenever possible.

Safe disposal of sharps

Never throw treated or untreated sharps containers or sharps directly into garbage cans or dumpsters.

- Needles and Syringes
 - Containing nonhazardous materials:
 - a. Place into a hard walled sharps container (non-red without biohazard label).
 - b. Label contents, room number and building and place in approved medical waste accumulation container or contact EH&S for pick-up.
 - Containing biohazardous materials:
 - a. Place into a hard walled sharps container (with biohazard label).
 - b. Label with room number and building and place in approved medical waste accumulation container or contact EH&S for pick-up.
 - Containing chemical carcinogens or hazardous chemicals:
 - a. Place into a hard walled sharps container (non-red without biohazard label).

- b. Label with a hazardous waste label, and contact EH&S for pick-up as a hazardous chemical waste.
- o Containing radioactive materials:
 - a. Place into a hard walled sharps container (non-red without biohazard label).
 - b. Label with radioactive tape, and place full sealed container in a dry radioactive waste box.
 - c. Contact EH&S for pick-up as radioactive waste.

A variety of red and non-red sharps containers are available through the campus central storehouse. Contact EH&S for advice on the proper management of needles and syringes with any combination of biological, chemical or radiological materials.

- Laboratory Glass

Laboratory glass could puncture regular waste bags and endanger waste handlers. Do not pick up broken glass with your hands. Wear cut-resistance gloves, use tongs, or a disposable broom and dustpan to pick up broken glass. Collect broken glass as carefully and completely as possible.

- o Clean or contaminated with nonhazardous materials:
 - a. Place clean glass into a sturdy container marked “Clean Lab Glass.”
 - b. Custodial will dispose as nonhazardous waste.
 - c. See [SafetyNet #12](#), “Why Didn’t the Custodian Pick Up my Trash” for more information.
- o Contaminated with biohazardous agent:
 - a. Place into a hard walled sharps container (with biohazard label).
 - b. Label contents, room number and building and place in approved medical waste container or contact EH&S for pick-up.
- o Contaminated with toxic or hazardous chemicals:
 - a. Place into a hard walled sharps container (non-red without biohazard label).
 - b. Label with a hazardous waste label, and contact EH&S for pick-up as a hazardous chemical waste.
- o Contaminated with radioactive material:
 - a. Place into a hard walled sharps container (non-red without biohazard label).
 - b. Label with radioactive tape, and place full sealed container in a dry radioactive waste box.
 - c. Contact EH&S for pick-up as radioactive waste.
- o Contaminated with biohazardous agent and carcinogenic or hazardous material:
 - a. If the chemical disinfectant for the biohazardous agent is compatible with the hazardous material, disinfect the material and place into a hard walled sharps container (non-red without biohazard label).
 - b. Label with a hazardous waste label, and contact EH&S for pick-up as a hazardous chemical waste.
 - c. If the disinfectant is not compatible with the hazardous material, cover the spill with paper towels and call EH&S for assistance.
- o Contaminated with biohazardous agent and radioactive material:
 - a. Cover the spill with paper towels and call EH&S for assistance.

- Pipette Tips

Waste Pipette Tips Disposal Policy:						
		Medical	Infectious (animal/plant)	Chemical	Radiological	NOS
Preferred	Primary Disposal	Red hard-walled sharps container	White hard-walled sharps container	Hard walled container with appropriate label	Hard walled container with rad label, rad dry waste box	Hard-walled container
	Treatment	optional: autoclave	optional: autoclave	none allowed	none allowed	none required
	Waste Stream	Medical waste	EH&S pickup	EH&S pickup	EH&S pickup	Lab trash
	Terminal	Approved medical waste treatment site	Vendor autoclave	EH&S packaging and disposal	EH&S packaging and disposal	Landfill
		Medical	Infectious (animal/plant)	Chemical	Radiological	NOS
"Allowed"	Primary Disposal	Leak-proof heavy bag IN red medical waste bag	Leak-proof heavy bag IN clear autoclave bag (TIPS ONLY!!!!)	Leak-proof heavy bag IN another leak-proof bag	Leak-proof heavy bag, rad dry waste box	Leak-proof heavy bag IN another leak-proof bag
	Treatment	optional: autoclave	Mandatory: autoclave and document	none allowed	none allowed	none required
	Waste Stream	Medical waste	Lab trash	EH&S pickup	EH&S pickup	Lab trash
	Terminal	Approved medical waste treatment site	Landfill	EH&S packaging and disposal	EH&S packaging and disposal	Landfill

Biological Waste

Includes any material that once contained or now contains living organisms, or that is a product, portion, or waste of a living or once-living organism.

Biological waste that is infectious to humans must be managed and disposed of as medical waste.

- Animal Carcasses and Waste Products
 - Healthy animals not treated with chemicals, radioisotopes, or biohazardous agents:
 - a. Place animal parts, tissue, waste and carcasses (small and large animals) in tightly sealed plastic bags in designated disposal containers.
 - b. Carcasses will be sent off campus to a rendering company or incinerated. Contact your department for more information.
 - Animals treated with chemical, radioactive, or biohazardous agents:
 - a. Contact EH&S to develop a written handling, transportation and treatment and/or disposal procedure.
- Blood and Body Fluids

- Non-infectious blood and body fluids in tubes, bags, vacutainers, etc.:
 - a. Treat with bleach (10% final concentration for at least 30 minutes) and pour into a sink drain connected to the campus sewage system. Be sure to follow the treated material with copious amounts of water. **Do not pour into a storm drain.**
 - b. Place the empty containers in autoclavable bags with autoclave tape and autoclave. **Do not dispose of containers of liquids in garbage cans or dumpsters.**
 - c. Dispose of autoclaved waste in solid waste container.
- Non-infectious blood or fluid soaked materials:
 - a. Place bandages, gauze, paper towels, etc. in autoclavable bags with autoclave tape and autoclave. **There should be no dripping or leakage of liquid from bagged waste.**
 - b. Dispose of solid autoclaved waste in solid waste container.
- Blood, fluid or fluid soaked materials that contains chemical, radioactive, or biohazardous agents:
 - a. Contact EH&S to develop a written handling, transportation and treatment and/or disposal procedure.
- Tissue Culture Media
 - Culture media used to transfer, inoculate, and prepare non-infectious cultures:
 - a. Place solid tissue culture media waste in autoclavable bags with autoclave tape and autoclave. **Do not dispose of untreated materials in garbage can or dumpsters.**
 - b. Dispose of autoclaved waste in solid waste container.
 - c. Autoclave or treat liquid tissue culture media waste with bleach (10% final concentration for at least 30 minutes) and pour liquids into a sink drain connected to the campus sewage system. Be sure to follow the treated material with copious amounts of water. **Do not pour into a storm drain.**
 - Culture material that contain chemical, radioisotopes or biohazardous agents:
 - a. Contact EH&S to develop a written handling, transportation and treatment and/or disposal procedure.

Medical Waste

Includes waste containing biological agents known or suspected of being a human pathogen. All wastes that are classified as medical waste (infectious human waste and sharps waste) must be stored, handled, transported and treated in accordance with the Medical Waste Management Act.

Contact EH&S at 752-1493 or ehsdesk@ucdavis.edu to develop a written medical waste handling, transportation and treatment and/or disposal procedure.

References

Biosafety in Microbiological and Biomedical Laboratories, 5th edition. National Institutes of Health, Centers for Disease Control. <http://www.cdc.gov/OD/ohs/biosfty/bmb15/bmb15toc.htm>

Reviewed/Revised. 03/2009

SJB

SafetyNet #62 - Needle and Syringe Safety



This SafetyNet outlines steps that can be taken to prevent potential needle stick injury or illness from sterile or contaminated needles.

Recommended Methods:

- To Remove Syringe from Case:
 - Grasp the casing top with the fingers of one hand and the case with fingers of other hand; push the top in toward the case and twist in opposite directions; or, hold the case perpendicular with the top facing downward and with one brisk tap, hit the top of the case against a counter top, then twist off the cap.
 - Slip the syringe out of the case and hold by the barrel (do not touch the open end where the needle will be attached).
- To Remove a Needle from Sterile Plastic Packaging:
 - Remove cap carefully.
 - a. The plastic cap is pitted and may be sealed snugly against a plastic needle hub.
 - Hold the small end (hub end) of the plastic packaging with fingers of one hand and the larger end with fingers of the other hand; then rotate the two pieces in opposite directions to break the seal.
 - Remove smaller plastic cap from the hub end of the needle, leaving the needle (sharp end) covered and protected.
- To Attach a Needle to a Syringe:
 - Holding the capped needle in one hand and syringe in the other, insert the small end of the syringe into the hub of the needle. Slightly rotate the syringe as you push it into the hub of the needle. This also helps break the cap seal on the needle.
- To Remove a Needle Cap:
 - Hold the syringe with one hand and grasp and push the needle cap toward the syringe with the other hand while rotating the cap just slightly (about 1/4 turn) to break the seal (do not try to pull the cap off the needle as you may inadvertently stick yourself when the cap comes off suddenly).
 - **Never** leave an uncovered needle on the counter. Always rest needle in its cap while waiting to use the assembled needle and syringe; it is not necessary to place the cap securely onto the needle at this point.

Needle and Syringe Disposal Instructions:

- Dispose of needles and syringes in puncture-resistant (hard-walled) containers (red sharps container if it contains medical waste).

- A sharps container should be placed close to where the needles and syringes are being used.
- Do not break or shear the needle shaft from the hub; this may aerosolize the material.
- Do not bend the needle.
- Do not remove the needle from the disposable syringe.
- Do not walk around the room with an uncapped needle or syringe and needle.
- Place the needle and syringe, **without cap**, directly into a disposable sharps container.
- If you need to replace the cap, do not hold the cap while attempting to reinsert the needle. Place the cap on a surface (e.g. counter top) and insert needle into cap. Carefully elevate the needle and cap, while applying slight forward pressure against the counter to set the needle in the cap. After securing the cap on the needle, dispose of materials into sharps disposable container.

For additional information, contact EH&S at 530-752-1493 or ehsdesk@ucdavis.edu.

Reviewed/Revised. 05/2003

SJ

SafetyNet #88 - The Respiratory Protection Program



How the Program Works

EH&S has three approaches to achieving respiratory protection. The first method of protection is local engineering controls such as fume hoods or local exhaust systems - the most effective and efficient means of protecting employees from on-site breathing hazards. Secondly, EH&S recommends administrative controls: these include substituting less toxic materials if possible, reassessing the task to see if exposure can be minimized or eliminated, and the possibility of job rotation to reduce the exposure of any one person to acceptable levels. Third, when the first two methods are not feasible, not yet in place, or cannot provide adequate protection, respiratory protection equipment is recommended.

Only those employees who have been designated by their supervisor, principal investigator, or EH&S as required to use respiratory protection equipment, and who have been medically approved, properly fitted, and trained are authorized to use such equipment.

A properly fitted respirator can help protect you. Face shape, facial hair, eyeglasses, missing dentures, and certain skin conditions can all affect respirator fit. Choosing a respirator that both fits properly and provides the protection required for a specific type of contaminant is essential. Each employee who is required to use respiratory protection equipment must be quantitatively fit tested before any equipment can be issued. EH&S provides fit testing and training, and maintains all records related to the program.

Procedures For Obtaining Respiratory Protection Equipment

When it is clearly impractical to remove harmful dusts, fumes, mists, vapors, or gases at their source and the employee may be exposed to levels at or above the Cal/OSHA Permissible Exposure Limits (PELs) found in Title 8, the employee must be enrolled and participate in the Respiratory Protection Program. Respiratory protection should only be used when other control measures (i.e., engineering controls, procedures, etc.) are not feasible or adequate to reduce exposures to acceptable levels. Elements of the respirator protection program include:

- **Medical History Questionnaire and Pulmonary Function Test** - Upon referral from EH&S, the employee is responsible for setting an appointment with Occupational Health Services (757-3200) for a pulmonary function test. At that time the employee will be asked to fill out a Medical History Questionnaire Form. Once the employee has received clearance from Occupational Health, respirator fit testing and training will be conducted.
- **Respiratory Protection Training** - The purpose of this training is to inform the user of the limitations, use, and care of the respirator. Anyone requiring a respirator, **including all single use disposable respirators** must be informed of the limitations of the masks.
- **Respirator Fit Testing** - EH&S will conduct a quantitative fit test when all the above elements are met. A respirator that provides the best comfort and protection will be issued. Upon completion of these three requirements, a respirator, cartridges, respirator test report, and EH&S Inter-Office Recharge Form will be submitted.
- **Respirator User's Responsibilities**
 - Update your respirator qualification status annually
 - Reschedule for a future date if scheduled appointments cannot be made. (A **No-Show** fee will be charged if a written/verbal cancellation is not received 24 hours prior to the scheduled appointment.)

- Follow the manufacturer's instruction on use, limitations, maintenance, cleaning, and storage of the respirator.
- Respirators must be returned to EH&S when employment is terminated at UC Davis or when the respirator is no longer needed.

For additional information, contact EH&S at 530-752-1493 or ehsdesk@ucdavis.edu.

Reviewed/Revised. 01/2007

FJP