UNIVERSITY OF OREGON
HAZARDOUS MATERIALS GUIDE

IN CASE OF EMERGENCY CALL

911

COMMUNICATION & EMERGENCY RESPONSE CENTER (CERC)
541-346-2919
(For non-emergency fire, medical, hazardous materials spill
or security incidents)

SPILL RESPONSE

When a hazardous material spill occurs, or if it is unknown if the material is hazardous go to a secure location and call:

Environmental Health and Safety, 6-3192
8:00am to 5:00pm, Monday through Friday
If you are unable to obtain assistance call
UOPD/CERC, 541-346-2919

Provide all information requested and follow the instructions provided by the dispatcher. If the hazards of the material are known and proper protective measures are followed, it is permissible to clean the spill in your work area. If you are unsure in any way **DO NOT** take any risks.

INTRODUCTION

This guide outlines procedures established for the safe and proper management of hazardous materials located at the University of Oregon. These procedures are intended to promote compliance with federal, state, and local regulations pertaining to hazardous materials. In addition, this guide provides instructions for handling materials which may not be considered hazardous, but have special processing or waste management requirements (See Appendix D).

The University of Oregon is unique in that the wastes generated are of an extremely varied nature. Researchers, instructors, and support services generate much of the University's hazardous waste. Everyone at the University who generates hazardous waste has the responsibility to ensure the success of the Hazardous Waste Management Program. The priorities of the program include:

- Reduce the quantity of hazardous waste generated.
- Manage hazardous waste in a manner which protects the health and safety of students, staff, and faculty at the University, as well as the surrounding community.
- Manage hazardous waste using the most environmentally sound and responsible methods practical.
- Reduce the potential for a release of hazardous waste into the environment.
- Comply with governmental regulations regarding hazardous waste management.

RESPONSIBILITIES

Department Chair or Institute Director

- Implement procedures which prevent abandonment of hazardous materials. Proper disposition of hazardous materials is required whenever a responsible individual leaves the University or transfers to a different working location. This includes shared storage areas such as refrigerators, freezers, and stock rooms. Refer to Appendix G for work area close out procedures.
- Promote the concepts of waste minimization and waste reduction.
- Assist in communications between Environmental Health and Safety and the primary user of hazardous materials when unusual circumstances arise.

- Assist in communication to departmental staff on issues related to hazardous materials.
- The department may be responsible for any additional costs incurred due to improper management or disposal of hazardous materials.

Faculty Member, Supervisory Staff, Employee, or Student

- Review procedures for substituting a less or non hazardous procedure which will produce the same results.
- Consider procedures to implement a smaller scale operation or experiment when possible.
- Implement inventory control by evaluating if a smaller quantity of chemical(s) may be purchased.
- Check Chemical Re-Use Facility database to avoid making unnecessary purchases.
- Educate others in the same working area on the safe and proper purchase, use, storage, and disposal of hazardous materials at the University.
- Accurately label all containers in the work area.
- Conduct periodic inspections of potential waste generating operations under your direct control.
- Contact Environmental Health and Safety when hazardous materials needs to be collected. Do not accumulate large quantities of unnecessary hazardous materials. See Material Handling and Disposal below for details on preparing materials for collection.

Science Stores Personnel

- Label individual chemical containers as they arrive if not already done so by the manufacturer.
- Date the chemical as to the month/year it is received.
- Assist in returning gas cylinders to the manufacturer or vendor. If possible purchase gases from a vendor who will readily accept returns.

Environmental Health and Safety (EHS)

- Provide a timely collection service for hazardous materials which are no longer needed.
- Maintain a Hazardous Waste Management Program which emphasizes source reduction.
- Arrange for final disposal of hazardous wastes.
- Complete all required regulatory reporting.

- Act as the University representative for contract agreement, shipment record keeping, and regulatory inspections involving hazardous materials.
- Provide information and technical assistance regarding proper purchasing, storage, labeling, and disposal of hazardous materials.
- Act as a collection point for individuals who have ideas for improving the Hazardous Waste Management Program.
- Maintain an accurate up-to-date inventory of the Chemical Re-Use Facility.

WASTE MANAGEMENT PRIORITIES

The University of Oregon maintains a successful Hazardous Waste Management Program. The success of the program is dependent upon each member of the campus taking responsibility for different aspects of the program. Some of the people who are integral to the success of the program include:

- Purchasing, receiving, laboratory, and shop personnel who first obtain the material for use.
- EHS, laboratory, and shop personnel who promote proper hazardous material handling procedures.
- University administrators who exemplify attitudes which inspire and unite the campus community to support the waste management program

By following the program priorities listed in the introduction and the specific management priorities listed below, the program can continue to improve.

Priority 1. Waste Reduction

A key hazardous waste management priority is to reduce the amount and toxicity of hazardous waste generated. Every effort should be made to reduce, reuse, or recycle materials before final disposal.

Waste reduction training, educational materials and on-site assistance is available by contacting EHS at 6-3192.

When evaluating waste reduction opportunities, the following concepts should be considered:

Purchasing. Before purchasing new materials, check with others such as nearby work areas, shared chemical storage areas, or EHS to see if the product is already available. If a purchase must be made, obtain the smallest amount

of the product which will satisfy the project requirements. Over purchasing of materials is a major contributor to unnecessary waste.

Inventory Control. A substantial amount of hazardous waste disposed of by the University consists of unused, outdated, or contaminated chemicals. Careful planning of chemical quantities and monitoring of chemical storage areas can reduce costs to the laboratory, department, and University. EHS should be contacted as soon as chemicals are no longer being used to prevent accumulation of outdated chemicals.

Substitution. Using non-hazardous or less hazardous material in place of the original material for a process requires some thought and research by the user. In doing this, the user is not only reducing waste but also reducing the risk of potential exposure to those in the immediate area. Process substitutions can also be utilized to reduce hazards. These substitutions may include using improved engineering controls to reduce waste and the risk of potential exposure.

Scale Reduction. Many individuals have already implemented micro scale techniques as a method of reducing waste. Whenever this strategy is utilized, the reduction of hazardous waste generated is consistent and substantial over time.

Product Exchange. While some procedures may require new materials, quite often it is possible to borrow or trade products from other users. Checking with others in the same department, building, or other nearby work areas can save money while reducing the amount of waste generated. A little extra record keeping and communication can be beneficial for everyone. EHS can assist in locating specific hazardous materials which are being used on the campus.

Recycling/Reuse. While recycling is not a true pollution prevention strategy, this alternative is preferred to disposal since the use of virgin materials is still being kept to a minimum. EHS has incorporated recycling strategies into current practices. Examples of these include: reclaiming the silver from spent photographic fixer, and recycling elemental mercury through a commercial recycling facility.

Priority 2. Material Segregation

Separate containers should be used for each waste material whenever possible. Types of materials include flammables, corrosives, toxics, and reactives. Segregating materials into like materials reduces risk due to chemical incompatibilities as well as helping keep costs to a minimum. For

example, a container of spent flammable solvent is typically collected for an approved method of energy recovery. If the solvent bottle is contaminated with mercuric chloride, energy recovery is no longer an option and a more expensive final disposition method must be utilized. If compatibility questions arise please contact EHS at 6-3192.

Priority 3. Waste Determination

When a product is no longer usable, it is considered waste. Local, state and federal regulations define what constitutes a waste as a hazardous waste. Generally, the EPA defines a hazardous waste as one which is specifically listed as such, or possesses hazardous characteristics. EHS is available to assist in determining whether a material is considered a hazardous waste.

Some wastes may not be regulated wastes however, they may possess characteristics which are similar to regulated wastes. In these cases, an off-site disposal method is a preferred option to sanitary sewer disposal or landfilling. See Appendix D for special wastes.

Priority 4. In House Treatment

Acid-Base Neutralizations. Small quantities of acids or bases, where pH is the ONLY hazardous characteristic, may be neutralized to a pH range of 5.5-12.0 and the neutral non-hazardous solution disposed into the sanitary sewer system. Neutralization logs shall be maintained at the point of sewer discharge, including: Date of discharge, Individual discharging, Analytical method used to determine pH, Results of analytical method, Volume of discharged liquid.

EHS will collect large quantities of acids or bases, or any quantity with multiple hazardous characteristics. **DO NOT DUMP** any CONTAMINATED neutralized corrosive material down the drain or in the trash.

Priority 5. Waste Disposal

EHS collects and prepares hazardous materials for ultimate disposal by commercial contractors in accordance with local, state, and federal regulations. When preparing hazardous materials for ultimate disposal, refer to the following section for material handling and processing procedures.

MATERIAL HANDLING, USE, AND COLLECTION

The following procedures should be followed when handling hazardous materials and when identifying a material which is no longer being used. If the material is unusual or there are questions as to these procedures, call EHS at 6-3192. **DO NOT DISPOSE OF HAZARDOUS MATERIALS DOWN THE SANITARY SEWER OR IN THE GENERAL TRASH.**

Laboratory Signage. Laboratory signage shall be utilized as a standard warning mechanism on the corridor doors entering laboratory workspace. Signage shall be developed in concert with OEHS and is based upon hazardous materials inventory and laboratory work practices. Signage utilizes NFPA, HMIS, and ANSI warning icons to provide an overview of the relative hazards to visitors, trained laboratory workers, and emergency first responders. Signage also identifies responsible parties and emergency contacts within the University and the local jurisdiction.

Transportation of Hazardous Materials. All chemicals, liquids and solids, should be transported using the container-within-a-container concept. Small containers may be carried, large containers should be transported within a chemically resistant bucket or upon a cart. Incompatibles and Corrosives must be transported within independent secondary containment and upon a cart. Gas cylinders must be transported upon a cylinder cart. Liquid nitrogen containers should be transported upon carts, or as specially designed rolling low-pressure cylinders. When transporting materials, move carefully and anticipate sudden or surprise movements of others; navigate corners, and uneven terrain, carefully. When transporting materials via elevator, consider the material hazards and warn potential riders that the stairs is their preferred option if unable to wait for the next car. Routing maps (available from OEHS) that keep material transport indoors, and away from heavily trafficked areas, should be followed. Only transport large quantities or particularly hazardous substances upon consult with OEHS; special requirements may apply. Hazardous materials should NEVER be transported by personal vehicle, transportation between buildings should be done by walking, and transportation off-site should only be done upon consult with OEHS.

Using Hazardous Materials. Safe use of hazardous materials may be assured by following the provisions within the University's Chemical Hygiene Plan, laboratory-specific plans and procedures, and by consult with OEHS. Introductory safety training is provided for new-hires, as refreshers, and upon request.

Material Spills. Small spills (less than or equal to 500 mL), at the discretion of the employees involved and under the supervision of the laboratory manager or Principal Investigator, may be handled directly by personnel in the immediate area who are familiar with the associated hazards. Note that in some cases, such as those involving particularly hazardous substances, spills less than 500 mL will be considered large spills. Large spills must be reported to OEHS to obtain assistance, meanwhile employees should leave and isolate the immediate area. EHS will follow EHS SOP EM-1, "Emergency Response Involving Hazardous Materials". Any unexpected compressed gas release and spills of particularly hazardous substances will be treated as major spills. Container leaks shall be treated as small spills unless the material released, or discharge rate, necessitates a large spill response.

Collection Container. It is important that all collection containers be non-leaking with a sealing lid. The material must be compatible with the container type. For example, acids or bases should not be stored in metal containers. Containers sealed with parafilm, corks, or tape are unacceptable. Volumes should be five gallons or less. Containers should be filled to approximately 80% of their capacity. This allows safe transportation of the material while maintaining the best use per disposal dollar. EHS has some containers available for hazardous materials collection. Refer to Appendix E for more information on container management.

Container Storage. All containers of liquid hazardous materials should be stored in a secondary container such as a plastic tub. Secondary containers should be large enough to hold the complete contents of the largest collection container. This will prevent a potential release onto the countertop, floor, or into the sanitary sewer system. Containers should be stored in a location where the risk of spillage is minimal. Hazardous materials prepared for collection should not be stored in walkways or fumehoods unless dedicated for that purpose. Storage of materials shall comply with quantity limitations, structural, and engineering requirements set within Building and Fire Code as determined and interpreted by the City of Eugene Fire Marshal's office and the University.

Container Labels. Reagent containers, solvent containers, cylinders, and dewars shall have a legible Manufacturer's label. Day-use containers shall have a secondary label indicating material contained. Containers for collection shall be labeled with the hazardous chemical tags provided by EHS (See Appendix B). Provide all information requested. Use full chemical names as well as the percentage of each category. Containers should be labeled with the material it contains, all other marking should be made illegible.

Segregation. Segregate the materials according to chemical compatibility (See Appendix A). For example, oxidizing materials should be kept separate from flammable materials and strong bases away from strong acids. For more information regarding chemical compatibility, consult the Material Safety Data Sheet(MSDS)or contact EHS at 6-3192.

Collection. To request a hazardous material collection, call EHS at 6-3192 and indicate: The name and phone number of the person responsible for the area, location of the material and an estimate of the amount of material to be collected. EHS personnel **will not** accept delivery of waste materials at the waste handling facility without prior approval by EHS personnel. Every effort will be made to ensure prompt collection of materials. Hazardous materials are typically collected within 72 hours of request.

Do not stockpile containers and call for one large collection. The collection facility operates most efficiently when there is a steady flow of materials.

Inventory. Chemicals should be inventoried at least annually with unusable chemicals prepared for collection by EHS personnel. With some chemicals, crystals commonly appear around container caps after a few years in storage. Some chemicals exhibiting this characteristic can form explosive compounds. Examples of these compounds are picric acid, ethyl ether, and tetrahydrofuran. **DO NOT** open containers which are potentially reactive and/or have crystals around the container cap. Call EHS for container management options. Peroxide-forming chemicals should be disposed 6 months after opening or if unopened, 1 year after purchase.

Radioactive and Mixed Materials. The proper handling and disposal procedures for radioactive materials are in the *Radiation Safety Guide*. Call the Radiation Safety Officer at 6-2864 to receive information about the University's Radiation Safety Program.

Special Wastes. Some common materials become regulated wastes when generated as part of University operations. Refer to Appendix D for a listing and handling instructions for various special wastes such as sharps, batteries, fluorescent light tubes, aerosol cans, used oil, and unknown materials.

APPENDIX A CHEMICAL CHARACTERISTICS

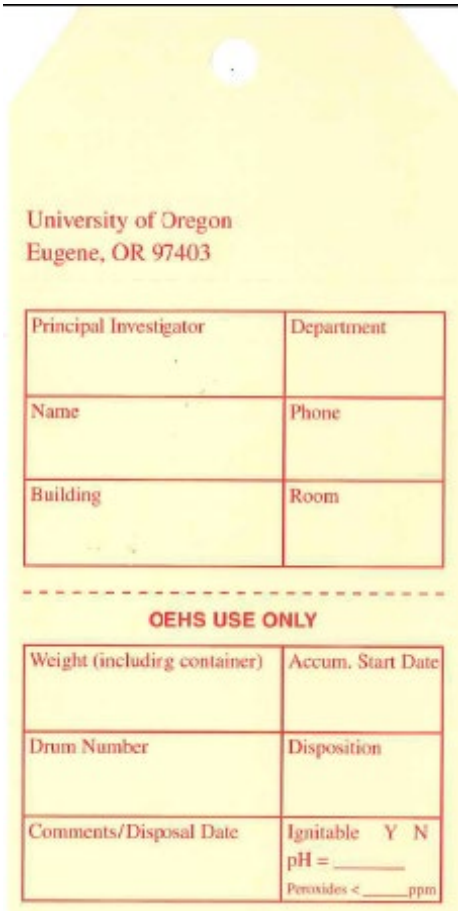
CHARACTERISTICS	EXAMPLES
Corrosive:	
Liquid with a pH of < 5.5 or > 12.0.	Sulfuric acid Sodium hydroxide solution
Solid- when mixed with water have a pH of < 5.5 or > 12.0.	Ferric chloride Potassium hydroxide
Flammable:	
Liquids with a flash point < 140°F.	Methanol Toluene
Solids which ignite in air or through friction or absorption of moisture.	Silicon powder Paraformaldehyde
Reactives:	
Unstable compounds which may explode.	Picric acid (dry) Lead azide
Compounds which react violently with water.	Metallic sodium Metallic potassium
Compounds which may produce toxic or corrosive gases when in contact with water or acids.	Sodium cyanide Acetyl chloride
Toxicity/Poisons:	
High acute toxicity to mammals by ingestion, inhalation, or absorption (measured by median lethal doses in laboratory animals)	Heavy metals (Mercury) Phenol Benzene Nicotine Cyanides

APPENDIX B

Hazardous Material Tag

Front of Tag

Back of Tag



Improperly completed tags may cause unnecessary delays in removal of materials.

APPENDIX B HAZARDOUS MATERIAL TAGS

What makes a GOOD tag
A good tag includes all of the following information, filled out legibly:

Part A.
Hazard category and %: List in fully (no abbreviations) all hazard chemicals in the container, and include their approximate proportions. These percentages should add up to 100%. If the proportions are unknown, indicate that the container holds a mixture and identify the materials as completely as possible.

For example: methanol 50%
water 50%

It is suggested that a "log in" type of system be utilized to keep track of mixed wastes. A running tally of waste materials can be taped to the jar and when waste is added, material, amount, and initials of the researcher are noted. When the container is nearly full, the "log" can be easily transcribed onto the hazardous material tag.

Chemical formulas or chemical abbreviations are unacceptable. No writing should be in the "office use only" section of the tag.

Circle appropriate phase and container information.

Part B.
Principal investigator: This is the person in charge of the project or work area.

Department: Most departments are not charged for waste disposal. However, EHS is interested in tracking who generates chemical waste to help in pollution prevention planning and toxic use reduction efforts.

Name: This is the person we contact if we have questions about the waste. He or she should be knowledgeable about the chemical characteristics of the waste and the processes used to generate the waste.

Phone number: Provide a phone number at the University where the user of the material can be reached.

Building and Room: Please list the building and room where the material is located.

The Bad Tag
Some common mistakes found on bad tags include:
* Writing which is not legible

* Failure to identify the building and room where the material is located.

* Failure of contents adding to 100%.

* Using chemical formulas to identify the constituents in the material. For purposes of clear communication the identity of the materials represented must be written out completely.

* Using trade names, abbreviations, or "waste" instead of listing material components.

The Ugly Tag
Remember, people handle the hazardous material tags and containers during the collection process. In addition, local, state and federal regulations require that all hazardous materials be labeled and that there is an inventory of all hazardous wastes generated on campus.

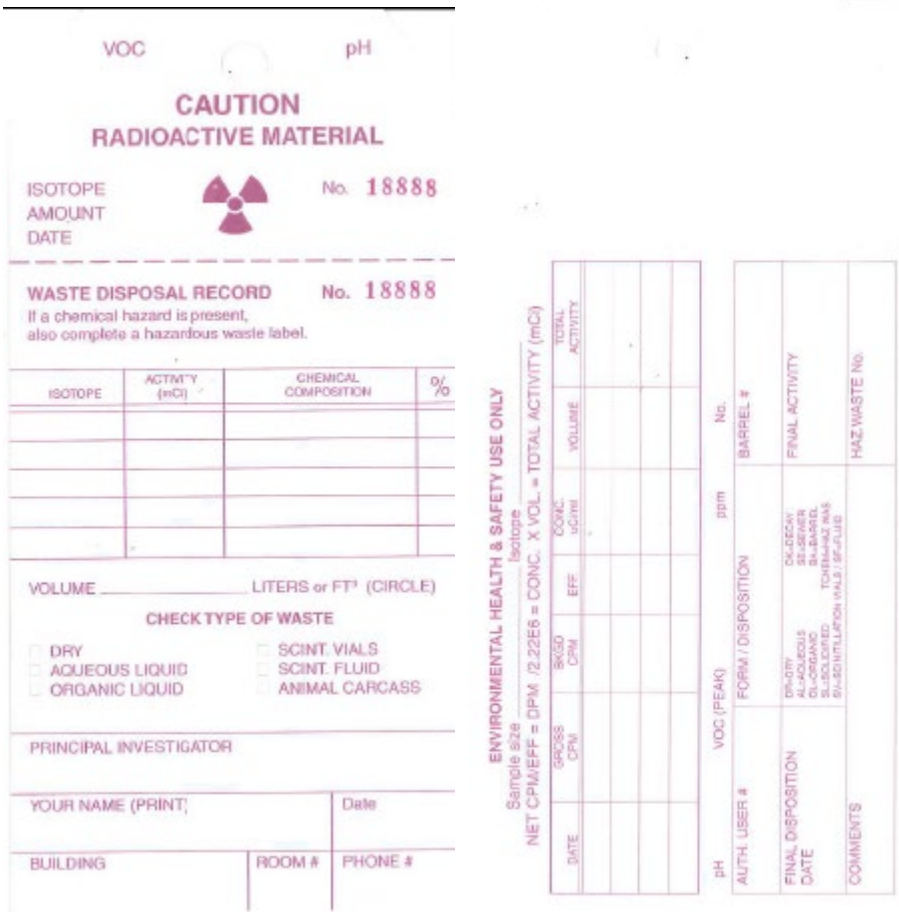
Tags that are contaminated with chemicals are occasionally discovered. Chemically contaminated tags often obscure or erase the tag's serial number as well as add to confusion on identification of material contents.

Prevent leakage by leaving empty space at the top of the containers. Wipe off dirty containers before affixing tags. If a container leaks, place the container in another container, or transfer the waste to an intact container. If you need containers suitable for waste transport, or have questions regarding the hazardous material tags EHS at 6-3192.

RADIOACTIVE MATERIAL PICK UP TAG

Complete the information below the dotted perforation line. Do not make extraneous marks on the card since it is a permanent record.

Front Back



APPENDIX C RADIOACTIVE MATERIAL TAGS

WASTE DISPOSAL RECORD

ISOTOPE: State the isotope(s) present in the container.

Liquid waste shall be separated by isotope. Solid waste may have isotopes combined in a single container. Most liquid scintillation vials may be combined, verify with EHS.

ACTIVITY: reported in milliCuries (mCi)

Liquid: Fill jugs to 90% of capacity. Count a representative sample, usually 1 milliliter. Calculate container activity by:

1. net counts per minute(cpm) per milliliter / efficiency of counter for the isotope being counted = disintegrations per minute(dpm) per milliliter
2. dpm per ml / 2.22E6 dpm per microCuries (μCi) = μCi per ml
3. μCi per ml × volume (milliliters) = μCi per container
4. μCi per container / 1000 μCi per milliCuries = Total activity (mCi) per container

Report three significant figures in milliCuries.

Correct the original activity received by accounting for decay. ($A = A_o e^{-\lambda t}$). Correct the activity of each log number used and disposed of to the current date.

Liquid Scintillation Vials: Estimate the activity present by noting the average dpm/vial times the number of vials to be disposed. Report a minimum value of 0.0001 mCi.

Solid: Subtract the calculated liquid waste activity from the corrected original activity to obtain the best estimate for solid waste activity.

Received activity minus disposed activity should demonstrate a balance on hand for each log number.

CHEMICAL COMPOSITION:

- If a chemical hazard is present, also complete a hazardous waste label.
- List the chemicals by name (not formula) starting with the component of highest percent per volume. This includes water or other solvents. List all chemical components greater than 1% by volume.
- If the waste has a final pH < 5 or pH > 10, note the component affecting pH.

- Dry waste may be described as; dry solid, laboratory trash, or paper, plastic, glass. No liquids or scintillation vials are to be placed in the dry waste.

%:

Indicate the percent by volume of each chemical component.

VOLUME:

Estimate the volume of waste. Estimate the liquid volume to the nearest liter. The dry waste boxes provided by EHS are two cubic feet.

CHECK TYPE OF WASTE:

Check the category of waste in the container.

PRINCIPAL INVESTIGATOR:

This is the faculty member authorized by the Radiation Safety Committee to oversee the use of radioactive materials in a designated laboratory.

YOUR NAME:

This is the person completing the waste tag. He or she should be knowledgeable about the waste composition.

Date:

List the date on which the activity was determined.

BUILDING and ROOM #:

List the building and room number where EHS will pick up the waste.

PHONE #:

List the phone number where the person completing the waste tag and knowledgeable about the contents can be contacted.

Additional information may be obtained from the Radiation Safety Guide in the section on RADIOACTIVE WASTE DISPOSAL or by contacting the Radiation Safety Officer at 6-2864.

APPENDIX D

SPECIAL MATERIALS LISTING

Batteries. All batteries which are purchased for University use should be collected by EHS for proper disposal. This waste stream is considered a universal waste and may not be disposed of in the regular trash.

Glass. Laboratory glassware (e.g., beakers, Erlenmeyer flasks) and broken glass that is not contaminated with hazardous materials must be disposed of in standard "Broken Glass" boxes. These boxes may be obtained from Science Stores or scientific supply companies. The boxes should be securely taped at the bottom to prevent heavy contents from breaking through, and the plastic bag liner must be in place. Use of homemade cardboard boxes or other containers is only permitted with express approval from EHS.

Glass contaminated with infectious or recombinant materials may be decontaminated with appropriate disinfectant and then disposed in the "broken glass" box IF the glass can be safely handled. Alternatively, it may be disposed of in the sharps container.

If glassware is contaminated with chemical or radiological material, please consult with EHS for disposal options.

When the box is filled, please tape it shut securely. Lab staff may take boxes to the dumpsters or request pickup from EHS. Unbroken, empty reagent containers are not considered laboratory glassware, and may be disposed directly to garbage dumpsters.

Sharps. The State of Oregon defines "sharps" to include the following:

- Needles
- IV tubing with needles attached
- Scalpel blades (including razor blades)
- Lancets
- Glass tubes that could be broken during handling (e.g., capillary tubes, thin-walled test tubes, Pasteur pipettes)
- Syringes that have been removed from their original sterile containers

Additionally, a "syringe" is an instrument that consists of a hollow barrel fitted with a plunger and a hollow needle.

UO requires that all sharps be collected in one of the following containers:

1. *In areas used for patient care, Animal and Biosafety Level 2 laboratories, or otherwise used with human or non-human primate source materials*, a standard sharps container containing a biohazard symbol, as depicted here.

2. *In all other areas, such as Animal and Biosafety Level 1 laboratories, chemistry laboratories, arts/theater, and facility maintenance use,* the sharps containers depicted above are optional. Alternatively, groups may collect sharps in an EHS-approved leakproof, rigid, puncture-resistant container that can be securely closed once filled. The container must clearly be marked "SHARPS" and conflicting information removed or marked through. Examples include plastic laundry detergent bottles, coffee cans, or containers intended for non-hazardous sharps (below).

When containers are ¾ filled, close the lid securely and request pickup from EHS. **ALL** sharps must be picked up by EHS for incineration, with the only

exceptions being groups contracting directly with a waste disposal vendor for incineration. **Do not** place sharps in the dumpster.

Syringes without attached needles may be disposed of in the biohazard (red bag) waste stream. However, removing needles from syringes for the express purpose of preferred waste disposal is prohibited.

Biohazards. Materials that contain potentially infectious human cells are considered a biohazard. If there is a question whether a material is biohazardous, please contact EHS for clarification. EHS can assist with acquiring biohazard containers that are specifically designated for infectious agents or bloodborne pathogens. When biohazard containers are almost full, call EHS at 6-3192 to request a collection.

Gas Cylinders. Before purchasing a compressed gas cylinder, ensure the vendor has a reliable return policy. Many vendors will only accept back cylinders that are completely empty. Order a cylinder that contains a volume that your laboratory will be able to use in a reasonable time frame. The use of lecture size bottles are discouraged because of the difficulty in returning these products to the manufacturer. When gas cylinders are not in use, gas connections should be removed and cylinder caps in place. Gas cylinders should always be securely attached to a solid object such as a wall with a minimum of one chain, ideally two chains. If the manufacturer is unable to accept a returned cylinder, contact EHS to discuss handling options.

Controlled Substances. All controlled substances must be tracked from the time of purchase through final use. For more information regarding controlled substances, call EHS at 6-3192.

Fluorescent Light Tubes. Spent fluorescent light tubes are currently considered a regulated waste and are collected for recycling by a commercial facility. DO NOT PUT FLUORESCENT LIGHT TUBES IN THE DUMPSTER. Burned out tubes should be collected by either Facilities Services 6-2319 or EHS.

Fluorescent Light Ballasts. Light ballasts may contain PCBs and thus be considered a regulated waste. Only licensed electricians should remove fluorescent light ballasts. Call Facilities Services at 6-2319 to arrange fluorescent light ballast removal. PCB light ballasts are collected and sent to an approved facility for recycling.

Paint Filters. Paint booth filters are typically considered a hazardous waste. Therefore, EHS should be contacted to arrange a collection. Before disposing

of any filters that have come into contact with a hazardous material, contact EHS for assistance with a waste determination.

Aerosol Spray Cans. Spray cans under pressure are considered hazardous waste because of their reactive characteristic. All aerosol cans should be collected by EHS personnel.

Contaminated Rags & Absorbent Towels. Rags, towels, and other absorbent materials which come into direct contact with hazardous materials may be considered a hazardous waste. Before placing contaminated rags in a dumpster, contact EHS for a waste determination.

Unknowns. After discovering a material which you cannot identify, investigate through previous researchers what it may contain and/or perform an analytical test. If still unable to identify, call EHS to collect the material and perform a waste determination. Unknown materials are extremely expensive to dispose of and present safety hazards to those in the immediate vicinity. Proper material management will reduce the number of unknown materials. **UNKNOWN MATERIALS ARE NOT TO BE DISCARDED INTO THE REGULAR TRASH OR SANITARY SEWER.**

Appendix E

CONTAINER MANAGEMENT GUIDELINES

Environmental Health and Safety has developed container management guidelines for the University community. The reason for the adoption of these guidelines is to take a pro-active and comprehensive approach to ensure containers are properly labeled, stored, and discarded. The goal is to eliminate the presence of unmarked and unclaimed containers on University-owned property.

For the purpose of these guidelines, a container is defined as a drum able to hold five (5) gallons or greater. Performance criterion for effective guidelines include the proper storing and labeling of unused products, rinsing of empty containers, and the storing of empty containers.

For the University to implement effective container management guidelines, EHS is asking each department to read and implement the steps below:

1. Label all containers with a durable material (i.e. paint, stickers) indicating, contents, associated hazards and department ownership (i.e. EMU, AAA, etc.).

2. If the containers are being used to store hazardous materials, label the container in a manner which conveys the hazards. Either the HMIS or NFPA system work well for this purpose. If a non-hazardous material is being stored in a 5-gallon or larger size container, the contents should also be labeled on the outside of the container.

3. Label containers with the word "EMPTY" if they do not contain any material.

4. Store all containers in an area secured by a locked door or gate that the department monitors to prevent tampering. Lids and bungs should be continuously in place, except when adding or removing contents of the containers.

5. Before disposing of its contents, call 6-3192 for assistance in making a waste determination.

7. Before reusing or disposing of an empty container, ensure the label that identified it as University of Oregon property and/or as a hazardous material, is defaced or removed.

NOTE. If a container is found with an unknown material, a sample is drawn by EHS. The reason for this is to determine whether it is to be disposed of as hazardous waste. Once sampled, the material is evaluated for hazardous constituents. This evaluation can be expensive. This charge may be passed onto the department that controls the location where the container was found. Departments are, therefore, encouraged to ensure their containers are labeled, stored, and collected properly.

Appendix G

HAZARDOUS MATERIALS CLOSEOUT CHECKLIST

Contact EHS at 6-3192 to arrange a laboratory exit inspection, and to obtain a working copy of the Laboratory/Workspace Closeout Checklist prior to that inspection. Highlights of the checklist include:

Chemicals

- Evaluate the structural integrity and label all chemicals for which you are responsible.
- Transfer responsibility of chemicals which are to be left in the area to another specific individual.
- If chemicals are no longer to be used, prepare them for collection as outlined in the Material Handling and Collection section of this guide.
- Check shared work areas for items which are no longer to be used.

Controlled substances

- Contact EHS for proper controlled substance management.

Gas cylinders

- Return gas cylinders which are no longer to be used back to the manufacturer, or Science Stores, if possible.
- If unable to return the gas cylinder, contact EHS at 6-3192.

Housekeeping

- Wipe all countertop surfaces and fume hoods
- Clean refrigerators, freezers, and incubators
- Notify supervisor or principal investigator when the area is ready for another use.

This publication can be provided in alternate formats. Contact the Office of Environmental Health and Safety at 346-3192 to discuss specific needs.

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