Introduction

This program applies to Eastern Washington University (EWU) personnel who work with chemicals in performance of their job duties and may produce chemical waste. Chemicals which have no further use are wastes which must be disposed of properly. If these materials are classified as hazardous or may pose a threat to human health or the environment, they must be disposed of, in strict accordance with prescribed federal and state regulations.

The Environmental Health and Safety (EH&S) Department assists departments on campus with the safe management of chemicals and chemical waste that is produced during department operations.

This procedure is supported by information provided in the Hazardous Waste/Hazardous Materials Contingency Plan Guidance, Responsibilities of Satellite Accumulation Managers Guidance, Disposal of Laboratory Chemical Containers Guidance, and the Universal Waste Guidance. The forms to assist with documentation of hazardous waste management are the Generator Inspection Record, the Workshop Inspection Form, the Lab Inspection Form, and the Waste Evaluation Permit.

Purpose

The purpose of this procedure document is to provide information and guidance to EWU personnel regarding the identification, storing, safe handling, and disposal of hazardous chemical waste in accordance with Solid Waste Disposal Act, the Resource Conservation and Recovery Act (RCRA), the Environmental Protection Agency (EPA) federal regulations and the Washington Administrative Code (WAC) 296-843 Hazardous Waste Operations and WAC 173-303 Dangerous Waste Regulations. This procedure document will be reviewed annually to ensure compliance with state and federal regulatory updates and modifications.

EXEMPTIONS

This procedure does not include asbestos waste, radioactive waste, infectious /biological waste, or other problem wastes that do not fall into the regulatory hazardous waste criteria. For information on these materials, consult the EH&S Radiation Safety Directive, Biohazard Control Biowaste Procedure, Asbestos Management/O&M Program, and the EH&S department.

Responsibility

The EH&S department is responsible for the development and implementation of this program. The program is based on the following objectives:

1. Comply with all federal and state government regulations regarding hazardous waste management.
2. Minimize the quantity of hazardous waste generated by the University to the lowest practical level.
3. Promote recycling and in-laboratory destruction of waste using responsible, environmentally sound methods.
4. Provide for the disposal of hazardous waste in a manner that protects the health and safety of faculty, staff, and students.
5. Maintain records on hazardous waste generated, received and final disposal process.

The main elements of this program are as follows:

- Areas of hazardous waste accumulation will have a designated Satellite Accumulation Manager, who will coordinate with EH&S on safe handling and storage procedures.
- Areas where hazardous wastes are generated will be supplied with hazardous waste collection containers.
    - These containers will be compatible with the type of waste being collected and will have labels specifying the type of waste to be collected and associated hazard.
- A label will be affixed to each container so that the name of each waste chemical placed in the container can be indicated. This will be done immediately after the waste substance has been placed in the container.
- The container will be dated at the time it is full (month, year) and ready for collection.
- Documentation and periodic inspections to track proper management of wastes generated.

Definition of Hazardous Waste

Washington law uses the term dangerous waste and by definition includes some wastes that are not within the RCRA and EPA federal law definition of hazardous waste. A hazardous waste is any solid, liquid, or contained gas material which is no longer useful, and which may cause injury to humans or the environment if released in an uncontrolled manner. Such waste is determined in the regulation either by listing, by identification through characteristics and other criteria as defined by state and federal regulations. Mixtures of chemicals may or may not be hazardous, depending on concentrations.

The general categories of hazardous waste will include, but may not always be limited to, the following:

1. Acid Waste (concentrated inorganic acids)
2. Caustic Waste (concentrated inorganic bases)
3. Halogenated Organic Waste (waste containing halogenated compounds)
4. Non-halogenated Organic Waste (organic waste containing no halogenated substances)
5. Aqueous Inorganic Waste (toxic inorganic waste in aqueous solution)
6. Solid Waste

Chemical Waste Hazards

The hazard the chemical presents can be determined through the information provided on the Material Safety Data Sheets (MSDS) now referred to as Safety Data Sheets (SDS). The SDS will provide information on the hazard, chemical incompatibilities, storage information, necessary personal protection, firefighting measures, and medical response. For each chemical in your area, read the SDS and have it on hand. Realize that not all personal protective equipment (PPE), will work on all chemicals. Therefore, by reading the SDS sheets before chemical use, you should know the proper PPE for routine handling or for spill response of that chemical.

Hazardous Waste Reduction Methods

The following methods will be used by EWU personnel to reduce the amount of waste produced:

1. Substitution. An evaluation of chemical products will be made to determine if a non-hazardous or less hazardous chemical can be substituted in the activity.

2. Smaller Quantities. The chemical usage procedures in use will be evaluated to ensure the smallest required amount of chemical product is used. Micro scale instruction experiments will be used whenever possible. Smaller quantity stock containers will be used in the laboratory or shop.

3. Chemical Purchasing Strategy. Careful planning will ensure only the required quantity of a chemical is purchased. This will avoid the accumulation and extended storage of partially filled containers of chemical which are not useful. Small containers will be purchased whenever possible. As documented by the American Chemical Society, small quantity purchases make good management sense.

   Smaller quantity purchases result in:
   - less unused chemical being stored;
   - smaller bottles break less than large ones;
   - spillage of small containers is less, and cleanup is easier;
   - small quantity purchases make good economic sense.

4. Surplus Chemical Exchange. A chemical which is no longer useful to one individual or department may be useful to another. Surplus chemicals will be identified and added to the Chemical Exchange Inventory at EH&S. The chemical will remain on the inventory for a few weeks until all attempts to redistribute the chemical to a department have been exhausted at which time the chemical will be designated as a hazardous waste and handled accordingly.

5. Recycling. Some materials are recoverable through distillation and other processes. Whenever possible, solvents will be distilled on-site; however, the use of commercial companies offering solvent exchange is encouraged. Please refer to the Universal and Special Waste Collection and Disposal Program guidance document, which details the recycling methods used for mercury, lead, and silver in photographic fixer, photographic negatives, batteries, light tubes, and ballasts.

Hazardous Waste Treatment

Treatment of Hazardous Waste in laboratories and shops (inerting for disposal, dilution, etc.) is not allowed. However, in the case of a chemical undergoing an uncontrolled reaction certain stabilization actions may be necessary for safe handling and in the case of a spill, inerting agents may be used for safe handling of waste.

- Solvent Evaporation – Solvents readily evaporate during use. The use of evaporation as a waste disposal method is not permitted. Cap all containers when not in use.
  - Empty (less than 3 percent remaining in the container) solvent containers can be vented until dry in a fume hood and then reused or discarded. The containers must have the label "RCRA Empty" as defined in the Resource Conservation Recovery Act (RCRA) to vent dry. See RCRA Empty information below.
- Special Considerations – Check dates on containers. Old ethers may have peroxide formation which can cause them to be unstable. Improper storage with off gassing chemicals can lead in some instances to explosive crystal formation. Chemicals that have undergone unknown chemical reactions will need special handling. Do not move dry picric acid; call EH&S. These types of wastes may need to be neutralized for safe transport.

Hazardous Waste Storage

Hazardous waste must be handled and segregated the same as with chemical products; acids from bases, corrosives from flammables, reactive chemicals from everything. All containers must be under the control of the satellite accumulation manager. When not in use, such as filling during a lab, the containers must be secured in a locked room. Secondary containment may be necessary when chemicals are near drains or other

chemicals that are incompatible. Store all chemicals away from heat sources, open flames and active workstations. Satellite accumulation areas must be near the point of waste generation.

Containers

All hazardous waste containers will be in good shape and be compatible with the chemical waste.

- Consider hydrofluoric acid. This chemical arrives in a plastic container. WHY? Hydrofluoric acid will etch glass and metal.

So, if a liquid chemical product arrives in glass, plastic etc., keep the chemical waste in a similar container. DO NOT USE ANY TYPE OF FOOD OR BEVERAGE CONTAINER to store chemicals.

Chemical product containers can be used for waste provided they are used for the same product or have been properly cleaned to accommodate the new waste product. If a different product waste is to put into the container, make sure the label on the container is defaced or covered. You must triple rinse a chemical container before reuse and the rinseate is considered a hazardous waste which must be containerized and labeled properly. If containers are not properly cleaned, a reaction can have occurred between the added waste and chemical product remaining in the container. See the Disposal of Laboratory Containers Guidance for more information.

Plan for the amount of waste you will generate. Drums for hazardous waste will be 30 gallons or less, unless arrangements are made with EH&S. Containers that are used for waste must be filled within 180 days of first use. We do not want to keep waste on site longer then we have to. Contact EH&S for large containers.

Containing Waste

Waste collection containers will be set up under a fume hood or on secondary containment for large containers. Funnels will be supplied with each container for the purpose of pouring the waste into the container. The containers should be kept tightly capped (hand tight) except when adding waste.

When pouring waste into a container (especially acid and caustic wastes) the glass door of the fume hood should be drawn down to chest height, and the waste poured slowly and carefully into the container. Use appropriate personal protection.

Fill waste containers to within 90 percent of capacity. Do not over fill. This will allow for any potential expansion of the waste product. Drums should have one to two inches of headspace at the top for potential expansion. Close the container after filling. It is a regulatory violation to leave non RCRA Empty containers open when not filling.

When the container is filled as directed above, complete and submit the Hazardous Waste Inventory to envhea@ewu.edu. **Waste must be picked up within three days of filling.**

Labeling

Hazardous waste will be labeled as follows:

- HAZARDOUS WASTE
- the chemical product name, if applicable,
- the chemical makeup, including percent's (Total percent should equal 100),
  - ✓ **Do Not Use Chemical Formulas or Abbreviations** for names.
- include the room number the waste is originated from, the building/department and contact name and number,

Use the label to the right when the waste stream is composed of several chemicals.
Complete date filled when the container is full.
Contact EH&S right away for a pickup.

The Workplace Accumulation Container label below can be used with the chemical list label to the right.

- the date the container was filled,
- then properties (Corrosive, Poison/Toxic, Flammable) label

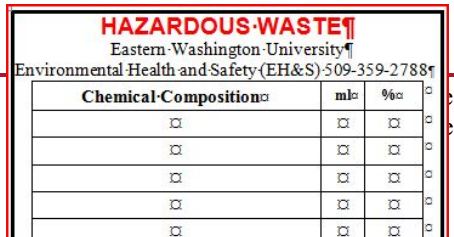
Individuals working in research laboratories, art studios or shops are responsible for proper labeling of all prepared reagents and chemicals they use and for proper waste collection. When a particular research project is suspended or terminated, all chemicals used should be returned to the central storage area, and all excess prepared reagents should be properly disposed of.

Unlabeled containers (this should never happen) of chemicals and solutions should be placed in a basin or other suitable container with the label "contents unknown" applied. The location where such chemicals were found should be indicated. Contact EH&S for a pickup. Whenever unlabeled chemicals or solutions are found; such occurrence should be immediately brought to the attention of the department chemical hygiene officer. Personnel must make every effort to provide an accurate description of all chemical constituents within the waste container. Unknown chemicals present serious problems for the chemical waste management program. Without a description, waste management personnel cannot handle or dispose of a chemical or chemical mixture in a safe manner; therefore, analysis is required.

Labels have been prepared to assist you in your labeling requirements. Contact EH&S for labels or

Use this label when the waste stream is a single chemical or product. This label is for chemical that will be in the area for a while.

The Start Date is the date you first use the container. Complete Full Date is when the container is full. Contact EH&S right away for a pickup. We have less than 90 days from the complete full date to get the container off campus. Contents will be whatever is in the container.


HAZARDOUS·WASTE¶
Eastern·Washington·University¶
Environmental·Health·and·Safety·(EH&S)·509-359-2788¶

Chemical·Composition¤	ml¤	%¤
¤	¤	¤
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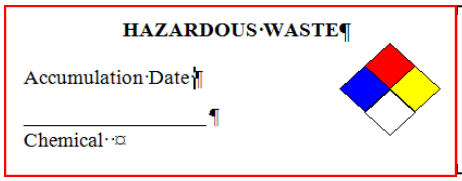


Use this label when the waste is a small container of a single chemical or product. The Accumulation Date is the completely full date, or if unwanted product then the discard date.

Labels identifying the hazard

These labels are used to identify the main hazard. You can also write out Flammable, Corrosive or Poison/Toxic

Do pH test to determine if acid or base.

For a pH greater than 7. In regards to hazardous waste pH must be 12.5 or higher.

For a pH less than 7. In regards to hazardous waste pH must be 2 or less.

For solid or semisolid corrosive materials

Specialized labels can be provided as needed. Contact EH&S

Use this label with the Workplace Accumulation Container label

RECYCLABLE
Accumulation Date _____
Used Amalgam
Mercury Hazard

Waste
Fixer
Silver Toxic

Waste Oil
Based Paint
Combustible

Use these labels with the Workplace Accumulation Container label.

This label is used by itself

USED OIL Accumulation Date

Eastern Washington University
EH&S 6496

Chemical Composition and Associated Hazard	**%**
USED OIL ONLY	100
WASTE GENERATOR INFORMATION	
Labeled By:	
Department:	Phone:
Building:	Room:

EMPTY
DATE:
THIS CONTAINER IS RCRA EMPTY.

Use this label for off gassing solvents in RCRA empty containers

Empty Chemical container
Contents_____

To be used for waste chemical above

Use this label when an EHW Container will be reused

WASTE THAT WILL BE RECYCLED

There are several chemical wastes that can be recycled. However, recyclable chemicals and products must still be labeled as hazardous waste until shipped to the recycler. Examples include Mercury, amalgam capsules and clean amalgam, photographic fixer, etc. If you have unwanted, unused chemicals contact EH&S before labeling as waste. EH&S will attempt to find a lab or shop who can use the chemical. If unsuccessful, EH&S will designate the chemical as a waste product at that time.

Waste Mixing

Different waste streams should not be mixed in the same container. Acids must not be mixed with bases. Corrosives must not be mixed with flammables. Reactive wastes should not be mixed with anything. Avoid pouring a weaker corrosive waste into a concentrated corrosive liquid even if they are the same chemical waste. If a waste is improperly mixed and there is a reaction, move away from the container, evacuate and cordon off the area and contact EH&S. Satellite accumulation managers must know the chemicals that were improperly mixed that could have caused the reaction. All efforts will be made to determine the final hazard of the reacted chemical. Depending on the reaction it could be some time before anyone can safely approach the container. Once the reaction is complete the waste container will be removed for disposal if safe. If the container explodes, a contractor may need to be brought in to handle the cleanup depending on the substance. An exploded chemical container may be considered a large spill and will be handled accordingly.

SPILLS

All Laboratories, Satellite Accumulation Areas, Chemical Storage Areas must have chemical spill kits and personal protection that are compatible with the chemicals present. Most small spills can be cleaned up by satellite accumulation managers and lab managers, taking the right precautions and using proper personal protection. All satellite accumulation managers and laboratory managers will be trained in hazardous condition identification and in small spill cleanup procedures. See who cleans up the spill guidance. Small spill cleanup will be the responsibility of the satellite manager and will be reported to EH&S by using the incident report. Cleanup materials will be considered hazardous waste and must be properly containerized, and labeled.

SATELLITE COLLECTION AREAS

Satellite Accumulation Areas are at or near the point of waste generation, under the control of the waste generator, and limited to one container per process up to 55 gallons. These areas require that responsible persons keep records, label containers, have full containers removed from the area within three days, inspect containers weekly, conduct safety inspections monthly, and ensure that secondary containment is provided in case of spills. Persons responsible for satellite accumulation areas must also complete hazardous chemical waste training within two weeks of employment. See Responsibilities of Satellite Accumulation Managers Guidance.

CONTINGENCY PLAN

The purpose of this section is to control releases of chemical products and regulated hazardous waste and to prevent or minimize environmental damage and human exposure to hazardous materials resulting from a release of a hazardous waste material. This section provides for compliance with WAC 173-303-350 and WAC 296-843. See the Hazardous Waste/Hazardous Materials Contingency Plan Guidance.

All hazardous materials users are expected to be prepared for any spill or release of the material. In the event of a spill or release, every effort will be made to contain the release while not putting yourself or members of the public in danger. Hazardous materials users will use appropriate spill containment materials and methods.

TRAINING PLAN

Classroom and on the job training for personnel handling hazardous waste will be conducted by EH&S staff and independent contractors as needed. Training will be provided by staff knowledgeable in hazardous materials, chemistry and qualified for Hazardous Waste Operations and Emergency Response [29 CFR 1910.120]. Hazardous waste management personnel will review training annually.

TRAINING CONTENT

Hazardous waste handling training will include the following:

1. Identification and classification of waste.
2. Review of general chemistry and safe chemical handling practices.
3. Waste packaging and labeling requirements.
4. Hazardous materials transportation requirements.
5. Hazardous chemical storage practices.
6. Hazardous waste shipment requirements including manifests, labeling, and truck inspection (EH&S personnel only)
7. Hazardous waste inspection and operating procedures.
8. Emergency procedures, evacuation, notification, and contingency plan.

HAZARDOUS WASTE MANAGEMENT PERSONNEL

Only EH&S employees are directly involved with the collecting, transporting, designating, and disposal of regulated dangerous waste: the EH&S personnel job descriptions and resumes are on file. These employees are responsible for the following:

1. Hazardous waste designation and collection.
2. Operation of the Waste Transfer Facility (WTF).
3. Hazardous waste training and education.
4. Emergency spill response for the WTF.
5. Hazardous materials emergency support as defined in the Emergency Response Plan and the Hazardous Waste/Hazardous Materials Contingency Plan.
6. Hazardous materials and pollution prevention technical guidance.

Satellite accumulation personnel are considered hazardous waste management personnel by the Department of Ecology. These employees, their areas, and their job duties are on file in EH&S.

HAZARDOUS WASTE MANAGEMENT PERSONNEL TRAINING

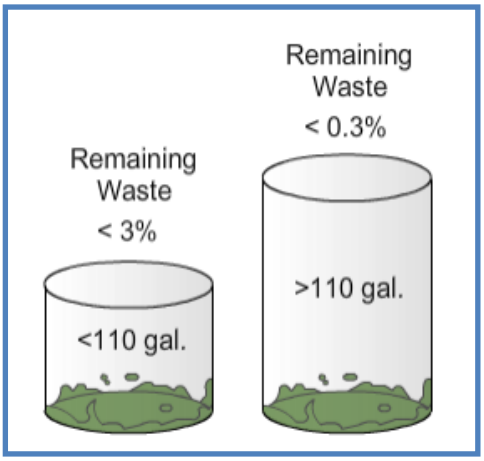
The EH&S personnel will be Hazardous Waste Operations and Emergency Response certified [29 CR 1910.120, WAC 296-843]. Retraining will be conducted annually. New employees will receive training within two weeks of employment. Individuals responsible for control of Satellite Accumulation Areas must attend training about

hazardous chemical waste classification, handling, and regulations at the time the area is established or within two weeks of employment in the area.

RCRA EMPTY

Containers that have been contaminated with hazardous waste are exempted if they are empty. There are two measures to determine if a container is ***empty***:

According to federal regulations, a container is considered empty when all wastes are removed using common practices and:



- There must be no more than 2.5 cm (1 inch) remaining in the container (>110 gal), -- or –
- containers less than 110 gallons must have no more than 3% remaining, -- or –
- containers over 110 gallons must have no more than 0.3% remaining in the container
- Compressed gas cylinders are considered empty when the pressure in the container approaches atmospheric pressure.
- Containers holding acutely hazardous materials must be triple rinsed or handled as a dangerous waste.
    - The rinseate will be a hazardous waste.

If a container meets the RCRA Empty standard, the "empty" container may be managed as follows:

- ✓ A container of 5 gallons or smaller may be disposed in a non-hazardous landfill or recycled for scrap.
- ✓ A container larger than 5 gallons must be reclaimed for scrap value, reconditioned, remanufactured or refilled.
- ✓ Containers holding flammable aerosols must be completely discharged of contents and propellant before disposed in a non-hazardous waste landfill.

Refer to Disposal of Laboratory Chemical Containers Guidance

Note: any empty container must be protected from the outside elements. If rain water or snow melt enters the container and fills the container above the 3 percent level it is no longer considered RCRA Empty. The contents will then need to be profiled and designated for disposal by EH&S at a considerable cost.

Related Documents

Guidance's

Hazardous Waste/Hazardous Materials Contingency Plan Guidance
Responsibilities of Satellite Accumulation Managers Guidance
Disposal of Laboratory Chemical Containers Guidance
Universal Waste Guidance

Forms

Generator Inspection Record
Workshop Inspection Form
Lab Inspection Form
Waste Evaluation Permit
Hazardous Waste Inventory Form

REVISION HISTORY		
Rev	**Affected Page**	**Change Descriptions**
0	All	Release 03/15/2010
1	All	Reformat, Remove Links 08/07/2013
2	All	Reformat, add history, add related documents on pg. 11 and 12, add note pg. 11 6/18/2014
3	All	Reformatted header and footer
4	All	Change reference of HazWaste pickup form on pg 5. Reviewed all 2/11/16
5	All	Update to New Format 4/24/17