

University of Alaska Anchorage	Section EHS/RMS
ADMINISTRATIVE SERVICES MANUAL	Part Procedure
Policies and Procedures	Statement 2
Title <i>HAZARDOUS MATERIAL MANAGEMENT</i>	Effective Date 3/25/09

Employee Responsibilities

All employees must adhere to applicable laws and regulations concerning the acquisition, use, storage, labeling and disposal of hazardous materials. EHS/RMS (786-1351 or ayssg@uaa.alaska.edu) is available for consultation on hazardous material management.

Acquisition Responsibilities

With regard to hazardous material acquisition, department heads and principal investigators have the responsibility to ensure that:

- All hazardous materials are ordered under the proper purchasing object code (4455).
- There is a legitimate need for the ordering the hazardous material, less hazardous material cannot be substituted, and order quantities are not excessive and will not result in a surplus of material when the job is completed.
- Hazardous material stockpiles do not exceed applicable fire or storage code limitations.

To help assure proper hazardous material management, EHS/RMS monitors all hazardous or potentially hazardous material requisitions. With few exceptions, hazardous materials cannot be ordered using the UA Procard (Mastercard) system.

P-Listed Compound Control

Because of the highly toxic nature of some chemicals and restrictions on UAA's Conditionally Exempt Small Quantity Generator Status, all P-listed items found on the EPA P-List must be reviewed by EHS/RMS prior to purchasing. Employees should be prepared to justify the need for the listed compounds and provide procedures to assure that the compounds can be safely and securely stored on site. In addition, procedures must be developed to safely use the compound. Evidence of end process detoxification or total consumption of the listed compound must be provided prior to purchasing listed compounds. The P-List can be found in [EHS/RMS Appendix 21, EPA's List \(p-List\) of Acutely Hazardous Substances](#).

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Use Guidelines General guidelines for the safe use of hazardous materials:

1. Know the hazardous properties of all chemicals with which you work.
2. Read the label on the container and follow the manufacturer's use instructions.
3. Know the appropriate first aid treatment and be prepared to use it.
4. Store chemicals in a safe manner and in accordance with the manufacturer's recommendations and with appropriate warning signs.
5. Dispose of chemicals properly in accordance with all current hazardous waste regulations.
6. Keep containers closed when not in use.
7. Inspect, at regular intervals, the containers and pipes used for corrosive materials and report leaks immediately.
8. Know where the closest shower and eye wash are located. Keep them unobstructed and in working condition. Test regularly for proper functioning.
9. Use respirators, goggles, gloves, and other protective equipment as required. University policy requires that **goggles be worn at all times in academic and research laboratories where splash hazards occur**, except in those instances where other physical shielding is present and in use, where there is no imminent threat of potential injury, where there is no danger from flying debris/splash hazards, or where EHS/RMS has approved a variance

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to this policy (contact EHS/RMS at 786-1351 or ayssg@uaa.alaska.edu).

Storage

All hazardous materials must be stored in approved containers, cabinets, and storage areas. Containers, cabinets, and storage areas will have proper labeling. Materials must not be transferred to unapproved, unlabeled containers, except for actual use or limited lab work. Safe procedures will be used for transferring materials from bulk (spill protection, ventilation, grounding, etc.) The department head should not approve the ordering of hazardous material unless proper and adequate storage is available.

Department heads have the responsibility for complying with the reporting requirements of the Superfund Amendment and Reauthorization Act (SARA Title III). EHS/RMS will coordinate and assist with these reporting requirements. All environmental or occupational regulatory reports must be submitted through the EHS/RMS office (786-1351 or ayssg@uaa.alaska.edu).

Departments should be prepared to provide local fire departments and other emergency services with lists of hazardous and acutely hazardous materials if their stored quantity exceeds the threshold planning quantity (TPQ) for that material. Departments should monitor inventory to ensure the TPQ is not exceeded. Upon request, departments should be able to supply the location and quantities of all stored hazardous materials.

Chemical Emergencies

The university will rely on local available state, municipal, or private emergency services to contain spills or leaks which progress beyond the ability of department staff to safely control. EHS/RMS (786-1351 or ayssg@uaa.alaska.edu) and or Facilities Project Services administers an Emergency Hazardous Material Incident contract to deal with these matters.

In addition, a Supervisory Hazardous Materials Response Team will be maintained on the Anchorage campus to aid in the identification and

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evaluation of the hazard and represent the university's interests in any spill control or cleanup decisions. This team will consist of EHS/RMS, Physical Plant personnel, and others who have the proper training and authority to make decisions consistent with these regulations and in the best interest of the university.

*Hazardous
Waste
Disposal*

As a generator of hazardous waste, the University is required to comply with federal standards promulgated under the Resource Conservation and Recovery Act (RCRA) and other regulations. These regulations require documentation of the transfer of hazardous waste from the point of generation to final disposal.

To reduce the risks and costs associated with hazardous material management and disposal, it is the policy of this university to reduce the amount of hazardous waste by employing a vigorous program of waste minimization, including:

1. Strict procurement and inventory control.
2. Interdepartmental exchanges of surplus materials.
3. Department level disposal by approved methods for certain hazardous materials, including evaporation, neutralization, etc. as these procedures are incorporated into experimental designs.

Recognizing that even with maximum waste minimization in effect, there will always be some hazardous waste in need of management and formal, external disposal. It will be the responsibility of department heads and principal investigators to identify the hazardous waste generated in their areas, prepare the waste for shipment, and notify EHS/RMS (786-1351 or ayssg@uaa.alaska.edu) that waste is ready for pick-up. The minimum information that is required prior to disposal is described in the *Temporary Storage* section of this procedure.

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Each physical location within UAA which produces hazardous waste will have a designated Hazardous Waste Coordinator, a secure hazardous waste storage area, and an EHS/RMS approved plan for shipment and disposal of hazardous waste. Campus collection, consolidation, shipment, and disposal of hazardous waste will be arranged by a Hazardous Waste Coordinator designated by EHS/RMS. At the Anchorage campus, that Coordinator will be EHS/RMS.

When EHS/RMS (786-1351 or ayssg@uaa.alaska.edu) is notified at the Anchorage campus that waste is ready for pick up, a qualified contractor will be obtained to transport the waste to the UAA Hazardous Material Facility (HMF) where it is segregated into compatibility groups according to Department of Transportation (DOT) hazard classifications.

Extended UAA campuses, through their Hazardous Waste Coordinator, must make their own arrangements for hazardous chemical and petroleum waste disposal. These arrangements must be in accordance with all federal, state, and local laws. EHS/RMS (786-1351 or ayssg@uaa.alaska.edu) will provide advice and assistance upon request and will periodically review compliance with procedures.

At this time, UAA is classified as a conditionally exempt small quantity hazardous waste generator. With proper management, the Anchorage campus can retain this classification and ability to economically dispose of wastes at Municipality of Anchorage Hiland Road Hazardous Waste Facility.

*Waste
Characteristics*

Current EPA regulations apply to wastes having the following characteristics:

Ignitability—liquids with a flash point of less than 60C (140F); oxidizers, solids capable of burning vigorously and persistently after ignition through friction, absorption of moisture, or spontaneous chemical changes at standard temperature and pressure.

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Corrosivity—aqueous solutions with a pH less than or equal to 2 or greater than or equal to 12.5; liquids which corrode steel at a rate greater than 6.35 mm per year at 55C.

Reactivity—chemicals normally unstable that undergo violent change, react violently with water, form potentially explosive mixtures with water, emit toxic vapors when mixed with water, capable of detonation or explosive reaction.

Toxicity—chemicals fatal to humans in low doses; oral LD 50 of 50 mg/kg (rat), inhalation LC 50 of 2 mg/liter (rat), or dermal LD of 200 mg/kg (rabbit); toxic, carcinogenic, or suspected carcinogenic, mutagenic, teratogenic.

*Waste
Minimization*

The most significant way that individual laboratories can assist in the management of hazardous waste is to reduce the volume of waste required to be handled. Principal investigators are encouraged to consider ways of reducing the volume of waste or preserving the usability of the materials through the redesign of experiments. Recyclable materials should be kept separate from other waste. Efforts should be made to decontaminate, detoxify, neutralize, or otherwise render the waste non-hazardous at the end of the procedure that generates the waste. Ideas and suggestions for reducing hazardous waste through recycling, redesign of experiments, or decontamination are welcomed.

*Disposal
Guidelines*

ALL HAZARDOUS WASTE DISPOSAL ACTIVITIES MUST BE COORDINATED THROUGH EHS (786-1351) IN ANCHORAGE. MUNICIPAL HAZARDOUS WASTE DEPOTS HAVE BEEN NOTIFIED TO REFUSE DISPOSAL OF UAA HAZARDOUS WASTES UNLESS PRIOR APPROVAL BY UAA EHS HAS BEEN OBTAINED. COMMUNITY CAMPUSES ARE RESPONSIBLE TO FOLLOW THEIR LOCAL GUIDELINES.

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Departments and employees are prohibited from circumventing this procedure by falsely claiming any UAA hazardous or non-hazardous waste as being generated by an individual or household.

An individual waste stream generated from a laboratory procedure should not be combined with other chemical wastes. The fewer the number of chemicals associated with a waste, the more economical the disposal. If waste segregation is not practical, EHS/RMS should be consulted about which wastes can be combined.

Flammable Solvents—Flammable solvents will be picked up by EHS/RMS. Disposal of solvents to the sanitary sewer is limited to low-toxicity solvents, miscible in water, diluted to non-flammable concentrations.

Halogenated Solvents—Halogenated solvents must not be combined with flammable non-halogenated solvents. Examples of halogenated solvents include methylene chloride, chloroform, and carbon tetrachloride.

Acids and Bases—Concentrated acids and bases are picked up by EHS/RMS. Diluted acids with a pH of greater than 5 can be discharged to the sanitary sewer.

Oils—Only trace quantities of oils associated with cleaning and washing operations should be released to the sanitary sewer. Oil wastes from vacuum pumps, transformers, motors, etc., should be accumulated for pickup and disposal by EHS/RMS (contact EHS/RMS at 786-1351 or ayssg@uaa.alaska.edu).

Biocides—Concentrated solutions are not to be released to the sanitary sewer. Disposal is to be limited to one gallon of "working strength" solution per laboratory per day. This applies primarily to germicides and occasional disposal of pesticides. Chemicals which persist in the environment should be released only in trace quantities.

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In addition to the previously described wastes, toxic, carcinogenic, oxidizer, reactive and explosive wastes will be picked up by EHS/RMS or a qualified contractor.

Compressed gas cylinders containing hazardous gas should be shipped back to the vendor. If this is not possible, the cylinders should be sent to EHS/RMS at atmospheric pressure.

Needles and syringes must not be put in the regular trash. They should be accumulated in glass jars, or other suitable containers, to be picked up by the EHS/RMS or a qualified contractor. Needles and syringes contaminated with infectious agents must be autoclaved or otherwise decontaminated before disposal. Needles and syringes contaminated with radioactive materials or chemical carcinogens are to be placed in containers specifically designated for these waste classifications. Refer to EHS/RMS [Procedure 14, Disposal of Medical and Infectious Waste](#) and [Policy 17, Bloodborne Pathogens](#) for additional information concerning these types of wastes.

Paint Disposal

WATER-BASED OR LATEX PAINT

This paint may disposed of in several ways and is presented in order of preference:

- Use the paint for university jobs.
- Donate any surplus paint to community service projects.
- Solidify the paint by mixing with vermiculite, granulated clay, or by applying it to a surface for eventual disposal. After completely dry, dispose of as regular trash. Never dispose of liquid paint in the trash.
- Take the paint to any municipal solid waste service depot for disposal at \$0.05 per pound (including container weight) at the generating department's expense.

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PETROLEUM-BASED OR OIL PAINT

This paint is a regulated hazardous waste and restrictions apply. UAA is only authorized disposal of limited amounts of hazardous waste before losing our Conditionally Exempt Small Quantity Generator Status. Loss of that EPA status will cause a marked increase from a few thousand dollars per year to estimated costs exceeding \$50,000 per year. Because of these hazardous waste management needs, departments are encouraged to use only water-based paints whenever possible and only order sufficient quantities to meet job needs for both forms of paint.

This paint may disposed of in several ways and is presented in order of preference:

- Use the paint for university jobs.
- Donate any surplus paint to community service projects.
- Contact EHS at 786-1351 for disposal. Depending on the quantity and management circumstance, EHS may pay for the disposal cost.

Solvents used for cleaning or prepping petroleum-base paint activities are also regulated as hazardous waste. Methods to manage this waste stream are, in order of preference:

- Limit the use of petroleum-based paints and solvents.
- Allow particulates, water, and paint to settle out of the solvent (works well outside and in the winter) and decant the clean solvent for re-use. Make sure that good secondary containment is used.
- Contact EHS at 786-1351 for disposal. Depending on the quantity and management circumstance, EHS may pay for the disposal cost.

Temporary Storage

The following temporary storage practices are recommended:

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1. Waste substances should not be intermixed if possible and should be stored in separate containers. Generally it is advisable to make use of original product containers for temporary waste storage.
2. Waste containers should be temporarily stored in an approved and secure location within or near the building where the waste was generated.
3. One individual should be assigned responsibility for control of the waste materials. Access to the temporary waste storage areas should be restricted.
4. A detailed log should be maintained for each waste container and should include the following items:
 - a. Identification of the wastes stored
 - b. Quantity and quality of the waste stored (volume or mass, concentration or amount of waste per volume of solvent)
 - c. Reason for the waste generation (academic lab or course, research, cleaning, etc)
 - d. Date and time of waste generation
 - e. Person depositing the waste (printed name and signature)
 - f. Spill management instructions (what to do if a spill occurs)
 - e. Access restrictions (who is authorized to work with containers of wastes or who is permitted in the storage area)
5. The waste container label should contain the following information:
 - a. Identification of the contents
 - b. In and out of service dates (the date waste collection was started and ended for any particular container)
 - c. Department and contact number
 - d. Appropriate warning decals (NFPA diamonds are recommended)

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EHS/RMS will conduct periodic inspections of temporary hazardous waste storage sites and make arrangements for waste disposal several times a year.

Prohibited Discharges

The following discharges to the sanitary sewer are prohibited (with some exceptions) by the Clean Water Act of 1977:

- Materials that may create a fire or explosive hazard
- Corrosive materials with pH less than 5
- Solid or viscous pollutants in amounts sufficient to obstruct flow or interfere with operations
- Discharges of any toxic pollutant in a volume or strength to cause interference with waste treatment processes, or contamination of the wastewater treatment plant permit sludge or effluent from so as to violate its permit
- Heat discharges which will inhibit biological activity or increase the wastewater treatment plant influent above 104F

Use of Chemical Carcinogens

Control practices must be used for the prevention of occupationally acquired cancer and for the protection of the general environment. These practices are to be used in all activities involving known or suspected carcinogens, teratogens, and mutagens.

Some of these compounds are fairly common materials used in many laboratories, such as chloroform, carbon tetrachloride, benzene, dioxane, hydrazine, thiourea, and o-toluidine. There are over 2000 other chemicals for which there is allegedly some degree of evidence for carcinogenicity. Many of these also warrant careful planning and control procedures. EHS/RMS should be consulted when questions arise about the carcinogenic potential of certain chemicals handled in laboratories.

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Listings of known or suspected agents and detailed standards governing their use are available from EHS/RMS on request.

Principal investigators are responsible for assuring that laboratory personnel are trained in safe practices, for reporting exposures or potential exposures to chemical carcinogens, and for the submission of a safety plan for the research under their direction to EHS/RMS. The safety plan is to describe the procedures that will be used to insure the safe handling of chemical carcinogens, an assessment of the potential risks, the need for medical surveillance, procedures for handling accidental spills, and waste disposal methods.

Accidental exposures of personnel to chemical carcinogens, such as exposure to a concentrated contaminated aerosol through research procedures, accidental spills, or accidental inoculation with a contaminated needle, are to be reported to EHS/RMS (786-1351 or ayssg@uaa.alaska.edu). Refer to EHS/RMS [*Policy 16, Use of Chemical Carcinogens*](#) for additional information.

*Use of
Biohazardous
Agents*

Biohazardous agents are infectious microorganisms, or their toxins, which cause or may cause human disease. Control practices for the prevention of laboratory acquired infections and for the protection of the general environment will be included in all research programs involving biohazardous agents.

Principal investigators are responsible for assuring that laboratory personnel are trained in safe practices; biohazardous exposures and potential exposures are reported, and a safety plan for research under their direction is submitted to EHS/RMS. The safety plan is to describe the procedures that will be used to insure the safe handling of biohazardous agents, an assessment of the potential risks, the need for medical surveillance, procedures for handling accidental spills and waste disposal methods.

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Prior to initiation of work, the principal investigator is to notify EHS/RMS (786-1351 or ayssg@uaa.alaska.edu) of the agents used and the location of the laboratory. There are no facilities on campus appropriate for working with dangerous class 4 viruses, so work involving these agents is prohibited.

Accidental exposures of personnel to biohazardous agents, such as exposure to a concentrated contaminated aerosol from research procedures, accidental spills, or accidental inoculation with a contaminated needle, should be reported to EHS/RMS (786-1351 or ayssg@uaa.alaska.edu) immediately.

Flammables and Combustibles

Special storage guidelines apply to substances which have the following flammable and combustible characteristics. However the tables below can sometimes be misleading as the recent adoption of the International Fire Codes allows doubling and tripling of amounts when certain conditions exist (sprinkling, cabinetry, zoning).

	<u>Flammables</u>			<u>Combustibles</u>	
Classes	IA	IB	IC	II	III
Flash point	<73F	<73F	73F - 100F	100F - 140F	>140F
Boiling point	<100F	≥100F	N/A	N/A	N/A

The potential fire hazard depends on the flash point and the quantity of liquid being used. The following table gives the maximum size container allowed for each class of liquid.

	Class				
<u>Container Type</u>	<u>IA</u>	<u>IB</u>	<u>IC</u>	<u>II</u>	<u>III</u>
Glass or Plastic	1 gal.	1 gal.	1 gal.	1 gal.	1 gal.
Metal	1 gal.	5 gal.	5 gal.	5 gal.	5 gal.
Safety Cans	2 gal.	5 gal.	5 gal.	5 gal.	5 gal.

The potential fire hazard also depends on the total quantity of flammable and combustible liquids present within a fire zone and the type of

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containers in which the liquids are stored. The maximum quantity allowed per unit is as follows:

1) Shelf or open storage:

- a) Glass, plastic, or cans 10 gal.
- b) Safety cans 25 gal.

2) Approved storage cabinets (maximum of two per fire zone)

- a) Class I & II 60 gal.
- b) Class III 120 gal.

3) Inside Storage Room (meeting NFPA Code recommendations)

- a) with sprinkler 4 - 10 gal/sqft
- b) without sprinkler 2 - 4 gal/sqft

It should be emphasized that quantity of flammables on hand must be kept to a minimum and that only in unusual circumstances (and with the approval of EHS/RMS) will the larger quantities be acceptable. The following guidelines should be followed:

1. If a one-gallon quantity of one specific liquid represents more than a ninety day supply of a Class IA or IB flammable, one-pint (IA) or one-quart (IB) shall be used.
2. Multiple cans and/or bottles of any one specific flammable will not be permitted in a laboratory in open storage or storage cabinet if it represents more than a 90-day supply of that flammable.
3. Quantities stored in inside storage rooms shall not exceed a 180 day supply for that building.

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Gasoline must be stored and transported on campus in safety cans. The use of safety cans in laboratories is encouraged where practicable.

Class I liquids shall not be transferred between metal containers unless the containers are electrically interconnected by direct bonding or by indirect bonding through a common ground. The maximum impedance of the bond shall not exceed 6 ohms.

Storage cabinets constructed to NFPA and/or UL standards should be used when required by quantity limits. Storage cabinets are not permitted in hallways. A central storage room is preferable to storage cabinets in each laboratory. This central storage alternative should be considered especially by departments which have centralized supply rooms.

Additional information on the appropriate methods of storing and using flammable and combustible materials can be found in [EHS/RMS Policy 35, Storage of Flammables and Combustibles](#).