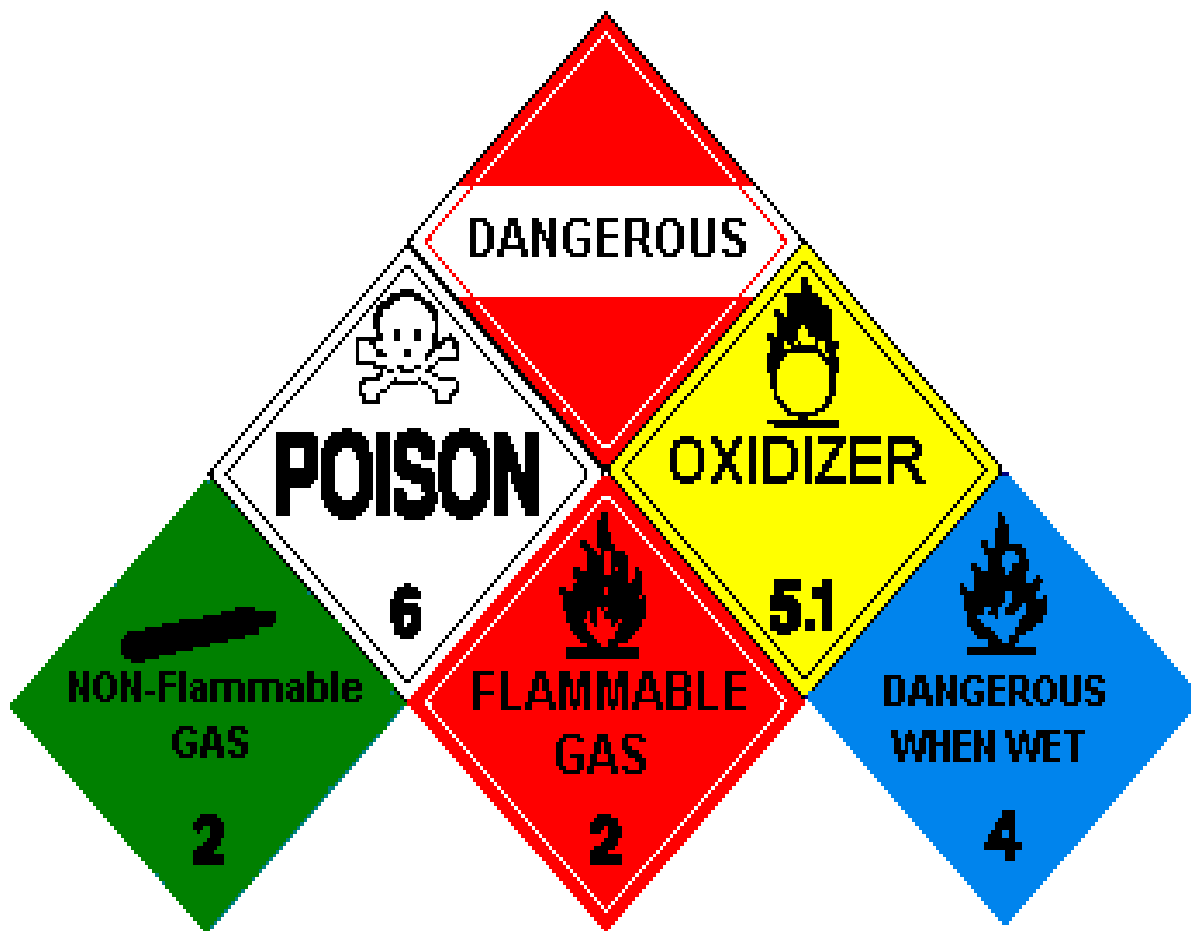


# UNIVERSITY OF HAWAII AT MANOA



## Hazardous Material Management Program

July 2016



UNIVERSITY  
of HAWAII®  
MĀNOA

Office of the Chancellor

July 25, 2012

Dear Colleagues:

Providing a safe and healthy environment in which the faculty, staff and students work and study is a matter of the highest priority on the Manoa campus. Our students and employees should be able to go about their daily activities knowing that hazardous materials in our laboratories are handled safely, with competence, and with utmost concern for our health and a commitment to protect our environment.

We are obligated to comply with the applicable federal, state and local regulations that govern the use of hazardous materials and the disposal of hazardous wastes. To assist us in following all applicable rules, the manual detailing the Manoa campus Hazardous Material Management Program (HMMP) has been revised and is being distributed for immediate implementation.

The manual is a definitive guide to handling hazardous materials and disposing of hazardous wastes. This is not only a matter of complying with the law-it is a matter of ensuring the personal health and safety of everyone on campus and making sure that we do whatever is necessary to maintain a safe and secure workplace and to protect our environment.

We all need to be aware of our responsibilities in this area, and the HMMP has been prepared with everyone's safety in mind.

Sincerely,

A handwritten signature in blue ink, appearing to read "Tom Apple".

Tom Apple  
Chancellor

2500 Campus Road, Hawai'i Hall 202  
Honolulu, Hawai'i 96822  
Telephone: (808) 956-7651  
Fax: (808) 956-4153

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## ATTACHMENTS

- Attachment 1..... Procurement Authorization for Hazardous Materials
- Attachment 2..... Agreement for the use of Hazardous Material (DELETED)
- Attachment 3..... Sample Chemical Inventory Format (DELETED)
- Attachment 4..... List of Acutely Hazardous Waste (p-coded waste)
- Attachment 5..... Excess Hazardous Materials and Hazardous Waste Turn in Form

# HAZARDOUS MATERIAL MANAGEMENT PROGRAM

## I. INTRODUCTION.

This manual provides information on requirements for the management of hazardous materials, including the disposal of hazardous waste. These requirements are based on Federal and State of Hawaii regulations. Failure to comply with these requirements may subject the University and/or individuals to fines, and civil or criminal prosecution. In addition, the proper management of hazardous materials is necessary to reduce disposal costs. While the disposal of all material as hazardous waste is expensive, there are certain materials that require special attention to minimize the difficulty and expense of their disposal. A copy of this Hazardous Material Management Program along with other useful information is available online at the University's web-site (<http://www.hawaii.edu/ehso/hazmat>).

## II. MANAGEMENT OF HAZARDOUS MATERIAL.

Compliance with the following requirements will assist the University's Environmental Health and Safety Office (EHSO) in ensuring the proper management of certain types of hazardous chemicals. Our hazardous material management strategy is divided into four parts: Approval to purchase, safety in use, inventory control, and audits.

- A. Approval to Purchase Certain Hazardous Chemicals. EHSO approval is required for the purchase or requisition of the specific chemicals on the list provided on the Procurement Authorization for Hazardous Material Form, Attachment (1). This form must be filled out and submitted to EHSO for approval prior to initiating a purchase order for any of the materials on the list. If approved, a copy of the form will be provided to you for attachment to your purchase order or requisition. The purpose of EHSO approval is to enable us to assist you in ensuring the safe storage, handling and disposal of the material while minimizing cost to the University.
- B. Safety in Use. Certain hazardous materials require Standard Operating Procedures (SOPs) to ensure the safe use and storage of these materials. The University Chemical Hygiene Plan (CHP) provides requirements for SOPs and describes the specific types of material covered. Attachment (2), Agreement for Use of Hazardous Material is being deleted by this revision to the HMMP since its purpose is being accomplished by the requirements cited above.
- C. Inventory of Hazardous Material. The previous hazardous material inventory form, Attachment (3), has been deleted because of the requirement for a total chemical inventory has been incorporated into the University Chemical Hygiene Plan (CHP). The CHP chemical inventory will be used to provide EHSO with the information previously provided by Attachment (3). A copy of the inventory must be available at the laboratory/facility for review, but a copy does not have to be submitted to EHSO unless specifically requested.

- D. Audit Program. EHSO has established an audit program to assist in maintaining laboratories and facilities that are safe and protective of the environment. EHSO personnel will periodically visit laboratories and facilities to review the implementation of applicable safety, health and environmental policies and requirements. Specifically, the following items will normally be covered: Use of personal protective equipment, emergency eyewashes and showers, laboratory chemical hoods, hazardous material storage, survey for highly hazardous materials or acutely hazardous waste, Material Safety Data Sheet availability, hazardous waste accumulation areas, and emergency plans. A report indicating any corrective actions that are necessary and suggesting any improvements will be provided.

III. **HAZARDOUS WASTE DISPOSAL REQUIREMENTS**. The following requirements apply to all generators of hazardous waste.

- A. Mandatory Training: Initial and annual refresher training is required for hazardous waste generators. The purpose of the training is to familiarize waste generators with EPA requirements and University policies and procedures. The EHSO Training Coordinator can be contacted at 956-5180 to schedule training. Principal Investigators have the primary responsibility for the storage and disposal of excess hazardous material and waste in the laboratories. They can choose to train all of the workers in the laboratory as hazardous waste generators or they can designate an individual or individuals as the trained hazardous waste generator(s) for the laboratory. At least one person in each laboratory must have current hazardous waste generator training. In addition all persons who generate waste in the laboratory must know who the designated trained hazardous waste generator is and the basic requirements for waste disposal (i.e. hazardous waste must be labeled and stored in the satellite accumulation area in a closed container and non-hazardous waste must be appropriately disposed). The Principal Investigator has the responsibility to ensure that all persons who generate waste know the basic requirements for waste disposal and that the satellite accumulation area is periodically monitored to verify that requirements are met. **EHSO will NOT pick up any hazardous material or hazardous waste unless the person who signs the material/waste turn-in form has been trained.**
- B. Waste Generator Responsibilities: The following outlines waste generator responsibilities.
1. Become familiar with the hazardous materials you use and the University policies on hazardous materials and hazardous waste management.
  2. Obtain initial waste generator training.
  3. Comply with waste requirements. Store and label waste properly, complete the waste turn-in form correctly.
  4. Complete annual waste generator training, available online from the EHSO website.

5. Contact EHSO, if in doubt about the requirements or how to properly dispose of waste.
- C. Establishment of a Satellite Accumulation Area (SAA): Each generator shall establish an identifiable area, with a posted sign for the collection of waste. The area must be at or near the point of generation of the waste (i.e., in the same room or in a connecting room where the waste is being generated). Up to 55 gallons of ordinary waste or one quart of Acutely Hazardous (P-coded) Waste may be accumulated over an indefinite period of time. A list of Acutely Hazardous Wastes is provided in Attachment (4). The containers must be labeled and must be closed except when waste is being added to them. If the 55 gallon or one quart limit is reached, you must contact EHSO immediately. The SAA should be neat and orderly, containers should not be stacked upon one another or containers of liquid should not be stored on their side. The SAA must be clearly defined and material that is not waste cannot be in the SAA.
- D. Waste Containers: Containers used for wastes must be in good condition (i.e. not rusting, without cracks or structural defects). If a container is broken or begins to leak, the material must be transferred to a container in good condition. The material composition must be compatible with the material to be stored and incompatible materials must not be stored in the same container. Containers must have a secure closure (e.g., screw cap). Parafilm, glass or rubber stoppers are not considered secure closures. Containers of liquid waste must not be "overfilled". The maximum amount of liquid in the container must not exceed 90% of its capacity.
- E. Labeling: Normally all waste material shall be labeled with the word "waste" and the chemical name(s) of the waste (e.g., "waste methyl alcohol" or "waste ethidium bromide"). Generic names can be used if a separate list is maintained to indicate the chemical names and the approximate amounts (e.g., "waste chlorinated solvent bottle no 1" with a separate list "Bottle no. 1 Chloroform 50%, Methyl Chloroform 40%, Methylene Chloride 10%"). Chemicals which are unused or only partially used, in original containers, do not have to be labeled as waste if the manufacturers label provides the chemical name and specific hazards (e.g., flammable, corrosive or poison) associated with the material. The name of the chemical and other required data are entered on the Hazardous Material and Hazardous Waste Turn-in Form.
- F. Secondary Containments. Secondary containments are required for containers of liquid waste under the following circumstances:
1. When the waste is stored in 55-gallon drums.
  2. When the waste is stored on the floor.
  3. When the waste is stored in a hood which has a drain.
  4. When the waste is stored within four (4) feet of a sink.

5. When necessary to separate incompatible or high hazard wastes.

Plastic tubs can be used as secondary containments. EHSO should be consulted about secondary containments for 55-gallon drums.

- G. Hazardous Material and Hazardous Waste Turn In Form. This form, Attachment (5), is necessary to comply with EPA regulations. It will provide the University with a permanent auditable record of the excess material and hazardous waste generated. Instructions for completing the form and an explanation of the entries are also provided in Attachment (5).
- H. Hazardous Waste Disposal Costs. The cost of hazardous waste disposal for the Manoa Campus is borne by the Environmental Health and Safety Office with no charge to the generator of the waste, except for the following:
  1. **Unknown Waste.** A charge of \$70 for each container of unknown waste is made to cover the cost of analysis. Waste cannot be legally disposed of unless it has been identified.
  2. **Radioactive Mixed Waste.** Wastes which are both naturally radioactive (e.g., Uranium or Thorium compounds) and a regulated waste (e.g., nitrates or flammable solvents), are very expensive to dispose. In the past the cost of 10 pounds of radioactive mixed waste was \$30,000. Reimbursement of EHSO disposal costs will be charged to the department generating the waste.
  3. **Compressed Gas Cylinders.** Compressed gas cylinders that are not empty, have frozen valves or which contain unknown gases present difficult and expensive disposal problems. One lecture bottle sized cylinder can cost from \$500 to \$6,000 to dispose and cylinders whose contents are unknown can cost \$10,000 or more for disposal. Reimbursement of EHSO disposal costs will be charged to the department generating the waste. There is no charge for the disposal of empty cylinders, but cylinders with frozen or non-operational valves cannot be considered empty. We dispose of empty cylinders by removing the valve and must be able to verify that the cylinder is truly empty before attempting to remove the valve or it would expose our technicians to an unacceptable safety risk. Once the valve has been removed the cylinders are disposed as scrap metal.
  4. **Dioxin or Dioxin Contaminated Materials.** Materials containing Dioxin (dibenzodioxins or dibenzofurans) must be disposed at one approved site on the Mainland which is only infrequently open or exported to a disposal site in Canada. This involves substantial cost, approximately \$1,000 per pound and special permits. Reimbursement of EHSO disposal costs will be charged to the department generating the waste.



I. Emergency Plans for Spills. A specific plan and training in the plan is needed for the chemicals you will be using. Emergency procedures and emergency phone numbers should be posted in the work area. Personnel working with hazardous chemicals should be able to answer the question: **"What would I do if this material spilled?"** Spill kits with instructions, adsorbents, reactants, and protective equipment should be available to clean up minor spills. A minor spill is one that does not spread rapidly, does not endanger people or property except by direct contact, does not endanger the environment, and the workers in the area are capable of handling safely without the assistance of safety and emergency personnel. All other chemical spills are considered major. The following are general procedures for the handling of spills.

1. Attend to anyone who may have been contaminated or hurt, if it can be done without endangering yourself.
2. Ensure that the fume hood(s) is on and open windows where it can be done without endangering yourself. If flammable materials are spilled, de-energize electrical devices if it can be done without endangering yourself.
3. If the spill is major, contact Campus Security (x66911) and the EHSO (x63198). If the spill is minor, clean up can be performed as follows:
  - a. Ensure protective apparel is resistant to the spilled material. Neutralize acids and bases, if possible using neutralizing agents such as sodium carbonate or sodium bisulfate.
  - b. Control the spread of liquids by containing the spill.
  - c. Absorb liquids by adding appropriate absorbent materials, such as vermiculite or sand, from the spill's outer edges toward the center. Paper towels and sponges may also be used as absorbent material, but this should be done cautiously considering the character of the spilled material. If you have any questions regarding spill clean up requirements, please contact EHSO at x63198.
  - d. Collect and contain the cleanup residues by scooping it into a plastic bucket or other appropriate container and properly dispose of the waste as hazardous waste.
  - e. Decontaminate the area and affected equipment. Ventilating the spill area may be necessary.
  - f. Document what happened, why, what was done, and what was learned. Such documentation can be used to avoid similar instances in the future. Major incidents are almost always preceded by numerous near misses.

- J. Specific Information on the Disposal of Various Materials. The individual possessing or generating the material retains the primary legal responsibility for the material. EHSO provides information on requirements and assistance in handling the materials. Specific information on various types of materials is given below.
1. **AEROSOL CANS:** Aerosol cans (e.g., paint cans, WD-40, or other aerosol products) whether full or empty shall be turned in to EHSO for disposal.
  2. **BATTERIES:**
    - a. Lithium, nickel-cadmium, silver or mercury batteries will be accepted by EHSO for disposal.
    - b. Alkaline and Carbon Zinc batteries will NOT be accepted by EHSO for disposal. Under current Honolulu City and County regulations Alkaline or Carbon Zinc batteries can be disposed of as ordinary trash.
    - c. Lead acid batteries are handled as follows. Lead acid batteries in computer equipment (i.e., UPS back-up power supplies) are e-waste and can be disposed of through the Quarterly University of Hawaii e-Waste Pick-up program (see UH website <http://manoa.hawaii.edu/landscaping/landscapingpage/ewaste.php>). Lead acid Vehicle batteries are recyclable and arrangements with local vendors can be made (e.g., Interstate Battery Systems of Hawaii, 94-120 Leokane St., 676-6000 or Battery Bill, 550 N. Nimitz Hwy, 536-4017). They accept car and other lead batteries for disposal/recycling. The disposal of batteries from University vehicles are handled by Transportation Services. The disposal of other lead acid batteries used in research will be handled on a case by case basis, contact EHSO (956-3198).
  3. **BIOLOGICAL MATERIALS:** For biohazardous wastes, refer to the published University biohazardous waste disposal guidelines or contact the Biosafety Program (x68009) for information concerning the handling and disposal of biological materials.
  4. **COMPRESSED GASES:** Compressed gas cylinders should be returned to the vendor. A return agreement with the vendor should be included in the contract. Without such an agreement the return or disposal of the cylinders is difficult and very costly.
  5. **CONTROLLED SUBSTANCES:** The handling and disposal of controlled substances (i.e. drugs and other substances listed in 21 CFR 1308) are the responsibility of the permit holder. EHSO cannot accept controlled substances for disposal.
  6. **FLUORESCENT LIGHT BALLASTS:** The Office of Facilities & Grounds (OFG) removes non-leaking ballasts. Ballasts that contained PCBs are believed to have already been removed from University light fixtures. Contact EHSO (x63198) for assistance concerning leaking ballasts or any known to contain PCBs.

7. **FLUORESCENT LIGHT TUBES:** OFG removes and disposes of fluorescent light tubes. Contact Work Coordination (x67134) for assistance. Specialty lamps used in research (e.g., UV lamps, Halogen lamps, Atomic Absorption spectral lamps) can be submitted to EHSO for disposal.
8. **HAZARDOUS CHEMICALS AND HAZARDOUS WASTE:** EHSO will pick-up excess hazardous chemicals and hazardous chemical waste. Efforts should be made to determine if excess hazardous chemicals can be used by others in the department or facility prior to contacting EHSO for pickup. Chemicals considered non-hazardous waste can be disposed of in the municipal sanitary landfill or sanitary sewer under certain conditions (see "Non-Hazardous Waste" below). The completion of a hazardous material and hazardous waste turn in form is required for material/waste pickup by EHSO. A copy of this form is included as Attachment (5). The following rules must be complied with for us to pick up your material.
- a. YOU MUST HAVE ATTENDED THE HAZARDOUS WASTE GENERATOR CLASS (initial and annual refresher). We cannot pickup waste from persons who do not have current training.
  - b. YOU MUST HAVE SUBMITTED A COPY OF A "HAZARDOUS MATERIAL & HAZARDOUS WASTE TURN-IN FORM" IN ADVANCE TO EHSO FOR OUR REVIEW AND APPROVAL. Fill in the form online and e-mail it to [hazwaste@hawaii.edu](mailto:hazwaste@hawaii.edu). Upon approval, a mutually convenient time for pickup will be arranged.
  - c. BE SURE EACH CHEMICAL CONTAINER IS PROPERLY LABELED  
Labels should clearly identify contents with a chemical name (i.e. no abbreviations or chemical formulas).
  - d. PACKAGE MATERIALS IN STURDY CARDBOARD BOXES OR PLASTIC WASTE CONTAINERS, AVAILABLE FROM EHSO. ORIGINAL CONTAINERS FOR QUANTITIES GREATER THAN 5 GALLONS OR 55-GALLON WASTE DRUMS ARE ACCEPTABLE. Cushion the material in the containers to prevent breakage. If cardboard boxes are used which originally held chemicals, the name of the chemical must be covered over or defaced. Failure to do so constitutes improper marking as to contents and is an EPA regulation violation.
  - e. REPACKAGE BROKEN OR LEAKING CONTAINERS INTO NON-LEAKING CONTAINERS PRIOR TO PICKUP.
  - f. SEPARATE INCOMPATIBLE MATERIALS. Incompatible materials shall be segregated in separate boxes. Examples of incompatible materials are: acids/bases, organics/oxidizers, and flammable liquids/oxidizers. Unknowns and high hazard materials such as cyanides, organic peroxides, pyrophorics,

water reactives and explosives shall be packaged separately regardless of quantity.

If you have any questions on the proper disposal of hazardous materials or wastes, contact EHSO at (x63198).

9. **MERCURY:** EHSO will accept for disposal items containing functional mercury (e.g. light switches, barometers and thermometers).
10. **MIXED WASTE:** Mixed waste is defined as materials that possess a radioactive or biological hazard as well as an unrelated chemical hazard (e.g., acetone with carbon-14, is both flammable and radioactive). Contact the Radiation Safety Program (x68591) or Biosafety Program (x68009) as applicable for assistance in the proper disposal of these materials.
11. **NON-HAZARDOUS WASTE:** Listed in Table 1 below are typical laboratory chemicals which are not considered hazardous wastes by the U.S. Environmental Protection Agency. If solid and in plastic containers, they may be disposed of as ordinary trash. The container must have the chemical name on it and it should be marked "non-hazardous" to mitigate any concern by the refuse collectors. If solid and in glass or metal containers the material would have to be transferred to plastic containers, labeled and marked "non-hazardous". This is necessary as the refuse contract does not permit the collection of metal or glass containers unless they are empty. As an alternative, all non-hazardous solid chemicals can be turned in to EHSO for disposal using the turn-in form. Liquid chemicals or chemical solutions can only be disposed of to the sanitary sewer (i.e. "down the drain") if they are within the scope of the University's Industrial Wastewater Discharge Permit. The paragraph below provides general requirements and Table 2 below provides a list of materials that can be disposed of to the sanitary sewer. Contact EHSO (X63198) if you have chemicals that you believe may be non-hazardous for a written determination as to whether they must be turned in to EHSO for disposal or may be disposed of as ordinary trash or in the sanitary sewer in small amounts.

**TABLE 1: Non-Hazardous Waste**

Sugars (e.g., sucrose, glucose, mannose)	Silica Gel
Starch	Alumina (aluminum oxide)
Naturally occurring Amino Acids	Calcium Fluoride
Citric Acid and its Sodium, Potassium, Magnesium, Calcium and Ammonium Salts.	Lactic Acid and its Sodium, Potassium, Magnesium, Calcium and Ammonium, Salts

Sodium, Potassium, Calcium, Strontium, and Ammonium Sulfates	Sodium, Potassium, Calcium, Magnesium, Strontium and Ammonium Phosphates
Sodium, Potassium, Magnesium and Ammonium Chlorides	Sodium, Potassium, Magnesium, and Calcium Borates
Silicon Dioxide	Sodium, Potassium, Ammonium Acetates
Boron, Magnesium, Copper Oxides	Sodium, Potassium, Magnesium, Calcium, and Ammonium Carbonates

The following general requirements must be met for all waste to be disposed of in the sanitary sewer. The waste must meet both the general requirements and be listed in Table 2 or have specific written permission from EHSO (Hazardous Material Management Officer). The solution must have a pH between 5.5 and 9.5. No viscous solutions or solutions containing oil are permitted. No solutions at a temperature of greater than 40 degrees Centigrade are permitted. No solutions containing ashes, cinders, sand, mud, straw, shavings, metal powder, glass, rags, feathers, tar, plastics, wood, or paper are permitted.

**TABLE 2: Drain Disposal Restrictions**

<b>Ethidium Bromide Solutions:</b> <0.01% by weight and < 2 quarts per day per laboratory.
<b>Phosphate Buffer Solutions:</b> <10% by weight and < 1 quart per day per laboratory
<b>Salt Solutions:</b> <10% by weight (sodium, potassium, lithium, ammonium: chlorides, carbonates, phosphates, sulfates, or acetates) < 2 quarts per day per laboratory.
<b>Dyes or Stains:</b> Small amounts of from slides as part of laboratory experiments.
<b>Alcohol Solutions</b> (methyl, ethyl, isopropyl only): < 10% by volume and < 1 quart per day per laboratory.
<b>Dilute formaldehyde Solutions:</b> < 3% by weight and < 1 quart per day per laboratory.
<b>Sugar Solutions:</b> < 10% by weight and <2 quarts per day per laboratory
<b>Amino Acids and their Salts in solution:</b> <10% by weight and <2 quarts per day per laboratory.

**Citric and Lactic Acids and their Salts in solution:** <10% by weight and <1 quart per day per laboratory.

NOTE: The percentage by weight or volume refers to a total of the items in any category. For example a solution of 5 % sodium chloride and 5 % potassium chloride would meet the limit while a solution of 10% sodium chloride and 5 % potassium chloride would not. Similarly, a solution of 10% ethyl alcohol and 5% methyl alcohol would not meet the criteria for drain disposal. A solution of 10% ethyl alcohol and 10% sodium chloride would meet the criteria as they are in different categories, but the volume permitted per day would be the lower of the two.

12. **OILS AND TRANSFORMER FLUID:** EHSO will accept waste pump oil. EHSO will NOT accept used motor oil, unless it was used in research. Used motor oil is recyclable through local vendors. Used motor oil from University vehicles is handled by Transportation Services. Transformer fluid will be handled on a case by case basis, contact EHSO (x63198) for assistance.
13. **RADIOACTIVE MATERIALS:** Refer to the University Radiation Safety Manual or contact the EHSO Radiation Safety Program (x68591) for information concerning the proper handling and disposal of radioactive material.
14. **SHARPS.** Sharps are defined as: Any material or object that can puncture or cut the skin and cause injury. These include, but are not limited to: needles syringes, razors, scalpels, lancets, and pipet tips.
  - a. Metal sharps contaminated with hazardous chemicals. For metal sharps contaminated with hazardous chemicals (e.g., hypodermic needles, razors, scalpels or knife blades),rinse to decontaminate them and dispose of them in a sharps container, but do not use a red sharps container. Contact the Biosafety Program(x68009\_) for disposal of the sharps container.
  - b. Glass or plastic sharps contaminated with hazardous chemicals. For glass or plastic sharps contaminated with hazardous chemicals (e.g., pipet tips), turn them in to EHSO as excess hazardous material/hazardous waste and include the name of the chemical (e.g., pipet tips contaminated with: phenol, ethidium bromide, or mercury).
  - c. Sharps contaminated with radioactive material. Refer to the University Radiation Safety Manual or contact the Radiation Safety Program (x68591) for information on the proper handling and disposal of sharps contaminated with radioactive material.
  - d. Sharps contaminated with biological or infectious material. Refer to the published biohazardous waste guidelines or contact the Biosafety

Program (x68009) for information concerning the proper handling and disposal of sharps contaminated with biological or infectious material.

## 15. GLASSWARE.

- a. Glassware not contaminated with radiological, biological or hazardous chemicals shall be placed in a puncture resistant container, labeled "glass or broken glass". It will be picked up by the custodial staff and disposed of.
  - b. Glassware contaminated with visible residual amounts (e.g., < 1gram or 1ml) of hazardous chemicals, except for "P" listed chemicals or insoluble materials, shall be rinsed to decontaminate them and the rinsate disposed down the drain. Glassware without any visible residual chemicals should be disposed of as ordinary glassware. Glassware contaminated with "P" listed chemicals or insoluble materials shall be turned in to EHSO for disposal as hazardous chemical waste.
  - c. Broken glassware contaminated with hazardous chemicals should be placed in a puncture resistant container (e.g., bottle, plastic container or metal can overpack with a secure lid), labeled with the name of the chemical and turned in to EHSO for disposal as hazardous chemical waste.
  - d. For information on the proper disposal of glassware contaminated with biological material, contact the Biosafety program (x68009). For information on glassware contaminated with radioactive material contact the Radiation Safety Program (x68591).
- K. Abandoned Waste. Abandoned waste should not occur, as the abandonment of waste is a violation of the HMMP. In the event that abandoned waste is discovered, the following policy will be implemented.
1. If the waste material is in a building or adjacent to a building such that it can be assumed that the waste came from the building, then the Department/School/College occupying the building is responsible for the disposal of the waste material in accordance with the HMMP.
  2. If the waste material is in an area such that it is not easily identifiable as having come from a building (e.g., the material is in a dumpster or parking lot), or if a chemical spill is involved, then EHSO will respond and dispose of the material as abandoned waste in accordance with the HMMP.

#### IV. HAZARDOUS WASTE MINIMIZATION

- A. Buying Chemicals in Smaller Amounts. The "large economy size" may cost less to buy, but disposal costs, in most cases, are several times the initial cost of the material. Many of the bottles of excess or waste chemicals turned in are full or 3/4 full. Everyone needs to accurately estimate the amount of chemicals they expect to use.
- B. Recycling and Redistribution. As described in the hazardous material control and hazardous waste program above, efforts are to be made to find someone in the laboratory or department who could use the hazardous material before it is turned in to EHSO as excess or waste. EHSO encourages the redistribution and exchange of surplus chemical products within the UH system as an alternative to disposal as waste. Information on the chemical exchange program and the UH electronic swap meet can be found online at [www.hawaii.edu/ehso/hazmat](http://www.hawaii.edu/ehso/hazmat) and [www.hawaii.edu/swapmeet](http://www.hawaii.edu/swapmeet). If no qualified user can be found then the material will be disposed of as hazardous waste. This program will reduce waste generation and save the University waste disposal costs.
- C. Use of Less Hazardous or Non-hazardous Materials. The following provides some examples of the use of less hazardous or non-hazardous materials; everyone is encouraged to seek other alternatives to hazardous materials that may be applicable to their research or instructional materials.
1. Cleaning Solutions: Chromerge, chromic acid and dichromate cleaning solutions are not desirable from a waste disposal prospective as they cannot be made non-hazardous and are expensive to dispose of. There are many non-toxic biodegradable-cleaning solutions that can be used instead of chromic acid. For extremely dirty glassware a product called Nochromix, which uses sulfuric acid and an organic oxidizer in place of chromium can be used. While this requires neutralization of the acid for ordinary disposal, it is far less costly to dispose of than chromium solutions. A number of alternative cleaning solutions are listed below. These are all available from Fisher Scientific, who has the University contract for laboratory supplies. NoChromix, Alconox, Liquinox liquid detergent, Citranox, Fisherbrand sparkleen, and FL-70 Concentrate.
  2. Drying Agents: The safest common drying agents are calcium chloride, silica gel, molecular sieves and calcium sulfate (Drierite). These are recommended because of their low toxicity and stability. Drying agents that pose varying degrees of hazard and disposal problems include:
    - a. Phosphorus pentoxide, which generates highly corrosive phosphoric acid and heat on contact with water. This material also has to be disposed of as a hazardous waste unless it can be reacted and neutralized.
    - b. Magnesium perchlorate (Dehydrite), which is a strong oxidizer and may



cause fires or explosions on contact with organic materials. This material has to be disposed of as a hazardous waste.

- c. Water Reactive Chemicals, (materials such as sodium metal, potassium metal, calcium metal, calcium carbide, calcium hydride, lithium hydride, lithium aluminum hydride, sodium hydride and potassium hydride) are not recommended for use as general purpose drying agents because they form flammable gases on contact with water and are both dangerous and expensive to dispose of. Small amounts of these materials can be safely disposed of by reacting them with water under controlled conditions by knowledgeable personnel to create non-hazardous or less hazardous materials. If a bottle of solvent contains a water reactive drying agent, this information must be clearly marked on the bottle. This is necessary for the safety of personnel handling the material during disposal.
- 3. Thermometers: Mercury thermometers should be replaced with non-mercury thermometers whenever possible. Broken mercury thermometers create spills that are a potential health hazard, time consuming to clean up, and are one of the most expensive hazardous wastes we handle. Non mercury thermometers with equivalent accuracy are available for temperature ranges of -20 to 250 degrees Centigrade. Contact EHSO or check your laboratory supply catalog for more information. If mercury-containing equipment is used, then a mercury spill kit and personnel knowledgeable in its use is required in the laboratory or facility.
- D. Conversion to Non-hazardous Material. As part of instruction or research operations, hazardous materials can be converted into non-hazardous wastes The neutralization of acids or bases is an example of this. Experiments can be designed to convert residual or produced hazardous materials into non-hazardous wastes. In some cases this can have instructional value as well as reducing the amount of hazardous waste and its disposal cost.

**UNIVERSITY OF HAWAII AT MANOA  
PROCUREMENT AUTHORIZATION FOR HAZARDOUS MATERIALS**

An approved (signed) copy of this form must accompany any purchase order or requisition for the procurement of the hazardous materials listed on page two of this form.

\*\*\*\*\*

**NAME:** \_\_\_\_\_  
(Principal Investigator)

**DEPARTMENT:** \_\_\_\_\_ **PHONE NO., EXT.:** \_\_\_\_\_

**LOCATION:** \_\_\_\_\_  
(Where chemical will be used)

Chemical Name	Solid/liquid/gas	Amount

**Signature of Principal Investigator:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**PLEASE SEND THE COMPLETED FORM TO:** EHSO, 2040 East-West Road, Attention: Hazardous Materials Management Officer. The Hazardous Materials Management Officer may be contacted at 956-3198 or FAX 956-3205, if you have questions.

\*\*\*\*\*

**FOR EHSO USE ONLY**

**EHSO APPROVAL:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
(Hazardous Materials Management Officer)

**APPROVAL NO.** \_\_\_\_\_

9/19/02

## **LIST OF CHEMICALS REQUIRING ENVIRONMENTAL HEALTH & SAFETY OFFICE (EHSO) APPROVAL TO PURCHASE**

Because the following chemicals are highly toxic, explosive, water reactive or for other reasons very difficult and expensive to dispose of (disposal costs can be more than \$1000 per container) their use needs to be minimized and monitored. Contact Tim O'Callaghan, at EHSO (956-3198) for further information.

Arsine	Methyl Bromide
Boron Trichloride	Methyl Chloride
Boron Trifluoride	Methyl Lithium
Bromine Chloride	Nitric Acid - concentrated only ( $\geq 68\%$ )
Butyl Lithium	Nitric Oxide
Carbon Monoxide	Nitrogen Dioxide
Carbonyl Sulfide	Nitrogen Trifluoride
Cesium	Phosgene
Calcium Hydride	Phosphine
Chlorine	Phosphorus
Chlorine Trifluoride	Picfume
Chloropicrin	Picric Acid
Cyanogen	Picryl Sulfonic Acid
Cyanogen Chloride	Picramide
Diborane	Potassium
3,5-Dinitrophenol	Rubidium
2,4-Dinitrophenylhydrazine	Silane
3,5-Dinitrosalicylic Acid	Silane Dichloride
Ethylene Oxide	Sodium
Fluorine	Sulfur Dioxide
Hydrogen Bromide	Thorium Compounds
Hydrogen Chloride	Trinitroaniline
Hydrogen Cyanide	Trinitrobenzene
Hydrogen Fluoride	Trinitrocresol
Hydrogen Sulfide	Trinitronaphthalene
Lithium	Trinitrophenol
Lithium Aluminum Hydride	Trinitrotoluene
Lithium Hydride	Uranium Compounds
Methyl Amine	Urea Nitrate
	Vinyl Chloride

**UNIVERSITY OF HAWAII AT MANOA  
AGREEMENT FOR THE USE OF HAZARDOUS MATERIAL**

**DELETED**

## SAMPLE CHEMICAL INVENTORY FORMAT

**PI's Name :** \_\_\_\_\_ **Date Completed:** \_\_\_\_\_

# FORM DELETED

[illegible]

## ATTACHMENT 4

### LIST OF ACUTELY HAZARDOUS WASTE (P-CODED WASTE)

The following materials are hazardous wastes if and when they are intended to be discarded (40 CFR 261.33):

1. Any commercial chemical product or manufacturing chemical intermediate having the generic name listed below.
2. Any off-specification commercial chemical product or chemical intermediate having the generic name listed below.
3. Any visible residue remaining in a container of P-coded material
4. Any residue resulting from the clean-up of a spill of a P-coded waste.
5. The phrase "commercial chemical product or manufacturing chemical intermediate having a generic name listed below" refers to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient.

<b>Hazardous Waste No.</b>	<b>Chemical Abstracts No.</b>	<b>Chemical Name</b>
P023	107-20-0	Acetaldehyde, chloro-
P002	591-08-2	Acetamide, N-(aminothioxomethyl)-
P057	640-19-7	Acetamide, 2-fluoro-
P058	62-74-8	Acetic acid, fluoro-, sodium salt
P002	591-08-2	1-Acetyl-2-thiourea
P003	107-02-8	Acrolein
P070	116-06-3	Aldicarb
P203	1646-88-4	Aldicarb sulfone
P004	309-00-2	Aldrin
P005	107-18-6	Allyl alcohol
P006	20859-73-8	Aluminum phosphide
P007	2763-96-4	5-(Aminomethyl)-3-isoxazolol
P008	504-24-5	4-Aminopyridine
P009	131-74-8	Ammonium Picrate
P119	7803-55-6	Ammonium Vanadate

Hazardous Waste No.	Chemical Abstracts No.	Chemical Name
P099	506-61-6	Argintate (1-), bis(cyano-C-), potassium
P010	7778-39-4	Arsenic acid (H <sub>3</sub> AsO <sub>4</sub> )
P012	1327-53-3	Arsenic oxide (As <sub>2</sub> O <sub>3</sub> )
P011	1303-28-2	Arsenic oxide (As <sub>2</sub> O <sub>5</sub> )
P011	1303-28-2	Arsenic pentoxide
P012	1327-53-3	Arsenic trioxide
P038	692-42-2	Arsine, diethyl-
P036	696-28-8	Arsenous dichloride, phenyl-
P054	151-56-4	Aziridine
P067	75-55-8	Aziridine, 2-methyl-
P013	542-62-1	Barium cyanide
P024	106-47-8	Benzenamine, 4-chloro-
P077	100-01-6	Benzenamine, 4-nitro
P028	100-44-7	Benzene (chloromethyl)-
P042	51-43-4	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-
P046	122-09-8	Benzeneethanamine, alpha,alpha-dimethyl-
P014	108-98-5	Benzenethiol
P127	1563-66-2	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
P188	57-64-7	Benzoic acid, 2-hydroxy,compd, with (3aS-cis)-1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrolo [2,3-b]indol-5-yl methylcarbamate ester (1:1)
P001	81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts, when present at concentrations greater than 0.3%.
P028	100-44-7	Benzyl chloride
P015	7740-47-7	Beryllium powder
P017	598-31-2	Bromoacetone
P018	357-57-3	Brucine
P045	39196-18-4	2-Butanone, 3,3-dimethyl-1-(methylthio)-, o-[methylamino, carbonyl] oxime
P021	592-01-8	Calcium cyanide
P189	55285-14-8	Carbamic acid, [(dibutylamino)-thio]methyl-,2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester
P191	644-64-4	Carbamic acid, dimethyl-, 1-[(diemthylamino)carbonyl]-5-methyl-1H-pyrazol-3-yl ester
P192	119-38-0	Carbamic acid, dimethyl-, 3-methyl-1-(1-methylethyl)-1H-pyrazol-5-yl ester
P190	1129-41-5	Carbamic acid, methyl-, 3-methylphenyl ester
P127	1563-66-2	Carbofuran

Hazardous Waste No.	Chemical Abstracts No.	Chemical Name
P022	75-15-0	Carbon disulfide
P095	75-44-5	Carbonic dichloride
P189	55285-14-8	Carbosulfan
P023	107-20-0	Chloroacetaldehyde
P024	106-47-8	p-Chloroaniline
P026	5344-82-1	1-(o-Chlorophenyl) thiourea
P027	542-76-7	3-Chloropropionitrile
P029	544-92-3	Copper cyanide (202CuCN)
P202	64-00-6	m-Cumenyl methylcarbamate
P030	-----	Cyanides (soluble cyanide salts) not otherwise specified
P031	460-19-5	Cyanogen
P033	506-77-4	Cyanogen chloride (CNCl)
P034	131-89-5	2-Cyclohexyl-4,6-dinitrophenol
P016	542-88-1	Dichloromethyl ether
P036	696-28-6	Dichlorophenylarsine
P037	60-57-1	Dieldrin
P038	692-42-2	Diethylarsine
P041	311-45-5	Diethyl-p-nitrophenyl phosphate
P040	297-97-2	O,O-Diethyl O-pyrazinyl phosphorothioate
P043	55-91-4	Diisopropylfluorophosphate (DFP)
P004	309-00-2	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexa-chloro-1,4,4a,5,8,8a,-hexahydro-(1alpha,4alpha,4abeta,5alpha,8alpha,8abeta)-
P060	465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexa-chloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5beta,8beta,8abeta)-
P037	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b]oxirene,3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-(1aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7beta,7aalpha)-
P051	72-20-8	2,7:3,6-Dimethanonaphth[2,3,-b]oxirene,3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2abeta,3alpha,6alpha,6abeta,7beta,7aalpha)-, & metabolites
P044	60-51-5	Dimethoate
P046	122-09-8	alpha,alpha-Dimethylphenethylamine
P191	644-64-4	Dimetilan



Hazardous Waste No.	Chemical Abstracts No.	Chemical Name
P047	534-52-1	4,6-Dinitro-o-cresol, & salts
P048	51-28-5	2,4,-Dinitrophenol
P020	88-85-7	Dinoseb
P085	152-16-9	Diphosphoramidate, octamethyl-
P111	107-49-3	Diphosphoric acid, tetraethyl ester
P039	298-0404	Disulfoton
P049	541-53-7	Dithiobiuret
P185	26419-73-8	1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O-[(methylamino)-carbonyl] oxime
P050	115-29-7	Endosulfan
P088	145-73-3	Endothall
P051	72-20-8	Endrin, & metabolites
P042	51-43-4	Epinephrine
P031	460-19-5	Ethanedinitrile
P194	23135-22-0	Ethanimidothioc acid, 2-(dimethylamino)-N- {[(methylamino) carbonyl] oxy}-2-oxo-, methyl ester
P066	16752-77-5	Ethanimidothioic acid, N- {[(methylamino) carbonyl]oxy}-, methyl ester
P101	107-12-0	Ethyl cyanide
P054	151-56-4	Ethyleneimine
P097	52-85-7	Famphur
P056	7782-41-4	Fluorine
P057	640-19-7	Fluoroacetamide
P058	62-74-8	Fluoroacetic acid, sodium salt
P198	23422-53-9	Formetanate hydrochloride
P197	17702-57-7	Formparanate
P065	628-86-4	Fulminic acid, mercuric salt
P059	76-44-8	Heptachlor
P062	757-58-4	Hexaethyl tetraphosphate
P116	79-19-6	Hydrazinecarbothioamide
P068	60-34-4	Hydrazine, methyl-
P063	74-90-8	Hydrocyanic acid
P063	74-90-8	Hydrogen cyanide
P096	7803-51-2	Hydrogen phosphide
P060	465-73-6	Isodrin
P192	119-38-0	Isolan
P202	64-00-6	3-Isopropylphenyl N-methylcarbamate
P007	2763-96-4	3(2H)-Isoxazolone, 5-(aminomethyl)-
P196	15339-36-3	Manganese, bis(dimethylcarbamodithioato-S,S')-

<b>Hazardous Waste No.</b>	<b>Chemical Abstracts No.</b>	<b>Chemical Name</b>
P196	15339-36-3	Manganese dimethyldithiocarbamate
P092	62-38-4	Mercury, (acetato-O)phenyl-
P065	628-86-4	Mercury fulminate
P082	62-75-9	Methanamine, N-methyl-N-nitroso-
P064	624-83-9	Methane, isocyanato-
P016	542-88-1	Methane, oxybis(chloro-
P112	509-14-8	Methane, tetranitro-
P118	75-70-7	Methanethiol, trichloro-
P198	23422-53-9	Methanimidamide, N,N-diemthyl-N'-{3- [[ (methylamino)-carbonyl]oxy]-phenyl}-, monohydrochloride
P197	17702-57-7	Methanimidamide, N,N-dimethyl-N'-{2-methyl-4- [[ (methylamino) carbonyl]oxy]phenyl}-
P050	115-29-7	6,9,-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a- hexahydro-, 3-oxide
P059	76-44-8	4,7,-Methano-1H-indene, 1,4,5,6,7,8,8- heptachloro-3a,4,7,7a-tetrahydro-
P199	2032-65-7	Methiocarb
P066	16752-77-5	Methomyl
P068	60-34-4	Methyl hydrazine
P064	624-83-9	Methyl isocyanate
P069	75-86-5	2-Methylactonitrile
P071	298-00-0	Methyl parathion
P190	1129-41-5	Metolcarb
P128	315-08-4	Mexacarbate
P072	86-88-4	alpha-Naphthylthiourea
P073	13463-39-3	Nickel carbonyl (NiCO)
P074	557-19-7	Nickel cyanide (NiCN)
P075	54-11-5	Nicotine & salts
P076	10102-43-9	Nitric oxide
P077	100-01-6	p-Nitroaniline
P078	10102-44-0	Nitrogen dioxide
P076	10102-43-9	Nitrogen oxide (NO)
P078	10102-44-0	Nitrogen oxide (NO2)
P081	55-63-0	Nitroglycerine
P082	62-75-9	N-Nitrosodimethylamine
P084	4549-40-0	N-Nitrosomethylvinylamine
P085	152-16-9	Octamethylpyrophosphoramide
P087	20816-12-0	Osmium Tetroxide (OsO4)

Hazardous Waste No.	Chemical Abstracts No.	Chemical Name
P088	145-73-3	7-Oxabicyclo(2.2.1)heptane-2,3-dicarboxylic acid
P194	23135-22-0	Oxamyl
P089	56-38-2	Parathion
P034	131-89-5	Phenol, 2-cyclohexyl-4,6-dinitro-
P048	51-28-5	Phenol, 2,4-dinitro
P047	534-52-1	Phenol, 2-methyl-4,6-dinitro- & salts
P020	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-
P009	131-74-8	Phenol, 2,4,6-trinitro-, ammonium salt
P128	315-18-4	Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate (ester)
P199	2032-65-7	Phenol, (3,5-dimethyl-4-(methylthio)-, methylcarbamate
P202	64-00-6	Phenol, 3-(1-methylethyl)-, methylcarbamate
P201	2631-37-0	Phenol, 3-methyl-5-(1-methylethyl)-, methylcarbamate
P092	62-38-4	Phenylmercury acetate
P093	103-85-5	Phenylthiourea
P094	298-02-2	Phorate
P095	75-44-5	Phosgene
P096	7803-51-2	Phosphine
P041	311-45-5	Phosphoric acid, diethyl 4-nitrophenyl ester
P039	298-04-4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
P094	298-02-2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
P044	60-51-5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
P043	55-91-4	Phosphorofluoridic acid, bis(1-methylethyl) ester
P089	56-38-2	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
P040	297-97-2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
P097	52-85-7	Phosphorothioic acid, O-{4-[(dimethylamino)sulfonyl] phenyl} O,O-dimethyl ester
P071	298-00-0	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester
P204	57-47-6	Physostigmine
P188	57-64-7	Physostigmine salicylate
P110	78-00-2	Plumbane, tetraethyl-
P098	151-50-8	Potassium cyanide (KCN)

<b>Hazardous Waste No.</b>	<b>Chemical Abstracts No.</b>	<b>Chemical Name</b>
P099	506-61-6	Potassium silver cyanide
P201	2631-37-0	Promecarb
P070	116-06-3	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl] oxime
P203	1646-88-4	Propanal, 2-methyl-2-(methyl-sulfonyl)-, O-[(methylamino) carbonyl] oxime
P101	107-12-0	Propanenitrile
P027	542-76-7	Propanenitrile, 3-chloro-
P069	75-86-5	Propanenitrile, 2-hydroxy-2-methyl-
P081	55-63-0	1,2,3,-Propanetriol, trinitrate
P017	598-31-2	2-Propanone, 1-bromo-
P102	107-19-7	Propargyl alcohol
P003	107-02-8	2-Propenal
P005	107-18-6	2-Propen-1-ol
P067	75-55-8	1,2-Propylenimine
P102	107-19-7	2-Propyn-1-ol
P008	504-24-5	4-Pyridinamine
P075	54-11-5	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, & salts
P204	57-47-6	Pyrrolo[2,3-b]indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-, methylcarbamate (ester, (3aS-cis)-
P114	12039-52-0	Selenious acid, dithallium (thallous) salt
P103	630-10-4	Selenourea
P104	506-64-9	Silver cyanide (AgCN)
P105	26628-22-8	Sodium azide
P106	143-33-9	Sodium cyanide (NaCN)
P108	57-24-9	Strychnidin-10-one, & salts
P018	357-57-3	Strychnidin-10-one, 2,3-dimethoxy-
P108	57-24-5	Strychnine & salts
P115	7446-18-6	Sulfuric acid, dithallium (thallous) salt
P109	3689-24-5	Tetraethyldithiopyrophosphate
P110	78-00-2	Tetraethyl lead
P111	107-49-3	Tetraethyl pyrophosphate
P112	509-14-8	Tetranitromethane
P062	757-58-4	Tetraphosphoric acid, hexaethyl ester
P113	1314-32-5	Thallic oxide
P113	1314-32-5	Thallium oxide (Tl <sub>2</sub> O <sub>3</sub> )
P114	12039-52-0	Thallium (I) selenite (thallous selenite)
P115	7446-18-6	Thallium (I) sulfate (thallous sulfate)

<b>Hazardous Waste No.</b>	<b>Chemical Abstracts No.</b>	<b>Chemical Name</b>
P109	3689-24-5	Thiodiphosphoric acid, tetraethyl ester
P045	39196-18-4	Thiofanox
P049	541-53-7	Thioimidodicarbonic diamide (H <sub>2</sub> NCS) <sub>2</sub> NH
P014	108-98-5	Thiophenol
P116	79-19-6	Thiosemicarbazide
P026	5344-82-1	Thiourea, (2-chlorophenyl)-
P072	86-88-4	Thiourea, 1-naphthalenyl-
P093	103-85-5	Thiourea, phenyl-
P185	26419-73-8	Tirpate
P123	8001-35-2	Toxaphene
P118	75-70-7	Trichloromethanethiol
P119	7803-55-6	Vanadic acid, ammonium salt
P120	1314-62-1	Vanadium Oxide (V <sub>2</sub> O <sub>5</sub> ) vanadium pentoxide
P084	4549-40-0	Vinylamine, N-methyl-N-nitroso-
P001	81-81-2	Warfarin, & salts, when present at concentrations greater than 0.3%
P205	137-30-4	Zinc, bis(dimethylcarbamodithioato-S,S')-,
P121	557-21-1	Zinc cyanide [ Zn (CN) <sub>2</sub> ]
P122	1314-84-7	Zinc phosphide (Zn <sub>3</sub> P <sub>2</sub> ) when in concentrations greater than 10%
P205	137-30-4	Ziram

## Excess Hazardous Materials and Hazardous Waste Turn in Form

This form is to be used for the turn in of excess hazardous materials or hazardous waste to the Environmental Health and Safety Office (EHSO) for reuse or disposal. Please refer to the Hazardous Materials Management Program requirements for information on the types of materials accepted and the proper disposition of other materials. See the attached sheet for information on completing the form. The form must be completed online and e-mailed as an attachment to hazwaste @hawaii.edu.

Dept/Org: \_\_\_\_\_

Date: \_\_\_\_\_

Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Location: \_\_\_\_\_

Page: \_\_\_\_ of \_\_\_\_

List of Materials:

<sup>*</sup> Item No#	Chemical Name	Quantity	<sup>**</sup> Physical State	For EHSO Use

\*Item No# = List the Item Number and mark the individual containers with the same Item Number.

\*\*Physical state = S (Solid), L (Liquid), G (Gas/Aerosol). Quantity is to be specified in pounds (lbs) for solids and gallons (gal) for liquids, See the conversion list if necessary. For gases and aerosols see Instructions.



**Name:** \_\_\_\_\_ **Page:** \_\_\_\_\_ **of** \_\_\_\_\_

\*Item No# = List the Item Number and mark the individual containers with the same Item Number.  
 \*\*Physical State = S (Solid), L (Liquid), G (Gas/Aerosol)

Attachment 5  
(Page 3 of 6)



LINE BY LINE INSTRUCTIONS FOR FILLING OUT THE EHSO EXCESS  
HAZARDOUS MATERIAL AND HAZARDOUS WASTE TURN IN FORM

Department/Organization: The source of the material (e.g. Chemistry, Engineering, Botany, Hawaii Natural Energy Institute)

Date: Today's date.

Name: Name of the generator who signs the form must appear here. Additional names can be listed as necessary. For example, John Smith, contact Harry Brown for Pick-up.

Phone No: Telephone number of contact person.

Location: Location where material can be picked up (e.g. Bilger 214 or Biomed T 411)

List of Materials: Each material is to be listed on a separate line. This information is critical for us to properly handle and dispose of the material. Unknowns are extremely difficult and expensive to dispose of. Try to identify the material in a broad category such as "unknown acid" or "unknown flammable solvent". If the material is truly unknown write "unknown" in the Chemical Name space on the form. Note; your department will be charged \$70 for each container of unknown material.

Item No #: This is an identifying number for each item (e.g., 1, 2, 3, 4). This number must be marked on the containers, so that the containers can be matched with the items on the list and placed in the proper drums for their hazard class at our facility.

Chemical Name: This is the name on the container label. Do not use chemical formulas or abbreviations. If the material is not pure then the concentration should be given (e.g. 10% hydrogen peroxide solution, Acid waste: 2 Molar hydrochloric acid, waste solvent: 60% isopropyl alcohol, 40% acetone.) The more information that you can supply, the easier and less expensive it will be for us to handle the material. Also, when you list ten (10) or more items list each item with a number and also mark the corresponding number on the container. This will assist EHSO in matching the items to the list when we pickup the items and pack for disposal. When filling in the form online, if you have a large list of names as constituents for one line item, you can reduce the font size to 9 and this will enable you to get more items in one block on the form. You are limited to two lines of data for each block. If reducing the font size is not enough to list all of your constituents on two lines then you will have to use multiple blocks for the line item.

Quantity: Indicate the approximate amount in pounds for solids and gallons for liquids. For items less than 0.01 pound (4.5 grams) report 0.01 pounds. For items less than 0.01 gallons (40 ml or 1.3 ounces) report 0.01 gallons. For gases indicate the number of cylinders in the quantity block. For aerosols indicate the size and number of containers (e.g., 5 x 15 oz cans).

Physical State: This identifies the type of material (solid, liquid, gas/aerosol) and is important as the hazard class or EPA waste code may depend on the physical state of the material. Use "S" for solids, "L" for liquids and "G" for gases or aerosols.

For EHSO Use: EHSO uses this space to record the DOT hazard class and the EPA waste code for the material. Please do not write in the left margin on the form, as we use that space to enter the drum number for each item.

Generator Certification: A person currently trained as a hazardous waste generator must fill in the signature block on the form. Complete the signature block by typing in your name. This signature acknowledges your responsibility for the material. When you e-mail the form, you should receive an automatic e-mail response that your form has been received. If you do not receive an automatic response, contact EHSO as we may not have received your form.

EHSO Approval: The Hazardous Materials Management Officer (HMMO) will review the form for completeness and conformance with the regulations. If there are any problems or questions, the HMMO will contact the generator. Upon approval of the form by the HMMO the generator will be contacted and a mutually convenient time for pickup of the material will be arranged by EHSO.

Material Acceptance: EHSO personnel will inspect the material, prior to accepting it. Any material that does not match the material on the approved form or that does not conform to the requirements for labeling, packaging and container condition will not be accepted. The EHSO Representative signature verifies that the generator has complied with the applicable requirements.

If you have any questions on the proper disposal of materials or on the form, please contact EHSO (x 63198).

7/7/2016

## Weight and Volume Conversion Table

The following tables are provided for convenience to those using the waste turn in form. Numbers are approximations and have been rounded off.

### **1. Weights: grams to pounds**      **1 gram = 0.0022 pounds**

<5 grams.....0.01 pounds (per instructions all weights less than 5 grams or 0.01 pounds are to be reported as 0.01 pounds)

5	grams.....0.01 lbs.	10	grams..... 0.02 lbs.
20	grams..... 0.04 lbs.	30	grams..... 0.07 lbs.
40	grams..... 0.09 lbs.	50	grams..... 0.11 lbs.
100	grams..... 0.22 lbs.	500	grams..... 1.10 lbs.

### **2. Volumes: liters to gallons**      **1 liter = 0.2642 gallons**

≤ 40 ml..... 0.01 (per instructions volumes ≤ 40 ml are reported as 0.01 gal.)

50	ml..... 0.01 gal	60	ml..... 0.02 gal
100	ml..... 0.03 gal	150	ml..... 0.04 gal
200	ml..... 0.05 gal	300	ml..... 0.08 gal
400	ml ..... 0.11 gal	500	ml..... 0.13 gal
600	ml..... 0.16 gal	700	ml..... 0.18 gal
800	ml..... 0.21 gal	900	ml..... 0.24 gal
1.0	liter.....0.26 gal	1.5	liters.....0.40 gal
2.0	liters.....0.53 gal	2.5	liters.....0.66 gal
3.0	liters.....0.79 gal	4.0	liters.....1.06 gal
0.5	pints (8 oz).....0.06 gallons	1.0	pint (16 oz)... 0.13 gallons
1.0	quart (32 oz)... 0.25 gallons		