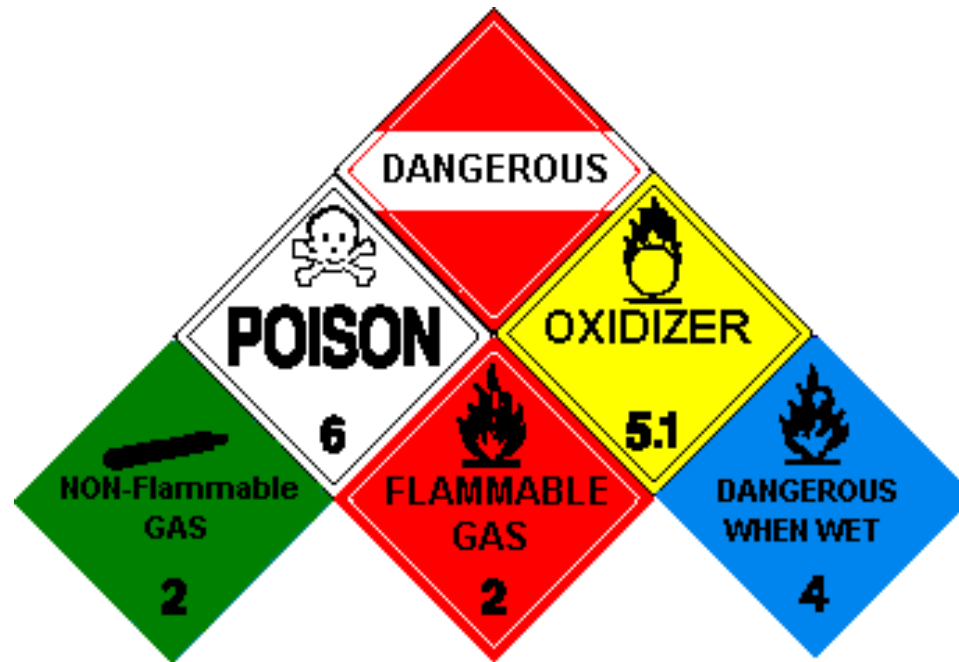




University of Hawaii, Community Colleges

Hazardous Waste Management Program





QUIZ TIME

What is the most important action you can take to ensure that you are in compliance with the Hazardous Materials and Hazardous Waste Regulations?



LABELS





Safety & Regulatory Websites

1 EHSO WEBSITE:

www.hawaii.edu/ehso

2 Environmental Protection Agency:

www.epa.gov

3 Hawaii Department of Health:

www.state.hi.us/doh

4 HIOSH:

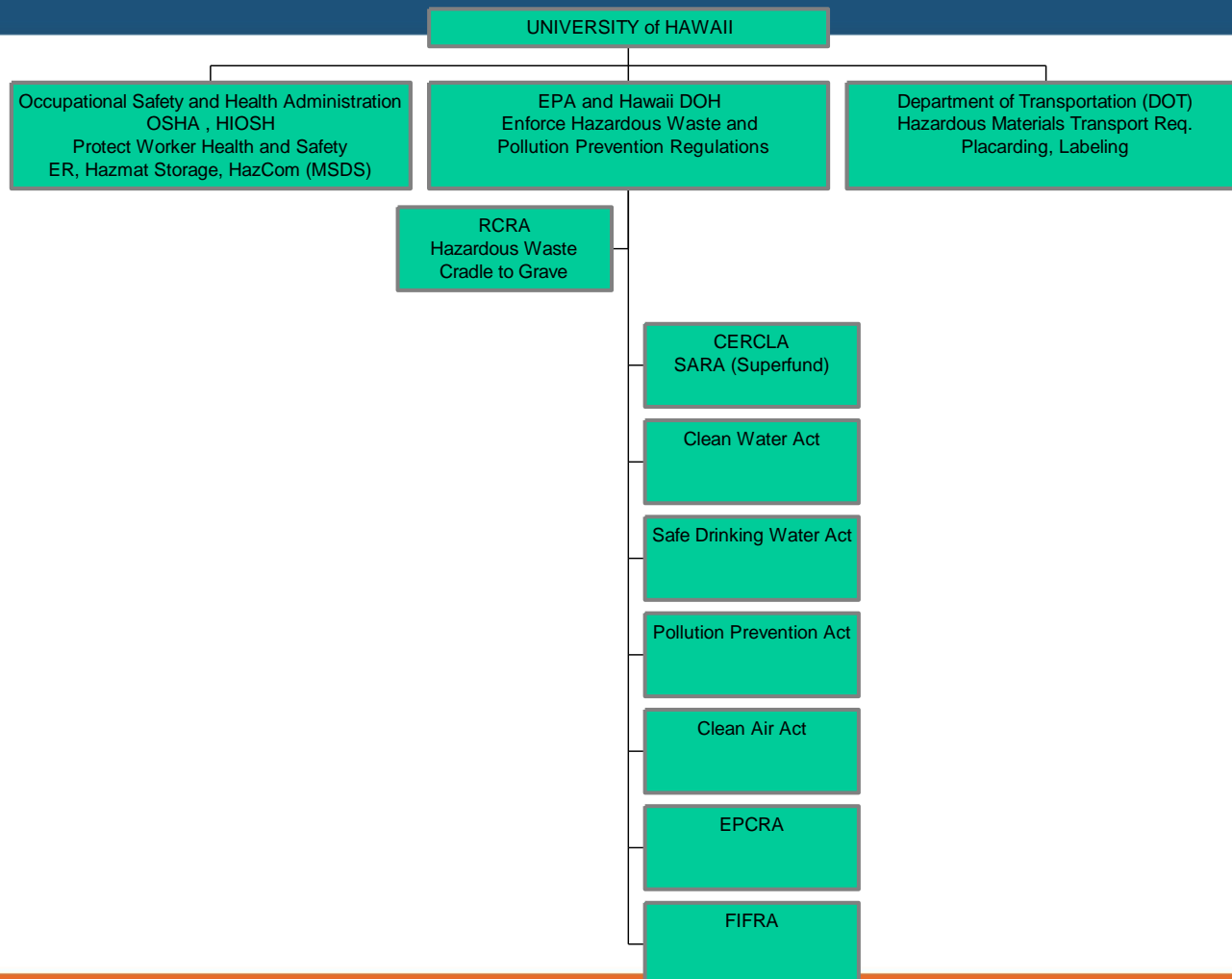
www.state.hi.us/dlir/hiosh



Benefits of Compliance

- ▶ Maintain the excellent reputation that UH has in the community.
- Continue to attract students.
- Attract Grants, Endowments & Donations.
- Expansion of programs.
- Bottom Line \$\$\$\$\$

Hazardous Materials, Hazardous Waste and Pollution Regulations





EPA and DOH ENFORCEMENT

United States Environmental Protection Agency Office of Enforcement and Compliance Assurance (2248A) EPA 300-N-00-012

EPA Enforcement Alert

Volume 3, Number 7 Office of Regulatory Enforcement July 2000

Universities, Colleges Not Receiving Top Marks for Environmental Compliance

EPA Holding Educational Institutions to Same Standards as Industry

Colleges and universities are required to comply with all applicable environmental requirements like their counterparts in the regulated industry to create a safe haven for human health and the environment.

Violating these requirements can be costly. For example, the University of Hawaii recently paid \$1.8 million in civil penalties for violating federal law by poorly managing laboratory waste.



Graphic courtesy of EPA Region 1

This issue of *Enforcement Alert* highlights the results of recent inspections by the U.S. Environmental Protection Agency (EPA), and identifies a host of resources, such as EPA's "Audit Policy," which can help universities and colleges stay in compliance with federal environmental requirements. EPA encourages academic institutions to take advantage of the Audit Policy, which establishes a framework for the voluntary disclosure and correction of violations in return for greatly reduced penalties.

Areas of Noncompliance Highlighted

Most academic institutions are similar to small cities and encompass many analogous activities within their campus borders such as operating research laboratories, auto repair facilities, power plants and wastewater treatment plants; disposing of hazardous waste and trash; managing asbestos; supplying drinking water; maintaining grounds; and incinerating wastes. Many universities also operate medical and research facilities that create their own set of environmental challenges.

During past inspections of university and college campuses across the nation, EPA Regions have found significant compliance problems with the Resource Conservation and Recovery Act (RCRA); the Spill Prevention, Control and Countermeasure (SPCC) requirements of the Clean Water Act (CWA); Underground Storage Tank management; and the Clean Air Act (CAA).

Specific examples of noncompliance include improperly handling and disposing of hazardous waste materials; boilers and furnaces that do not meet clean air regulations; inadequate monitoring of underground storage tanks; sewage treatment facilities that are not operating properly; and improper abatement of lead-based paint and asbestos.

Continued on page 2

This publication is found on the Internet at <http://www.epa.gov/oeca/ore/en/alert>

About Enforcement Alert

"Enforcement Alert" is published periodically by the Office of Regulatory Enforcement to inform and educate the public and regulated community of important environmental enforcement issues, recent trends and significant enforcement actions.

This information should help the regulated community anticipate and prevent violations of federal environmental law that could otherwise lead to enforcement action. Reproduction and wide dissemination of this publication are encouraged.

For information on obtaining additional copies of this publication, contact the editor listed below.

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(Please Email all address and name changes or subscription requests for this newsletter.)

<u>University</u>	<u>Fine</u>	<u>Violation</u>
Yale	\$348,000	HW
Notre Dame	\$250,000	CAA
U of Wyoming	\$180,000+	HW
Stanford	\$1,000,000	HW
Boston U	\$253,000 + 1.8 million SEP	HW
MIT	\$150,000+ \$400,000 SEP	HW



RCRA

Resource **C**onservation and **R**ecovery **A**ct

RCRA encompasses EPA's solid and hazardous waste regulations

- ▶ “*Cradle to grave*” - the moment the waste is created until it is finally disposed of





How Do We Comply?

We control waste production and properly manage waste stored on site.

- 1. Control amounts and types of hazardous materials coming onto the site.**
- 2. Monitor and control the amount of waste produced.**
- 3. Limit the amount of waste produced through reuse and recycling.**
- 4. Limit the types of waste produced by using less hazardous or non-hazardous alternative.**



RCRA

- ▶ Hazardous wastes can be dangerous to human health and the environment
- ▶ Know how to safely work with/around the wastes in your workplace and how to handle them safely.



Identifying Waste

- ▶ What is a waste?
 - You decide to dispose of it, thus if you are still using a material, or plan to reuse it, it is not considered a waste
 - Regulated by federal or state agencies





Identifying Waste

- ▶ What is a hazardous waste?
 - A waste with a chemical composition or other properties that make it capable of causing illness, death, or harm to humans and other life forms when mismanaged or released into the environment.

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL
IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY, OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY.

ACCUMULATION START DATE _____ E.P.A. WASTE NO. _____

D.O.T. PROPER SHIPPING NAME _____

AND _____

U.N. OR N.A. NO. _____

GENERATOR'S NAME _____

ADDRESS _____

CITY _____ STATE _____

E.P.A. I.D. NO. _____

MANIFEST TRACKING NO. _____

HAZARDOUS WASTE - HANDLE WITH CARE



Identifying Waste

► Steps to determine hazardous waste

- Is it a **solid waste**?

Under RCRA, the term "solid waste" means any waste, whether it is a solid, semisolid, or liquid.

- Is it specifically **excluded** from the RCRA regulations?

The waste may still be regulated, but under a different program. For example, industrial wastewater will be regulated under the Clean Water Act.

- Is it a **listed** hazardous waste?
- Does it exhibit a hazardous **characteristics**?



Identifying Waste

- ▶ What is a solid waste?
discarded material that is:
 - Abandoned
 - Recycled
 - Considered inherently waste-like
 - A military ammunition





Listed and characteristic waste

- ▶ **Test for hazardous characteristic(s)**

Use your basic knowledge, the information described in the regulations, and the information on the SDS of the waste to make a waste characteristic determination.
- ▶ **Generator knowledge**

Generators can use knowledge of the process used to generate the waste or 'common knowledge' to determine that the waste is a hazardous. For instance, it is common knowledge that gasoline is ignitable. Generators must keep records of all waste determinations, including any test results, waste analyses, or other documentation.





Listed and characteristic waste

- ▶ **Ignitability (I):** Can create fires under certain conditions.
- ▶ **Corrosivity (C):** Acids or bases capable of corroding metal containers.
- ▶ **Reactivity (R):** Unstable under "normal" conditions. Can cause explosions, toxic fumes, gases, or vapors when heated, compressed, or mixed with water.
- ▶ **Toxicity (E):** Harmful or fatal when ingested or absorbed. When land disposed, contaminated liquid may leach from the waste and pollute ground water.



Waste Handlers

▶ **Hazardous Waste Generators**

A facility owner, operator, or person who first creates a hazardous waste is subject to state or federal regulations.

▶ **Transporters**

Transportation includes air, rail, highway, or water. Transporters of hazardous wastes are hazmat employees who need or have received proper training.

▶ **Treatment, storage, and disposal facilities (TSDFs)**

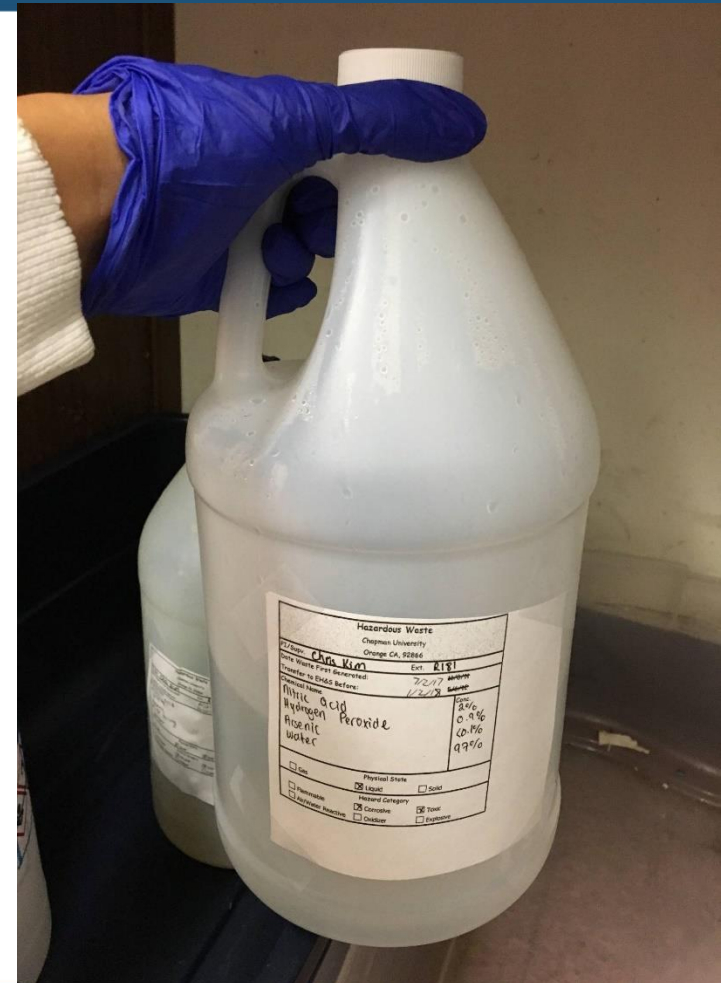
The term TSDF groups treatment, storage, and disposal facilities together, but in reality, there are many other combinations of the three.





Waste Containers

- ▶ Waste in the hazardous waste storage areas must be marked with the date the waste began accumulating (the first drop) and labeled “Hazardous Waste” or must contain the contents of the waste
- ▶ Containers must be kept closed and secured except when adding or removing waste





Hazardous Waste Management

Central Accumulation Areas

- ▶ The main hazardous waste storage area, sometimes called the '90-day' or '180-day' area
- ▶ Leave enough aisle space between containers to allow firefighters, emergency responders, fire protection equipment, or spill control equipment to move easily between them in an emergency.





Hazardous Waste Management

- ▶ Container management
 - Good condition, no leaks
 - Waste compatibility
 - Keep containers closed!
 - Handle with care
 - Store ignitable or reactive wastes at least 15 meters from property line
 - Inspect containers for leaks once per week



Hazardous Waste Management

If waste is ignitable or reactive:

- Take special precautions
- “NO SMOKING”
- Avoid mixing
- Appropriate container
- Avoid heat-producing reactions





Employee Safety

▶ Job-specific training

Employees must be trained to work safely around and with the waste they may come into contact with on the job. OSHA requires training to be function/job specific. This means employees must know how to protect themselves from the specific wastes at their facility.

▶ Proper PPE

Training includes learning about job specific personal protective equipment (PPE) . Consult the SDS on the required protective measures for individual chemicals/wastes.





Hazardous Materials and Waste Plan

HAWAII COMMUNITY COLLEGE

UNIVERSITY OF HAWAII



**Hazardous Materials/
Hazardous Waste
Management Program**



The UHCC Programs Hazardous Materials and Waste Plan

- ▶ The program outlines the basic requirements for the management of hazardous materials and the disposal of hazardous waste at UH Community College (UHCC).
- ▶ These requirements are based on the federal, state and county regulations.
- ▶ Failure to comply with these requirements may subject UHCC and/or individuals to fines and civil or criminal prosecution.
- ▶ Additionally, proper management of hazardous materials reduces disposal costs and ensures that UHCC are a safe and protective environment for Faculty, Staff and visitors.



Generation and Accumulation of Wastes

UHCC's waste generator status is defined by EPA and Hawaii DOH regulations as a

**Very Small Quantity Generator
(VSQG)**

of Hazardous Waste.



Limits on Waste Generation

To maintain the status of VSQG,
UHCC may not generate more than,

100 kilograms

of hazardous waste per month,
and

1 kilogram

of acute hazardous waste in one month
(P-Coded)



Limits on Waste Accumulation

To maintain CESQG status
UHCC may not store more than,

1000 kilograms

of total accumulated hazardous waste,
and no more than

1 kilogram

of accumulated acute hazardous waste at any time!!.



Storage of Hazardous Waste

Labeling

- ▶ All hazardous waste containers must be labeled with the yellow “**HAZARDOUS Waste Tag**”.
- ▶ Mixtures: The percentage of each Major Chemical Constituent must be on the label.

Examples of Proper Labels



Item Number – This number should correspond to the item number on the waste inventory form.

Building & Room – Indicate the building and the room where waste is located.

Department – The Department responsible for the waste

Contact & Phone # - Contact person and phone number responsible for managing waste.

Chemical Constituents – List all constituents ensuring that the totals are equal or greater than 100%. Please do not use abbreviations.

pH – All liquids must have pH written on the tag before the waste can be picked up.

Physical State, Hazard Class – Complete appropriately, if need assistance, please call EHSO. (Base this characterization on the final composition of the waste, NOT the individual hazard classes of the contents.)

Item#

CHEMICAL WASTE
Hawaii Community College

Dept: _____ Building: _____ Room: _____

Contact: _____ Ph#: _____

Chemical Constituents
(if mixture, list all constituents by percent volume.)
(Totals must equal or be greater than 100%)

_____ %
_____ %
_____ %
_____ %
_____ %
_____ %

_____ pH (please list for all liquids)

Physical State
 Gas Solid Liquid

Hazard Class
 Flammable Poison Oxidizer
 Reactive Corrosive



Chemical Waste Label

Hazard Class: Is this waste EPA regulated hazardous waste or is it not EPA regulated hazardous waste. Call UHCC ESS for assistance.

EPA regulated hazard codes. Please mark accordingly for your waste stream. If any of these items are in your waste stream or exhibit these characteristics, please mark the appropriate item.

Hawaii Community College
120 W. Kawili Street, Hilo, Hawaii 96720
(808) 974-7656

Hazard Class	__RCRA	__NonRCRA
__Flammable D001	__Oxidizer D001	__Corrosive D002
__Reactive D003	__Toxic:....	
__Arsenic.D004		__Hexachlorobenzene.D032
__Barium D005		__Hexachlorobutadiene.D033
__Benzene.D018		__Hexachloroethane.D034
__Cadmium.D006		__Lead.D008
__Carbon Tetrachloride.D019		__Lindane.D013
__Chlordane.D020		__Mercury.D009
__Chlorobenzene.D021		__Methoxychlor.D014
__Chloroform.D022		__Methyl ethyl ketone.D035
__Chromium.D007		__Nitrobenzene.D036
__o-Cresol.D023		__Pentachlorophenol.D037
__n-Cresol.D024		__Pyridine.D038
__p-Cresol.D025		__Selenium.D010
__Cresol.D026		__Silver.D011
__2,4-D.D016		__Tetrachloroethylene.D039
__1,4-Dichlorobenzene.D027		__Toxaphene.D015
__1,2-Dichloroethane.D028		__Trichloroethylene.D040
__1,1-Dichloroethylene.D029		__2,4,5-Trichlorophenol.D041
__2,4-Dinitrotoluene.D030		__2,4,6-Trichlorophenol.D042
__Endrin.D012		__2,4,5-TP (Silvex).D017
__Heptachlor.D031		__Vinyl Chloride.D043



Waste Containers

Closed Containers. All hazardous waste containers must remain closed except when waste is being added to them.

Containers in Good Condition:

Containers used for waste must be in good condition and compatible with the waste.



































Secondary Containment

- ▶ **Secondary containment is required for all hazardous waste containers.**
- ▶ **Secondary Containment is required for all chemical containers stored on the floor, near a drain, or in the fume hood.**
- ▶ **Plastic pans and tubs are acceptable.**



Quick Guide for Chemical Storage by Compatibility

Chemical Hazard Always refer to the SDS	Flammable	Acid	Base	Oxidizer	Toxic
					
					
					
					
					



Unknowns



- ▶ Unknowns pose a very serious risk. Assume that all unknowns are extremely dangerous and take appropriate actions.



- ▶ Contact EHSO ASAP. EHSO will analyze the unknown.



Other Regulated Waste

- ▶ Universal waste 40 CFR 273
 - Batteries
 - Lamps (Compact fluorescent light bulbs)
 - Mercury-containing equipment (thermostats, switches)
 - Pesticides (certain recalled or unused)

*Contact EH&S for proper disposal





Specific Information on the Disposal of Various Materials/Waste

- ▶ **BATTERIES**
- ▶ **BIOLOGICAL MATERIALS**
- ▶ **CONTROLLED SUBSTANCES**
- ▶ **COMPRESSED GASES**
- ▶ **FLUORESCENT LIGHT BALLASTS**
- ▶ **FLUORESCENT LIGHT TUBES**
- ▶ **HAZARDOUS CHEMICALS AND HAZARDOUS WASTE**



Specific Information on the Disposal of Various Materials/Waste

- ▶ **MERCURY**
- ▶ **MIXED WASTE**
- ▶ **NON-HAZARDOUS WASTE**
- ▶ **OILS AND TRANSFORMER FLUID**
- ▶ **PAINT WASTE**
- ▶ **PHOTOGRAPHIC CHEMICALS**
- ▶ **RADIOACTIVE MATERIALS**
- ▶ **SHARPS AND GLASSWARE**



Drain Disposal Restrictions

TABLE 2: Drain Disposal Restrictions

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



Other regulated waste

- ▶ **Universal wastes**
 - Keep in closed containers
 - Mark the accumulation date
 - Store up to one year



Designated Program Coordinators

- ▶ **The Vice Chancellors of Administrative Services (VCAS) is responsible for overall management of this plan at UHCC.**
- ▶ **Individual Department Directors and faculty are designated as responsible for implementation and enforcement of this program in their respective departments.**
- ▶ **All UHCC Staff will comply with all applicable environmental health and safety laws and regulations.**



UHCC Hazardous Material Management Strategy

- 1. Authorization to Purchase Form**
- 2. Approval to Use Hazardous Materials in Research and Grants**
- 3. Semi-Annual Inventory Form**
- 4. Annual Waste Inventory form**
- 5. Audit Program.**



Procurement Authorization Form

HAWAII COMMUNITY COLLEGE - UNIVERSITY OF HAWAI'I PROCUREMENT AUTHORIZATION FOR HAZARDOUS MATERIALS

An approved (signed) copy of this form must accompany any *request*, purchase order or requisition for the procurement of all hazardous materials.

NAME: _____
(Instructor/Program Coordinator)

DEPARTMENT: _____ PHONE NO., EXT.: _____
LOCATION: _____ PURCHASE ORDER NO.: _____

Chemical Name	S/L/G	Amount (gallon, lbs)	Usage Plan	Estimated Usage Period

Instructor/Program Coordinator _____ DATE: _____
(Signature)

Dean/Director _____ DATE: _____
(Signature)

PLEASE SEND THE COMPLETED FORM TO: Director of Administrative Services (DOAS).

FOR DOAS USE ONLY

DOAS APPROVAL: _____ DATE: _____

APPROVAL NO.: _____



Semi-Annual Chemical Inventory Form

College _____

**SAMPLE
UNIVERSITY OF HAWAI'I
Community College
HAZARDOUS CHEMICAL INVENTORY FORM (SEMI - ANNUAL)**

This form assists University of Hawaii with proper management of our hazardous material and hazardous waste and to ensure that materials are safely stored and handled. You should provide a complete inventory of all stored hazardous materials. If additional space is needed, you may use an attached sheet using the same format. If at a later date you obtain materials not previously listed, please submit an amended form.

I. PRODUCT NAME	II. CHEMICAL NAME	Primary Hazard Warning	Physical State (solid, liquid or solution)	Container Size	Amount (gal, lb)s	Qty
Acetic Acid, Glacial		Flammable	Liquid	1 gal	1 gal	5
Enamel Paint	Naphtha ether, mineral spirit	Flammable	Liquid	1 gal	1 gal	10
Carter's Rubber Cement	Naphtha, Hexane, Propyl alcohol	Flammable	Liquid	4 oz	4 oz	48

INSTRUCTOR/PROGRAM COORDINATOR:

_____ **Dr. George Bush** _____ PHONE NO.: _____ x7777 _____ LOCATION: _____ Science Bldg, Rm 205 _____
(Printed Name)

_____ **Date:** _____
(Signature)

PLEASE SEND THE COMPLETED FORM TO: Director of Administrative Services. The DOAS may be contacted if you have any questions.



Annual Waste Inventory Form

College _____

**SAMPLE
UNIVERSITY OF HAWAII
Community College
HAZARDOUS WASTE INVENTORY FORM (ANNUAL)**

This form assists Hawaii Community College with proper management of our hazardous waste. If you have any hazardous or non-hazardous waste being stored for disposal, please provide the information requested. If additional space is needed, you may use an attached sheet using the same format. If at a later date you generate wastes not previously listed, please submit an amended form. **EHSO will complete columns 8 and 9, DOT Class and EPA Waste Code.**

Chemical Name/Product (Chemical constituents)	Physical State (solid, liquid or solution)	Amount (gal, lbs)	Container Size	Container Type	Hazard Category	pH)	DOT Class (EHSO only)	EPA Waste Code (EHSO only)
Solvent waste—Acetone 5%, methanol 20%, mineral spirits 50%, water 20%	Liquid	55 gal	55 gal	Drum metal	flam	N/A		
Spray paint—mineral spirit	Liquid under pressure	8 oz	16 oz	Metal	Flam	N/A		
Acid solution—hydrochloric acid 45%, sulfuric acid	Liquid	4 liter	4 liter	Glass	corr	1		

INSTRUCTOR/PROGRAM COORDINATOR:

_____ **Dr. George Bush** _____ **PHONE NO.:** x7555 **LOCATION:** Science bldg rm 205
(Printed Name)

_____ **Date:** _____
(Signature)

PLEASE SEND THE COMPLETED FORM TO: Director of Administrative Services. The DOAS may be contacted if you have any questions.



AUDIT PROGRAM

- ▶ Primary purpose is to assist in maintaining Laboratories and Facilities that are safe for all staff and protective of the environment.
- ▶ Secondary purpose is to ensure that the facility is in compliance with all health and safety regulations.
- ▶ EHSO will perform periodic visits to review implementation of applicable safety, health and environmental policies and requirements.

AUDITING PROGRAM







AFTER THE AUDIT









3980-1
Stannous Chloride
Dihydrate, Crystal
Indicator for Mercury Determination
MERCK ANALYZED[®] Reagent

Chloride Fisher
CRYSTAL ChemAlert[™]
Guide

SAFETY DATA SHEET

HAZARD IDENTIFICATION

PRECAUTIONS

STORAGE

DISPOSAL

NO MFDS LISTING

B STORAGE CLASS BLUE

11502
N 6202-174502
454 g (1 lb)

Approximate Formula Per Liter Purified Water

*Phytocasein [®] Peptone	22.8 g
Sodium Chloride	5.2
Agar	12.5
Pheng [®] Broth	0.254
Final pH 7.4 ± 0.2	

*10% Pancreatic Digest of Casein

Hygroscopic. Keep bottle tightly closed.

Expiration date applies to product in intact container; stored as directed. 1270





Audit Program

- ◆ **Use of Personal Protective Equipment**
- ◆ **Showers and Eyewashes**
- ◆ **Ventilation Hoods**
- ◆ **Hazardous Material Storage.**
- ◆ **Hazardous and acutely hazardous waste accumulation.**
- ◆ **Material Safety Data Sheet availability.**
- ◆ **Hazardous waste accumulation areas.**
- ◆ **Emergency plans.**



Emergency Response

Employees must not respond to an emergency unless they are properly trained to do so; you must be trained in emergency procedures. Employees need to know the location and function of any and all emergency equipment they will be expected to use.





Summary

- ▶ Hazardous waste training
 - Facility/Waste/Job specific
 - Know your role in an emergency

