

# HAZARDOUS MATERIALS MANAGEMENT PLAN

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#### 1.0 PURPOSE:

The purpose of this plan is safety manage hazardous waste produced by Southern Utah University so that employee safety and the environment is not compromised and to comply with state and federal regulations governing hazardous waste.

#### 2.0 INTRODUCTION:

The plan was drafted based on the following assumptions:

State and federal law governs the handling and disposal of hazardous materials. Southern Utah University, as a matter of policy, should and must comply with this Body of law

Funds and manpower to deal with disposal of hazardous materials are limited.

As a group we need to find the most cost – effective strategy to create a system that encourages academics and at the same time ensures that hazardous materials are handled safely and disposed of in an environmentally sound manner.

Other laws and regulations, such as the worker right-to –know law should be dealt with as an integral part of the hazardous materials management plan because safe handling and use requires knowledge of the materials.

The plan will be reviewed and updated annually to reflect changes in local, state, and federal laws.

While Southern Utah University's Safety and Risk Manager will have primary responsibility for overseeing the plan, successful implementation of the plan rests largely with campus departments, laboratories, shops and their employees.

#### 3.0 TRACKING HAZARDOUS MATERIALS:

It is in the best in the best interest of the institution to minimize the amount of hazardous materials present. It is recognized that hazardous chemicals are used and hazardous waste products from a number of operations on campus. The waste stream must be quantified from each source in order to make a legitimate determination of our generator status. Examples are solvents from the vehicle shops and other shops even though these solvents are recycled; print shop wastes; old glazed and solvents from the art department and photography lab wastes. Full product information in the form of material safety data sheets [MSDS's] is necessary for determining waste category as well as safe handling procedures. We must ensure that MSDS sheets are available for all materials and develop individual waste plans for each type of generator on campus. This is a direct link with OSHA's worker right-to-know requirements and is sound waste management.

# 4.0 CHEMICAL HYGIENE AND HAZARD COMMUNICATION STANDARDS:

Under OSHA's Occupational Exposure to Hazardous Chemicals in Laboratories Standard [29 CFR 1910.1450] a chemical hygiene plan [CHP] must be developed. The CHP is the heart of the standard which covers industrial, clinical and academic labs. You must comply with the standard if:

Your Laboratory is one where relatively small quantities of hazardous chemicals are used on a non-production basis.

Your Laboratory is one in which chemical manipulations are carried out on a "laboratory scale," meaning with chemical substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person. "Laboratory scale" excludes those workplaces whose function is to produce commercial quantities of materials: and

Multiple chemical procedures or chemicals are used; and

Laboratory procedures, practices, and equipment accepted by laboratory health and safety experts as effective, or that the employer can show to be effective, in minimizing the potential for employee exposure to chemicals, are available and in common use to minimize the potential for employee exposure to hazardous chemicals.

The basic requirements apply to OSHA'S Hazardous Communication Standard. For detailed information on the right-to-know requirements, call the Safety and Risk Management office at 586-7964.

The CHP requires written steps that outline how you will protect employees form overexposure to hazardous chemicals. A chemical hygiene officer [the plan requires one] must make sure the plan is adequate and that everyone understands and follows it, [training is the key element]. The plan focuses on employees, and they must understand "which chemicals are dangerous, how chemicals affect them, how much and what kind of exposure is harmful, how to protect themselves form overexposure, what to do if they are overexposed, decontamination procedures, the correct way to dispose of hazardous chemicals, use and maintenance of fume hoods and other protective equipment, and which operations require prior approval." In addition to training, the CHP must include provisions for medical attention for employees whenever "there's a leak or an explosion that might overexpose employees to a hazardous chemical, or an employee shows symptoms or overexposure to a hazardous chemical, or tests find a regular, dangerous level of a hazardous chemical in the laboratory atmosphere."

Training must be provided BEFORE a new employee starts working with hazardous materials, and records of initial and annual training must be kept. In addition to training

and record-keeping for employees, all safety equipment must be tested every 6 months and records kept. This requirement is designed to avert situations such as someone pulling the chain on the emergency shower and breaking off the handle because it has not been used in years.

The Safety and Risk Manager will provide a "train the trainer" program for supervisors or designated employees, who will in turn train their staff. Records of employee training will be maintained by individual departments.

Chemicals, particular acids, should not be stored under sinks because these chemicals cause rapid deterioration of cabinets and piping under sinks. The purchase of acid storage cabinets or plastic tubs with tight fitting lids to segregate acids and bases is advisable. Storage cabinets for flammable materials are to be used whenever possible.

Exhaust hoods are routinely maintained by Plant Operations Maintenance personnel. They have a legitimate concern over what may be coming out of the stack while they do fan maintenance and what materials they may come in contact with while working inside the hoods. Upon request by Plant Operations service personnel, individuals responsible for hoods should remove their chemicals and apparatus and survey the hood area to ensure the hood is a safe work environment. If any special precautions or personnel protective equipment is necessary due to the nature of chemical or other residue inside the hood, the Safety Manager should be noticed for confirmation of safe work practices.

It is the laboratory supervisor's responsibility to inform maintenance personnel of any unusual hazards they may encounter while working in the lab. Long-term replacement funds for aging hoods should be identified and budgeted for. As a general rule, chemical storage inside the hood should be limited.

# 5.0 WASTE DISPOSAL IN LABS, SHOPS AND OTHER WORK AREAS:

ARM 16.44.415[7] states, "Large and small generators may accumulate as much as 55 gallons of hazardous waste or one quart of acutely hazardous waste in containers at or near any point of generation where waste initially accumulate, which is under the control of the operator of the process generating the waste, without a permit and without being subject to the time and waste quantity limits of the accumulation requirements..." provided containers are marked either with the words "HAZARDOUS WASTE" or "ACCUTELY HAZARDOUS WASTE," as applicable, or with words that identify the contents of the container. ARM 16.44.415 [9] states, "the large and small generator shall prepare and maintain at its premises a log book or similar documentation, which lists the hazardous waste it has generated for each calendar month by date, EPA hazardous waste number and quantity. The log shall be current as of the most recent complete calendar month within 30 days after the end of said month, and shall contain monthly data for at least 11 consecutive calendar months, if appropriate. The log shall also note which of he listed wastes have been removed from accumulation for either on-site or off-site treatment, storage, or disposal."

The intent of ARM 16.44.415 [9] is to ensure that we handle our wastes appropriately based on the volume produced in any one month. Since everyone is keeping a record of chemicals used in individual lab notebooks, that will serve as a record of waste generated provided all material used goes to waste. If this is not the case, please note in your regular laboratory notebooks what volume of what chemical has gone into a labeled waste container. In laboratories, containers of waste that are not hazardous by law should labeled simply "waste" followed by the chemical name or chemical class. An example would be used nutrient agars waiting for disposal. The point here is to ensure that all containers in the lab area have their contents clearly labeled. Hazardous wastes must be clearly labeled as such. The more information available about the contents of hazardous waste containers, the better. Wastes should be segregated whenever possible. For guidelines on waste segregation see the following section.

# 6.0 PACKAGING AND LABELING OF WASTES FOR PICKUP:

Labeling is required of all chemical containers except those that will be used within the same day by one individual. The following requirements are designed to ensure compliance with the law and minimize the cost for analysis and final disposal of waste:

Containers must be labeled clearly with the works "HAZARDOUS WASTE" or "ACUTELY HAZARDOUS WASTE" or the substance name and the word "WASTE" such as "WASTE TOLUENE".

Contents must be known and listed on the label. This includes water and concentrations of chemical, estimated by the percent of water. Any waste containing TCLP constituents must be listed. Review the EPA D-list/TCLP list for the concentrations of regulated compounds to determine if you have a TCPL waste. While the TCPL list reflects the regulatory limit for leachable quantities. The total amount should be listed and therefore is as follows:

Table1TCLP Constituents					
EPA#	Contaminant	CAS#	Reg. Level [mg/l]		
D004	Arsenic	7440-39-3	5.0		
D005	Barium	7440-39-3	100.0		
D018	Benzene	71-43-2	0.5		
D006	Cadmium	7444-39-9	1.0		
D019	Carbon tetrachloride	56-23-5	0.5		
D020	Chlordane	57-74-9	0.03		
D021	Chlorobenzene	108-90-7	100.0		
D022	Chloroform	67-66-3	6.0		
D007	Chromium	7440-47-3	5.0		
D023	o-Cresol	95-48-7	200.0		
D024	m-Cresol	108-39-4	200.0		
D025	p-Cresol	106-44-5	200.0		

D026	Cresol		200.0		
D016	2,4-D	94-75-7	10.0		
D027	1,4-Dichlorobenzene	106-46-7	7.5		
D028	1,2-Dichloroethane	107-06-2	0.5		
D029	1,1-Dichloroethylene	75-35-4	0.7		
D030	2,4-Dinitrotoluene	121-14-2	0.13		
D012	Endrin	72-20-8	0.02		
D031	Heptachlor [& its Epoxide]	76-44-8	0.008		
D032	Hexachlorobenzene	118-74-1	0.13		
D033	Hexachlorodutadiene	87-68-3	0.5		
D034	Hexachloroethane	67-72-1	3.0		
D008	Lead	7439-92-1	5.0		
D013	Lindane	58-9-89-9	0.4		
D009	Mercury	7439-97-6	0.2		
D014	Methoxychlor	72-43-5	10.0		
D035	Metyl ethyl ketone	78-93-3	200.0		
D036	Nitrobenzene	98-95-3	2.0		
D037	Pentrachlorophenol	87-86-5	100.0		
D038	Pyridine	110-86-1	35.0		
D010	Selenium	7782-49-2	1.0		
D011	Silver	7440-22-4	5.0		
D039	Tetrachloroethylene	127-18-4	0.7		
D015	Toxaphene	8001-35-2	0.5		
D040	Trichloroethylene	79-01-6	0.5		
D041	2,3,5-Trichlorophenol	95-95-4	400.0		
D042	2,4,6-Trichorophenol	88-06-2	2.0		
D017	2,4,5,-TP [Silvex]	93-72-1	1.0		
D043	Vinyl chloride	75-01-4	0.2		

Use the original containers where possible. Plastic milk jugs or containers without lids are not acceptable. Containers that will not react with the contents should always be used [e.g., don't put acids in metal cans]. Always use the sturdiest container you have for chemical transportation.

Leave two inches of head space in liquid containers. DO NOT FILL BOTTLES TO THE TOP.

Segregate SOLVENT wastes into three separate classes/containers.

- Halogenated [e.g. chloroform].
- 2. Water miscible, non-halogenated [e.g. acetone, alcohols].

# 3. Non-water miscible, non-halogenated [e.g. hexane].

# IN ALL CASES, LABEL THE CONTENTS OF THE CONTAINER WITH THE CHEMICAL NAME:

Do not mix inorganic wastes with organic wastes.

Do not mix heavy-metal wastes with organic wastes and NEVER mix mercury compounds with ANY other wastes.

Segregate acid and base waste unless you are neutralizing the material for drain waste. Do not mix either with solvents.

Do not accept wastes from outside parties for disposal in the University hazardous waste disposal system.

All containers of hazardous waste will be dated at the time of pickup delivery, and this date will determine the accumulation start time.

# 7.0 GUIDELINES FOR COLLECTION OR DELIVERY OF HAZARDOUS MATERIALS FOR DISPOSAL:

Arrangements must be made before collection of hazardous waste. To arrange for hazardous waste pickup call the Safety and Risk Manager at 435-586-7964. Chemicals having no use and which meet the definition of hazardous waste will be logged in for disposal. Transport chemicals to and from your laboratory in a safe manner. Carry containers in plastic buckets or tubs or very sturdy cardboard cartons. Whenever possible, avoid times when classes are changing or sidewalks are icy.

#### 8.0 DISPOSAL COST:

Disposal costs will continue to be paid for out of the Safety and Risk Managers budget.

# 9.0 POLICY ON DISPOSAL OF CHEMICALS BY MEANS OTHER THAN SHIPMENT OR DONATION

# TRASH TO BE LANDFIELD

Only non-hazardous solid chemicals are allowed to go to the landfill, as Iron County will not accept liquid or solutions of chemicals. This allows for disposal of small quantities of organic or bio-chemicals that are equivalent to food products or food additives. Examples include old DIFCO and other nutrients and agars. The MSDS sheet often provides guidance on disposal practices. Many of the chemicals that have historically gone in the dumpster are now considered a "special waste" by the Iron County Landfill. Any chemical container may be thrown in the trash after it has been emptied and rinsed.

#### SINK TO DRAIN TO THE CEDAR CITY SEWAGE FACILITY

A.R.M. 16.44.303 [1] [b] [iv] [E] states that, "Wastewater resulting from laboratory operations containing toxic [T] wastes identified in ARM 16.44.330 through 16.44.333, provided that wastewater flow into the head-works of the of the facility's wastewater treatment or pretreatment system, or provided the wastes combined annualized average concentration does not exceed one part per million in the head-works of the facility's wastewater treatment or pretreatment facility... "Are exempt from regulation provided that the waste go to a state or federally permitted treatment facility. ARM 16.44.304 [1] [F] further excludes from regulation "domestic sewage and any mixture of domestic sewage and other wastes that passes through a sewer system to a publicly owned treatment works for treatment. Domestic sewage means untreated sanitary wastes that pass through a sewer system." If the University exceeds 15 Kg. of hazardous waste disposal into the city sewer in any one month, we must notify the city, the EPA regional waste management director and the state Solid and Hazardous Waste Bureau of the constituents discharged the approximate mass and concentration. [CFR 403.12,p] This notification is required only once and should include everything discharged in the calendar month. This is one of the requirements that is leading us toward a better inventory and tracking system for hazardous materials.

#### SINK DRAIN DISPOSAL GUIDELINES

# **10.0 GENERAL PROHIBITIONS:**

Gasoline, benzene, ethers, carbides, xylene, perchlorates, oils and naphtha or any halogenated solvents or other like substance must be collected for hazardous waste disposal by means other than sink drain. Like substances shall be defined as non-water miscible, flammable or explosive except in de minimis amounts. For purposes of this section, de minimis is defined as the residue left in a container after the container is emptied by normal means such as pouring or pumping. Under no circumstances should a de minimis or residue amount of the above materials exceed 10 ml. at any one time. The intent of this section is to preclude a number of small containers of these materials is an attempt to avoid generating a waste. Instead, every effort should be made to reasonably collect these materials for shipment as a hazardous waste.

# **ACIDS AND BASES**

Acids and bases should be neutralized to a pH above 2.0 or below 12.5 whenever possible. Materials pH outside the above are legally defined as a hazardous waste. After adjustment, acids and bases may be disposed of in the sink drain.

# **AQUEOUS METALS SOLUTIONS**

Aqueous metals solutions may be disposed on in the sink drain if the pH is adjusted to the limits defined in the ACIDS AND BASES section.

#### **ALCOHOLS AND ACETONES**

Alcohols, acetones and other water-miscible materials may be disposed of in the sink drain provided they are diluted at least twenty fold with water at the time of disposal.

This procedure is necessary to insure that a flammable or explosive situation never occurs.

#### LIQUID NUTRIENT SOLUTIONS

Liquid nutrient solutions may be disposed of in the sink drain.

# CARCINOGENIC, MATAGENIC, OR OTHER BIOHAZARDOUS CHEMICALS

These materials may go into the drain after they are deactivated in some way or, if a threshold limit is provided by the manufacturer, diluted below the TLV.

#### 11.0 EVAPORATION INTO THE ATMOSPHERE

Evaporation of chemicals for the purpose of their disposal is not often proper. It is also recognized that evaporation is often a major route of loss of a chemical in its normal use or application. This route is not restricted by this policy. In these situations, prudent practices should be used to ensure personnel and environmental protection.

# 12.0 CONSUMPTION IN NORMAL USE OR APPLICATION

It is recognized that some chemicals, when used in normal and accepted manner, are consumed in a way that does not provide a retrievable product or waste. The above policies are not intended to restrict this normal consumption unless there is an obvious personnel or environmental hazard.

#### 13.0 WASTE MINIMIZED AS A FORMAL PROCESS

The Resource Conservation and Recovery act requires that each generator of hazardous waste must have a waste minimization plan in effect before wastes are shipped from the site. It shall be the responsibility of each department, with assistance from the Safety & Risk Office, to develop a waste minimization plan and to reduce the generation of hazardous waste to as low a level as possible. Any budget adjustments that may be needed for extra equipment such as small stills, a change in types of chemicals for experiments or a conversion to microscale equipment should be planned for in the University budgets. In June 1990, EPA published the GUIDES TO POLLUTION PREVENTION IN RESEARCH AND EDUCATIONAL INSTITUTIONS. Many of the recommendations have already been discussed, but the following should be included in each waste minimization plan:

- Appoint and train one person from each department to oversee the hazardous materials management plan and right-to-know. Training records will be reviewed by the Safety & Risk Management Office.
- 2. Eliminate the need for chromic acid washing of glassware, either by using disposable plastic glassware or cleaning glassware with specialty detergents.
- Purchase laboratory chemicals, paints and other maintenance chemicals in the minimal quantity required. This will reduce generation of surplus materials requiring disposal.
- 4. Establish a tracking system for listed chemicals from purchase to disposal. This is being dome for the chemicals on the attached list. This will reduce duplicate

purchases and minimize the waste generated from old, partially used containers that age on laboratory shelves. A bar-coding system would improve inventory control. Each chemical would have a different code to allow for efficient tracking. This system would also help promote sharing of surplus chemicals.

- 5. Encourages use of the intra-campus chemical program.
- 6. Provide routine audits for professors' laboratories. Focus on unusable reagent accumulation and unlabeled containers.
- 7. INCREASE THE AMOUNT OF IN-LAB DESTRUCTION OF WASTE CHEMICALS. MANY TOXIC AND CORROSIVE WASTE CHEMICALS CAN BE CONVERTED TO NON-HAZARDOUS CHEMICALS VIA CHEMICAL TREATMENT (SEE "PRUDENT PRACTICES FOR DISPOSAL OF CHEMICALS FROM LABORATORIES, NATIONAL RESEARCH COUNCIL, 1983: CHAPTER 6)." WASTE DESTRUCTION SHOULD BE THE FINAL PROCEDURE FOR EXPERIMENTS.
- 8. Increase the use of instrumentation in undergraduate course work.

# 14.0 PREPAREDNESS, PREVENTION, CONTINGENCY PLAN AND EMERGENCY PROCEDURES FOR SOUTHERN UTAH UNIVERSITY AS A SMALL QUANTITY GENERATOR

This plan is intended to meet the requirement of ARM 16.44.415 requirements for accumulation of wastes. The ARM incorporates 40 CRF 265.16 and Subparts C and D. The above EPA standards have been used as the guides in development of this plan.

# PREPAREDNESS AND PREVENTION MAINTENANCE AND OPERATION OF FACILITY

The Southern Utah University hazardous waste and hazardous materials programs must be operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste, hazardous waste constituents or hazardous materials to air, soil, or surface water which could threaten human health or the environment.

# **15.0 REQUIRED EQUIPMENT**

All areas at Southern Utah University where hazardous materials are stored or utilized or where hazardous waste is stored shall at the minimum have:

An internal communications or alarm system capable of providing immediate emergency instruction to facility personnel. The fire alarm will be the internal communications system which will be utilized to notify building occupants of an emergency and the need for evacuation;

A device such as a telephone [immediately available at the scene of operations] or a hand-held two-way radio, capable of summoning emergency assistance. In shop or lab work areas, a telephone will normally be used to call Campus Security at 586-7793 to initiate the Contingency Plan and Emergency Procedures. Support staff have mobile phones which will be used in an emergency and at all times when dealing with normal hazardous waste operations;

Portable fire extinguishers, fire control equipment [including special extinguishing equipment, such as that using foam, inert gas or dry chemicals as necessary], spill control equipment, and decontamination equipment; and

Water at adequate volume and pressure to supply water hose streams, of foam producing equipment, or automatic sprinklers, or water spray systems.

#### **16.0 TESTING AND MAINTENANCE OF EQUIPMENT**

All facility communications or fire alarm systems, fire protection equipment, spill control equipment and decontamination equipment, where required must be tested and maintained as necessary to assure its proper operation in time of emergency.

The fire related equipment is routinely tested by Plant Operations staff. Plant Operations staff are also responsible for telephone services.

#### 17.0 ACCESS TO COMMUNICATIONS OR ALARM SYSTEM

Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation must have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee.

# **REQUIRED AISLE SPACE**

Adequate aisle space shall be provided to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment and decontamination equipment to any area of the facility operation in an emergency. The amount of clear space required will be commensurate with the amount of hazardous material or waste at an individual location. In laboratories and shops having minimal material on hand, only normal access is required.

# **ARRANGEMENTS WITH LOCAL AUTHORITIES**

The owner or operator must attempt to make the following arrangements, as appropriate for the type of waste handled at his/her facility and the potential need for the services of these organizations:

Arrangements to familiarize police, fire departments, and emergency response teams with layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes.

Where more than one police and or fire department might respond to an emergency, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority;

Agreements with State emergency response teams, emergency response contractors, and equipment suppliers; and

Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility.

#### 18.0 LOCAL AUTHORITY AWARENESS

The Local Emergency Planning Committee and the Cedar City Fire Department both have copies of building layout showing the quantity of hazardous materials by hazard class. Entrances and routes for emergency vehicles are evaluated annually and evacuation routes are outlined in University's evacuation plan.

Cedar City Police and Fire Department will be dispatched by 911 or at the request of Campus Public Safety. City Police will assist Campus Security staff with scene control including ingress and egress and evacuation if needed.

The Cedar City Fire Department will be the primary emergency authority with the ranking on scene firefighter designated as the Incident Commander.

There is no state response team and as such, no agreement exists. In the event of a spill large enough to be beyond the capabilities of Southern Utah University, clean-up will be done with appropriate outside contractors as needed.

#### 19.0 ENVIRONMENTAL HEALTH OFFICER

In the event of a hazardous materials spill or leak, the following should be notified in descending order until one of them is reached:

University Department of Public Safety 586-7793		7793	701-1617
Supervisor, Life Safety Compliance	586-7769		704-1215
Risk Manager	586-7901	-7901 590-102	
Fire Marshall	559-4	1602	
Utilities Manager	586-7888 590-84		590-8451
Cedar City Fire Department	9-91	1	

# **20.0 REPORTING A SPILL**

These types of spills must be reported to the Safety & Risk Management Office.

- 1] Spills which may threaten life, health or property or;
- 2] Trained people and or proper clean-up equipment is not available within the lab or work area. Before calling and reporting a release of chemical, radioactive or biohazardous material, the reporter should consider the following:

Personal exposure. If the spill may cause personal injury to yourself or other, vacate the area.

Containment. If it is feasible to stop the spill from spreading or going into a floor drain by containment, do so.

Prevent access. If others might come to harm by entering the area, prevent access to the area.

Assessment. If you can do so without exposing yourself, determine the type of material spilled and the extent of the spill.

Injuries. Determine the type and extent of injuries, if applicable.

# **REPORT INFORMATION REQUESTED**

- 1. Identity of material
- 2. Quantity of material
- 3. Hazards of the material known
- 4. Extent of the spill or release
- 5. Type and extent of injuries if, applicable

LEAVE A PHONE NUMBER WHERE YOU CAN BE REACHED FOR FURTHER INFORMATION---THERE WILL BE MORE QUESTIONS AS THE SITUATION UNFOLDS