



HAZARDOUS WASTE MANAGEMENT POLICY AND GUIDELINES FOR FACULTY AND STAFF

EMERGENCY NUMBERS

Fire/Spill/Other Emergency	Department of Campus Safety (Ext. 5566)
Security/Personal Safety	Department of Campus Safety (Ext. 5566)
Medical	Department of Health Services (Ext. 5550)
Physical Plant.....	Department of Facilities Services (Ext. 5860)

IMPORTANT SAFETY CONSIDERATIONS

- Safety Data Sheets (SDS) must be readily available in department offices, on-line at <https://www.skidmore.edu/purchasing/secure/chemwatch.php> or SDS Centers throughout the campus.
- The fire extinguisher(s) nearest the Satellite Accumulation Area (SAA) should be located.
- Fire alarms nearest the SAA should be located.
- The telephone nearest the SAA should be identified.

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POLICY

In an effort to protect individuals and the environment, all faculty, staff, and students at Skidmore College will routinely follow procedures for the handling of hazardous wastes that meet federal, state and local regulations.

SCOPE

The policy is prepared in accordance with the requirements of the Federal Resource Conservation and Recovery Act of 1976 (RCRA) and the Federal Environmental Protection Agency (EPA) as documented in **40 CFR 260-268**. Its contents apply to all faculty, staff, students, subcontractors and visitors who generate hazardous waste in any quantity during the course of their research, work assignment, and/or course of study.

RESPONSIBLE INDIVIDUALS

(1) All *generators* of hazardous waste are responsible for the implementation of these guidelines in their respective work areas and for the proper maintenance of their Satellite Accumulation Areas. The generator is also responsible for the purchase of all necessary supplies for the appropriate management of their hazardous wastes.

(2) *Facilities Services*, specifically the Grounds and Transportation Manager, is responsible for

- Facilitating removal of full bottles of waste from Satellite Accumulation Areas within 3 days of their becoming full.
- Planning, scheduling, coordinating, and reviewing the removal of hazardous waste by the Hazardous Waste Contractor.
- Apprising generators of scheduled waste pick-ups.
- Facilitating removal of hazardous wastes from laboratories, storage areas, etc.
- Ensuring all Hazardous Waste Manifests are received from the Hazardous Waste Contractor and provided to all appropriate agencies.
- Ensuring that all disposal, reporting and record keeping are in compliance with federal, state, and local requirements.
- Ensuring, with the aid of the Hazardous Waste Contractor, that annual reporting to all federal, state and local agencies is completed in a timely fashion.
- Ensuring that the disposal site is an EPA certified disposal site.
- Overseeing the proper storage of hazardous waste in the Main Accumulation Area.
- Completing a weekly inspection of the Main Accumulation Area and maintaining the records thereof.

(3)The *Hazardous Waste Contractor* is responsible for

- Ensuring all handling, packaging, labeling, placarding, manifesting, and transportation are completed in compliance with EPA and DOT requirements.
- Assisting Facilities Services in the completion of annual reporting requirements as required by federal, state, and local agencies.

STANDARD OPERATING PROCEDURES

Waste Identification and Characterization

- ◆ The generator will use the SDS (SDS can be found at <https://www.skidmore.edu/purchasing/secure/chemwatch.php> manufacturer's label on the reagent bottle or container, the Merck Index, and/or the Classification of Hazardous Waste information in this document (see **Appendix A**) to determine if a substance is a hazardous waste and to identify its classification.
- ◆ Unwanted chemicals in their original containers should not automatically be considered chemical waste as they might be used by other workers. If it is determined after departmental consultation that the chemical is unwanted, the worker must follow the procedure for hazardous waste removal addressed in **Appendix C** of this document.
- ◆ If an unknown chemical or mixture is discovered, a hazardous waste label must be attached immediately. The contents should be labeled "unknown" and the date of discovery must be indicated. Safe attempts at characterization of the contents may be attempted (phase, pH, organic vs. inorganic, etc.), and the bottle should be placed in the nearest SAA,. A request for waste removal must be place, immediately

General Procedures

- ◆ Proper personal protective equipment should be used when working with hazardous chemicals. SDS should be consulted in the selection of appropriate PPE.
- ◆ No hazardous waste may be poured into sinks/storm drains or placed in the trash under any circumstances. Examples include, but are not limited to
 1. ignitables (flammables; often volatile organic compounds)
 2. carcinogens and/or mutagens
 3. heavy metals such as arsenic, barium, cadmium, chromium, lead, mercury, nickel, silver, zinc, etc. and/or other toxic materials
 4. materials with a pH of ≤ 2 or ≥ 12.5 (corrosives)
 5. cyanides, sulfides, oils/grease
 6. any solid or viscous material capable of obstructing the water flow in the sewers.
 7. radioactive waste(s)
- ◆ Hazardous waste may *only* be stored in the MAA or SAA. Hazardous waste may *never* be left in/on loading docks, elevators, lobbies, hallways or any other unrestricted locations.

- ◆ All hazardous waste must be poured into bottles/containers that are of appropriate size, in good condition, are sturdy, leak-proof and compatible with the waste material contained (See **Appendix B**).
- ◆ Hazardous waste containers must have a *tight fitting, screw on cap* (no corks, plastic film, aluminum foil, funnels, etc.) and must be sealed at all times, except when additional waste is being added.
- ◆ Nonhazardous waste should not be mixed or packaged with hazardous wastes (See **Appendix G**).
- ◆ All old or extraneous labels on waste containers must be removed or completely defaced, unless the waste placed in the container is *precisely* the same material as is indicated on the original label.
- ◆ No container of hazardous waste may be left unlabeled at any time.
- ◆ All hazardous waste containers must be identified with proper labeling (see **Appendix B**). Labels must include:
 1. the words “Hazardous Waste”
 2. the accumulation start date
 3. a list of all chemical components and their relative quantities
 4. the primary hazard(s) presented by the waste
 5. the site of waste collection
- ◆ The percent by volume must be determined when the waste container is full, or if the bottle is not yet full, prior to pickup by Facilities Services.
- ◆ The hazardous waste label must be *securely affixed* to the container. If tape is used, it should encompass the four sides of the label.
- ◆ Incompatible wastes may never be stored/mixed together. The original label on the bottle/container, the Merck Index, the SDS and/or **Appendix E** should be consulted for information on incompatibilities.
- ◆ Two or more hazardous waste containers having contents that are incompatible (See **Appendix E**) may never occupy the same secondary containment. They must be placed into separate secondary containment.
- ◆ Halogenated solvents should not be combined for disposal with solvents with non-halogenated solvents.
- ◆ Hazardous waste containers must be segregated by hazard class (ignitable, corrosive, toxic, air or water reactive) and placed in *separate* secondary containment. No co-mingling of classes is permitted. See **Appendix A** for further information on waste classification.
- ◆ Compatible wastes may be mixed/stored together provided the relative quantities are listed on the waste label.
- ◆ All SAAs must be inspected weekly for compliance with EPA regulations, and the records must be kept for 3 years.

GUIDELINES/REQUIREMENTS FOR THE SATELLITE ACCUMULATION AREA (SAA)

- ◆ All SAAs must be located *at or near* the site of generation of the waste, and are under the management of the person(s) generating the waste.
- ◆ There must be at least one SAA in each room where hazardous waste is generated.
- ◆ Each designated SAA must be identified by a sign with words identifying the area and indicating the hazard(s) associated with the area.
- ◆ SAAs should be located in areas that are free from sources of heat.
- ◆ Waste containers in the accumulation area must be compatible with the waste. (See **Appendix B**) Food, beverage and detergent containers are not permitted.
- ◆ Secondary containment equal to a *minimum* of 110% of the capacity of a single waste container stored therein or 150% of the volume of the largest container if more than one is stored therein is *required*. All secondary containment must be sturdy, leak-proof, and unbreakable.
- ◆ No hazardous waste containers may be stored on the floor or in a sink.
- ◆ No more than one container of each *type* of waste generated will be permitted in the area at one time (See **Appendix A** for waste classification; See **Appendix C** regarding procedure for full bottles).
- ◆ The total volume of waste that may be stored in any SAA is limited to 55 gallons of hazardous waste or one (1) quart of extremely hazardous waste (See **Appendix F**).
- ◆ A *minimum* of 1 inch of head space must be left unfilled in waste accumulation containers to allow for possible expansion.
- ◆ Once a container of hazardous waste is full at a SAA, it must be removed from the area and transferred by Facilities Services to the (180 day storage) MAA *within 3 days of becoming full* (see **Appendix C**).
- ◆ Each SAA must be kept neat/orderly and be available for regular inspection.

WASTE MINIMIZATION

The U.S. Congress has made waste minimization a national policy and goal of each waste generator (RCRA). Waste minimization decreases exposure to hazardous substances and damage to the environment. It also reduces the cost of disposal which frequently exceeds the original cost of the chemical by 4 to 20 times. Generators should, therefore, make every attempt to minimize hazardous waste generation.

Purchase of Chemicals/Preparation of Solutions

- ◆ The departmental chemical inventory should always be checked for on site availability prior to the purchase of any chemical.
- ◆ The smallest size suitable should be ordered when new chemicals are purchased.
- ◆ Solutions prepared for laboratories, cleaning, painting, glazing, fertilizing, etc. should be scaled to the amount required for the immediate task.

Storage of Chemicals

- ◆ When chemicals are received, the manufacturer's suggestions/requirements for proper storage on the SDS form and/or label should be followed (cool, dry area, refrigerated, away from light/heat, etc.) in order to maximize the life span of the material.
- ◆ An inventory system that dates the arrival of new chemicals should be employed to ensure that old inventory is used prior to its expiration date/degradation.
- ◆ All mixtures of chemicals should be labeled with the chemical composition, date made, the hazard class, and the name of the individual responsible for its preparation in order to minimize the appearance of "orphan" and/or unknown hazardous waste.

Reduction of Chemicals Used and Waste Generated

- ◆ Procedures should be downscaled whenever possible.
- ◆ Hazardous materials should be replaced with less hazardous or recyclable chemicals as often as is feasible.
- ◆ Processes for waste minimization should be incorporated into existing protocols. Such processes might include neutralization/detoxification of intermediates and by-products and/or the destruction of waste products in the last step of a procedure/activity.
- ◆ Spent solvents should be reused and/or recycled, and metals should be recovered from spent catalysts whenever possible.
- ◆ Small amounts of hazardous waste should *never* be mixed with non-hazardous waste since the entire mixture will be considered hazardous.

TRAINING

All laboratory staff involved in the generation and/or management of hazardous waste are required to be appropriately trained, pursuant to the OSHA Laboratory Standard (29 CFR 1910.1450). Facilities Services staff engaged in the management of hazardous waste are HAZWOPER certified within six month of hire, and annually thereafter (40 CFR 262.34 (a) (4), 40 CFR 265.16).

All non-academic staff involved in the generation and/or management of hazardous waste are required to be appropriately trained (**40 CFR 262.34 (a)(4); (d) (5) (iii); 40 CFR 265.16/29 CFR 1910.120**).

APPENDIX A

Classification of Hazardous Waste

40 CFR 261.10

A chemical waste is considered to be a hazardous waste if it is specifically listed by the EPA as a hazardous waste and/or meets any of the four hazardous classifications below. If a chemical waste is not on the EPA list of hazardous wastes, and does not meet any of the hazardous waste characteristics, it is a nonhazardous waste.

Hazardous Waste Classification/Characteristics

◆ **Ignitable Waste** (40 CFR 261.21) (EPA hazardous waste classification **D001**)

1. A waste is considered ignitable if it meets any of the following criteria.
2. liquids (other than an aqueous solution containing less than 24% alcohol by volume) that have a flash point of less than 60°C (140°F)
3. solids capable of causing fire at standard temperature (0 °C, 32 °F) and pressure (760 mm Hg, 29.92 in) through friction, absorption of moisture, or spontaneous chemical change(s) which cause(s) vigorous and persistent burning when ignited.
4. an ignitable compressed gas as defined in **49 CFR 173.300**
5. an oxidizer as defined in **49 CFR 173.151** or a chemical whose name contains one of the classes in Table 1.

Table 1: Common Classes of Oxidizers

Bromates	Chromates	Nitrates	Permanganates
Chlorates	Dichromates	Nitrites	Peroxides
Chlorites	Hypochlorites	Perchlorates	Persulfates

◆ **Corrosive Waste** (40 CFR 261.22) (EPA hazardous waste classification **D002**)

A waste is considered corrosive if it is

1. an aqueous solution that has a pH less than or equal to 2 or greater than or equal to 12.5.
2. a liquid that corrodes steel at a rate greater than 0.25 inches/year

Table 2: Examples of Corrosive Chemicals

ACIDS	BASES	OTHER
acetic	Ammonium Hydroxide	Aluminum chloride
chromic	Barium Carbonate	Ammonium dichromate
chloroacetic	Barium Hydroxide	Ammonium Oxalate

Cresylic	Calcium Hydroxide	Antimony Trichloride
Hydrochloric	Calcium Oxide	Bismuth Trichloride
Hydrofluoric	Potassium Carbonate	Bromine
Nitric	Potassium Hydroxide	Chlorine
Perchloric	Sodium Carbonate	Glutaraldehyde
Periodic	Sodium Hydroxide	Potassium Chromate
Phosphoric		Stannic Chloride
Sulfuric		Thionyl chloride

◆ **Reactive Waste (40 CFR 261.23) (EPA hazardous waste classification D003)**

A waste is considered reactive if it

1. is normally unstable and readily undergoes violent change without detonating.
2. reacts violently with air or water.
3. forms potentially explosive mixtures with air or water.
4. generates toxic gases, vapors or fumes sufficient to present a danger to human health or to the environment when mixed with water in quantity.
5. is a cyanide or sulfide bearing waste.
6. is capable of detonation or explosive reaction if subjected to a strong initiating force.
7. is readily capable of detonation or explosive decomposition or reaction at standard temperature or pressure or if heated under confinement.
8. is a forbidden explosive as defined in **49 CFR 173**.

Table 3: Examples of Air Reactive (Peroxide Forming) Compounds

Aldehydes	Potassium Amide
Benzoyl peroxide	Potassium Metal
Diethyl Ether	Sodium Amide (Sodamide)
Diisopropyl Ether (Isopropyl Ether)	Sodium borohydride
Divinylacetylene (DVA)	Tetrahydrofuran
Perchloric acid	Vinylidene Chloride (1,1-DiChloroethylene)
Picric Acid (solid, dry)	

Table 4: Examples of Water Reactive Chemicals

ELEMENT/COMPOUND	EXAMPLES
Alkali Metals	Na, Li, K
Alkali Metal Hydrides	LiH, CaH ₂ , LiAlH ₄ , NaBH ₂
Alkali Metal Amides	NaNH ₂
Metal Alkyls	Lithium and Aluminum Alkyls
Grignard Reagents	RMgX
Halides of Nonmetals	BCl ₃ , BF ₃ , PCl ₅ , SiCl ₄ , S ₂ Cl ₂
Inorganic Acid Halides	POCl ₃ , SOCl ₂ , SO ₂ Cl ₂

Anhydrous Metal Halides	AlCl ₃ , TiCl ₄ , ZrCl ₄ , SnCl ₄
Phosphorous Pentoxide	
Calcium Carbide	
Organic Acid Halides/ Anhydrides of Low Molecular Weight	
Metal Carbonyls	Ni(CO) ₄ , Fe(CO) ₅ , Co ₂ (CO) ₈
Metal Powders	Al, Co, Fe, Mg, Mn, Pd, Pt, Ti, Sn, Zn, Zr
Metal Alkyls and Aryls	RLi, RNa, R ₃ Al, R ₂ Zn
Nonmetal Hydrides	B ₂ H ₆ , and Other Boranes, PH ₃ , AsH ₃
Nonmetal Alkyls	R ₃ B, R ₃ P, R ₃ As
Phosphorus (White)	

◆ **Toxic Waste (40 CFR 261.24) (EPA waste number D004 through D0043)**

A toxic waste is substance/mixture as identified by the SDS **OR** has EPA waste number **D004 through D0043** that

1. contains material that may cause acute or chronic harm to human health or to the environment.
2. contains one of the constituents in concentrations equal to or greater than the values shown in Table 5* (see **page 11**).

*Table 5 is *not* meant to be a complete listing of toxic materials. When making a toxicity determination, the generator must therefore consider:

- ◆ The *nature* of the toxicity presented by a chemical.
- ◆ The *concentration* of the chemical in the waste.
- ◆ The *potential* of the chemical or any toxic degradation product of the chemical to migrate from the waste into the environment.
- ◆ The *persistence* of the chemical or any toxic degradation product in the environment.
- ◆ The *potential* of the constituent of any toxic degradation product to degrade into non-harmful constituents as well as the rate of degradation.
- ◆ The *degree* to which the chemical or any degradation product of the chemical bioaccumulates in an ecosystem.

In general, it is best to consider a waste toxic if it fits none of the other categories or is not clearly considered non-hazardous waste (see **Appendix G**).

Table 5: Common Toxic Waste Material Concentration Limits in milligrams/liter *
[as determined by the EPA Toxicity Characteristic Leachate Procedure (TCLP)]

EPA Waste No.	Constituent	CAS Number	Regulatory Level (mg/L)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon Tetrachloride	56-23-5	0.5

D020	Chlordane	57-74-9	.03
D021	Chlorobenzene	108-90-7	100.0
D007	Chromium	7440-47-3	5.0
D022	Chloroform	67-66-3	6.0
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	none	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 (and its hydroxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	0.13
D033	Hexachloro-1,3-butadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentachlorophenol	87-86-5	100.0
D038	Pyridine	100-86-1	5.0
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8000-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

****Note: This table is not to be considered a complete listing of toxic substances.***

Table 6 summarizes the classification of some of the *most commonly encountered* types of hazardous waste.

Table 6: Classifications Associated with Common Types of Hazardous Waste

HAZARDOUS WASTE	ASSOCIATED HAZARD
Halogenated solvents (e.g. methylene chloride)	Toxic
Non-halogenated solvents (e.g. acetone, benzene, diethyl ether , dioxane, ethanol, ethyl acetate, heptane, hexane, ligroin, methanol, pentane, petroleum ether, toluene, xylene)	Ignitable Toxic
Waste oils from vacuum pumps, etc.	Toxic
Strong oxidizers (bromates, chlorates, dichromates, iodates, nitrates, nitrites, perchlorates, permanganates, peroxides)	Reactive Ignitable
Peroxides (see Table 3)	Reactive Ignitable
Strong acids and bases (see Table 2)	Corrosive
Heavy metal salts	Toxic
Mercury thermometers	Toxic

- ◆ Waste containers that previously held a different material must be triple rinsed and the rinsate must be considered hazardous waste. **Extreme caution** should be exercised when rinsing containers. The solvent used for rinsing **must be compatible** with the container's original contents and must have the **chemical capability to dissolve** the original contents. **Important note:** *water does not dissolve many organic chemicals and may cause reactive chemicals to explode* (See **Table 4**).
- ◆ Waste containers used that previously held a different chemical must have the original labels *completely removed or totally defaced*.
- ◆ Corrosive or reactive waste(s) should *never* be placed in metal containers.
- ◆ In general, use of metal containers is discouraged since they have a tendency to corrode. Exceptions may be made when the original container of the waste was metal and is available for use.
- ◆ Alkaline corrosive waste should be stored in polyethylene containers.
- ◆ Hydrofluoric acid waste should be stored in polyethylene containers.
- ◆ Organic solvents should, in general, be stored in glass containers. See **Table 7** for wastes that *must be* placed in glass.

Table 7: Hazardous Wastes That Must Be Placed in Glass Containers
(note: ethers may be also stored in *original* metal containers)

Amyl chloride	Carbon disulfide	Diethyl benzene	Nitric acid
Aniline	Cedarwood oil	Diethyl ether	Thionyl chloride
Benzyl alcohol	Chlorinated solvents	Ether (other)	Toluene
Brominated solvents	Concentrated acids	Ethyl chloride, liquid	Trichloroethene
Bromine	Cinnamon oil	Fluorinated solvents	Trichloroethylene
Bromobenzene	Cresol	Hydrogen peroxide > 10%	Vinylidene chloride
Bromoform	Cyclohexane	Nitrobenzene	xylene
Butadiene	o-dichlorobenzene	Perchloroethylene	
Butyric acid	p-dichlorobenzene	Phenol/chloroform mixtures	

- ◆ Compatible hazardous wastes may be mixed/stored in the same container.
- ◆ Incompatible hazardous wastes may not be stored in the same container, nor may they share the same secondary containment. See **Table 8** and **Appendix E** for more information.

Table 8: General Classes of Incompatible Chemicals That Should Not Be Stored in the Same Waste Container

Oxidizers & ignitables	Acids& chlorine compounds	Organic peroxides & anything
Elemental metals & hydrides	Acids & alcohols	Phenol & formaldehyde
Acids & cyanides	Acids & elemental metals	Sodium Azide & Aqueous lead
Acids & sulfides	Amines & chlorine compounds	
Acids& bases	Water/air reactives & anything	

APPENDIX C

PROCEDURES FOR HAZARDOUS WASTE REMOVAL FROM THE SAA

Hazardous waste will be removed from the SAA under the following conditions:

- ◆ A hazardous waste container has become full, or*
- ◆ Facilities Services has scheduled a hazardous waste removal with the generators and the Hazardous Waste Contractor (usually twice per year).**

In either situation, the generator must

- ◆ Completely fill out the hazardous waste label (See **Appendix B**).
- ◆ Fill out the Hazardous Waste Pick Up Form (found on the **Facilities Services website, front page**).
- ◆ Make a copy of the Hazardous Waste Pick Form or save the original for documentation purposes.

**Note: The generator must follow procedures above AS SOON AS A CONTAINER IS FILLED. Facilities Services will pick up the container(s) for removal to the MAA within 3 days.*

***Note: The generator must complete this procedure EACH TIME a scheduled pick up by the Hazardous Waste Contractor occurs whether or not the container(s) are full. According to EPA regulations, Skidmore College may only store waste in SAAs or the MAA for a specified period of time.*

APPENDIX D

Table 9: Commonly Regulated Hazardous Substances

VOLATILE ORGANICS			
Acetone	2-chloroethyl vinyl ether	c-1,3-dichlorpropene	Phenolic compounds
Acrolein	chloroform	t-1,3-dichlorpropene	Styrene
Acrylonitrile	chloromethane	Ethylbenzene	1,1,2,2-tetrachloroethane
Benzene	Dibromochloromethane	Fluoranthene	Tetrachloroethene
Bromoform	Dichlorobromomethane	2-hexanone	Toluene
Bromomethane	1,1-dichloroethane	Hexachlorobutadiene	1,1,1-trichloroethane
Carbon tetrachloride	1,2-dichloroethane	Methyl ethyl ketone	1,1,2-trichloroethane
Chlorinated naphthalenes	1,1-dichloroethene	Pentachlorophenol	Trichloroethylene
Chlorobenzene	t-1,2-dichloroethene	Phenanthrene	trichlorofluoromethane
Chloroethane	1,2-dichloropropane	Phenol	
TOTAL TOXIC ORGANICS			
Vinyl Acetate	Vinyl Chloride	Xylene	
HEAVY METALS (chemical symbol in parentheses)			
Antimony (Sb)	Cadmium (Cd)	Lead (Pb)	Selenium (Se)
Arsenic (As)	Chromium (Cr)	Mercury (Hg)	Silver (Ag)
Boron (B)	Copper (Cu)	Nickel (Ni)	Zinc (Zn)
OTHER			
Cyanides	Mixed hazardous waste	Pathogenic organisms	Pesticides
Fats	Oils	PCBs	Petroleum Hydrocarbons
Grease			

Appendix E

Incompatible Substances/Wastes

The following list provides information concerning chemicals that are incompatible with other compounds. Avoid contacting, in storage and in working, as explosion, evolution of toxic fumes, or other hazard(s) may result.

Incompatible Substances

Compound (s)	Incompatible With:
Acetic acid	chromic acid, nitric acid, ethylene glycol, perchloric acid, peroxides and permanganates
Acetone	concentrated sulfuric and nitric acid mixtures
Acetylene	copper tubing, fluorine, bromine, chlorine, iodine, silver, mercury
Ammonia	anhydrous mercury, halogens, calcium hypochlorite, hydrogen fluoride (HF)
Ammonium	acids, metal powders, flammable liquids, chlorates, nitrates, sulphur, finely divided organics or
Nitrate	combustibles
Aniline	nitric acid, hydrogen peroxide
Arsenic compounds	any reducing agent
Azides	acids
Bromine	ammonia, acetylene, butadiene, butane, hydrogen, sodium carbide, turpentine, finely divided metals
Calcium	water, carbon dioxide, carbon tetrachloride, and chlorinated hydrocarbons
Carbon, activated	calcium hypochlorate, all oxidizing agents
Chlorates	ammonium salts, acids, metal powders, sulfur, finely divided organics or combustibles, carbon
Chromic acid	acetic acid, naphthalene, camphor, alcohol, glycerine, turpentine, alkalis, other flammable liquids
Chlorine Dioxide	ammonia, methane, phosphine, hydrogen sulfide
Chlorine	ammonia, acetylene, butadiene, benzene, petroleum fractions, hydrogen, sodium carbide, turpentine, and finely divided metal powders
Copper	acetylene, hydrogen peroxide
Cyanides	acids and alkalis (bases)
Flammable Liquids	ammonium nitrate, chromic acid, hydrogen peroxide, nitric acid, sodium peroxide, halogens
Fluorine	isolate from everything
Hydrazine	hydrogen peroxide, nitric acid, all oxidizers
Hydrocarbons	fluorine, chlorine, bromine, chromic acid, peroxide
Hydrocyanic acid	nitric acid, alkalis
Hydrofluoric acid	ammonia, alkalis
Hydrogen Sulfide	fuming nitric acid, oxidizing gases
Hypochlorites	acids, activated carbons
Iodine	acetylene, ammonia, hydrogen
Mercury	sulfuric acid
Nitric acid (conc)	acetic acid, aniline, chromic acid, hydrocyanic acid, hydrogen sulfide, flammable liquids, flammable gases, copper, brass, heavy metals
Nitrites	acid
Nitroparaffins	inorganic bases, amines
Oxalic acids	silver, mercury

Oxygen	oils, grease, hydrogen, flammable liquids, solids or gases
Perchloric Acid	acetic anhydride, bismuth, alcohol, paper, wood, oil and grease
Peroxides	organic acids, friction, heat, sparks, Phosphorous, white air, oxygen, alkalis, reducing agents
Phosphorous pentoxide	water
Potassium	carbon tetrachloride, carbon dioxide, water
Potassium chlorate	sulfuric and other acids
Potassium perchlorate	sulfuric and other acids (see Chlorates also)
Potassium permanganate	glycerol, ethylene glycol, benzaldehyde, sulfuric acid
Selenides	reducing agents
Silver	acetylene, oxalic acid, tartaric acid, ammonium compounds, fulminic acid
Sodium	carbon tetrachloride, carbon dioxide, water, Sodium nitrite ammonium nitrate and other ammonium salts
Sodium peroxide	ethyl or methyl alcohol, glacial acetic acid, acetic anhydride, benzaldehyde, carbon disulfide, glycerin, ethylene glycol, ethyl or methyl acetate, furfural
Sulfides	acids
Sulfuric Acid	potassium (sodium or lithium) chlorate, perchlorate, or permanganate
Tellurides	reducing agents

Incompatible Wastes

The mixing of Group A materials with Group B materials may have the potential consequences noted.

Group 1-A

Acetylene sludge
 Alkaline caustic liquids
 Alkaline cleaner
 Alkaline corrosive liquids
 Alkaline corrosive battery fluid
 Caustic wastewater
 Lime sludge and other corrosive alkalies
 Lime wastewater
 Lime and water
 Spent caustic

Group 1-B

Acid sludge
 Acid and water
 Battery acid
 Chemical cleaners
 Electrolyte, acid
 Etching acid liquid or solvent
 Pickling liquor & other corrosive acids
 Spent acid
 Spent mixed acid
 Spent sulfuric acid

Potential consequences: Heat generation; violent reaction

Group 2-A

Aluminum
 Beryllium
 Calcium
 Lithium
 Magnesium
 Potassium
 sodium
 Zinc powder
 Other reactive metals and metal hydroxides

Group 2-B

Any waste in Group 1-A or 1-B

Potential consequences: Fire or explosion; generation of flammable hydrogen gas

Group 3-A

Alcohols
Water

Group 3-B

Any concentrated waste
in Groups 1-A or 1-B
Calcium
Lithium
Metal hydrides
Potassium
SO₂Cl₂, SOCl₂, PCl₃, CH₃SiCl₃
Other water-reactive waste

Potential consequences: Fire, explosion, or heat generation; generation of flammable or toxic gases

Group 4-A

Alcohols
Aldehydes
Halogenated hydrocarbons
Nitrated hydrocarbons
Unsaturated hydrocarbons
Other reactive organic compounds
& solvents

Group 4-B

Concentrated Group 1-A or 1-B wastes
Group 2-A wastes

Potential consequences: Fire, explosion, or violent reaction

Group 5-A

Spent cyanide and sulfide solutions

Group 5-B

Group 1-B wastes

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulfide gas

Group 6-A

Chlorates
Chlorine
Chlorites
Chromic acid
Hypochlorites
Nitrates
Nitric acid, fuming
Perchlorates
Permanganates
Peroxides
Other strong oxidizers

Group 6-B

Acetic acid and other organic acids
Concentrated mineral acids
Group 2-A wastes
Group 5-A wastes
Other flammable and combustible wastes

Potential consequences: Fire, explosion, or violent reaction

APPENDIX F

EXTREMELY HAZARDOUS WASTE

A waste or material is extremely hazardous if human exposure may likely result in death, disabling personal injury, or serious illness because of the carcinogenicity, high acute or chronic toxicity, bioaccumulative properties, or persistence in the environment of the waste or material.

The chemicals listed below are presumed to be extremely hazardous wastes. The list is NOT definitive and every generator should evaluate all waste with regard to the above definition of extremely hazardous waste.

General Categories of Extremely Hazardous Chemicals

Arsenic and arsenic compounds
Beryllium and beryllium compounds
Boranes (B_xH_y)
Cadmium and cadmium compounds
Cyanide, cyanide salts and cyano
compounds
Dioxin compounds
Halogenated silanes
Hypochlorite compounds

Lead and organo-lead compounds
Mercury and mercury compounds
Metal hydrides
Pesticides
Platinum compounds
Polychlorinated Biphenyls (PCBs)
Selenium and selenium compounds
Thallium and thallium compounds

SPECIFIC NAMES OF SOME EXTREMELY HAZARDOUS CHEMICALS

acetyl chloride
acetyl thiourea
2-acetylaminofluorene
acrolein
acrylonitrile
adiponitrile
alkyl aluminum compounds
allyl alcohol
allyl trichlorosilane
aluminum chloride
(anhydrous)
aluminum diethyl
monochloride
aluminum phosphide
4-aminodiphenyl
5-(aminomethyl)-3-isoxazol
5-(aminomethyl)-3-
isoxazolone
aminopyridine (2- and 4-)
N-(aminothioxomethyl)
acetamide
ammonium bifluoride

ammonium picrate
ammonium vanadate
antimony pentachloride
antimony pentafluoride
arsenic and arsenic
compounds
aziridine
benzene hexachloride
benzenephosphorus
dichloride
benzenethiol
benzidine and salts
1,4-benzoquinone
benzotrifluoride
benzoyl chloride
benzyl chloride
benzyl chlorocarbonate
benzyl chloroformate
beryllium and beryllium
compounds
biphenyl
boranes

boron trichloride
boron trifluoride
bromine
bromine pentafluoride
bromine trifluoride
3-bromo-1-propyne
1-bromo-2-propanone
bromoacetone
bromomethane
brucine
2-butenal
n-butyllithium and isomers
cacodylic acid, esters and
salts
cadmium and cadmium
compounds
calcium
calcium carbide
calcium hydride
calcium hypochlorite
calcium oxychloride
calcium phosphide

carbon disulfide
carbonic dichloride
carbonyl chloride
chlorine
chlorine dioxide
chlorine pentafluoride
chlorine trifluoride
chloroacetaldehyde
a-chloroacetophenone
chloroacetyl chloride
p-chloroaniline
4-chlorobenzeneamine
o-chlorobenzylidene
malonitrile
chlorochromic anhydride
chloromethylbenzene
bis (chloromethyl) ether
o-chlorophenyl thioiurea
chloropicrin
3-chloropropionitrile
chlorosulfonic acid
chromyl chloride
cyanide, cyanide salts
cyano compounds
cycloheximide
2-cyclohexyl-4,6-
dinitrophenol
3,3-dichlorobenzidine and
salts
dichloromethyl ether
2,4-dichlorophenoxyacetic
acid
O,O-diethyl-O-pyrazinyl
phosphorothioate
diethyl-p-nitrophenyl
phosphate
O,O-diethyl-S-
(isopropylthiomethyl)phospho
rodithioate
diethylaluminum chloride
diethylzinc
difluorophosphoric acid
diglycidyl ether
diisopropylfluorophosphate
a,a-dimethyl
benzeneethanamine
dimethylaminoazobenzene
dimethylhydrazine
dimethyl nitrosoamine
a,a-dimethylphenethylamine
dimethyl sulfate
dimethyl sulfide
dinitrobenzene
4,6-dinitro cresol and salts
dinitrophenol
dioxin compounds

diphenyl
diphosphoric acid,
tetraethylester
disulfuryl chloride
epinephrine
bis (2,3-epoxypropyl) ether
ethanedinitrile
ethylchlorocarbonate
ethylchloroformate
ethyleneimine
ethylmercaptan
ethylzinc
fluorine
2-fluoroacetamide
fluoroacetanilide
fluoroacetic acid and salts
fluoroboric acid
fluorosulfonic acid
fuming sulfuric acid
halogenated silanes
hexaethyl tetraphosphate
hydrazine
hydrazinecarbothioamide
hydrobromic acid
hydrochloric acid
hydrocyanic acid
hydrofluoric acid
hydrogen phosphide
hydrogen sulfide
hydroiodic acid
2-hydroxy-2-
methylpropaneitrile
hypochlorite compounds
O-isopropyl methyl
phosphoryl fluoride
lead, lead compounds and
organo-lead compounds
lithium
lithium aluminum hydride
lithium amide
lithium ferrosilicon
lithium hydride
lithium hypochlorite
magnesium
maleic anhydride
mercury and mercury
compounds
metal hydrides
methyl acrolein
methylaluminium
sesquibromide
methylaluminium
sesquichloride
2-methylacetoneitrile
2-methylaziridine
methyl bromide

methyl chlorocarbonate
methyl chloroformate
methyl chloromethyl ether
2-methyl-4,6-dinitrophenol
and salts
4,4-methylene bis(2-
chloroaniline)
methyl hydrazine
methyl isocyanate
methylmagnesium bromide
methylmagnesium chloride
methylmagnesium iodide
N-methyl-N-
nitrosomethanamine
N-methyl-N-
nitrosovinylamine
2-(1-methylpropyl)-4,6-
dinitrophenol
methyl yellow
1-naphthalenylthiourea
naphthylamine (a and b)
a-naphthylthiourea
nickel carbonyl
nicotine and salts
nitric oxide
p-nitroaniline
4-nitrobenzenamine
nitrobenzene
nitrobenzol
4-nitrobiphenyl
nitrochloroform
nitrogen dioxide
nitroglycerine
nitrophenol (o,m,p)
N-nitrosodimethylamine
N-nitrosomethylvinylamine
nitrotrichloromethane
octamethyl-diphosphoramid
e
oleum (fuming sulfuric acid)
osmium tetroxide
oxy bis(chloromethane)
oxygen difluoride
perchloromethyl mercaptan
pesticides
phenylbenzene
phenylthiourea
phosgene
phosphine
phosphoric acid, diethyl-4-
nitrophenyl ester
phosphoric chloride
phosphoric sulfide
phosphorofluoridic acid,
bis(1-methylethyl) ester

phosphorus (white or yellow)
phosphorus oxybromide
phosphorus oxychloride
phosphorus pentachloride
phosphorus pentasulfide
phosphorus sesquisulfide
phosphorous tribromide
phosphorous trichloride
phosphoryl bromide
phosphoryl chloride
platinum compounds
polychlorinated biphenyls
potassium
potassium bifluoride
potassium hydride
propanenitrile
1,2,3-propanetriol, trinitrate
propargyl alcohol
propargyl bromide
2-propen-1-ol
2-propenal
b-propiolactone
1,2-propylenimine
2-propyn-1-ol
4-pyridinamine
pyrosulfuryl chloride
quinone

selenium and selenium
compounds
silicon chlorides
silver acetylide
sodium
sodium aluminum hydride
sodium amide
sodium azide
sodium bifluoride
sodium cacodylate
sodium fluoroacetate
sodium hydride
sodium hypochlorite
(chlorine bleach)
sodium methoxide
sodium methylate
sodium peroxide
sodium potassium alloy
strychnine and salts
sulfonyl chloride
sulfonyl fluoride
sulfur chloride
sulfur mustard
sulfur oxychloride
sulfur pentafluoride
sulfuryl chloride
sulfuryl fluoride

tellurium hexafluoride
tetraethyldithiopyrophosphate
tetraethyl pyrophosphate
tetramethyl succinonitrile
tetranitromethane
tetraphosphorus trisulfide
thallium and thallium
compounds
thiocarbonyl chloride
thionyl chloride
thiophenol
thiophosgene
thiosemicarbazide
titanium tetrachloride
toluene-2,4-diisocyanate
trichloroborane
trichloromethanethiol
trichloromethylsulfenylchlori
de
trichloronitromethane
trifluoromethylbenzene
2,4,6-trinitrophenol,
ammonium salt
vandium oxides
vinyl chloride
zinc phosphide
zirconium chlorides

APPENDIX G

NONHAZARDOUS CHEMICALS

Examples of nonhazardous waste are provided below. These chemicals are listed because they:

- ◆ Have oral rat LD₅₀ toxicity values higher than 500mg/kg.
- ◆ Have no positive determination as carcinogens according to the National Institute of Occupational Safety and Health (NIOSH) 1979 Registry of Toxic Effects Chemical Substances.

These compounds can be generally placed in the trash (if they are in solid form) or in the drain (if in liquid form). If the waste is in solid form, zipper bag it or place it in a box. If the waste is in liquid form, flush it into the drain with copious amounts of water (20-30 times the normal amount).

Acacia Gum	Aquacide I, Calbiochem	Calcium Gluconate
Acetate Buffer (Acetate Kinase)	Aquacide II, Calbiochem	Calcium Iodide
Acethropan	Arabinose, L-(+)-	Calcium Lactate
Acid Ascorbic	Arabinose, D-	Calcium Lignosulfonate
Acrylate (Monomer Mgl)	Arginine Hydrochloride	Calcium Oleate
Activated Carbon	Arginine, L-	Calcium Pantothenate
Agar	Arlacel	Calcium Phosphate, Dibasic
Agarose	Asafetida Gum	Calcium Phosphate, Monobasic
Alanine, DL-	Ascorbic Acid, L-	Calcium Phosphate, Tribasic
Alanine, L-	Asparaginase, L-	Calcium Sulfate
Alanine-D	Asparagine Hydrate, (L)-	Calcium Sulfate Dihydrate
Algin	Asparagine, L-	Calcofluor- White
Alginate Acid	Aspartic Acid, D-	Carbolon
Alginate Acid, Sodium Salt	Aspartic Acid, DL-	Carbon Decolorizing
Alkyl Aryl Sodium Sulphonate	Aspartic Acid, L-	Carbon Lampblack
Aloe Gum	Azaprozone	Carborundum
Aloe-Emodin	Azauracil	Carbowax
Alumin-Ar Cc-10 100-200 Mesh	Azauridine, 6-	Carboxymethyl Cellulose
Alumina	B-Lactoglobulin	Carboxymethyl Cellulose, Sodium Salt
Aluminum Hydroxide Hydrate	Behenic Acid	Carnauba, Wax
Aluminum Oxide	Bentonite	Carnitine Hydrochloride
Aluminum Oxide, Acidic	Benzoyl Acrylic Acid-3	Carotene, Trans-Beta-
Aluminum Oxide, Activated	Bicinchoninate, Dipotassium Salt, 2,2'-	Casein, Sodium Complex
Aluminum Oxide, Basic	Bio-Gel A	Catechu Gum
Aluminum Silicate	Bis Hydroxyethylimino Tris Hydroxy Methyl Methane	Cefotaxime
Aluminum Sodium Sulfate	Bis(2-Ethoxyethyl)Phthalate	Celite
Aluminum Sulfate Anhydrous, Solid	Bis(2-N-Butoxyethyl)-Phthalate	Cellex
Alundum	Bismuth Citrate	Charcoal, Animal Bone
Amber	Boileezers (Boiling Chips)	Chlorhexidine
Amberlite Ira-410cp	Bone Flour	Chlorhexidine Diacetate
Ambilhar	Borax, Anhydrous	Chlorophyll
Amino Acids	Borneol	Chlorthiazide
Aminoacetic Acid	Boron Carbide	Cholesteryl Acetate
Aminonaphthol Sulfonic Acid	Bromo-Alpha-Ergocryptine Methane Sulfonate, 2	Choline
Amioca	Butyl Benzoate	Choline Chloride
Ammonium Phosphate Monobasic	Butyl Phenoxy Iso Propyl 2-Chloroethyl Sulfite	Chromosorb W-Aw-Dmcs
Ammonium Phosphate, Dibasic	Butyrylthiocholine Chloride	Chromosorb W-Hp
Ammonium Salicylate	Cab-O-Sil	Citric Acid
Ammonium Stearate	Calcium Acetate	Citric Acid Monohydrate
Ammonium Sulfate	Calcium Borate	Citric Acid Trisodium Salt Dihydrate
Ammonium Valerate	Calcium Carbonate	Clarase-Diastase
Amygdalin	Calcium Chloride	Clay
Amylopectin	Calcium Chloride Dihydrate	Clomiphene Citrate
Ansolysen	Calcium Citrate	Cm Cellulose
Anti Oxidant 2246	Calcium Disodium Edta	Cocanut Charcoal
	Calcium Disodium Versenate	Comet Cleanser
		Copper Oxychloride

Corn Syrup	Fucose, L-	Lanolin, Wool Fat
Corticotropin	Fuller's Earth	Lecithin
Creatinine	Galactose, D-(+)-	Lente Iletin
Cristobalite	Galactric Acid	Leucine, D-
Cyanocobalamin	Gelatin	Leucine, DI-
Cyclodextrin Hydrate, Alpha-	Gluconic Acid	Leucine, L-
Cyclohexaamylose	Gluconic Acid, D-Sodium Salt	Leupeptin
Cystine	Gluconic Acid, Potassium Salt	Levulose
Cystine, DI-	Glucose 6-Phosphate, D-	Limestone, Crushed
Cystine, L-	Glucose Pentaacetate, Alpha-D-	Litmus Blue
Cytidine 5'-Diphosphoglucose	Glucose Pentaacetate, Beta-D-	Litmus, Indicator
Cytidine-3'-Monophosphate	Glucose Reagent	Lusozyme
Cytidylic Acid, 3'-	Glucose, Alpha-D	Lysine Monohydrochloride, L-
Cytodex 3, Beaded Micro Carrier	Glucose, D-(+)-	Lysine Monohydrochloride,DI-
Cytosine	Glucose-1-Phosphate Dipotassium, Alpha, D-	Lysine, L-
Dansylglycine Free Acid	Glutamic Acid, L-	Lysozyme
Darran #404	Glutamine, L-	Magnesium Acetate
Dehydroisandrosterone Sulfate - Sodium Salt	Glutaric Acid	Magnesium Carbonate Basic
Dextran Sulfate	Glutathione Reduced Form	Magnesium Carbonate Hydroxide
Dextran T 70	Glutathione S-Transferase	Magnesium Carbonate, Basic
Dextrin	Glycerol 2-Phosphate, Disodium Salt Hydrate	Magnesium Chloride
Dextrose	Glyceryl Guaiacolate	Magnesium Oxide
Di-N-Butyl Sebacate	Glyceryl Monostearate	Magnesium Phosphate Tribase
Diatase (Of Malt)	Glycine	Magnesium Sulfate
Diatomaceous Earth	Glycogen	Magnesium Sulfate Heptahydrate
Diatrizoate Sodium	Graphite Powder	Malt Extract
Dibutyl Adipate	Guaiac Resin	Maltodextrin
Dibutyl Fumarate	Guanine	Maltose Monohydrate, D-
Dibutyl Maleate	Guar Gum	Mannitol, D-
Dichlorophenamide	Gum Arabic	Methionine, DI-
Diethyl Barbituric Acid	Gum Benzoin	Methionine, L-
Dihydroxyphenyl)-L-Alanine], [3-(3,4-	Gum Elemi	Methionine,D-
Diisopropyl Phthalate	Gum Ghatti	Methylclothiazide
Dimethyl Thiourea	Gum Guaic	Methyl Cellulose
Dimethyl Urea 1,3	Gum Tragacanth	Methyl Cysteine-S
Dimethylaniline Hcl	Gypsum	Methyl Histidine, L-1-
Dimethylglycine Hcl, N,N-	Hemoglobin	Methyl Laurate
Diphospho-D-Glyceric Acid,2,3-	Heparin	Methyl-L-Histidine
Dipotassium Phosphate	Histamine	Methyl-N-Nitroso-P-Toluenesulfon Amide, N-
Disodium Phosphate	Histamine Dihydrochloride	Methylmannoside, Alpha
Disodium Pytophosphate	Histidine Monohydrochloride Mononydrate, D-	Mica
Disodium Sulfate	Hsa Minispheres	Monostearin, Tech
Distearin	Hydroxy Propyl Methyl Cellulose	Mucic Acid
DI-Alpha-Glycerophosphate	Hydroxy-3-Methoxybenzoic Acid, 4-	Mutarotase
Dowtherm A	Hydroxy-L-Proline, Cis-4-	Myoglobin
Dypyridamole	Hydroxy-L-Proline, Trans-4-	Myrrh Gum
Enalapril Maleate	Hydroxyethyl Cellulose	Naphthoflavone, Alpha-
Epon 1001 Resin	Hydroxylapatite	Niacin
Epsom Salt	Hypaque	Niacinamide
Escalol 106	Imidazole,1-Methyl-2-	Nicotinamide
Ethyl(2)-Hexyl Acetate	Iminodipropionitrile(-3,3)	Nicotinamide Adenin Dinucleotide Phosphate
Ethyl-1,3-Hexane Diol-2	Indican	Nicotinic Acid
Ferric Citrate	Infusorial Earth	Nylon
Ferric Phosphate	Inosine, (-)-	Ofloxacin
Ferritin	Inositol	Olibanum Gum
Ferrous Gluconate	Iron Citrate	P-Anilinophenol
Ferrous Oxide	Isocitric Acid, Trisodium Salt Hydrate, DI-	Pancreatin
Fibrin	Isocitric Dehydrogenase	Papain
Fibrinolysin	Isoleucine, L-	Pentbutolol Sulfate
Ficin	Isopropamide	Pepsin Powder
Filter Agent, Celite	Kaolin	Phenyl-5ehtyl-Hexahydropyrimidine-4,6-Dione,5-
Flazo Orange	Karaya Gum	Phenylalanine, D-
Florisil	Keratin	Phenylalanine, L-
Flunisolide Hemihydrate	Klucel	Phenylethyl-(2) Acetate
Fluorescein	L-Glutamic Acid, Monosodium Salt	Phosphalase, Acid
Formvar Resin, Hardened	Lactalbumin Enzymatic Hydrolysate	Phosphatidyl Choline, L-Alpha-
Forvar, Solid	Lactobionic Acid	Phosphodiesterase 3-5-Cyclic Nucleotide
Fructose 1,6-Diphosphate Disodium Salt	Lactose Monohydrate	Phytonadione
Fructose, D-	Lactose, Beta-D-	Pimozide
Fructose-6-Phosphate	Lactulose	Piperazine Citrate

Pirenzepine Hcl Hydrate	Sea Sand	Strontium Carbonate
Plasmin	Senna Gum	Succinic Semialdehyde
Poly (3-Hydroxy Butyric Acid)	Serine, DI-	Sucrose
Poly Ethylene Oxide	Serine, L-	Sulfadoxine
Poly Propylene, Isotactic	Shellac Gum	Sulfamylon
Poly(Ethylene Glycol), Solid	Silicic Acid	Suloctidil
Poly(Ethylene), Solid	Silicic Acid Sodium Salt	Talc
Poly(Isobutylene), Solid	Silicon Carbide	Tantalum Carbide
Poly(Isoprene), Solid	Silicon Dioxide	Tartaric Acid, L(+)-
Poly(Methyl Methacrylate), Solid	Silicon Dioxide, Amorphous	Terrasodium Pyrophosphate
Poly(Sodium 4-Styrene Sulfonate)	Silicone Rubber, Solid	Tetrahydroxybenzophenol(2,2,4,4)
Poly(Vinyl Alcohol), Solid	Sminosalicyclic Acid,5-	Thiamine Hydrochloride
Poly(Vinyl Formal), Solid	Soda Ash	Thienyl-DI-A-Alanine-Z
Poly(Vinyl Pyrrolidone), Solid	Sodium 2-Ethylhexyl Sulfate	Threonine, D-
Poly-Beta-Hydroxybutyric Acid	Sodium Acetate	Threonine, DI-
Polyacrylic Acid, Solid	Sodium Acetate Trihydrate	Threonine, L-
Polyanetholsulfonic Acid, Sodium Salt	Sodium Ascorbate	Thyodene
Polybutadiene, Cis-, Solid	Sodium Bicarbonate	Titanium Dioxide
Polybutene	Sodium Borate, Anhydrous	Tocopherol, Alpha-
Polyethylene Glycol	Sodium Carbonate	Tocopheryl Acetate, DI-Alpha-
Polyethylene Glycol 8000	Sodium Carbonate Monohydrate	Tolazoline Hcl
Polyvinyl Acetate, Solid	Sodium Carbonate, Decahydrate	Tragacanth Powder
Portland Cement	Sodium Cellulose Phosphate	Tri(B-Chloroethyl) Pohosphate
Potassium Acetate	Sodium Chloride	Tricalcium Phosphate
Potassium Bicarbonate	Sodium Cholate	Triethelene Glycol Diacetate
Potassium Bisulfite	Sodium Citrate	Trifluorothymine
Potassium Bitartrate	Sodium Cloxaxillin	Trigonelline
Potassium Carbonate	Sodium Glucuronate	Triphosphopyridine Nucleotide, Sodium Salt
Potassium Chloride	Sodium Glutamate	Tripropyleneglycolmethyl Ether
Potassium Citrate	Sodium Hyaluronate	Trisodium Phosphate, Activator
Potassium Gibberellate	Sodium Iodide	Trypsin
Potassium Gluconate	Sodium L-Aspartate	Trypsin Inhibitor
Potassium Hydrogen Sulfite	Sodium Lactate	Tyrosine, D-
Potassium Hydrogen Tartrate	Sodium Lignosulfonate	Tyrosine, DI-
Potassium Iodide	Sodium Metaphosphate	Tyrosine, L-
Potassium Phosphate Dibasic Trihydrate	Sodium Monofluorophosphate	Urease
Potassium Phosphate Monobasic, Anhydrous	Sodium Nitrobenzene Sulfonate	Urecholine
Potassium Phosphate, Dibasic, Anhydrous	Sodium Nucleinate	Uricase
Potassium Phosphate, Tribasic	Sodium Oleate	Uridine
Potassium Pyrophosphate, Tetra-	Sodium Phosphate Dibasic Dodecahydrate	Valine, L-
Potassium Sodium Tartrate	Sodium Phosphate Monobasic Monohydrate	Vanillic Acid
Potassium Sulfate	Sodium Phosphate Tribasic Dodecahydrate	Vanillin
Potassium Tetraborate Tetrahydrate	Sodium Phosphate, Dibasic	Variton
Povidone	Sodium Phosphate, Dibasic, Anhydrous	Vinyl Resin
Procion Brilliant Red	Sodium Phosphate, Dibasic, Heptahydrate	Vitamin B12
Proteidase	Sodium Phosphate, Monobasic, Anhydrous	Vitamin B2
Protoporphyrin Ix, Sodium Salt	Sodium Polymetaphosphate	Vitamin E
Pth-Aspartic Acid	Sodium Polymethacrylate	Vitamin E
Pth-Glutamic Acid	Sodium Polystyrene Sulfonate	Vitamin K-5
Putrescine Dihydrohydrochloride	Sodium Potassium Phosphate	Vp-16
Pvp	Sodium Potassium Tartrate	Xanthine
Pyridoxal Phosphate	Sodium Pyrophosphate	Xylan
Pyrite	Sodium Silicate	Yeast Extract
Quartz	Sodium Sulfadiazine	Zein
Quebracho	Sodium Sulfate	Zinc Phosphate
Rennase	Sodium Sulfate, Anhydrous	Zirconium Oxychloride
Rennin	Sodium Tartrate	
Resacetophenone	Sodium Tetraborate, Anhydrous	
Retinyl Acetate	Sodium Tetrphosphate	
Riboflavin	Sodium Titanate	
Riboflavin-5-Phosphate	Sodium Trimetaphosphate	
Ribose	Sodium Tripolyphosphate	
Ribose Nucleic Acid	Sodium Tripolyphosphate	
Ribose, D-	Sodium Tungstate	
Rongalite	Sorbitol, D-	
Rosin, Powder	Sorbose, L-(-)-	
Saccharose	Spectra-Sorb Uv-9	
Salicylic Acid	Starch, Electrophoresis	
Sand	Starch, Soluble	
Sandimmun	Steapsin	

APPENDIX H

**HAZARDOUS WASTE SATELLITE ACCUMULATION AREA (SAA)
INSPECTION CHECKLIST
(please print unless specified)**

SITE IDENTIFICATION

Inspector _____ Department _____
 Generator(s) _____ Room# _____
 Building Name _____ I _____ Signature of Inspector _____
 Date of Inspection _____

REQUIREMENTS TO BE INSPECTED	yes	no
Is a weekly inspection conducted on the SAA? 40 CFR 262.34 (d)(2), 40 CFR 265.174, 40 CFR 262.15(a)	<input type="checkbox"/>	<input type="checkbox"/>
Is the SAA labeled with the proper signage?	<input type="checkbox"/>	<input type="checkbox"/>
Is/Are established SAA(s), sufficient to accommodate all waste streams generated in the area?	<input type="checkbox"/>	<input type="checkbox"/>
Is the SAA located at or near the point of generation of the waste? 40 CFR 262.34(c)(1)	<input type="checkbox"/>	<input type="checkbox"/>
Is the SAA under the control of the generator(s)? 40 CFR 262.34(c)(1)	<input type="checkbox"/>	<input type="checkbox"/>
Does each container used for hazardous waste have a hazardous waste label? 40 CFR 262.34(a)(3), 40 CFR 262.34(d) (4)	<input type="checkbox"/>	<input type="checkbox"/>
Does each label identify the contents of the waste container by chemical name? 40 CFR 262.34(a)(3)	<input type="checkbox"/>	<input type="checkbox"/>
Does the label categorize the hazardous waste (ignitable, corrosive, air or water reactive, toxic)? 40 CFR 262.11	<input type="checkbox"/>	<input type="checkbox"/>
Does the label indicate the date when collection of the waste was begun (start accumulation date)? 40 CFR 262.34 (d) (4), 40 CFR 262.34(a)(2)	<input type="checkbox"/>	<input type="checkbox"/>
Does the label indicate the physical state(s) of the waste? 40 CFR 262.34(a)(3)	<input type="checkbox"/>	<input type="checkbox"/>
Does the label indicate the building and room number of the SAA?	<input type="checkbox"/>	<input type="checkbox"/>
Is there separate secondary containment for incompatible waste stored in the same SAA? 40 CFR 265.177(c)	<input type="checkbox"/>	<input type="checkbox"/>
Are the Hazardous waste containers properly segregated into secondary containment? 40 CFR 265.177	<input type="checkbox"/>	<input type="checkbox"/>
Are hazardous waste containers kept securely (screw cap) closed when not in use? 40 CFR 265.17(a), 40 CFR 262.34(d)(2), 40 CFR 262.34(c)(1)(i), 40 CFR 265.173	<input type="checkbox"/>	<input type="checkbox"/>
	yes	no

Are there any waste containers present that are outside of the SAA? 40 CFR 262.34(c)(1)		
Are the waste containers compatible with the contents? 40 CFR 265.172, 40 CFR 262.34(c)(1)(ii)		
If waste containers used originally contained another substance, have they been triple rinsed and is the rinsate treated as hazardous waste?		
If waste containers used originally contained another substance, are the original labels completely removed or totally defaced?		
Are the waste containers and screw caps in good condition, free from leaks, cracks, and corrosion? 40 CFR 265.171, 40 CFR 262.34 (d) (2)		
Is there more than one unfilled bottle of any of the four categories of hazardous waste present in the SAA? If yes, please explain in the space below.		
Is the volume of waste at or near any point of generation, in one room, less than 55 gallons or less than 1 quart of extremely hazardous waste? 40 CFR 262.34 (c)(1)		
----- (a)If no, has the generator marked the container with the date that the quantity reached the volume indicated above?		
Are there any <i>full</i> bottles of waste present that have been stored in the SAA for longer than 3 days? -----		
(a)If yes, has a waste pick up form for removal to the Main Accumulation Area been faxed to Facilities Services? 40 CFR 262.34(c)(2)		
Are there any bottles of waste present that have been stored in the SAA for longer than 6 months?-----		
(a)If yes, has a waste pick up form for removal to the Main Accumulation Area been faxed to Facilities Services?		
Have all individuals in charge of the SAA received Hazardous Waste Training? 40 CFR 262.34(a)(4), 40 CFR 265.16		

Please make any necessary explanations/comments below. Include any actions taken to correct violations that were found during the inspection.

APPENDIX I

GLOSSARY

Accumulation Start Date—the date when hazardous waste was first placed in a container in a Satellite Accumulation Area.

Accumulation End Date—the date when a hazardous waste container becomes full in a Satellite Accumulation Area.

Air Reactive—a chemical that forms an explosive or potentially explosive substance when exposed to air.

Aqueous solution—any mixture of a liquid, solid or gas mixed with water.

Carcinogens—substances that have been shown to cause cancer.

CAS registry number—the Chemical Abstract Services identification number for a given substance. Despite the variety of IUPAC, common and trade names that may be assigned to a chemical, only one registry number exists and is therefore the best tool to use when searching for information about a chemical.

CFR—Code of Federal Regulations.

Common name—a frequently used name for a chemical.

Compressed gas—any material which is a gas at normal temperature and pressure and which is contained under pressure as a dissolved gas, or liquefied by compression or refrigeration.

Concentration --The relative amount of a material in combination with another material. For example, 5 parts (of acetone) per million (parts of air).

Corrosives—substances/mixtures with a low or high pH that are capable of causing serious burns/visible destruction/irreversible changes to living tissue; may be fatal if ingested.

DOT --The United States Department of Transportation is the Federal agency that regulates the labeling and transportation of hazardous materials.

EPA--The Environmental Protection Agency is the governmental agency responsible for administration of laws to control and/or reduce pollution of air, water, and land systems.

EPA Number--The number assigned to chemicals regulated by the Environmental Protection Agency.

Flash Point—the minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid.

Generator—“any person, *by site*, whose act or process produces hazardous waste...or whose act first causes a hazardous waste to become subject to regulation” (40 CFR 260.10).

Halogenated solvents—organic solvents that contain chlorine, bromine, fluorine, or iodine.

Hazard Class—the category of hazard assigned to a hazardous material.

Hazardous Waste— [as defined by the federal Resource Conservation and Recovery Act (RCRA) or the EPA in **40 CFR 262**] a waste, or combination of wastes, that because of its quantity, concentration or physical, chemical or infectious characteristics may cause or

significantly contribute to an increase in serious irreversible, or incapacitating reversible illness or pose a substantial present or potential hazard to human health, safety or welfare or to the environment when improperly treated, stored, transported, used, disposed of or otherwise managed.

Hazardous Waste Contractor—an outside agency/business that picks up hazardous waste, and transports it to the disposal site.

Hazardous Waste Label—a label affixed to a hazardous waste container that identifies/classifies the waste, indicates the date when accumulation of waste began, and estimates the % composition of the waste by chemical.

Heavy Metals—metals of high molecular weight that are frequently classified as toxic.

Ignitables—flammables, often volatile organic compounds, that may be in the solid, liquid, or gas phase.

Incompatible wastes—wastes that when co-mingled may produce heat, pressure, fire and/or explosion, violent reaction, toxic dusts/mists/fumes/gases or flammable fumes/gases.

IUPAC name—the universally accepted name designated for a chemical as established by the International Union of Pure and Applied Chemistry.

LD₅₀ = Lethal Dose₅₀--the dose of a substance or chemical that will kill 50 percent of the test animals in a group within the first 30 days following exposure.

Liter (L)—metric unit of measurement equal to 1.06 quarts.

Main Accumulation Area (MAA)—a designated, labeled area maintained by Facilities Services where filled containers of hazardous waste are stored until official removal by the Hazardous Waste Contractor occurs.

Safety Data Sheet (SDS)—information provided by a vendor covering health hazards, emergency medical procedures, chemical classification, chemical hazards, etc.

Milligram (mg)—metric unit of measurement equal to 1/1000 of a gram or approximately 0.00003 ounces.

Mutagens—substances that cause chromosomal/genetic changes.

Organic—chemical compounds that contain a predominance of carbon and hydrogen (hydrocarbons).

Oxidizer—chemical that initiates/promotes combustion in other materials thereby causing fire either of itself or through the release of oxygen/other ignitable gases.

Personal Protective Equipment (PPE)—items such as safety goggles, gloves, aprons, face shields, respirators, etc. that are designed to protect an individual from the hazards associated with a chemical.

pH—a scale that measures the acidity/alkalinity of a substance/mixture. A pH of 7 is neutral, a pH of < 7 is acidic, and a pH of >7 is alkaline (basic).

Pyrophoric material—a liquid or solid that, even in small quantities, can ignite within 5 minutes after coming in contact with air.

Reactivity--A substance's susceptibility to undergoing a chemical reaction or change that may result in dangerous side effects, such as explosion, burning, and corrosive or toxic emissions. The conditions that cause the reaction, such as heat, other chemicals, and dropping, will usually be specified as "Conditions to Avoid" when a chemical's reactivity is discussed on a SDS.

Satellite Accumulation Area (SAA)—a designated, labeled area where identified and categorized small quantities of hazardous waste are temporarily stored. The SAA is the

space that a generator uses for accumulation prior to collection by Facilities Services (when bottles are full) or by the Hazardous Waste Contractor (when scheduled removal occurs). It may be a hood, cabinet, low shelf, or table.

Secondary containment—unbreakable, sturdy containers in which hazardous waste bottles are placed prior to transfer to the Main Accumulation Area. The containers provide protection in the event that waste is spilled or bottles leak.

Toxicity--The potential of a substance to exert a harmful effect on humans or animals and a description of the effect and the conditions or concentration under which the effect takes place.

Toxicity Characteristic Leachate Procedure (TCLP)—EPA procedure (effective 9/25/90) for characterizing wastes as hazardous or non-hazardous.

Trade name—a name given to a chemical by a manufacturer; one chemical may have many different trade names.

Water-reactive—a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.