

GOUCHER | college

Hazardous Materials Management Program

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I. POLICY/PURPOSE

It is a policy of Goucher College, Inc. (Goucher) that all hazardous materials, as defined by the Environmental Protection Agency, Occupational Safety and Health Administration, Maryland Department of the Environment or any other federal, local or state regulatory agency, shall be handled in a manner that poses no substantial hazard to human health or the environment and is in accordance with state and federal regulations.

II. REGULATORY CLASSIFICATION

Federal regulations define Goucher College as a “small quantity generator” (SQG), which is a facility that generates between 100 and 1,000 kilograms of hazardous waste per month.

Maryland regulations define Goucher College as a “fully regulated generator” (FRG), which is a facility that generates 100 kilograms (approximately 220 pounds) or less of hazardous waste per month *and* accumulates more than 100 kilograms of non-acute hazardous waste at any one time.

As an SQG/FRG, Goucher College is required to:

- determine which of its wastes are hazardous;
- obtain an EPA identification number;
- manifest all shipments of hazardous waste;
- ship hazardous waste to transporters with EPA identification numbers;
- offer waste only to permitted treatment, storage, and disposal (TSD) facilities; and
- comply with all training, packaging, labeling, marking, placarding, and documentation requirements.

The main generators of hazardous waste at the College are the Chemistry, Biology and Physics Departments. However, the Arts Department and Facilities Management Services (FMS) also have the potential to generate hazardous waste and are therefore covered under this program.

III. DESCRIPTION OF OPERATIONS ON CAMPUS GENERATING HAZARDOUS WASTE

The science departments use various chemicals for education and research purposes. Chemicals are placed in labeled containers within a designated storage area in each laboratory. These materials are stored according to compatibility classes and are disposed of with the guidance of the CHO.

The Art Department painting studio uses turpentine and a turpentine substitute to clean brushes and equipment. This material is stored in labeled five-gallon containers and is disposed of with the waste oil generated from vehicle maintenance at the physical plant. In addition the photography lab uses developers and other chemicals in the development process.

During routine repair and maintenance of Goucher College's grounds, buildings, machinery, and vehicles, various chemicals are used. These materials are completely consumed during the activity for which they have been employed (such as the application of pesticides and fertilizer). Some waste is generated during vehicle and machinery maintenance. These materials are generally petroleum-related (used motor oil and used hydraulic fluid) and are not hazardous. The spent materials are collected in various containers and deposited into a waste oil container located at FMS facilities. This material is tested and properly disposed of by an outside contractor. Refrigeration and air conditioning units are maintained by an outside contractor. The contractor is responsible for the proper disposal of waste materials generated by the equipment, which it maintains.

IV. RESPONSIBILITIES

The primary hazardous waste coordinator for the Goucher is the Chemical Hygiene Officer (CHO). In addition, both FMS and the Art Department have departmental coordinators - the Director of Facilities Management Services and the designated Arts Department Coordinator, respectively. Their responsibilities are identified below:

A. Primary Hazardous Waste Coordinator: (CHO)

- Coordinating disposal of science department waste
- Sole signature authority for hazardous waste manifests
- Prepares biennial reports to MDE.
- Prepares exception reports to MDE.

B. Department Coordinator

Arranging and coordinating disposal of department hazardous waste:

- Coordinating hazardous waste disposals with primary coordinator

C. College legal counsel

- Assists in the preparation of biennial reports to MDE.

D. Director of Public Safety

Serves as the college's emergency coordinator under 40 CFR Section 265.55-56:

V. HAZARDOUS MATERIAL HANDLING

A. Accepting Hazardous Materials at Goucher College

Prior to acceptance of hazardous materials, the responsible staff member should examine the shipping container for any evidence of leaks. If there is leakage of the material, the material should not be accepted. The shipper should be notified to handle the material in an appropriate manner and return the shipment to the supplier for replacement.

B. Transportation of Hazardous Material on Campus

Transporters of hazardous materials within Goucher College shall adhere to the following guidelines:

- All hazardous materials, regardless of size, will be transported in secondary containment of sufficient size to hold the entire content in the event of a spill or leakage.
- Large volumes or numerous containers of hazardous materials shall be transported on carts, whenever possible. Carts used for transporting hazardous materials should have sufficient size and height to restrain containers and wheels of adequate diameter to assure smooth travel throughout the route area.
- Routes for transport of hazardous materials shall be planned to minimize exposure to personnel in the event of a spill. When transporting hazardous materials, areas that are not readily accessible to the public should be used, if possible.
- In the event of a spill of a hazardous material, the procedures for spill containment and clean up found within the Chemical Hygiene Plan are to be followed. Only Goucher personnel trained in spill response (if any) or contractors who specialize in hazardous material cleanup will be allowed to clean-up chemical spills.
- Hazardous materials shall not be transported off campus by Goucher personnel.

C. Hazardous Material Storage

- All hazardous materials shall be stored in such a manner as to minimize exposure to staff and students. All chemicals shall be dated by the recipient when received and, again, when opened.
- Chemicals should be evaluated on an annual basis to determine their continued usability. The date of the examination should be noted on the container.
- Hazardous materials that have been stored for greater than five years (with exception of certain compounds such as ethers), should be evaluated as to whether they should be sent for disposal.

- Incompatible chemicals must not be stored together. The following sections should be used as a guideline for determining whether chemicals can be stored in the same cabinet or immediate vicinity.
- Peroxide forming compounds, i.e., ethers including dioxane, shall be disposed of one (1) year after receipt and opened; two (2) years, if unopened and no expiration date; one (1) year prior to the manufacturer's expiration date.
- Flammable materials in containers larger than one gallon should be stored in a ventilated NFPA- approved flammable storage cabinet. The cabinet shall be installed per the manufacturer's instruction to assure the integrity and the cabinet will be electrically bonded.
- Acids and bases, due to their corrosive nature, should not be stored within flammable storage cabinets or stored in other areas immediately next to combustible, flammable or other hazardous materials, which violently react with acid or base. Also, acids and bases must be segregated from each other.
- Labels must be consulted before storing a hazardous chemical. The SDS will provide any special storage information and incompatibilities, which must be followed by the handler.
- Unsegregated chemicals should not be stored in alphabetical order.

Hazardous chemicals should be separated in storage as follows:

Solids

-oxidizers	-flammable solids
-water reactive	-others

Liquids

-acids	-caustics
-oxidizers	-perchloric acid

Flammable/combustible gases

-toxic	-flammable
-oxidizers and inert	

- Once separated into hazard classes, chemicals may be stored alphabetically.
- Spill trays should be used under containers of strong reagents.
- Old chemicals should be disposed of promptly. See Waste Disposal section of this guide.
- Liquids should not be stored above eye level.
- For more information on chemical storage, the supervisor or Chemical Hygiene Officer should be contacted.

D. Hazardous Material Classifications

1. Chemical Stability

Stability refers to the susceptibility of the chemical to dangerous decomposition. Ethers, liquid paraffins, and olefins form peroxides on exposure to air and light. Since these chemicals are packaged in an air atmosphere, peroxides can form even though the containers have not been opened. The label and SDS will indicate if a chemical is unstable. The following are examples of materials that may form explosive peroxides:

- acetal
- decahydronaphthalene
- dicyclopentadiene
- diethylene glycol
- dioxane
- ether (glyme)
- tetrahydronaphthalene
- isopropyl ether
- sodium amide
- vinylidene chloride
- cyclohexene
- diacetylene
- diethyl ether
- dimethyl ether
- divinyl acetylene
- ethylene glycol dimethyl ether
- methyl acetylene
- tetrahydrofuran
- vinyl ethers

- Unless an inhibitor was added by the manufacturer, closed containers of ethers should be discarded after 1 year.
- Open containers of ethers should be discarded within 6 months of opening.
- For additional information on chemical stability, your supervisor or Chemical Hygiene Officer should be contacted.

2. Shock Sensitive Chemicals

Shock sensitive refers to the susceptibility of the chemical to rapidly decompose or explode when struck, vibrated or otherwise agitated. The label and SDS will indicate if a chemical is shock sensitive. A list of shock-sensitive chemicals can be found in Appendix A.

- Some chemicals become increasingly shock sensitive with age. The date received and date opened should be noted on all containers of shock sensitive chemicals.
- Unless an inhibitor was added by the manufacturer, closed containers of shock sensitive materials should be discarded after 1 year.
- Open containers of shock sensitive materials should be discarded within 6 months of opening.

- Appropriate personal protective equipment should be worn when handling shock sensitive chemicals.

3. Incompatible Chemicals

Certain hazardous chemicals cannot be safely mixed or stored with other chemicals because a severe reaction can take place or an extremely toxic reaction can result. The label and SDS will contain information on incompatibilities. A table containing examples of incompatible chemicals can be found in Appendix B.

E. Chemical Spill Procedures

In the event of a spill of hazardous materials, the procedures set forth in Section 5.0 of the Chemical Hygiene Plan shall be implemented.

F. Employee Protection

It is the responsibility of the employee working with hazardous materials to wear proper protective attire and personal protective equipment to insure that they have provided some protection against exposure to hazardous materials. The procedures set forth in the Chemical Hygiene Plan, Section

VI. HAZARDOUS WASTE MANAGEMENT

A. Waste Handling

All hazardous materials i.e. chemicals, which have been deemed as no longer suitable for reuse or continued use, should be handled as excess hazardous materials. The used materials are stored in appropriately labeled containers and disposed of according to appropriate federal and state guidelines. The general classification categories for disposal of hazardous materials are as follows:

- Ignitability - any material that has a flash point below 60 degrees Centigrade, 140 degrees Fahrenheit.
- Corrosive - any substance with a pH of less than, or equal to 2, or greater than, or equal to 12.5.
- Reactive - any substance, which is unstable, reacts violently with water, forms potentially explosive mixtures and generates toxic gas, vapors or fumes when mixed with water or is exposed to pHs between 2 and 12.5.
- Toxic - any substance, which contains a compound listed by the EPA under the Resource Conservation Recovery Act (RCRA), at, or greater than, the listed concentration.

- Specific Chemicals - any substance listed by the EPA under the Resource Conservation Recovery Act.

Once designated as "hazardous waste" these materials must be handled in the following manner:

- Wherever possible, co-mingling chemicals of different categories of excess hazardous materials should be minimized.
- Non-hazardous and hazardous waste should not be mixed. Mixing, (diluting) of waste is illegal.
- The material shall be placed in a container of similar construction and integrity to the container in which the original material was shipped.
- Concentrated acids or bases, elemental mercury, highly toxic, malodorous, or lachrymatory substances or any substance which might interfere with the biological activity of waste water treatment systems, create fire or explosion hazards, causes structural damage or obstruct flow should not be discharged to the sewer system
- Unlabeled containers of chemicals and solutions should undergo prompt disposal; if partially used, they should not be opened.
- Hoods should not be used as a means of disposal for volatile chemicals.
- All bottles or glassware from contaminated lab waste or spill clean-up material should be segregated and labelled
- Chlorinated and non-chlorinated solvents should not be mixed for disposal.
- Arrangements for pick-up of large quantities of chemicals and questions about specific waste chemical handling should be directed to the CHO and/or the Director of FMS.
- PCBs, PCDFs, pyridine and mercaptan compounds must be segregated from other chlorinated and non-chlorinated chemicals and appropriately labeled.
- Incineration in an environmentally acceptable manner is the most practical disposal method for flammable and combustible chemical waste. Disposal by recycling or chemical decontamination are other acceptable disposal methods that should be used for chemical wastes.
- Indiscriminate disposal by pouring waste chemicals down a drain or adding them to mixed refuse for landfill burial is prohibited.

B. Labeling

- All containers used for the storage of spent chemicals must be properly labeled with an indelible ink marker or with labels that adhere tightly to identify their contents in the event of a spill or fire and to ensure proper disposal. These containers should also be always be labeled hazardous. Containers are assigned an accumulation start date only when closed or full...

- All hazardous waste transported off site is properly marked and labeled following Department of Transportation (DOT) requirements. The DOT marking will provide the proper shipping name, the name of the hazardous substance, the EPA hazardous waste number, or the characteristic description such as corrosive, ignitable, toxic, or reactive.
- The DOT hazard labels will be applied by the waste-shipping contractor prior to transport. It is the responsibility of Goucher College to ensure that each shipment of hazardous waste is properly labeled and placarded before it leaves the site. Goucher College is not a licensed waste hauler, and therefore will employ the services of a licensed firm.

C. Hazardous Waste Storage Area/Main Accumulation Area

The RCRA states that the waste storage area should include design features to minimize threats to human health and the environment in the event of an accidental release. The Chemistry Department's primary chemical storage area may also be used for the storage of generated hazardous wastes during labpack operations. This room is kept locked at all times. Only authorized staff members are provided with access keys. Spent chemicals are stored in labeled containers with other chemicals of their compatibility class. Shelves in this room are lipped to contain minor spills. Flammable and ignitable materials are stored in locked and labeled flammable material storage cabinets with a two-hour fire rating. Several spill containment kits labeled for the appropriate spilled material classification are maintained in this room. The Chemistry Department's primary stockroom must be labeled with flammable materials decals and is posted with no smoking signs. No smoking is allowed in the Hoffberger Science Building.

D. Manifest and Shipping Procedures

Before the approved transporter removes the hazardous waste from the facility, the disposal contractor will ensure that the transporter's truck has the proper hazard placard displayed. The RCRA states that the generator is responsible for ensuring that the waste hauler has identified the waste with the correct placard.

The EPA and DOT, in a combined regulation, have established a uniform hazardous waste manifest to be used by all states. The only variation on the use of this form is that some states may require additional information in certain sections of the manifest form. A manifest form is required to accompany any shipment of hazardous waste over a public road for treatment, storage, or disposal. This form shall be filled out and copies provided to the CHO by the disposal contractor.

Copies of the manifest form will be obtained from the state in which the designated disposal facility is located. If that state does not have its own manifest form, then the Maryland manifest is used. The designated department coordinator

maintains information on the disposal companies used, documenting that they are permitted to handle the spent chemical hazardous waste.

When the shipment is picked up and the manifest is signed, the facility must also sign a "Land Ban Notification" form, which is attached to the manifest. This form is applicable to solvent containing waste. The solvent waste cannot be disposed in a landfill unless it has been chemically or physically treated to meet certain standards. The purpose of the Land Ban Notification form is to inform anyone handling or disposing of the waste that it should not be directly land filled. When Goucher College's representative signs the form, he or she must also fill in the number of the manifest of that particular shipment, in case the form gets separated from its manifest.

E. Manifest Tracking

After the transporter has picked up the hazardous waste and signed the manifest form, one copy of the form is forwarded to the primary coordinator (CHO) and placed in a logbook. The manifest number is entered in a log sheet along with the date and description of the shipment. When the signed copy of the manifest is received from the disposal facility indicating that the shipment reached its final destination, the date of receipt is entered into the logbook and copies of the manifest are forwarded to the primary hazardous coordinator (CHO). A copy of the waste shipment log sheet is provided in Appendix C.

The primary coordinator maintains the logbook in his file. Whenever a shipment of hazardous waste is picked up, the primary coordinator makes a note on his calendar 35 days in the future. On that date, if the signed copy of the manifest has not yet been received from the disposal facility, the primary coordinator will contact the transporter to determine whether the shipment was delivered. The primary coordinator will keep documentation of such telephone contacts.

Goucher College is required by law to contact the transporter if the signed manifest copy has not been received within 35 days following shipment. A sample letter to be sent to the transporter and/or disposal facility is included in Appendix D

If Goucher College has not received a copy of the manifest within 45 days, an EPA Exception Report is filed with the Maryland Department of the Environment (MDE). A copy of a blank EPA Exception Report is provided as Appendix E.

F. Biennial Reporting

Preparation of the Biennial Report will performed by the Primary Coordinator with assistance from legal counsel.

VII. APPENDICES to HAZARDOUS MATERIALS MANAGEMENT PROGRAM

A. Appendix A

Shock Sensitive Chemicals

acetylides of heavy metals	hyrazoic acid	polynitro aliphatic compounds
aluminum ophorite	lead azide	potassium nitroamino-
explosive	lead mannite	tetrazole
amatol	lead mononitroresorcinate	trimethylolethane
ammonal	lead picrate	magnesium ophorite
ammonium nitrate	lead salts	mannitol hexanitrate
ammonium perchlorate	lead styphnate	mercury oxalate
ammonium picrate	dipicryl sulfone	germane
ammonium salt lattice	dipicrylamine	silver acetylide
butyl tetryl	erythritol tetranitrate	silver azide
calcium nitrate	fulminate of mercury	silver styphnate
copper acetylide	fulminate of silver mercury tartrate	silver tetrazene
cyanuric triazide	mononitrotoluene	sodatol
cyclotrimethyl-enetrinitramine	nitrated carbohydrate	sodium amatol
cyclotetramethyl-enetrinitramine	nitrated glucoside	sodium dinitro-orthocresolate
dinitroethyleneurea	nitrated polyhydric alcohol	sodium nitrate-potassium explosive
dinitroglycerine	nitrogen trichloride	mixtures
dinitrophenol	nitrogen tri-iodide	sodium picramate
dinitrophenolates	nitroglycerin	syphnic acid
dinitrophenyl hydrazine	nitroglycerin	tetrazene
dinitrotoluene	nitroglycol	tetranitrocarbazole
fulminating gold	nitroguanidine	tetrytol
fulminating mercury	nitroparaffins	trimonite
fulminating platinum	nitronium perchlorate	trintroanisole
fulminating silver	nitrourea	trinitrobenzene
gelatinized nitrocellulose	organic amine nitrates	trinitrobenzoic acid
guanyl nitsamino guanyl tetrazene	organic nitramines	trinitrocresol
guanyl nitrosamino-guanylidene	organic peroxides	trinitro-meta-cresol
hydrazine	picramic acid	trinitronaphthalene
heavy metal azides	picramide	trinitrophebetol
hexanite	picratol	trintrophloroglucinol
hexanitrodiphenylamine	picric acid	trinitroresorcinol
hexanitrostilbene	picryl chloride	tritonal
hexogen	picryl fluoride	urea nitrate
hydrazinium nitrate		

B. Appendix B

Incompatible Chemicals

Chemical	Keep Out of Contact With:
Acetic acid	Chromic acid, nitric acid, hydroxyl compounds, ethylene glycol, perchloric acid, peroxides, permanganates
Acetylene	Chlorine, bromine, copper, fluorine, silver, mercury
Alkali metals	Water, carbon tetrachloride or other chlorinated hydrocarbons, carbon dioxide, the halogens
Ammonia, anhydrous	Mercury, chlorine calcium hypochlorite, iodine, bromine, hydrofluoric acid
Ammonium nitrate	Acids, metal powders, flammable liquids, chlorates, nitrites, sulfur, finely divided organic or combustible materials
Aniline	Nitric acid, hydrogen peroxide
Bromine	Same as chlorine
Carbon, activated	Calcium hypochlorite, all oxidizing agents
Chlorates	Ammonium salts, acids, metal powders, sulfur, finely divided organic or combustible materials
Chromic acid	Acetic acid, naphthalene, camphor, glycerin, turpentine, alcohol, flammable liquids in general
Chlorine	Ammonia, acetylene, butadiene, butane, methane, propane (or other petroleum gases), hydrogen, sodium carbide, turpentine, benzene, finely divided metals
Chlorine dioxide	Ammonia, methane, phosphine, hydrogen sulfide
Copper	Acetylene, hydrogen peroxide
Cumene hydroperoxide	Acids, organic or inorganic
Flammable liquids	Ammonium nitrate, chromic acid, hydrogen peroxide, nitric acid, sodium peroxide, halogens
Hydrocarbons	Fluorine, chlorine, bromine, chromic acid, sodium peroxide
Hydrocyanic acid	Nitric acid, alkali
Hydrofluoric acid	Ammonia, aqueous or anhydrous
Hydrogen peroxide	Copper, chromium, iron, most metals or their salts, alcohols, acetone, organic materials, aniline, nitromethane, flammable liquids, oxidizing gases
Hydrogen sulfide	Fuming nitric acid, oxidizing gases
Iodine	Acetylene, ammonia (aqueous or anhydrous), hydrogen
Mercury	Acetylene, fulminic acid, ammonia
Nitric acid	Acetic acid, aniline, chromic acid, hydrocyanic acid, hydrogen sulfide, flammable liquids, flammable gases
Oxalic acid	Silver, mercury
Perchloric acid	Acetic anhydride, bismuth and its alloys, alcohol, paper, wood
Potassium	Carbon tetrachloride, carbon dioxide, water
Potassium chlorate	Sulfuric and other acids
Potassium permanganate	Glycerine, ethylene glycol, benzaldehyde, sulfuric acid
Silver	Acetylene, oxalic acid, tartaric acid, ammonium compounds
Sodium	Carbon tetrachloride, carbon dioxide, water
Sodium peroxide	Ethyl or methyl alcohol, glacial acetic acid, acetic anhydride, benzaldehyde, carbon disulfide, glycerin, ethylene glycol, ethyl acetate, methyl acetate, furfural
Sulfuric acid	Potassium chlorate, potassium perchlorate, potassium permanganate (or compounds with similar light metals, such as sodium, lithium, etc.)

(from Manufacturing Chemists' Association. Guide for Safety in the Chemical Laboratory)

C. Appendix C

Waste Shipment Log Sheet

Waste Shipment Log sheet

Page ____

Container Description & Contents	Manifest Number	Date Received into Storage	Date Shipped	Date Returned Manifest	Operator's Initials

D. Appendix D

45-Day Manifest Follow-Up

Date: _____ **Report No.** _____

To: _____
(Transporter Name) (Transporter EPA ID No.)

(P.O. Box or Street Address)

(City, State, ZIP)

Attn: _____ (Authorized Contact)

To: _____
(Treatment/Storage/Disposal Facility Name) (Facility EPA ID No.)

(P.O. Box or Street Address)

(City, State, ZIP)

Attn: _____ (Authorized Contact)

From: _____
(Generator EPA ID No.) (Generator Name)

(P.O. Box or Street Address) (City, State, ZIP)

As of the above date, we have not received our return copy of the following hazardous waste manifest as required by the U.S. Environmental Protection Agency:

Manifest No.: _____ **Date:** _____

Please respond immediately concerning this manifest to preclude subsequent reporting to EPA.

Sincerely, _____
(Authorized Contact)

E. Appendix E

EPA Exception Report

Date: _____ **Report No.** _____

To: U.S. Environmental Protection Agency

Region No. _____

(P.O. Box or Street Address)

(City, State, ZIP)

Attn: RCRA Activities

From: _____
(Generator EPA ID No.) (Generator Name)

(P.O. Box or Street Address)

(City, State, ZIP)

On _____ (date), our company shipped hazardous waste as specified on the attached hazardous waste manifest No. _____ (Manifest Number). On _____ (date), we notified the Transporter, EPA ID No. _____ (Transporter, EPA ID No.) that our copy of the manifest had not been received. (See attached copies of follow-up report.) As of the above date, a copy of the manifest, appropriately signed, has still not been received.

Please specify what further action is necessary on our part at this time.

Should the signed manifest be subsequently received, we will follow up with a letter referencing this exception report number and provide you with a copy of the completed manifest and the date on which it was received.

Sincerely,

_____ (Authorized Contact)