WASTE MANAGEMENT AND MINIMIZATION PLAN 2011-2012

Purpose

Local, state and federal regulations require organizations that generate waste streams of various types and quantities to develop a program to both manage and minimize those wastes in a manner that protects human health and the environment. This plan is intended to provide the Hamilton College community with the guidance necessary to comply with these regulations.

Authority

The subject material in this plan is based upon requirements of both federal and state law, as well as other generally recognized best management practices.

Objectives

- To protect the health and welfare of Hamilton College employees, and the greater Hamilton College community;
- To provide college personnel with the necessary information and guidance concerning management practices for the various waste streams generated by the college; and
- To protect personnel and the environment from adverse health effects or physical damage associated with improper management and/or disposal of waste products.

Applicability

This plan conforms with other formal Hamilton College EH&S-oriented documents—the Hazard Communication Plan, the Chemical Hygiene Plan, and the Integrated Contingency Plan. Further, this plan applies to all officially sanctioned Hamilton College activities and functions, which generate the following waste streams:

- Hazardous wastes.
- Biohazardous wastes.
- Universal wastes.
- Other select waste streams.

Exceptions

Since the college is committed to acting in a responsible manner regarding all waste streams generated on its property, it will take practical steps to ensure that wastes generated by the resident student population are managed appropriately. This includes (for example) the cursory pickup/disposal of TV's and computers as electronic wastes, compact fluorescent lamps as universal wastes, and the management of syringes generated by students with certain medical conditions as regulated medical waste. However, since the college's resident population technically generates "household waste" exempt from the RCRA regulations, efforts by the college to act responsibly should not be viewed as assumption of ownership and liability for waste streams it does not specifically generate.

HAMILTON COLLEGE
ENVIRONMENTAL HEALTH & SAFETY PROCEDURES

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SECTION 1
WASTE MINIMIZATION

Though most of this plan concerns itself with the rules, practices or procedures associated with properly managing specified waste streams, the first priority in managing waste is to minimize its generation in the first place. Wastes not only constitute lost resources, but also represent significant monetary expenditures as the volume, type and variety of waste streams increase. To minimize the generation of any regulated/non-regulated waste stream, the following should be practiced at all times:

1. Appropriate Storage Practices

The first step in effectively minimizing the amount of hazardous or universal waste generated is the proper storage of current chemical inventories. Improperly stored chemicals can result in:

- Degraded containers that allow chemicals to become contaminated.
- Degraded containers releasing gases/vapors that can affect the integrity of nearby containers and/or result in unnecessary airborne/dermal/ingestion routes of exposure to personnel.
- Degraded containers that result in the generation of unknown chemical wastes.
- Chemicals becoming unstable and/or potentially explosive if not properly used and/or disposed of within the specified shelf life.

While peroxide-forming chemical containers must be dated when they are first opened, all chemical containers in laboratories should as a general rule of thumb be labeled upon opening as a best management practice. Further, chemical containers with expiration dates should be checked regularly, and disposed of properly.

With the exception of small containers in laboratory settings at or below 100 mL is size, all other chemical containers must be labeled in accordance with original manufacturer's labels, or HAZCOM labeling. Any chemical container that has a deteriorating label should be replaced with one that is legible.

Chemicals should be stored according to compatibility groups, and alphabetically thereafter. The basic chemical segregation scheme should adhere to the following DOT specifications:

- Flammable liquids.
- Flammable/air-reactive/water-reactive solids.
- Oxidizers.
- Highly toxic materials.
- Corrosives (with sub-categorical segregation between acids and bases),
- Low-hazard chemicals.

2. Order Only What You Need

Before ordering chemicals and/or other consumable products, review the current chemical inventory and use those chemicals first. It may also be possible to borrow small amounts of chemicals from other labs. Please take the time to check with your colleagues. Although chemicals are usually cheaper when purchased in bulk on a unit price basis, the actual use, storage and disposal cost associated with unused or leftover chemicals frequently diminishes these cost savings. Further, chemicals in large containers are frequently rendered useless over time by contamination and/or degradation.

3. Substitution (Non/Less Hazardous Materials for More Hazardous Ones, or Green Chemistry)

Oftentimes, there are low to non-hazardous chemicals or materials that can be substituted for more traditionally hazardous ones, thereby reducing both personal exposure risk and disposal costs upon waste generation. Common examples in and out of the classroom include:

- The use of electronic or alcohol based thermometers as opposed to mercury filled devices;
- The performance of analytical extractions using green alternatives as opposed to the more traditionally flammable and poisonous organic solvents;
- The use of latex or acrylic paints as opposed to oil-based (and often heavy metal containing) paints;
- The use of cleaning chemicals with oxidizing or disinfectant properties as opposed to the more traditional corrosive cleaners; and
- The use of water-based urethanes when sealing floors as opposed to oil-based polyurethanes.

4. Reduce Chemical Usage Through Micro-Scale Activities

The benefits of reducing chemical usage through micro-scale activities include:

- Reduced costs in chemical purchases and hazardous waste disposal.
- Shorter analysis time.
- Significantly less glassware usage and breakage.
- Compatibility with micro-scale equipment.
- Less hazardous chemical exposure to employees and students.
- Minimized potential for fires and explosions.
- Less space required for chemical and hazardous waste storage.

5. Reuse/Recycle Chemicals Whenever Possible

Chemicals can often be reused a number of times before disposal. An example includes using paint thinner repeatedly, until it is no longer practical to do so. Further, chemical recycling is another option. Often, if chemical containers are in their original containers with unbroken seals, manufacturers will recycle the chemical without having to dispose of it.

6. Cylinders and Lecture Bottles

The disposal costs associated with cylinders and lecture bottles is significant. Personnel using such equipment should determine if the manufacturer will take back empty/partially full cylinders or lecture bottles before a new order is placed. If at all possible, only order from manufacturers who will accept empty cylinders/bottles for return.

7. Neutralization and/or Sink Disposal

In some cases, mild acids/bases may be safely neutralized into relatively innocuous compounds (i.e. salt and water). Likewise, a host of other compounds, such as common agars, sugars and amino acids, are readily soluble and/or biodegradable. In both cases, it may be permissible under certain circumstances to discharge these compounds through the sanitary sewer system. Refer to Appendix A and B below for further guidelines addressing these waste streams.

SECTION 2
RESPONSIBILITIES

Each Hamilton College employee and student who uses chemical materials or products that may potentially result in regulated waste streams, have both a moral and legal obligation to utilize them in a manner that is protective of the health and welfare of the entire college community. Individuals who work in a supervisory capacity have an even greater burden of responsibility for ensuring those under their direction adhere to the recognized measures that will minimize injuries or illnesses, and prevent environmental degradation. Those who fail to recognize these obligations, or "willfully and knowingly" violate regulatory requirements, may be held personally liable for their actions/inactions. The following responsibilities regarding waste management and minimization at minimum shall be recognized:

1. Director of Environmental Protection & Safety & Sustainability (EP&S)

- Periodically review/modify the Waste Management and Minimization Plan as needed.
- Provide generator training for all college administrators, faculty and staff, and conduct periodic inspections/audits as necessary, to ensure that hazardous wastes are handled in accordance with the procedures contained herein.
- Provide technical assistance to Departmental Chemical Hygiene Officers, EH&S Liaisons, laboratory supervisors and workers concerning appropriate storage, handling and disposal of hazardous chemicals/materials.
- Coordinate and manage the disposal activities associated with all hazardous or otherwise regulated waste streams (addressed by this document) that are generated by the college.

2. Department Chemical Hygiene Officers/EH&S Liaisons

- Assure that the elements of the Waste Management and Minimization Plan are implemented within their respective departments.
- Act as the liaison between their department and the Director of EP&S regarding all hazardous/regulated waste matters.
- Coordinate all technical matters concerning the appropriate storage, handling and disposal of hazardous chemicals, with the assistance of the Director of EP&P.
- Provide and/or coordinate all department-specific hazardous waste training for employees or students generating hazardous wastes within their department (where applicable).
- Conduct internal inspections to assess and verify compliance with these procedures.

3. Hazardous/Regulated Waste Generators

- Properly manage generated hazardous/regulated wastes in accordance with these procedures.
- Minimize the quantity, type and variety of hazardous/regulated wastes generated.
- Properly segregate and store hazardous wastes in the appropriate satellite accumulation area in labeled containers with caps closed when not in use.
- Notify your Department Chemical Hygiene Officer/EH&S Liaison immediately when you have generated a full container of hazardous waste, so that it can be transported to the 180-day hazardous waste storage area within three days.
- Attend training in accordance with this plan, and state/federal regulations.

SECTION 3
HAZARDOUS WASTE

1. Hazardous Waste Definitions/Determinations

Solid wastes are determined to be hazardous by any number of the following:

- They are "characteristically" hazardous—meaning they exhibit one of more of the following four characteristics, and are D listed:
  - *Ignitability*—flash point less than 140^0F;
  - *Corrosivity*—pH <2.0 or >12.5;
  - *Reactivity*—the chemical undergoes a violent chemical reaction spontaneously or reacts violently with air or water; and/or
  - *Toxicity*—the chemical would fail a TCLP test.
- They are "listed"—meaning they are specifically listed in the federal or state regulations as being hazardous wastes, and carry waste codes such as P, U, K, F or B.
- Mixtures of certain hazardous wastes and solid wastes.
- Off-Spec Used Oil with a total halogen content exceeding 1000 ppm, PCB's or excess metals.

Further, chemical wastes may also be determined to be hazardous by the following:

- They have an oral LD50 for a rat of less than 500 mg/kg.
- The container the chemical came in identifies it as being toxic or poisonous.
- The chemical is a known or suspected carcinogen, mutagen or teratogen.

Ultimately, all personnel who use chemicals at the college are legally and morally obligated to dispose of generated waste products correctly. When in doubt, consider the waste stream to be hazardous until proven otherwise by the Director of EP&S.

2. Non-Regulated Chemical Wastes

Many chemical products (or chemical wastes generated thereof) utilized at the college may not meet the regulatory definition of hazardous waste. However, while the disposal of non-regulated chemical products or wastes as normal trash or through the sanitary sewer may technically be legal, it is generally inadvisable to dispose of questionable chemical materials by either of these methods. Although a chemical may not be regulated today, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, otherwise known as the Superfund, extends "retroactive liability" to chemical waste generators in the future if a particular chemicals becomes regulated.

It is also important to keep in mind the stigma attached with the disposal of chemicals in the normal trash. This is especially true when other members of the campus community who may not have the technical knowledge needed to identify and evaluate those chemicals discover chemicals in the trash. This type of situation can quickly escalate into unwarranted attention from the media and regulatory agencies. Please be aware of the concerns people have with regard to their health and safety when discovering strange and unknown chemicals in the trash.

Ultimately, the decision as to how to manage non-regulated chemical waste products rests with the various users/managers/supervisors of those chemical materials. As discussed in Appendix B, there is an accepted procedure for the drain disposing of various aqueous mixtures of non-regulated solutions in laboratories. However, the Office of EP&S recommends that all containers of virgin or residual chemical materials that are intended for disposal be managed through the hazardous waste program.

3. Empty Containers

By regulation, most chemical containers that have been emptied by any acceptable or standard means (i.e. pouring, pipetting, aspirating, dispensing, etc.), such that less than 3% (or 1 inch in a 55-gallon drum) of residual product remains in the container, are not considered hazardous waste. In other words, the container and its residue may be legally disposed of as trash. As a practical measure to manage the generation of empty containers, the following guidelines shall apply for the disposal of empty containers as trash:

- Chemical containers that meet the regulatory definition of "empty" should have their labels defaced with a permanent marker before being disposed of as trash.
- As a general rule of thumb, empty chemical containers should not be recycled, unless they are "completely" empty, meaning no detectable trace of residual chemical material.
- Chemical containers that are technically empty, but once held an extremely hazardous or volatile liquid (such as hydrochloric acid or benzene), should be allowed to air dry in a laboratory ventilation hood for 1 night before being disposed of.

The one exception to this rule concerns containers that once held P-listed materials (see this LINK), or certain dioxin precursor F-listed solvents, including tri-, tetra- or pentachlorophenol (2,4,5 or 2,4,6). By regulation, empty P-listed and F-listed dioxin precursors chemical containers are considered hazardous waste until they are triple rinsed with a solvent that is accepted by scientific literature to be effective in decontaminating the container. As a practical measure, the college should avoid trying to decontaminate these types of chemical containers, as this process in and of itself generates a P-listed rinsate. Alternatively, the container will normally be managed through the hazardous waste program. Please contact your DCHO or the Director of EP&S directly for questions pertaining to this issue.

4. Examples of Hazardous Wastes

There are a large variety of chemical wastes generated by Hamilton College that must be included in this program. Examples include:

- Flammable, corrosive, reactive and toxic wastes generated by laboratories.
- Waste solvents, oils and paints generated from vehicle/equipment maintenance and painting operations.
- Waste pesticides generated by horticultural operations.
- Flammable and corrosive wastes generated from printing operations.
- Photographic chemicals from darkroom operations.
- Ceramic, painting and printmaking wastes from Art department activities.
- Other miscellaneous wastes from non-specific sources.

5. Hazardous Waste Management Options

The management of hazardous wastes generated from these sources includes:

- Minimizing hazardous waste generation as noted above.
- Neutralization and/or sink disposal.
- Hazardous waste collection and disposal.
- Periodic laboratory cleanouts and inventory reductions.
- Providing information and training with regard to preventative chemical use, handling and storage.

6. Hazardous Waste Container Selection

It is critical for hazardous wastes to be collected in the appropriate type of container as follows:

- If the original container is otherwise unavailable or not suitable for waste collection, plastic or glass containers are the preferred types of containers to be utilized.
- Do not use metal containers for the collection of corrosive products, and do not use glass containers for the collection of hydrofluoric acid.
- Containers should have a screw-on cap or equivalent secure closure—do not use rubber stoppers, corks, parafilm or glass stoppers.
- Do not use beakers, standard labware, plastic milk jugs or soda bottles to collect hazardous wastes.
- Liquid wastes should be collected in small-necked containers, while solid wastes should be collected in wide-mouthed containers.
- 1-gallon/4-liter containers should be the maximum sized container for most hazardous waste streams.

7. Collection, Segregation, Storage of Hazardous Wastes in Satellite Accumulation Areas (SAA's)

Containers of hazardous wastes should be collected, segregated and stored at the place of generation in accordance with the following:

- Containers of hazardous waste are to be kept closed except when they are being filled.
- Each container being used must be labeled and marked with the words "Hazardous Waste", and identify the constituents of the container and the date when the container is full—chemical constituents should be identified on the label in written form, not by chemical symbols.
- Do not fill containers completely full—leave approximately 2" of headspace to prevent pressure buildup.
- Separate containers should be utilized when collecting wastes of different hazard classes.
- The interim storage of containers being used for the on-going collection of hazardous wastes should make use of designated SAA's that are established within the lab/area generating the wastes.
- SAA's should be established at or near the point of generation, under the control of the individual(s) generating the wastes.
- A lab/area generating hazardous wastes may not accumulate more than 55 gallons of hazardous waste, or 1 liter/kilogram of acutely hazardous waste, in any single SAA.
- In most labs, the areas underneath lab hoods are the preferred locations for SAA's—otherwise, suitable cabinetry or securable locations may be utilized to fulfill these interim storage requirements.
- Containers of hazardous waste that are of similar hazard classes should be segregated from other hazard classes while in interim storage in SAA's—this type of segregation should make use of secondary containment bins, for example, to segregate waste corrosives from waste solvents.
- When a container of hazardous waste is full, the Director of EPS&S shall be notified, who will fill in the accumulation start date on the label (or otherwise consolidate the wastes with other like waste streams). The container will then be logged into the appropriate hazardous waste accumulation to await pick-up and disposal by a permitted and licensed transporter.

8. Hazardous Waste Accumulation Areas

Hamilton College accumulates/stores hazardous waste in 1 of 2 locations dependent upon where the waste was generated on campus, and manages the waste accumulation areas in accordance with the applicable regulations. Hamilton has a separate EPA ID number for each location.

Main Campus Hazardous Waste Accumulation Area
The main campus is regulated as a Small Quantity Generator (SQG) of hazardous waste in NYS, and accumulates all hazardous waste it generates in Room #G090 of the Science Center. Most of this waste is generated by academic or administrative activity, and will be managed as follows:

- Within 3 days of being full, most containers of hazardous waste generated by the college will be delivered to the main hazardous waste storage area, where they will be stored for a period not to exceed 180 days.
- Containers of hazardous waste will be signed into a logbook at the accumulation area so as to track full dates and quantity information, for both recordkeeping purposes and generator classification determinations.
- All waste containers will be segregated by DOT hazard class within the facility.
- Weekly inspections of the facility will be performed to ensure that hazardous waste containers are properly labeled and segregated, and that they are closed, in good condition, and free of leaks. These inspections will be documented within the area's logbook, and by the inspection form in Appendix C.

Physical Plant Hazardous Waste Accumulation Area
The Physical Plant is regulated as a Conditionally Exempt Small Quantity Generator (CESQG) of hazardous waste in NYS, and accumulates all hazardous waste it generates as follows:

- The Paint Shop utilizes a paint thinner dispensing station to clean brushes used with oil based paints/stains/varnishes. This station is serviced by an outside vendor on an 8-week service contract basis. When the station is serviced, the 16 gallons of thinner normally in the station is shipped out as hazardous waste, and the supply of paint thinner is recharged. This generation of hazardous waste is documented in the log book stored in the adjacent 60-gallon vertical flammable storage cabinet.
- Any paint-related wastes that are intended for disposal (such as paint thinner not supplied by the paint thinner dispensing station, or waste stains/shellacs/varnishes/oil based paint) will be consolidated in the Paint Shop, and poured off into a 20-gallon, double-bung, HDPE drum, to be stored in a 60-gallon vertical flammable storage cabinet with secondary containment.
- Other regulated waste streams generated by the Physical Plant, such as flammable aerosol containers, used rags, or mercury devices that are intended for disposal, will be consolidated into 1 or 5-gallon screw top pails, to be stored in a either the 60-gallon vertical cabinet or adjacent 30-gallon storage cabinet, each with appropriate shelving and containment.
- The logbook stationed inside the 60-gallon vertical cabinet will be utilized to record the type and quantity of materials consolidated/poured-off into the drum or 5-gallon pails, the date of any such dispensing, and the individual performing the chemical consolidations/pour-offs.
- The 20-gallon paint waste drum, along with the other hazardous waste streams in 5-gallon pails, will be shipped off-site as needed, based on space constraints and in accordance with CESQG requirements.
- Weekly inspections of the area will be performed to ensure all hazardous waste containers are properly labeled, stored, and closed, and that all containment devices are free of liquid or material that would indicate a spill or leak. This inspection will be documented within the area's logbook, and by the inspection form in Appendix D.

9. Guidance/Management Techniques for Specific Waste Types

Corrosive Acids/Bases
Strong acids and bases, either contaminated with other materials or in their pure form, should be collected and managed through the hazardous waste program. However, residual quantities of some uncontaminated corrosive materials may be safely neutralized, and disposed of down the drain. If a

department determines it can neutralize virgin corrosive products, it should adhere to the steps/procedures noted in Appendix A and B. Do not attempt to neutralize highly concentrated acids or bases, and never neutralize strongly oxidizing acids such as chromic acid or perchloric acid. Further, corrosive wastes should not be collected in metal containers, and hydrofluoric acid should not be collected in glass containers.

Flammable/Combustible Liquids
Flammable and combustible liquids include various solvent compounds, such as acetone, turpentine, mineral spirits, and ethyl acetate, just to name a few. Under no circumstances should waste flammable/combustible liquids be disposed of down the drain or through evaporation. Rather, waste flammable/combustible liquids shall be collected in safety cans or other approved containers not to exceed 5 gallon, or in their original manufacturer containers, and managed through hazardous waste program.

Other Hazardous Chemical Types
The following examples of hazardous chemical types should always be collected in appropriate original or otherwise suitable containers, and managed through the hazardous waste program:

- Strong Oxidizers and Reducers—Examples of strong oxidizers include metallic perchlorates and chromic acid, while examples of strong reducers include metallic sulfides and sodium hydride.
- Air/Water Reactive Chemicals—Examples of air reactive/pyrophoric chemicals include yellow phosphorus, while examples of water reactive chemicals include potassium and sodium metal.
- Potentially Explosive Chemicals—Examples of potentially explosive chemicals include dry picric acid, dry benzoyl peroxide and trinitro- compounds.
- Highly Toxic Chemicals—Examples include reproductive toxins and/or carcinogens, such compounds with arsenic, lead and cyanide.

Particularly Hazardous Substances
Particularly Hazardous Substances (PHS) are those chemicals which typically are carcinogenic, reproductive toxins, or have a high degree of acute toxicity acutely. Many such chemicals are often defined by the EPA as P-listed, when they are either the sole active source of a hazardous waste stream, or are disposed of as container residues or off-spec commercial products. In addition to tri-/tetra-/penta-chlorophenols (F-027), are also considered to be PHS's. Since the use of chemicals in this category are typically confined to academic activities inside laboratories, such activities are required to conform to the procedures governing PHS use within the Chemical Hygiene Plan, which should be referenced accordingly. Otherwise, all PHS's must be managed through the hazardous waste program.

Aqueous Solutions with Toxic Materials
Aqueous solutions generated in laboratories typically include toxic organic chemicals and/or toxic metals that carry any of a number of listed or characteristic waste codes noted above. Therefore, under no circumstances should they be disposed of down the drain. Rather, they should be collected in the appropriate container, such as a 1-gallon glass or nalgene container, and managed through hazardous waste program.

Compressed Gas Cylinders
Compressed gases include those contained in large cylinders, lecture bottles and propane/fuel containers. Although the disposal of compressed gas cylinder wastes can be made through the hazardous waste program, cylinder disposal in general is quite expensive. So, cylinder purchases are strongly discouraged. Rather, departments wishing to utilize compressed gas cylinders should make arrangements with the appropriate vendors to lease cylinders accordingly. Since lecture-sized cylinders are exceptionally

difficult and expensive to dispose of, especially when labels have fallen off or become defaced, the labeling and/or identification of a cylinder's content is critical. When vendor arrangements for the return of cylinders have been made, ensure that the appropriate transportation procedures are adhered to.

Mercury Wastes

Elemental mercury and other mercury compounds are both highly toxic and extremely expensive to dispose of when mixed with other chemicals. Therefore, free-flowing mercury should be tightly sealed in leak-proof containers when not in use, and any excess and uncontaminated mercury should be collected and recycled. All other mercury waste must be collected and managed through the hazardous waste program. When using mercury, departments should have mercury spill kits equipped with commercially available "Hg Absorb" powders. Mercury should not be mixed with chemicals like sulfur, nitric acid or water, as this may exacerbate the evolution of mercury vapors. When possible, mercury-based thermometers should be replaced with instruments reliant upon non-hazardous fluids or other electronic means.

Paints and Paint-Related Materials

General Painting Activity

Water based paint and pigments, including latex, acrylic or vinyl acrylic, may be placed in regular trash as long as they are dry/solidified, and do not contain any metals or other hazardous materials. Unwanted oil-based paint, varnish, stain, finish, sealants and aerosol cans may frequently be recycled by the Physical Plant Paint Shop or given away to the public if they are in usable condition. Such products which are not in reusable condition, or any other paint products thinned/mixed with a solvent, labeled as flammable or combustible, or containing heavy metals, must be collected in their original containers, and managed through the hazardous waste program. The Physical Plant Paint Shop also uses a paint brush cleaning station that is managed by contractual arrangements. Once this station is serviced according to the contract, the waste paint/solvent is shipped out as hazardous wastes, manifested accordingly, and the activity is logged in the site log book.

Painting Activity in Academic Art Studios

Paint brush cleaning stations are also staged in both the List and Dunham teaching studios, and are to be used as central locations for the dispensing and recycling of combustible paint thinner for their respective buildings. These stations will also be serviced by contractual arrangements, and the waste paint/solvent is shipped out as hazardous waste and manifested accordingly. Oil based paint tubes that are not empty, rags/pallets that are stained with paint thinner, or waste paint thinner not originating from the paint brush cleaning stations must be managed through the hazardous waste program.

Darkroom Photochemicals

- Stop Baths and Developers—Though stop baths and developers are not typically regulated as hazardous waste when used and diluted in accordance with manufacturer specifications, they often contain chemicals like acetic acid that may be regulated as a concentrated and unused product. Therefore, the MSDS's should be consulted on a product-by-product basis to verify that used and diluted working solutions may be safely disposed of down the drain, and any raw/unused/concentrated products should be managed through the hazardous waste program.
- Fixers—Since used fixer photochemical waste typically contains elevated levels of silver, both raw/unused containers and used solutions of waste fixer should be managed through the hazardous waste program. This typically involves precious metals recycling through a silver recovery unit within the Studio Art Department's Photography studio in List.

Ceramic Products

A number of glazing and under-glazing products used to color ceramic finishes contain regulated heavy metals like lead, cadmium, and chromium. A number of other materials used to alter the clay itself are either corrosive, like soda ash, or contain heavy metals, like lead or barium sulfate. In either case, wastes associated with creating ceramic materials must be managed through the hazardous waste program if they contain any regulated materials. Product MSDS's should be referred to prior to discarding any unused ceramic materials, and the procurement of new products without regulated substances should be considered. Those ceramic products known to contain regulated components should be labeled with small stickers that say "Dispose of Excess as Hazardous Waste", as an awareness strategy to alert ceramics personnel as to the accepted disposal method.

Used Rags

Used rags that have had solvents or other chemicals applied to them may be considered hazardous waste. To avoid this hazardous waste determination, any department generating used rag waste should ensure:

- Reusable cotton rags are used at all times;
- Rags are never soaked to the point of saturation;
- Used rags are temporarily stored in flame proof/resistant cans; and
- Arrangements are made with local vendors to pickup and launder used rags on a routine basis.

If the generation of used rags contaminated with solvents or other chemicals does not conform to the above conditions, they must be managed through the hazardous waste program.

SECTION 4
BIOHAZARDOUS WASTE

1. Biohazardous Waste Definition/Determination

Biohazardous wastes are divided into 2 basic categories:

Regulated Medical Wastes (RMW)—Include solid wastes generated in the diagnosis, treatment, or immunization of human beings or animals, or research pertaining thereto, or in the production or testing of biologicals, as defined by the NYS DEC. RMW is divided into the following categories:

- "Infectious Agents" mean any organisms such as a virus or bacteria that cause disease or an adverse health impact to humans. Those organisms found in Biosafety Levels 2 through 4 of the CDC's Manual for Biosafety in Microbiological and Biomedical Laboratories (May 1993) are included.
- Cultures and Stocks of infectious agents and associated biologicals; cultures from medical and pathological labs; culture and stocks of infectious agents from research and industrial labs; wastes from the production of biologicals; discarded live and attenuated vaccines; and culture dishes and devices used to transfer, inoculate, and mix cultures
- Human Pathological Wastes, including tissues, organs, body parts and body fluids that are removed during surgery, autopsy or other medical procedures, and specimens of body fluids.
- Liquid Waste Human Blood, products of human blood, items saturated and/or dripping with human blood, or similar items that are now caked with human blood, including serum, plasma, and other blood components and their containers, and intravenous bags.
- Sharps that have been used in animal/patient care, treatment or research, regardless of the presence of infectious agents, including hypodermic needles, syringes, pasteur pipettes, scalpel blades, blood vials, and culture dishes. If exposed to infectious agents, slides and cover slips would also qualify as a sharp. Unused needles, syringes and scalpel blades would also qualify as a sharp.
- Contaminated animal carcasses, body parts, and bedding of animals known to have been exposed to infectious agents.
- Laboratory wastes that were in contact with infectious agents, including slides, cover slips, and personal protective equipment (PPE).
- Biological waste and discarded materials contaminated with blood, excretion, exudates, or secretion of humans who are isolated to protect others from certain highly communicable diseases, or isolated animals known to be infected with highly communicable diseases.

Blood Borne Pathogen Wastes (BBP)—Includes blood and other potentially infectious materials as defined by OSHA. The complete definition of regulated BBP waste is as follows:

- Regulated BBP waste includes liquid/semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid/semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological/microbiological wastes containing blood or other potentially infectious materials.

2. Excluded Waste Streams

The following waste streams are excluded from regulation as biohazardous waste:

Feminine Hygiene Products—Since feminine hygiene products are intended to absorb menstrual flow, the absorbent material of which they are made of will not regularly release liquid or dried blood. Therefore, OSHA does consider such products to be regulated. However, OSHA does recommend that receptacles used to collect feminine hygiene products be lined in such a way as to prevent contact with the contents during handling.

Diapers—Since neither urine nor feces are construed to be regulated medical waste by the NYS DEC (except in certain clinical or diagnostic circumstances), soiled baby diapers are not regulated as biohazardous.

Animal Carcasses—Unless animal carcasses/parts and their bedding have been specifically or intentionally exposed to infectious agents, they do not meet the definition of regulated medical or biohazardous waste. However, based upon the volume of animal carcasses regularly generated by the Animal Care Facility/Science Center, animal carcasses are profiled and managed/disposed of directly through the Oneida-Herkimer Solid Waste Authority.

**Note on Animal Carcasses—Any animal carcass that is fixed with something other than a dilute formalin solution, "may" be regulated as a hazardous waste. Please contact your DCHO or the Director of EPS&S for further instruction.

Household Wastes—Any household wastes generated in student residential/dormitory spaces that are not affiliated with official college functions are not regulated. Examples include sharps, blood soaked bandages, IV bags, etc.

Exceptions—Should the custodial department have to respond to something like a large blood spill in a student dorm, and take the necessary universal precautions for cleaning the spill, the resulting materials from the cleanup would be regulated as biohazardous waste.

3. Biohazardous Waste Segregation/Storage/Disposal Guidance

Sharps
All sharps must be placed into an approved container following use to reduce the risk of puncture and/or exposure. An approved container is one that is leakproof, puncture-resistant, closable, and bears the biohazard symbol. When a full container of sharps has been generated, the responsible lab/department supervisor must contact the Director of EP&S (x4647) or the Science Stockroom & Facility Coordinator (x4914) for a waste pickup. All sharp wastes will be stored in Room #G091 of the Science Facility until shipment offsite.

Solid Non-Sharp Biohazardous Wastes
Wastes in this category include non-sharp items such as cultures and stocks of infectious agents, lab wastes, PPE, culture dishes, blood-soaked bandages, and related materials. These wastes must be stored in biohazard bags or containers prior to decontamination or disposal. The specific requirements are dependent upon where the waste is generated, as follows:

Health Center/Athletic Department Training Facility
Solid non-sharp waste generated at both of these facilities is classified as Blood Borne Pathogen waste, and must be collected in a manner that minimizes the risk of spillage in containers with sufficient strength to resist ripping, tearing or bursting under normal conditions of usage and handling. In most situations, this can be accomplished by using a properly colored/labeled biohazard bag as the primary container, and

placing it within a similarly colored/labeled, open-top, sturdy pail or container as a secondary spill barrier. When the primary bag is full, the waste must be delivered to the Science Facility by the Physical Plant Custodial Department, where it will be stored in Room #G091 of the Science Facility. The waste must be disposed of through a qualified vendor within 30 days of generation using a NYS medical waste tracking form.

Non-Health Care Facilities (Academic Departments—Biology, Chemistry, Psychology)
Solid non-sharp waste generated during the course of academic lab activities should also be collected in a manner that minimizes the risk of spillage, and in containers with sufficient strength to resist ripping, tearing or bursting under normal conditions of usage and handling. While a similar colored/labeled, open-top, sturdy pail or container should be used as a secondary spill barrier, the primary container should be an unlabeled, autoclavable bag. When the primary bag is full, or the particular lab activity generating the waste stream has concluded, the bag must be delivered to the autoclave in the Biology department for treatment/sterilization in accordance with Appendix H below. Treated BSL-1 waste is no longer regulated as biohazardous, and should be transferred into a gray garbage bag before being thrown away. While treated BSL-2 wastes are also not regulated as biohazardous, local solid waste facilities are not permitted to accept this treated waste stream. As such, treated BSL-2 waste must be stored in Room #G091 of the Science Facility, and disposed or through a qualified vendor on an as needed basis.

Liquid Biohazardous Waste
Human or animal blood and body fluids, regardless of where they are generated, can be flushed to the sanitary sewer without prior treatment. However, all potentially infectious liquids generated by non-health care facilities, i.e. media with growth, cell line waste, etc., must be autoclaved **or** chemically disinfected before disposal into the sanitary sewer. Do not autoclave wastes that are chemically treated as this action may create a chemical exposure hazard.

4. Summary Notes on the Use of the Biology Department's Autoclave

The Biology Department's autoclave may be used as an effective treatment technology only in accordance with Appendix F below.

SECTION 5
UNIVERSAL WASTES

1. Universal Waste Definition

Universal wastes in general are waste materials of high volume but low toxicity. The various regulations governing universal wastes are intended to provide hazardous waste generators with alternative management options designed to encourage recycling. The most significant materials that fall into the universal waste category at Hamilton College include:

- Used lamps of certain types and varieties;
- Select rechargeable batteries (alkaline batteries are neither rechargeable nor recyclable); and
- Mercury containing thermometers, thermostats and related equipment.

If the above waste materials are not handled as universal wastes, they must otherwise to be handled as hazardous wastes.

2. General Universal Waste Requirements

As a small quantity generator/handler of universal waste, Hamilton College shall handle the universal waste materials it generates as follows:

- The listed waste types will be managed in a way that prevents the release of any universal waste or its components to the environment.
- The college is prohibited from improperly disposing of such wastes, or otherwise diluting or treating the wastes, unless in response to a spill or release.
- The college will contain the universal wastes in containers/packages that are structurally sound, adequate to prevent breakage, compatible with the contents, and lack evidence of spillage or damage that could cause leakage under reasonably foreseeable conditions.
- The college will label containers of universal wastes with a "Universal Waste" label, clearly indicating the contents, generator information, and date of first accumulation.
- The college will not accumulate universal wastes for more than one year from the date the waste is generated, and will not store in excess of 5,000 kg of universal wastes at any time.
- The college must immediately contain all releases of universal wastes and other residues, and must determine whether any material resulting from the release is hazardous waste, which would then be managed in accordance with the hazardous waste management procedures.
- The generator will not self-transport universal wastes on-site or off-site to another waste handler or destination facility, in quantities exceeding 500 pounds.

3. Specific Universal Waste Type Procedures

Mercury-Containing Lamps—includes all fluorescent, metal halide, high intensity discharge (HID), high-pressure sodium, neon and mercury lamps.

General Procedures

- All major buildings and facilities at the college where custodial closets or workstations are staged to facilitate lamp deployment/collection and general housekeeping will be designated as Universal

Waste Management Areas. Some of the smaller buildings on campus may use a single custodial closet within a group of buildings to consolidate and/or simplify lamp universal waste management.

- All universal waste lamps, as identified above, will be collected in their original or otherwise suitable container at these Universal Waste Management Areas.
- Containers utilized to collect universal waste lamps should be secured to prevent accidental breakage, and maintained in a closed fashion. These containers must be labeled with a "Universal Waste" label once the first used lamp is placed into it. The label must identify the type of lamp waste, generator information, and accumulation start date. To simplify later handling requirements, it is recommended that the labels also indicate the number of lamps within the container, and the building where the container was generated.
- When a lamp container becomes full with used bulbs, or if the accumulation start date nears the 11 month date based upon the accumulation start date, custodians will notify his or her foreperson, who will arrange for pick-up and transportation of the full container to the Physical Plant.
- Once arriving at the Physical Plant, the stockroom supervisor or his designate will be notified, so as to oversee the placement of the universal waste lamps within the furniture barn's Universal Waste Storage Area.
- On a periodic or as needed basis, containers of universal waste lamps will be packaged and self-transported to an approved destination facility in a manner that ensures that no container of universal waste lamps has been storing such wastes in excess of 1 calendar year. Currently, the approved destination facility is the Oneida-Herkimer Solid Waste Authority. Containers of universal waste lamps will be safely and securely packed in a manner that will both prevent damage during transport, and limit the weight of the shipment to less than 500 pounds. A universal waste manifest will be prepared so as to document the number of containers, lamp varieties and quantities, weight, and date of first accumulation for each container. This manifest will accompany the shipment to the Solid Waste Authority, and will be maintained as a record of disposal by the college.
- Alternatively, the College may use a qualified and approved vendor to collect, ship and recycle universal waste lamps.

<u>Procedures for Handling Broken Lamps</u>

- In the event a universal waste lamp is accidentally broken, it may no longer be managed under the universal waste program. It must now be managed as hazardous waste.
- Broken lamps will be broken down for safety reasons and for container consolidation using a 6-gallon bulb crusher, through the Office of EP&S.
- Lamps broken anywhere on the main campus must be delivered to the Science facility stockroom, while lamps broken at the Physical Plant must be delivered to the PP Stockroom.
- Should a lamp shatter in a way that makes spill cleanup difficult, cleanup personnel must abide by the following guidance:
    - Notify your supervisor/foreperson if the spill is too difficult to cleanup without assistance;
    - Cordon of the area to prevent public access to the spill area;
    - Donn the necessary PPE (protective gloves, filtering facepiece, safety glasses), and consolidate spill materials into a suitable container, like a 5-gallon bucket.
    - If the lamp has shattered into a rug or other surface, thus making cleanup difficult, request the use of the custodial shop's HEPA vac.
    - Ensure all spill materials are delivered to the locations noted above.

Rechargeable Batteries—including automotive lead-acid batteries, and small rechargeable batteries of the following varieties: small sealed lead or lead-acid batteries, lithium-ion batteries, nickel-cadmium batteries, and nickel-metal hydride batteries.

General Procedures for Small Sealed Lead or Lead-Acid Batteries, Lithium-Ion Batteries, Nickel-Cadmium Batteries, Nickel-Metal Hydride Batteries

- Most universal waste batteries generated by the college are done so through Physical Plant maintenance activities.
- Physical Plant personnel who generate these types of batteries are to transport them to the Physical Plant Stockroom Universal Waste Management Area, where they will be managed as universal waste (i.e. segregated by type, containerized, and labeled).
- All other departments on campus that generate these types of batteries, like ITS, academic faculty, administrative departments, etc., are to contact the Office of EPS&S directly, who will collect and manage these batteries through the Physical Plant Stockroom, as per the above.
- Full containers of universal waste batteries will be relocated from the Physical Plant Stockroom to the furniture barn Universal Waste Storage Area.
- On a periodic or as needed basis, containers of universal waste batteries will be packaged and self-transported to an approved destination facility in a manner that ensures that no container of universal waste lamps has been storing such wastes in excess of 1 calendar year. Currently, the approved destination facility is the Oneida-Herkimer Solid Waste Authority. Containers of universal waste batteries will be safely and securely packed in a manner that will both prevent damage during transport, and limit the weight of the shipment to less than 500 pounds. A universal waste manifest will be prepared so as to document the number of containers, battery varieties and quantities, weight, and date of first accumulation for each container. This manifest will accompany the shipment to the Solid Waste Authority, and will be maintained as a record of disposal by the college.
- As an alternative to this principal battery management strategy, the Office of EPS&S may recycle select battery types (small sealed lead, lithium-ion, nickel-cadmium, and nickel-metal hydride) through either Rechargeable Battery Recycling Corporation (RBRC) or Regional Computer Recycling & Recovery (RCR&R). While this strategy achieves the same goal as the principal strategy above, it delivers select battery types directly to a primary and approved recycling company as opposed to a broker (the Oneida-Herkimer Solid Waste Authority), and avoids the fees associated with delivery and handling. The Office of EPS&S will maintain manifest documentation similar to that generated through the primary battery management strategy to document compliance with the universal waste program requirements.

General Procedures for Automotive Lead-Acid Batteries

- The automotive garage at the Physical Plant will maintain a lead-acid battery spill pallet, which will be used to temporarily store used or spent lead-acid batteries derived from automotive repair and maintenance activities.
- All used/spent automotive lead-acid batteries will be exchanged for new batteries with local vendors/distributors, so that the number of waste lead-acid batteries never exceeds the storage capacity as provided by the spill pallet.

Mercury Containing Equipment—includes all HVAC thermostat systems with a mercury ampule attached to a bimetal sensing element, and other miscellaneous mercury equipment, like thermometers, barometers, etc., generated in a laboratory or other setting.

General Procedures

- Due to the inability of the Oneida Herkimer Solid Waste Authority to collect and process mercury containing devices as universal wastes, all such materials generated by the college will be managed through the hazardous waste program.

SECTION 6
OTHER SELECT WASTES

1. Other Waste Types of Significance

A number of other waste types must be managed properly in order to comply with certain regulatory drivers, and/or avoid current and future liability. Waste types in this category include the following:

- Used oil;
- PCB (and non-PCB) fluorescent light ballasts;
- Used antifreeze; and
- Electronic Wastes.

2. Specific Other Waste Type Procedures

Used Oil—includes any oil that has been refined from crude oil, or any synthetic oil, that has been used, and as a result of such use, is contaminated by physical or chemical impurities.

General Procedures

- Since used oil that is going to be recycled is exempt from the hazardous waste regulations unless it has been mixed with any amount of a listed or characteristic hazardous waste, all efforts will be taken not to otherwise contaminate used oil.
- The Physical Plant automotive garage will serve as the on-site storage facility for the college, as it performs all vehicle-servicing activities, and acts as the aggregation point for miscellaneous used oils. The transportation of any used oil to this aggregation point may not exceed 55 gallons by college personnel performing the transportation.
- The automotive garage will maintain 2 drum storage units for used oils, both of which are equipped with secondary containment. Within these storage units, no more than 3 55-gallon drums will be utilized to store used oil from 'known sources", i.e. from vehicle maintenance, oil-filter draining, and other sources where the oil is assumed to be non-contaminated. Additionally, 1 30-gallon drum will be utilized to store used oil from "unknown sources", i.e. the used oil did not arise from official college activities and may be off-spec or contaminated. Both containers will be labeled with a "Used Oil" label, which will provide generator information, the used oil source, and contact information.
- Used oil generated and stored in either of the 2 storage units will require periodic sampling or monitoring to ensure the chemical properties of the used oil meet the analytical criteria exempting it from regulation as a hazardous waste. The sampling/monitoring frequency will be determined by both generator knowledge and vendor discretion. For example, if the college has a reason to believe that a full container of used oil may be suspect (i.e. the 30 gallon drum of oil from unknown sources), then analytical sampling and analysis for heavy metals, PCB's, and total halogens may be called for. However, if only the 55-gallon drums of used oil from engine maintenance are generated, the college may rely upon the waste vendor's monitoring equipment, along with periodic sampling, as a contamination screening mechanism to rebut the hazardous waste presumption.
- Once negative sampling/monitoring information has been received, the Physical Plant will contact a used oil-recycling vendor, who will pump and transport the college's used oil for processing. The vendor will be required to provide some type of documentation, like a non-hazardous waste manifest or bill of lading, which will be retained by the Office of EP&S.
- In the event sampling data determines that any used oil meets the criteria for hazardous waste, it will be managed in accordance with the hazardous waste program.

- Oil filters must be drained for at least 24 hours before they can be disposed of in the municipal solid waste stream. Likewise, oil-spill absorbent materials, like speedi-dry, used to contain miscellaneous drips of oil on the concrete floor of the Physical Plant automotive garage, may also be disposed of in the municipal solid waste stream as it is generated.

PCB (or other oil-filled non-PCB) Fluorescent Light Ballasts—includes any fluorescent light ballasts manufactured before 1978 (or are not stamped with the words "NO PCB's"), should be considered to be PCB fluorescent light ballasts because the small capacitor included as one components of the ballast probably contains polychlorinated biphenyls (PCB's). PCB ballasts with less than 3 pounds of dielectric fluid are exempt from being defined as hazardous waste in NYS.

General Procedures

- Whenever non-leaking PCB fluorescent light ballasts, or any other oil-filled light ballasts for that matter, meeting the criteria noted above are generated by on-going maintenance activities at the college, the devices will be transported to the Physical Plant Stockroom.
- The PCB (or non-PCB) fluorescent light ballasts will be collected in a suitable container, such as a 5-gallon pail, and will be clearly labeled so as to indicate the contents and generator information.
- Containers of used PCB (or non-PCB) fluorescent light ballasts will be stored near the Universal Waste Management Area of the Stockroom.
- When a sufficient number of PCB (or non-PCB) fluorescent light ballasts have been collected, the waste stream will be delivered directly to the Oneida-Herkimer County Solid Waste Authority as solid waste, so as to ensure they are do not make their way into the college's solid waste compactor.

Antifreeze—includes the vehicle additives normally used for keeping engines from both freezing and overheating.

General Procedures

- Since antifreeze is regulated as a hazardous substance, the Physical Plant automotive garage will maintain an on-site storage container to facilitate antifreeze recycling.
- All used antifreeze from vehicle servicing activities, or used antifreeze otherwise delivered to the automotive garage from other miscellaneous college areas, will be stored in a 30-gallon drum staged within a secondary containment device. The transportation of any used antifreeze to this collection area by college personnel may not exceed 55 gallons. The drum will be clearly labeled so as to indicate the contents and generator information.
- Once the 55-gallon drum of used antifreeze is nearly full, the Physical Plant will contact a used antifreeze-recycling vendor, who will pump and transport the college's used antifreeze for processing. The vendor will be required to provide some type of documentation, like a non-hazardous waste manifest or bill of lading that will be retained by the Office of EP&S for a period of at least 3 years.

Electronic Wastes—includes all electronic waste materials as outlined in Appendix G below.

General Procedures

- All college departments should have a general understanding of the basic types of electronic waste that must be managed through the electronic waste recycling program. However, the following departments should develop a close working relationship with both the Physical Plant and the Director of EPS&S to manage the higher volumes of electronic waste materials it frequently generates:
    - ITS (along with its subsidiaries), Audio-Visual, the Library, and the 5 academic sciences in the Science Facility (Chemistry, Biology, Geology, Physics, Psychology).

- The ITS department, specifically, manages the use and distribution of all computer-related equipment owned by the college, and should attempt to minimize the electronic waste it generates by reusing electronic components to the greatest extent possible, or by selling or donating any such equipment that remains in a useful condition to members of the greater college community and its vendors.
- Any electronic wastes that cannot be reused or donated, and which must be discarded by the college, shall conform to the following procedures as a final disposal alternative, so as to avoid the generation of electronic wastes classified as hazardous wastes.
- In accordance with state regulations, the college will submit the appropriate "C7" notification to the NYS DEC each time it intends to dispose/recycle electronic wastes under the "scrap metal exemption". By this notification, the college agrees to handle electronic wastes in a manner that recycles such waste products, thereby exempting generated electronic wastes from the hazardous waste regulations.
- Whenever a college department generates electronic wastes intended for disposal, it shall notify the Physical Plant or the Director of EPS&S of the generated waste stream, who will make the necessary arrangements to ensure the wastes are properly delivered to the Physical Plant.
- The Physical Plant will maintain 2 electronic waste receptacles within the furniture barn—1 for computer monitors and TV's, and 1 for all other types of electronic waste.
- On an as needed basis, electronic wastes will be packaged and shipped in Gaylord boxes or other suitable containers to the Oneida-Herkimer Solid Waste Authority, in quantities not to exceed 500 pounds. Alternatively, the college may choose to recycle its electronic wastes through Regional Computer Recycling & Recovery (RCR&R). In either case, electronic wastes will be tracked and recorded by manifest documentation, and that information will be kept on file by the Office of EP&S.

SECTION 7
EMPLOYEE TRAINING

Employee training for those personnel who generate regulated or otherwise significant waste streams across any of the arenas presented above should conform to both the guidance presented below, and any additional training as stipulated by the Chemical Hygiene Plan, Hazard Communication Plan, and Integrated Contingency Plan.

1. Hazardous Waste Training

In general, the training requirements for Small Quantity Generators of hazardous waste must be sufficient to ensure that employees are thoroughly familiar with proper waste handling and emergency procedures relevant to their responsibilities during normal institutional operations and foreseeable emergencies. As such, three levels of hazardous waste training will be required for select college personnel dependent upon their institutional responsibilities:

Training for the Employees Who Manage Hazardous Wastes in Main Accumulation Areas, & May Authorize Hazardous Waste Transportation
The training requirements for those personnel who manage hazardous wastes in main accumulation areas, and may authorize a shipment of hazardous waste for transportation (and sign a hazardous waste manifest) shall at a minimum include:

- 16-Hour Initial Hazardous Waste Management Training for Generators, with an annual 4-hour refresher; and
- 8-Hour Department of Transportation Training, with a 4-hour refresher every 3 years.

Training for Departmental Chemical Hygiene Officers/EH&S Liaisons
The training requirements for departmental chemical hygiene officers (DCHO's) or EH&S Liaisons (administrators/staff who act in a supervisory capacity with respect to hazardous wastes for non-laboratory departments), should at a minimum include:

- The initial/semi-annual Hamilton College hazardous waste training for generators; and
- Any other necessary hands-on training based upon the type and variety of waste generated by the department they represent.

Training for Generators of Hazardous Waste
The training requirements for all other generators of hazardous waste, in either the laboratory or non-laboratory setting, should include at a minimum:

- The initial/semi-annual Hamilton College hazardous waste training for generators.

2. Biohazardous Waste Training

The training requirements for those who generate or otherwise handle biohazardous wastes will be dependent upon the specific type of biohazardous waste. For those personnel in the Health Center, Athletic Training Facility and Physical Plant Custodial Department, who may routinely generate/handle Blood Borne Pathogen regulated waste, annual BBP training will suffice. For those personnel in Academic departments (Chemistry, Biology, Psychology) who may routinely generate/handle Regulated Medical Waste, initial/semi-annual EH&S training, which reviews the Chemical Hygiene/Hazcom/Waste plans, may need to be supplemented by specific training from the lab supervisor with specific expertise on the waste stream.

3. Universal Waste Training

In general, the training requirements for small quantity handlers of universal waste require the employer to distribute information to all employees who handle the waste steam, or have responsibility for managing universal wastes. The information must describe proper handling and emergency procedures appropriate to the type(s) of universal waste handled by the institution. As such, those Physical Plant personnel who have universal waste handling or management responsibilities will be required to attend a Hamilton College universal waste training class meeting the specified criteria on an as needed basis.

4. Other Waste Type Training

Though there are no specified regulatory training requirements for personnel who handle or manage used oil, PCB fluorescent light ballasts, antifreeze or electronic wastes, select personnel who are responsible for such activities will be trained in accordance with the procedures contained herein on a regular basis.

5. Training Documentation

All internally performed employee training in accordance with these procedures will be documented for recordkeeping purposes on the form contained in Appendix E, which will be retained by the Office of EP&S, as well as the department the employee works for. All externally performed employee training records will similarly be retained by the above parties through certification documents generated by training providers.

SECTION 8
HAZARDOUS MATERIALS TRANSPORTATION (HMT) SECURITY

1. Security Plan Basic Requirements

The college has developed the following security plan requirements in accordance with the Department of Transportation (DOT) regulations set forth in 49 CFR Part 172 Subpart I. The only hazardous materials shipped by Hamilton College subject to these DOT rules are hazardous wastes. The hazardous waste regulations already contain provisions intended to assure the security of the wastes shipped. Among other things, the hazardous waste regulations require:

- The use of a manifest describing the waste shipped, the transporter and the destination facility (6 NYCRR §§ 372.2(b) & 373-2.5);
- The use of a permitted transporter (6 NYCRR § 372.3(a)(4));
- Shipment to a permitted destination facility (6 NYCRR § 373-1.2) only after the college has confirmed in writing that the destination facility is authorized and capable of properly handling the waste materials manifested to them (6 NYCRR § 372.2(b)(2)); and
- Notification to the NYS Department of Environmental Conservation if the College does not receive written confirmation that the waste was received by the destination facility within 45 days of shipment (6 NYCRR § 372.2(c)(3)).

2. Additional Security Considerations

The requirements of the hazardous waste regulations provide a strong foundation for assuring the security of the shipments of hazardous materials from Hamilton College. To further enhance the security of the shipments, the following additional procedures will apply:

- Chemical Security. The College operates a Centralized Chemical Stockroom within its Science Facility for the secure storage of all chemicals in bulk supply, managed by the Stockroom Coordinator and Director of EPS&S, with limited access to Science faculty. Further, all chemicals of acute toxicity stored in bulk are secured in the Special Hazards room, G083, in the Science Facility, with access limited to the Stockroom Coordinator and Director of EPS&S.
- Security of Hazardous Waste Storage. Once Hazardous Waste has been consolidated for transport, it will be stored/locked/secured in room G090 within the Science Facility. Only College personnel with the need to enter the room will be provided with keys. Generally, these persons will be limited to the Director of EPS&S and the Stockroom Coordinator.
- Security of Biohazardous/Radiological Waste Storage. Once Biohazardous or Radiological Waste has been consolidated for transport, it will be stored/locked/secured in room G091 within the Science Facility. Only College personnel with the need to enter the room will be provided with keys. Generally, these persons will be limited to the Director of EPS&S, the Stockroom Coordinator, the Radiation Safety Officer, and the Chair of the Radiation Safety Committee.
- Confirmation of Driver Identity. Upon arrival, the driver of the transport vehicle for all shipments of hazardous, biohazardous and radiological waste will be required to provide credentials or other means of identification to the Director of EPS&S (or his designee), so as to confirm the driver's identity and that the driver has been sent by the transporter to pick up the appropriate waste at the College.
- Confirmation that the Transporter Implements a Security Plan. The College will require each transporter used to transport hazardous, biohazardous or radiological waste to provide documentation that it has developed and implemented a security plan to comply with the DOT regulations.

- Security of Loading. Loading of the hazardous materials will be conducted in a secure area from which unauthorized personnel are excluded. To the greatest extent possible, hazardous waste will be transported off-campus when the College is not in session. The loading of the hazardous waste will be observed by College personnel to assure that only authorized personnel are in the area.
- Personnel Security. The College will establish personnel procedures to assure that all College personnel involved in transportation of hazardous materials are qualified and trustworthy. As part of this process, the College may confirm a job applicant's recent employment history, references and citizenship.
- Training. All College personnel involved in hazardous material handling or transportation will be trained in security awareness and the requirements of this procedure.

This procedure will be revised from time to time as required to enhance the security of hazardous material shipments from the college.

SECTION 9
EMERGENCY PROCEDURES/CONTINGENCY PLAN

All college employees using hazardous chemicals and/or generating hazardous wastes should be thoroughly familiar with the proper chemical/waste handling and emergency procedures relevant to their responsibilities during normal institutional activities and foreseeable emergencies. For a more detailed description of the college's emergency procedures/contingency plans, refer to the Integrated Contingency Plan. The following outlines those basic procedures.

1. Emergency Preparedness

All who use dangerous chemicals or equipment in laboratories, studios or other college workstations should be prepared for emergencies before they actually occur. Emergency preparedness begins at a minimum with the following:

- Be prepared for chemical spills, or spills of hazardous/universal/other wastes;
- Before you begin using hazardous materials, be familiar with the MSDS for the appropriate containment materials and safety precautions;
- Before you begin using dangerous equipment, ensure you have been properly trained and authorized to use it;
- Ensure the appropriate emergency equipment, such as fire extinguishers, first aid equipment, emergency eye washes and/or showers, and spill equipment, is accessible as required; and
- Know the procedures for handling those emergencies that may arise in your work area.

2. Level 1 Emergencies

Level 1 emergencies, otherwise referred to as incidental or incipient emergencies, are those that do not pose a significant threat to life, the environment or property. Level 1 emergencies are routine occurrences that can be handled safely by operational employees in the immediate work area or by maintenance personnel. Common examples of Level 1 emergencies include:

- Minor/incidental spills that pose minimal risk to safety, health or the environment;
- First-aid injuries that can be safely treated with a first aid kit; and
- Minor fires that can be safely extinguished with a hand-held fire extinguisher.

Minor/Incidental Spills
Minor/incidental spills that do not pose a significant safety, health or environmental hazard may include any of the following:

- A spill of a hazardous chemical, such as a solvent like acetone, in a laboratory in quantities not to exceed 1 liter (as a general rule of thumb), that can be safely isolated and contained by lab personnel with staged spill kits;
- A broken universal waste lamp in a maintenance area that again can be safely isolated and contained by trained maintenance personnel with the appropriate equipment; and
- A spill of used oil on a concrete floor within a maintenance area that can be immediately controlled and cleaned up before the oil reaches any release pathways.

Minor Spill Response Steps

- Immediately alert area/nearby personnel, secure the scene, and notify your supervisor.

- The supervisor shall make the determination as to whether or not the spill can be safely controlled and cleaned up by trained individuals with the appropriate equipment, or whether an evacuation and Campus Safety notification is necessary.
- Don the appropriate personal protective equipment located within your workstation or in a nearby spill kit.
- Deploy spill absorbent/neutralization materials upon the spill as necessary.
- Spill kits in laboratories have four absorbent/neutralization materials for this purpose; sodium sesquicarbonate for acidic spills, citric acid for basic spills, Magic-Sorb for solvent/other spills, and Hg-Absorb for mercury spills;
- Spill kits in garage/maintenance areas have spill pads/pillows, oil booms, and speedi-dry for absorbent purposes.
- Once the chemical or waste has been controlled, absorbed and/or neutralized, consolidate the spill cleanup materials by sweeping inward, and collect in a suitable container.
- Notify your Departmental Chemical Hygiene Officer or EH&S Liaison that you have a full container of spill cleanup materials, who will label it accordingly and have it picked up by the Office of Environmental Protection and Safety.

Minor First-Aid Injuries

First-aid injuries in general include those that will not require medical treatment, and can be safely and thoroughly addressed by the equipment staged in first-aid kits. These types of incidents include, but are not limited to, minor cuts, scrapes and abrasions, as well as topical burns and foreign bodies not embedded in the eye. Injuries beyond those that are minor in nature, such as chemical splashes in the eye thus requiring the engagement of an emergency eye wash followed by medical treatment, must be immediately conveyed to Campus Safety, who will notify the appropriate response agency/personnel. The procedures for responding to a minor first-aid incident are as follows:

- The injured individual will immediately notify his/her supervisor, who will assist in determining the nature and severity of the injury, as well as the location of the first-aid equipment.
- The injured individual shall utilize the first-aid equipment as necessary to treat the minor injury. The supervisor shall not assist in treating the first-aid injury unless he/she is properly certified by the American Red Cross.
- In the event blood is dripped upon the floor or other surfaces, the supervisor will notify the area custodian or the Physical Plant, who will take the necessary precautions to clean up the bloodstained areas.

The supervisor must then complete the required accident report form—Appendix H is the accident report form for students injured on campus, while Appendix I is the accident report form for employees injured on campus. Either form, upon completion, must be forwarded to both the Human Resources Department and the Health Center.

Minor Fires

Although a properly trained individual with an appropriately rated fire extinguisher may easily extinguish minor fires involving isolated pieces of equipment, fires in general are inherently extremely dangerous. Since college personnel will not engage in fighting uncontrolled fires, the key to knowing the difference between a "minor" and "major" fire is **discretion**. Should there be any question as to the nature and dangers involved with a fire, fires should be considered an emergency incident, requiring the immediate evacuation of all area personnel and building occupants, followed by the notification of Campus Safety. In general, using fire extinguishers to extinguish a fire would not be appropriate if any of the following conditions exist:

- The fire could block your only exit;

- The fire is large, and/or is spreading quickly or uncontrollably;
- The type or size of the fire extinguisher is wrong or insufficient; or
- You have not been properly trained on using a fire extinguisher.

Minor Fire Extinguishing Steps

- In the event a fire is determined to be minor or incipient in nature, personnel trained in the use of fire extinguishers may proceed with extinguishing activities **AFTER** they have notified Campus Safety, as follows:
    - Retrieve an appropriately rated fire extinguisher staged from a safely accessible location, and follow the PASS method:
        - **Pull** the trigger pin;
        - **Aim** the extinguisher nozzle toward the base of the fire;
        - **Squeeze** the handle or trigger to activate the device; and
        - **Sweep** the nozzle of the fire extinguisher in a side-to-side motion, applying the dry chemical to the fire from the base of the fire up, until the fire is adequately suppressed or the extinguisher is empty.

3. Level 2 Emergencies

Level 2 emergencies are those that pose some threat to health, safety or the environment, and typically require 1—localized evacuations from buildings/groups of buildings on campus, 2—employee/student mustering at designated assembly points, and 3—the notification of trained outside emergency responders (i.e., the local fire department, ambulance services, police, private Hazmat teams). Common examples of Level 2 emergencies include:

- A 5-gallon spill of a highly flammable solvent in a scientific laboratory;
- An actual or potential fracture injury at the Physical Plant; and
- An equipment fire that is large in size and blocking an exit at the Minor Theater.

The following actions are generally applicable following a Level 2 emergency:

- Know who your Building Coordinator is, as well as the location of you building's Assembly Points and Initial Gathering Points.
- Those teaching or supervising personnel in academic or administrative buildings are responsible for both communicating the Assembly/Initial Gathering Points information, and for accounting for their whereabouts during an actual emergency evacuation.
- If you discover a potential Level 2 emergency, immediately notify and evacuate all personnel in the area of the emergency incident.
- Contact Campus Safety at x4000 from a secure location, and be prepared to provide the dispatcher with as much information relative to the emergency, including the following:
    - Your name, phone number and exact location;
    - Nature of the incident, and name/type/volume of substances involved (if known);
    - Advise if there are any injuries requiring an ambulance, or if there are visible flames.
- The individual(s) making the initial notification to Campus Safety should secure the area to the safest extent possible, until he/she is relieved by a more experienced or senior college official. Under no circumstances should anyone attempt a rescue operation, fire-fighting, or a spill response during an emergency incident. Toxic substances commonly have no odor or other warning properties, and untrained personnel can only worsen the initial emergency incident.

- Campus Safety will immediately dispatch security personnel to the scene, and will notify the primary facility emergency coordinator(s), or any alternates as required.
- The facility emergency coordinator will then authorize which outside emergency response organization(s) will be contacted to safely respond to the emergency incident, and will take any further action in accordance with the Integrated Contingency Plan.

4. Level 3 Emergencies

Level 3 emergencies, otherwise referred to as catastrophes, are those occurrences that pose a significant threat to life, the environment or property, and will typically involve a great number of emergency responders/response agencies, and resources. Common examples of Level 3 emergencies include:

- A natural disaster resulting in the widespread disruption of essential functions/services on campus; and
- A major/multi-building fire, or an active shooter on campus.

In the event of a Level 3 emergency, emergency responders and local/state/federal authorities will likely assume on-site decision-making. For planning purposes, a Level 3 incident requiring the evacuation of the campus will utilize the Clinton High School as its safe place of refuge, and St. Mary's Church will serve as the alternate location.

APPENDIX A
ACID/BASE NEUTRALIZATION PROCEDURES

As an option to managing select acids/bases through the hazardous waste management program, certain departments may opt to manage small amounts of non-contaminated acids/bases that are a part of an experimental process through neutralization and sink disposal. However, strong oxidizing acids, such as chromic and perchloric acid, and certain bases that carry toxicity waste codes, such as barium hydroxide, may not be neutralized and sink disposed.

In the event an experimental process generates residual concentrated acids/bases less than 100 ml, or dilute solutions less than 1 liter, neither of which is otherwise contaminated, the following optional procedures may be followed:

General Procedures

- Receive authorization from your lab supervisor before performing any neutralization.
- Donn the appropriate personal protective equipment, such as safety goggles, a faceshield, gloves and an apron.
- Always neutralize inside a lab hood, as heat and vapors may be generated.
- Use a 5-gallon bucket or equivalent for the neutralization, and have plenty of ice available.
- Keep the container cool throughout the process, and work slowly.
- Following neutralization, flush down the drain with plenty of water—at least 20 parts water for each part neutralized product.

Acid Neutralization

- With at least 10 liters of water and ice in the 5-gallon bucket, slowly add the acid while stirring.
- Then, slowly add a 6 M solution of sodium hydroxide, or other suitable base, to the solution while continuing to stir. If heat builds up, add more ice.
- Allow the solution to cool, and check the pH.
- When a pH of at least 6.0 is achieved (but no higher than 8.0), dispose of the solution down the drain with excess water.

Base Neutralization

- With at least 10 liters of water and ice in the 5-gallon bucket, slowly add the base while stirring.
- Then, slowly add a 6 M solution of hydrochloric acid, or other suitable acid, to the solution while continuing to stir. If heat builds up, add more ice.
- Allow the solution to cool, and check the pH.
- When a pH of at least 8.0 is achieved (but no lower than 6.0), dispose of the solution down the drain with excess water.

APPENDIX B
DRAIN/SANITARY SEWER DISPOSAL PROCEDURES

Another option for managing select aqueous waste streams other than through the hazardous waste management program includes the management of small amounts of water-soluble, low toxicity and readily biodegradable chemicals that are a part of an experimental process, through sanitary sewer disposal procedures. However, this option cannot be used as a convenient way to dispose of stock/solid solutions that must be diluted, or in any other method such that use constitutes disposal. Further, acidic/basic solutions must also conform to the procedures noted in Appendix A.

General Procedures

- **What can be drain disposed of**—chemical categories listed below that are a part of an experimental process, which are water-soluble, of low toxicity, and are readily biodegradable, may be drain disposed of according to this procedure.
- **Where can drain disposal occur**—use only sinks with good flow. Do not use floor drains.
- **How much can be drain disposed of**—in general, limit the drain disposal to a few hundred grams or milliliters per day per lab/work area.
- **How**—use standard goggles, gloves, labcoat, etc. Pour slowly into a stream of running water, followed by flushing with excess water.

Chemicals Suitable For Drain Disposal

- Organic sugars;
- Vitamins;
- Surfactants;
- Neutralized acids/bases;
- Soluble salt combinations of the following ions:

Cations	Aluminum, ammonium, bismuth, calcium, cerium, cesium, gold, iron, lithium, magnesium, potassium, rubidium, sodium, strontium and tin
Anions	Acetate, bicarbonate, bisulfite, borate, bromide, carbonate, chloride, hydroxide, iodide, phosphate, sulfate, sulfite and thiosulfate

Chemicals Not Suitable For Drain Disposal

- Flammables and halogenated hydrocarbons;
- Nitro compounds;
- Mercaptans and other malodorous compounds;
- Water soluble polymers that could form gels in the sanitary sewer system;
- Water reactive materials;
- Acutely toxic materials, such as carcinogens, mutagens and teratogens;
- Phenolic compounds;
- Chemicals that boil below 50 degrees C;
- And any other substance capable of sewer obstruction, such as ashes, cinders, sand, mud, straw, metal, glass, cotton, tar, plastics, wood, hair, paint residues, lime, stone and marble dust.

APPENDIX C
180-DAY HAZARDOUS WASTE STORAGE AREA WEEKLY INSPECTION

REQUIREMENT	YES	NO
Is the accumulation start date clearly marked and visible on each container? 6 NYCRR § 372.2(a)(8)(iii)(d)		
Have all containers been in the storage area less than 180 days? 6 NYCRR § 372.2(a)(8)(iii)		
Is the storage area labeled "HAZARDOUS WASTE STORAGE AREA UNAUTHORIZED PERSONNEL KEEP OUT"? 6 NYCRR § 372.2(a)(8)(iii)(d)		
Is each container marked with the words "HAZARDOUS WASTE" and with other words identifying the contents? 6 NYCRR § 372.2(a)(8)(iii)(d)		
Is each container in good condition (e.g., free of rust, bulges, dents, and leaks) and not in danger of leaking? 6 NYCRR § 373-3.9(b)		
Is each container kept tightly closed except when hazardous waste is being added or removed? 6 NYCRR § 373-3.9(d)(1)		
Are all the containers compatible with the wastes? 6 NYCRR § 373-3.9(c)		
Are incompatible hazardous wastes separated? 6 NYCRR § 373-3.9(g)(1)		
Are containers opened, handled, and stored in a way that prevents leakage? 6 NYCRR § 373-3.9(d)(2)		
Is there sufficient aisle space to allow for the unobstructed movement of personnel and fire protection/spill control equipment? 6 NYCRR § 373-2.3 (f)		
Is the following information posted next to the telephone in the storage area:		
- Name and telephone number of emergency coordinator?		
- Telephone number of the fire department?		
- Location of the nearest fire extinguisher, spill kits, and fire alarm?		
6 NYCRR § 372.2(a)(8)(iii)(e)(2)		
Do you have immediate access to an internal alarm or emergency communication device? 6 NYCRR § 373-2.3(e)		
Does the storage area have a portable fire extinguisher, spill kits, emergency eyewash/shower, and access to adequate water to fight fires? 6 NYCRR § 373-2.3(c)		
Is the emergency equipment (i.e., alarms, eyewashes, communication device, etc.) routinely tested to ensure that it remains in proper operation? 6 NYCRR § 373-2.3(d)		

If any of the above questions were "No," briefly describe corrective actions taken and means to prevent recurrence.

_____

_____

Inspector's Name: _____ Inspector's Signature: _____

Date of Inspection: _____Time of Inspection: _____

APPENDIX D
PHYSICAL PLANT CESQG HAZARDOUS WASTE STORAGE AREA
WEEKLY INSPECTION CHECKLIST

REQUIREMENT	YES	NO
Is the storage area labeled "HAZARDOUS WASTE STORAGE AREA UNAUTHORIZED PERSONNEL KEEP OUT"?		
Is each container marked with the words "HAZARDOUS WASTE and with other words identifying the contents?		
Is each container in good condition (e.g., free of rust, bulges, dents, and leaks) and not in danger of leaking?		
Is each container kept tightly closed except when hazardous waste is being added or removed?		
Are all the containers compatible with the wastes?		
Are incompatible hazardous wastes separated?		
Are containers opened, handled, and stored in a way that prevents leakage?		
Is the following information posted next to the telephone in the storage area:		
- Name and telephone number of emergency coordinator?		
- Telephone number of the fire department?		
- Location of the nearest fire extinguisher, spill kits, and fire alarm?		
Do you have immediate access to an internal alarm or emergency communication device?		
Does the storage area have a portable fire extinguisher, spill kits, emergency eyewash/shower, and access to adequate water to fight fires?		
Is the emergency equipment (i.e., alarms, eyewashes, communication device, etc.) routinely tested to ensure that it remains in proper operation?		

If any of the above questions were "No," briefly describe corrective actions taken and means to prevent recurrence.

_____

_____

Inspector's Name: _____ Inspector's Signature: _____

Date of Inspection: _____Time of Inspection: _____

APPENDIX E
HAZARDOUS/BIOHAZARDOUS/UNIVERSAL/OTHER WASTE TRAINING DOCUMENTATION & CERTIFICATION

The following individuals have been trained in accordance with the Hamilton College Waste Management & Minimization Plan, as specified below:

Training Instructor Name	Signature	Date of Training

Type of Training (Specify): _____

Name (Print)	Signature	Dept.

APPENDIX F
AUTOCLAVE STERILIZATION/TREATMENT PROCEDURES

Autoclave sterilization is a time proven and economical process of killing microorganisms through the application of moist heat (saturated steam) under pressure. Further, it is a legally recognized treatment technology by which small quantity generators of RMW may render BSL-2 wastes non-regulated. The key to achieving both effective sterilization and treatment in accordance with the law is to abide by this written Standard Operating Procedure, which will serve as the official "RMW treatment operations plan", in accordance with the applicable requirements from the NYS Department of Health. (Note—this procedure is only for the sterilization/treatment of RMW generated by non-health care facilities)

Science Behind Autoclaving
Heat damages the cell's essential structures, including the cytoplasmic membrane, rendering the cell no longer viable. The rate by which bacterial cells are thermally inactivated depends on the temperature and the time of heat exposure to which they are exposed. In practical terms this means that it would take a longer amount of time at lower temperatures to sterilize a population than at a high temperature. Additionally, the higher the concentration of organisms that need to be killed, the longer it will take to kill all of the cells in that population at the same temperature.

Basic Procedure
The following procedure is recommended for the treatment/decontamination of RMW:

1. The following materials need to be autoclaved prior to disposal:
- Cultures/stocks of infectious agents, culture dishes and related devices, contaminated solid items such as paper/towels, plastic pipette tips, pipettes and vials, petri dishes and gloves, and discarded live and attenuated vaccines.

2. Items should be autoclaved in approved autoclavable bags. You must add 1 cup of water to each bag prior to autoclaving, and the bag must be left open during the process.

3. To prevent spills and accidents, be sure that the exhaust setting is appropriate for the type of material you are autoclaving. Use FAST exhaust for solid items (solid waste, instruments) and SLOW exhaust for semi-solid or liquid wastes.

4. After the cycle is completed, let the bag cool for several minuets before removing it from the autoclave. Securely close orange autoclavable bag.

5. Place treated autoclave bags/waste into opaque (non see-through) black or gray garbage bag and close them securely before disposing. To assure that the black bag does not rupture, do not put multiple orange bags in a single black bag.

Safety/Quality/Other Considerations
- Approvals—Do not operate the autoclave unless you have been approved to do so by the Biology Department.

- Personal Protective Equipment—PPE options you should consider include the following:
    - Heat-resistant gloves for loading/unloading;
    - Fluid-resistant gloves to avoid contact with contaminated wastes;
    - Lab coat to protect your personal apparel;
    - Splash goggles if splash hazards are present.

- Packaging Materials—Correct packaging of waste ensures that steam penetrates the load. It is important to remember that the density of the load affects steam penetration; bags packed to capacity with RMW waste will not be properly decontaminated even if autoclave parameters are observed. Therefore, if autoclave bags are not overloaded or the waste purposely compacted inside, the waste should be properly sterilized.

- Loading the Autoclave—To effectively sterilize RMW wastes, it is important to properly load the autoclave. Adding one cup of water to solid wastes creates additional steam that drives residual air from the bag. It is also important to allow the steam to circulate freely throughout the chamber—do not overload the chamber with bags that are too large for the capacity of your autoclave. While clean and contaminated items may be sterilized in the same autoclave, do not mix them together during the same cycle—they require different heat exposure times. Never place sharps (e.g. syringes with needles) in a biohazard bag. All sharps need to be disposed of in sharps containers, which will be shipped off site.

- Unloading the Autoclave—When the cycle is complete, wait until the chamber pressure gauge reads zero before attempting to open the autoclave. A waiting period of several minutes before removing the bag from the autoclave will allow the chamber and any residual liquids to cool, significantly reducing your chances of getting burned. Also be aware of molten agar that may have collected in the secondary container during the cycle. Use special caution when autoclaving containers that may have become pressurized. Never autoclave a sealed container of liquids as this may result in an explosion of super-heated liquid during the cycle or when the container is opened.

- Quality Assurance—The ability of an autoclave to sterilize RMW is determined though yearly testing by the Biology department. These tests determine the time, pressure and temperature needed to safely decontaminate waste in the autoclave through the use of a biological indicator which uses spores of Bacillus stearothermophilus, which is rendered unviable at 250 ° F (121 ° C). For the test, ampoules of B. stearothermophilus are autoclaved along with a load of waste. Upon completion of the cycle, the ampoules are incubated for 48 hours and then observed for any sign of growth with would indicate the autoclave is not sterilizing properly. If growth occurs, the autoclave must be re-tested until a cycle time that allows for decontamination is found. The results will be posted on or nearby the autoclave. Any questions about this procedure should be directed to Brian Hansen or Pearl Gapp. (Alternative QA procedures may be developed by the autoclave manufacturer or service representative).

APPENDIX G
ELECTRONIC WASTES

In accordance with the specifications as outlined by the Oneida-Herkimer Solid Waste Authority, the following materials are generally considered to be electronic wastes that will be accepted as part of their electronic waste recycling program:

- Computer equipment (including cpu's, laptops, monitors, keyboards, speakers, mice, scanners, hardware, printers, and all computer associated cords/cables);
- Electronic calculators (with circuit boards);
- Camcorders & related video equipment;
- CD/DVD/VCR players, radios, record players, and other associated stereo equipment;
- Office equipment like fax machines, paper shredders, and desktop copiers (along with inkjet and toner cartridges);
- Electronic video games (Nintendo, Sega, Play Stations);
- Telephones and cellular phones;
- Two way radios and associated communication devices; and
- Typewriters and word processing equipment.

The following items will not generally be accepted as part of the Solid Waste Authority's electronic waste recycling program:

- Cash registers;
- Major kitchen appliances and microwaves;
- Remote controls;
- Large floor copiers;
- Lamps; and
- Televisions;

This list of acceptable/unacceptable electronics equipment is illustrative only. Analytical equipment generated by college offices, specifically analytical equipment generated by Science departments, will be assessed when they are generated on a case-by-case basis for inclusion in the electronic waste recycling program. Additionally, while televisions are not specifically accepted as a part of the program, there are special handling requirements and fee charges relative to televisions, and so they will generally be segregated from the college's solid waste stream, and recycled accordingly.

Finally, while the college will make every reasonable effort to recycle acceptable electronic waste materials, as defined above, generated by non-college activities, such as discarded computers from a residence hall, the college will not endanger its own personnel in doing so. For example, if a student places his/her own personal computer by a trash/recycling area in a dorm, Physical Plant custodial personnel will see that it is recycled in accordance with the electronic waste program. However, should a student discard their personal computer into a trash dumpster, it is exempt as household generated waste, and college personnel are forbidden from entering such dangerous locations to retrieve these types of waste.

APPENDIX H
SUPERVISOR'S ACCIDENT INVESTIGATION REPORT (Students/Non-Employees)

HAMILTON COLLEGE STUDENT ACCIDENT REPORT FORM		
Reported By:	Telephone:	Location:
Incident Date: Incident Time:	Report Date: Report Time:	
Injury Type(s):	Individual(s) Involved: Class Year:	
Location: Department:	Room/Specific Area:	
Incident Description: Did Student/Employee Go To Health Center? ☐ Yes ☐ No		
Corrective Action To Prevent Recurrence:		
Report Reviewed By: Date:	Report Submitted To: Date:	

HAMILTON COLLEGE
ENVIRONMENTAL HEALTH & SAFETY PROCEDURES

APPENDIX I
SUPERVISOR'S ACCIDENT INVESTIGATION REPORT (For Employees Only)

Report to be completed by employee's/student's supervisor within 24 hours of the accident, and routed to the Human Resources Department upon completion.

(Check One) _____ Employee _____ Student Worker _____ Student

Name	Age	Time of Accident am pm	Date of Accident	Date Returned to Work

Job Classification	Job Assignment when Injured	Length of Service	Location of Accident (specific)

Nature of injury and any first-aid administered:

Doctor/Hospital referred to:

Detailed description of accident:

_____

_____

_____

Primary cause of accident:

_____

_____

_____

Injury cause types (check all that apply):

□ Struck by Tool/Object
□ Struck Against
□ Strain or Overexertion
□ Slip/Trip/Fall
□ Falling/Flying Objects
□ Caught On/In/Between
□ Hot/Cold Contact
□ Faulty Equipment
□ Inexperience
□ Safety Rule Violation
□ Inattention To Job
□ Other (describe) _____

When was supervisor informed of accident?	Were any witnesses present?

Was any equipment involved?	If yes, was there any equipment damage?

Supervisor's/instructor's investigation findings and corrective action recommended/taken to prevent recurrence:

_____

_____

_____

Investigation completed by:_____ (Supervisor/Instructor)	Date of investigation: _____/_____/_____
Report reviewed by:_____ (Human Resources Department)	Date of review: _____/_____/_____