ST. LAWRENCE UNIVERSITY

WASTE MANAGEMENT

AND

MINIMIZATION PLAN

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WASTE MANAGEMENT AND MINIMIZATION PLAN

Purpose

The United States Environmental Protection Agency and New York State Department of Environmental Conservation require institutions that generate waste streams of various types and quantities to develop a program to both manage and minimize those wastes to protect personnel and the environment. This plan is intended to provide the St. Lawrence University community with the guidance necessary to comply with these requirements.

Authority

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

Objectives

- To protect the health and welfare of St. Lawrence University employees, and the greater St. Lawrence University community;
- To provide university personnel with the necessary information and guidance concerning management practices for the various waste streams generated by the university; 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 two other St. Lawrence University documents: the Written Hazard Communication Plan and the Chemical Hygiene Plan. This plan applies to all St. Lawrence University departments, including faculty, staff, administrators and students, who generate the following waste streams:

- Hazardous wastes
- Universal wastes
- Other select wastes

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 the generation of wastes***. Waste streams in general not only constitute wasted resources, but also represent significant monetary expenditures as the volume, type and variety of wastes generated increase. To minimize the generation of hazardous, universal, and any other regulated/non-regulated waste stream for that matter, 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 when they are first opened as a best management practice. Further, chemical containers with expiration dates should be checked regularly, and disposed of properly.

ALL chemicals must be labeled. 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. See the chemical hygiene plan for more detailed information on chemical storage and handling. 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.

Chemical storage inventories will be taken at least once a year and damaged or obscured labels replaced. In addition, compounds with expired shelf lives or no anticipated usage in the near term (2-3 year period) will be culled and treated as waste. A documented hazardous waste determination must then be conducted (See section 3) to determine if these expired and/or unwanted chemical inventories are considered hazardous wastes. All wastes determined to be

hazardous must be managed in accordance with the Satellite Accumulation Area and 180-Day Storage Area requirements (if applicable) while on campus prior to shipment off site.

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. Substitute Non-Hazardous or Less Hazardous Materials for Hazardous Ones

There are many non-hazardous substitutes for hazardous chemicals used in laboratories that can serve the same purpose. Efforts should be taken to examine non-hazardous options when and where available. The prudence of ordering and using particularly hazardous substances (P list, appendix E) should be carefully examined. Safety and disposal cost concerns mitigate against using these materials unless absolutely necessary. In order to ensure such scrutiny is applied, no P-list chemicals will be ordered without the signatures of the Chemical Hygiene Officer. A form for the ordering of P list substances is found as appendix H.

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 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 for further guidelines addressing these waste streams.

In all labs employing organic solvents for cleaning glassware, appropriately labeled hazardous waste collection vessels will be available at the sink at which dishwashing takes place. Absolutely no organic solvents will be drain disposed.

SECTION 2
RESPONSIBILITIES

Each St. Lawrence University 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 such materials in a manner that is protective of the health and welfare of the entire university community. Individuals who work in a supervisory capacity have an even greater burden of responsibility for ensuring those personnel and students 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. Accordingly, the following responsibilities concerning waste management and minimization at minimum shall be recognized:

Director of Environmental Health and Safety

- Provide generator training for all university personel who generate, handle, and manage universal waste (facility operations)
- Conduct periodic inspections as necessary, to ensure that hazardous wastes and universal wastes are handled in accordance with the procedures contained herein.
- Sign manifests for universal waste disposal and act as backup for CHO for signing hazardous waste manifests.

Department Chemical Hygiene Officers/EH&S Liaison

- Coordinate and manage the disposal activities associated with all hazardous waste streams that are generated by the university.
- Review the Waste Management and Minimization Plan a minimum of annually and make modifications as needed.
- Provide generator training for all university administrators, faculty and staff who generate, handle, and manage hazardous waste (academics)
- Conduct periodic inspections as necessary, to ensure that hazardous wastes and universal wastes are handled in accordance with the procedures contained herein.
- Assure that the elements of the Waste Management and Minimization Plan are implemented within their respective departments.
- Provide technical and regulatory guidance for all departments regarding all hazardous/regulated waste matters.
- Coordinate all technical matters concerning the appropriate storage, handling and disposal of hazardous chemicals.
- Conduct internal inspections as necessary to assess and verify compliance with these procedures.
- Manage the 180-day storage area and conduct weekly inspections.
- Coordinate hazardous waste disposal and sign manifests.
- Prepare and maintain all documentation for the hazardous waste program including but not limited to: Hazardous waste log, waste generated per month, manifests and all annual reporting requirements.
- Act as the backup to the EHS Director for signing universal waste manifests.

Grounds Manager

- Manage the universal waste storage areas
- Coordinate universal waste disposal.
- Assure their employees properly transport hazardous waste across campus to the Bewkes hazardous waste storage room in a timely manner (72 hrs of notification).

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 the Chemical Hygiene Officer 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 annual training in accordance with state and federal regulations.

SECTION 3
HAZARDOUS WASTE

1. Hazardous Wastes Definition/Determination

Hazardous wastes are any solid, liquid, semi-solid or contained gas that is discarded or inherently waste-like and displays a "hazardous characteristic" or is specifically "listed" as hazardous waste.

Hazardous wastes are regulated according to EPA and DEC standards. There is characteristics hazardous waste (D waste number), EPA listed hazardous waste (U, P, F, K Codes) and NY State listed hazardous waste (B Code).

ALL wastes (unless specifically excepted) are subject to classification according to their characteristics. Characteristic wastes are assigned a D- series hazardous waste number. The general characteristics of Ignitibility (D001), Corrosivity (D002), Reactivity (D003) and Toxicity (D004-D043) are summarized below (see 40 CFR Part 261 Subpart C for full definition).

Characteristic Hazardous Waste

Characteristic of Ignitibility **D001** (40CFR261.21)	• liquid (other than aqueous soln. <24% alcohol by volume) and f.p.<140 °F • pyrophoric • ignitable compressed gas • oxidizer • flammable solid
Characteristic of Corrosivity **D002** (40CFR261.22)	• aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5 • liquid and corrodes steel at a rate greater than 0.25"/year at 130 °F)
Characteristic of Reactivity **D003** (40CFR261.23)	• normally unstable and readily undergoes violent change without detonating • reacts violently with water • forms potentially explosive mixtures with water • when mixed with water, generates toxic gases, vapors or fumes in quantity sufficient to present a danger to human health or the environment • is a cyanide or sulfide bearing waste which when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment. • is capable of detonation or explosive reaction if subjected to a strong initiating source or if heated under confinement. • is readily capable of detonation or explosive decomposition or reaction at standard temperature or pressure • it is a forbidden explosive, class A or class B explosive.
Characteristic of Toxicity **D004-D043** (40CFR261.24)	• wastes exhibit the characteristic of toxicity if, using the toxicity characteristic leaching procedure (TCLP), the waste contains contaminants in excess of the limits listed in the table commonly known as the D-List (see Appendix E).

Listed Hazardous Waste

When **UNUSED** chemicals are evaluated, in addition to the Characteristics, two different lists are used to determine if they are "listed wastes." These are defined as ***discarded commercial chemical products, off-specification species, container residues, and spill residues thereof*** (40CFR261.33). These lists are the:

- U-List Toxics (See Appendix F) and
- P-List Acutely Toxics (See Appendix G)

When **USED** chemicals are evaluated, in addition to the Characteristics, two lists are used to determine if they are regulated. These include the:

- F-List (40CFR261.31 Hazardous Wastes From Non-Specific Sources) (See Appendix H)
- K-List (40CFR261.32 Hazardous Wastes From Specific Sources) – **None at SLU**

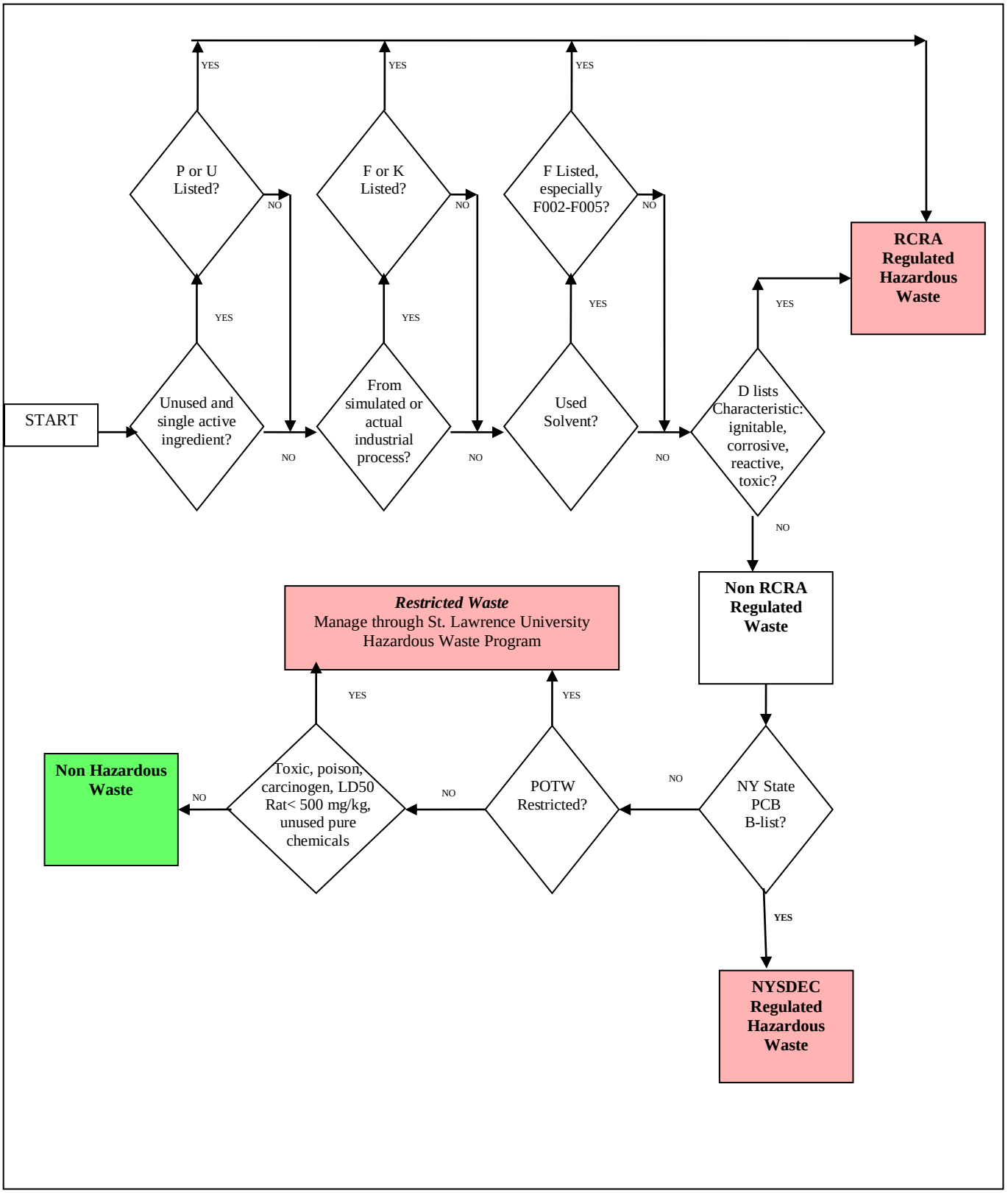
An alphabetized list of all EPA listed hazardous waste is located on the St. Lawrence University EHS Web Page.

New York State Hazardous Waste Codes (6 NYCRR PART 371.4(e)):

DEC Hazardous Waste Number	Waste
B001	PCB Oil (concentrated) from transformers, capacitors, etc.
B002	Petroleum oil or other liquid containing 50 ppm or greater of PCBs, but less than 500 ppm PCBs. This includes oil from electrical equipment whose PCB concentration is unknown, except for circuit breakers, reclosers and cable.
B003	Petroleum oil or other liquid containing 500 ppm or greater of PCBs
B004	PCB Articles containing 50 ppm or greater of PCBs, but less than 500 ppm PCBs, excluding small capacitors. This includes oil-filled electrical equipment whose PCB concentration is unknown, except for circuit breakers, reclosers, and cable.
B005	PCB Articles, other than transformers, that contain 500 ppm or greater of PCBs, excluding small capacitors.
B006	PCB Transformers. "PCB Transformers" means any transformer that contains 500 ppm PCB or greater.
B007	Other PCB Wastes including contaminated soil, solids, sludges, clothing, rags and dredge material.

An easy way to classify hazardous waste is to follow the flow chart on the next page. It was created by Dave Drummond (University of Wisconsin—Madison, Safety Department) and posted to for all higher education to use (for more information visit the web site http://www2.fpm.wisc.edu/chemwasteinfo/). The chart has been modified to meet the needs of St. Lawrence University. Additional POTW requirements and best management practices have been added to the flow chart.

Flowchart for Hazardous Waste Determination



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

- *Mixtures* of Characteristic and/or Listed hazardous wastes and solid wastes.
- *Off-Spec Used Oil* with a total halogen content exceeding 1000 ppm.

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.
- Or the chemical is a known or suspected carcinogen, mutagen or teratogen (see Appendix C of the Chemical Hygiene Plan).

Ultimately, all personnel who use chemicals at the university are legally and morally obligated to manage and dispose of generated waste products correctly. When in doubt, consider the waste stream to be hazardous unless proven otherwise. ***All hazardous waste determinations on regularly generated waste streams should be documented*** (i.e student teaching labs, research, art waste per studio, paint shop (maintenance), etc). Waste determinations can be made through testing using the prescribed test methods, and/or by applying knowledge of the hazardous characteristic of the waste in light of the materials or processes used. Generators of waste should make process knowledge determinations or arrange for sampling and analysis of all new and previously uncharacterized waste streams.

2. Non-Regulated Chemical Wastes

Many chemical products (or chemical wastes generated thereof) utilized at the university 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 not advisable 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 and managers of those chemical materials. As discussed in Appendix B, there is an accepted procedure for the drain disposing of various aqueous mixtures on non-regulated solutions in laboratories. However, the Office of Environmental Health & Safety 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 containers of regulated chemical material that have been emptied by any acceptable or standard means, such as pouring, pipetting, aspirating, dispensing, etc., such that less the 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, such as those identified in Appendix G. By regulation, empty P-listed chemical containers are considered hazardous waste unless 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 university should avoid trying to decontaminate empty P-listed chemical containers, as this process in and of itself generates a P-listed rinsate. Alternatively, the container will normally be disposed of as hazardous waste. Please contact your department chemical hygiene officer or the Director of Environmental Health & Safety directly for questions pertaining to this issue.

4. Examples of Hazardous Wastes

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

- Flammable, corrosive, reactive and toxic wastes generated by laboratories.
- Waste solvents, and oil-based 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.
- Hazardous waste collection and disposal.
- Periodic laboratory cleanouts and inventory reductions.
- Spill response.

- 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 containers should be the maximum sized container for most hazardous waste streams.

7. Collection, Segregation, Storage of Hazardous Wastes in Satellite Accumulation Areas

Containers of hazardous wastes **must** be collected, segregated and stored at the place of generation in accordance with the following (See Appendix K for SAA Posting):

- 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 satellite accumulation areas that are established within the lab/area generating the wastes.
- Satellite accumulation areas 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 quart of acutely hazardous waste, in any single satellite accumulation area.
- In most labs, the areas underneath lab hoods are the preferred locations for satellite accumulation areas—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 satellite accumulation areas—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, notify your chemical hygiene officer. The container will then be collected within 3 days and transported to the university's 180-day hazardous waste storage facility where it will be dated, inventoried and logged in.

8. 180-Day Hazardous Waste Storage Areas

Note: If the University's generation status changes to a conditionally except small quantity generator (CESQG), these operating procedures may change.

In accordance with the small quantity generator (SQG) requirements for generators of hazardous waste in NYS, the University has designated 2 areas where hazardous wastes are to be stored on campus, that correlate to the EPA Generator ID number it possesses – NYD002255792.

Science Hazardous Waste Storage Area

The science hazardous waste storage area is located on the ground floor of the Bewkes science building (Room 136). Most of the regulated hazardous wastes generated by the various academic and administrative departments on an on-going basis will be delivered to and stored in this facility, coordinated with the chemical hygiene officer and/or the EH&S office, and will be managed as follows:

- Within 3 days of being full, most containers of hazardous waste generated by the university will be delivered to the science hazardous waste storage area, where they will be stored for a period not to exceed 180 days.
- Upon arrival, containers of hazardous waste will be dated and signed into a logbook at the storage 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. Inspections will be conducted by the chemical hygiene office and/or EH&S.

Facilities Operations Hazardous Waste Storage Area

- Select containers of potentially regulated materials and/or hazardous wastes that are generated by the Facilities Operations will be consolidated in the Facilities Operations hazardous waste storage area, where they will be segregated and characterized for alternative uses and/or disposition.
- Weekly inspections of the area will be performed by EHS to ensure the hazardous waste containers are properly labeled and stored. This inspection will be documented within the area's logbook.

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 disposed of through the hazardous waste management 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 methylene chloride, 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 not to exceed 2 gallon, or in other plastic or original containers, and disposed of through the hazardous waste management program.

Other Hazardous Chemical Types

The following examples of hazardous chemical types should always be collected in appropriate original or otherwise suitable containers, and disposed of through the hazardous waste management 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.
Explosive and Potentially Explosive Chemicals—Examples of potentially explosive chemicals include dry picric acid, dry benzoyl peroxide and trinitro- compounds. Never open an old bottle that contains a chemicals that has the potential to explode. Contact the Chemical Hygiene Officer (x-5105) immediately to have it properly disposed.
Highly Toxic Chemicals—Examples include reproductive toxins and/or carcinogens, such compounds with arsenic and cyanide.

Peroxide Forming Chemicals

Certain chemicals are known to produce dangerous peroxides on exposure to air or light. These may detonate with extreme violence when concentrated by evaporation or distillation, when combined with other compounds, or when disturbed by unusual heat, shock or friction. Examples of peroxide-forming chemicals include those identified in Appendix C. Containers of peroxide-forming chemicals shall be dated upon opening, and disposed of through the hazardous waste management program in accordance with Appendix C and/or before its expiration date.

Particularly Hazardous Substances

Particularly Hazardous Substances (PHS) are those chemicals which are acutely hazardous by EPA definition, and usually carry a P-code 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. Appendix G lists all PHS. They are all P listed waste codes in addition to hydrofluoric acid. 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 their use within the Chemical Hygiene Plan, which should be referenced accordingly. Otherwise, all PHS must be collected and disposed of through the hazardous waste management 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 disposed of through the hazardous waste management 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 properly return and/or dispose of cylinders. Since compressed gas cylinders are especially difficult and expensive to dispose of when labels have fallen off or become defaced, the labeling and/or identification of a cylinders' 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 disposed of through the hazardous waste management 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 (See chemical stockroom for non-mercury thermometers).

Radioactive Wastes
Radioactive material will only be disposed of through the Radiation Safety Officer (See Radiation Safety Program on EHS Website).

Regulated Medical Waste (RMW)
All Regulated Medical Waste will be properly disposed following the RMW handling and disposal procedure (see Environmental Affairs on the EHS Website). Under no circumstances should RMW be disposed of in the regular trash. Contact the Chemical Hygiene Officer (x-5105) to have it properly removed and disposed.

Pesticide Wastes
All pesticides containing waste (unused pesticides, mixtures, residue) will be handled of through the hazardous waste management program. For detailed information "Pesticide Waste vs. Hazardous Waste" located on the website http://pmep.cce.cornell.edu/facts-slides-self/facts/pesthazard.html.

Paints and Paint-Related Materials
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, or any other paint products thinned/mixed with a solvent, usually contain flammable materials and/or heavy metals. Therefore, they must be collected in their original containers, and disposed of through the hazardous waste management program.

Darkroom Photochemicals
Stop Baths and Developers—Though stop baths and developers are not typically regulated as hazardous waste when used and/or diluted in accordance with manufacturer specifications, they often contain chemicals like acetic acid that may be regulated as a raw/unused product. Therefore, the MSDS's should be consulted on a product-by-product basis to verify that used solutions may be safely disposed of down the drain, and any raw/unused products should be collected and disposed of through the hazardous waste management program.
Fixers—Since fixer photochemical waste typically contains elevated levels of silver, both raw/unused containers and used solutions of waste fixer should be collected and disposed of through the hazardous waste management program.

Ceramic Products
Since many of the clay and glaze constituents that make up ceramic products may contain hazardous substances like heavy metals, product MSDS's should be referred to prior to discarding any unused portions. More importantly, the purchasing of such constituents should as much as possible exclude those which contain regulated substances.

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 should be collected and disposed of through the hazardous waste management program.

SECTION 4
UNIVERSAL WASTES

1. Universal Waste Definition

Universal wastes in general are waste materials of high volume/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 St. Lawrence University include:

- Used lamps of certain types and varieties;
- Select batteries; and
- Mercury containing thermostats.

If the above waste materials are not handled as universal wastes, they are otherwise to be handled as hazardous wastes. Posted Universal Waste Procedures are located in Appendices I and J.

2. General Universal Waste Requirements

As a small quantity generator of universal wastes, St. Lawrence University 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 university is prohibited from improperly disposing of such wastes, or otherwise diluting or treating the wastes, unless in response to a spill or release.
- The university 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 university will label containers of universal wastes with a "Universal Waste" label, clearly indicating the contents, generator information, and date of first accumulation.
- The university 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 university 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 university where custodial closets or workstations are staged to facilitate lamp deployment/collection and general housekeeping will be designated as the Universal Waste Management Areas. However, some of the smaller buildings may use a single custodial closet within a group of buildings to consolidate and/or simplify the management of universal waste lamps.
- 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, or 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, custodians will notify his or her supervisor, who will arrange for pick-up and transportation of the full container to Facilities Operations. The transportation of universal waste containers may not exceed 500 pounds to travel university or contiguous roads without a DOT licensed transportation permit.
- Once arriving at the Facilities Operations, the stockroom supervisor or his designate will be notified, so as to oversee the placement of the universal waste lamps within the furniture barn. This area will be referred to as the 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. 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 university in the Environmental Health and Safety office.
- If any regulated lamps are damaged/broken before or after use, they must now be collected and disposed of through the hazardous waste management program.

Batteries—includes automotive lead-acid batteries, small sealed lead or lead-acid batteries, and rechargeable nickel-cadmium batteries.

General Procedures for Small Sealed Lead or Lead-Acid Batteries, and Rechargeable Nickel-Cadmium Batteries

- Whenever small sealed lead/lead-acid or rechargeable nickel-cadmium used batteries are generated by university activities, the devices will be transported to the Facilities Operations Universal Waste Management Area, and managed as universal wastes.
- Universal waste small sealed lead/lead-acid or rechargeable nickel-cadmium batteries will be collected in a suitable container, such as a 1 or 5-gallon pail, and will be labeled with a "Universal Waste" label once the container is put into use. The label will contain a description of the contents, generator information, and the accumulation start date.
- Full containers of universal waste batteries will be relocated from the stockroom to the Facilities Operations 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. 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 with copies to the Environmental Health and Safety office.

General Procedures for Automotive Lead-Acid Batteries

- The automotive garage at Facilities Operations will maintain a lead-acid battery storage bin with secondary containment, 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 storage bin.

Mercury Thermostats—includes all HVAC thermostat systems with a mercury ampule attached to a bimetal sensing element.

General Procedures

- Whenever used mercury thermostats are generated by on-going maintenance activities, the devices will be transported to the Facilities Operations stockroom Universal Waste Management Area, and managed as universal wastes.
- Universal waste mercury thermostats will be collected in a suitable container, such as a 5-gallon pail, and will be labeled with a "Universal Waste" label once the container is put into use. The label will contain a description of the contents, generator information, and the accumulation start date.
- Full containers of universal waste mercury thermostats will be relocated from the stockroom to the Facilities Operations Universal Waste Storage Area.

- When the accumulation start date or any container of universal waste mercury thermostats nears 1 year, the stockroom supervisor will coordinate the pick-up of the waste stream with a qualified universal waste vendor to properly recycle and/or dispose of the devices in accordance with federal and state regulations. Although an EPA manifest is not required for small quantity generators of universal wastes, the university will nonetheless require the selected vendor to provide such documentation, which shall be retained by the Environmental Health and Safety Office for a period of at least 3 years.
- If any mercury thermostats are damaged/broken during maintenance, they must now be collected and disposed of through the hazardous waste management program.

SECTION 5
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 Facilities Operations automotive garage will serve as the on-site storage facility for the university, 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 university personnel performing the transportation.
- The automotive garage will maintain 2 storage units for used oils, both of which are equipped with secondary containment. The first unit will contain two 55-gallon drums, and will be utilized to store used oil from vehicle maintenance, oil-filter draining, and other sources where the oil is assumed to be non-contaminated. The second unit will contain one 55-gallon drum, and will be utilized to store used oil from unknown sources, or where it is possible that the oil 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/mandatory sampling to verify and ensure the chemical properties of the used oil meet the analytical criteria exempting it from being regulated as a hazardous waste. The 55-gallon drums of used oil from known sources will be profiled at a frequency of 1 sample per every 6 drum volumes generated, or at the discretion of the used oil waste vendor. The 55-gallon drum from unknown/suspect sources will be profiled every time a single drum volume is generated.
- Once negative profiling information has been received, or the 55-gallon drums of used oil from known sources is full on a non-profiling period, Facilities Operations will contact a used oil-recycling vendor, who will pump and transport the university'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, that will be retained by the Environmental Health and Safety office for a period of at least 3 years.
- In the event profiling data determines that any used oil meets the criteria for hazardous waste, it will be disposed of in accordance with the hazardous waste management 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 Facilities Operations automotive garage, may also be disposed of in the municipal solid waste stream.

PCB (or other oil-filled non-PCB) Fluorescent Light Ballasts—includes any fluorescent light ballasts manufactured before 1978 or which 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 university, the devices will be transported to the Facilities Operations 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 in an appropriate area within the Facilities Operations stockroom.

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 Facilities Operations automotive garage will maintain an on-site storage facility to facilitate antifreeze recycling.
- All used antifreeze from vehicle servicing activities, or used antifreeze otherwise delivered to the automotive garage from other miscellaneous university areas, will be stored in a 55-gallon drum staged within a secondary containment device. The transportation of any used antifreeze to this collection area by university 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, Facilities Operations will contact a used antifreeze-recycling vendor, who will pump and transport the university'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 Environmental Health and Safety office for a period of at least 3 years.

Electronic Wastes—includes all computer monitors, keyboards and central processing units, which may be otherwise characterized as hazardous waste if improperly managed due to the presence of lead and other heavy metals.

General Procedures

- The Department of Information Technology Services (ITS), which manages the use and distribution of all computer-related equipment owned by the university, should attempt to minimize the electronic waste it generates by reusing electronic components to the greatest extent possible, or by donating any such equipment that remains in a useful condition to members of the greater university community. Any electronic wastes that cannot be reused or donated, and which must be discarded by the university, 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 NYSDEC regulations, the university has submitted the appropriate "C7" notification to the DEC, to inform them that all electronic wastes generated by the university will be managed under the scrap metal exemption. By this notification, the university agrees to handle electronic wastes in a manner that recycles such waste products, thereby exempting generated electronic wastes from the hazardous waste regulations.
- Whenever ITS generates an electronic waste intended for disposal, it shall notify the Environmental Health and Safety office, who will collect such materials for transportation to Facilities Operations. If a computer monitor is included within that waste stream, the monitor type/brand name, model number and serial number shall be noted by ITS.
- Facilities Operations will maintain 2 electronic waste receptacles within their storage facility - 1 for computer monitors, and 1 for all other computer accessories. An electronic waste inventory sheet will be maintained at this location to account for all of the monitor-related portions of the electronic waste stream added to the receptacles.
- Whenever either of the 2 receptacles are full, or the gross combined weight of the receptacles nears but does not exceed 500 pounds, they will be removed by an appropriate contractor with proper manifest documentation and copies retained by the St. Lawrence University Environmental Health and Safety office.

SECTION 6
EMPLOYEE TRAINING

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

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. Federal regulations from the EPA, DOT, and OSHA require training for employees in certain situations, including any employee who works with any hazardous substance.

(1) The DOT requires training for any employee who will be handling, transporting, preparing for transport, or even preparing paperwork of hazardous materials (49 CFR 172.700**). – EHS Director, University CHO, shipping/receiving and Grounds (only people transporting waste across campus) every 3 years**

(2) The OSHA hazardous materials training requirement, found in the regulations at 29 CFR 1910.120, is referred to as the "Hazwoper" standard. The EPA's hazardous waste training requirements are generally incorporated into Hazwoper. **CHO, S&S Director and Staff, EHS Director (annual training**)

The EPA has other training requirements such as that required to handle or work with or near certain hazardous substances; such as Asbestos (40 CFR Part 763), PCBs (40 CFR Part 761), refrigerant CFCs (40 CFR Part 60), etc. **All Hazardous Waste Generators – General Hazardous Waste management training offered by CHO annually. (Specific waste streams such as asbestos, PCB, etc require additional training coordinated through the EHS Director).**

2. Universal Waste Training

In general, the training requirements for small quantity generators of universal waste require the employer to distribute information to all employees who handle universal wastes, 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 Facilities Operations personnel who have universal waste handling or management responsibilities will be required to attend an annual St. Lawrence University universal waste training class meeting the specified criteria.

3. 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; including oil SPCC required training.

4. Training Documentation

All internally performed employee training in accordance with these procedures will be documented for recordkeeping purposes on the form contained in Appendix D, which will be retained by the Personnel Office, the Environmental Health and Safety Office, and 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 7
EMERGENCY PROCEDURES/CONTINGENCY PLAN

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

1. Emergency Preparedness

All chemical users and/or waste generators should be prepared for emergencies before they engage in work with such materials. 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;
- 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.

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 by Safety and Security (315) 229-5555 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.
- Put on 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 three absorbent/neutralization materials for this purpose; sodium sesquicarbonate for acidic spills, citric acid for basic spills and Magic-Sorb for solvent/other 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 be sweeping inward, and collect in a suitable container.
- Notify your departmental chemical hygiene officer or department administrator that you have a full container of spill cleanup materials, label it and have it picked up by the Chemical Hygiene Officer.

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 first-aid kits deployed by security and safety. 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.
- Call Campus Security and Safety (315) 229-5105 to come to the site to administer first aid.
- In the event blood is dripped upon the floor or other surfaces, the supervisor will notify the area custodian or Facilities Operations, who will take the necessary precautions to clean up the bloodstained areas.
- The supervisor must then complete the required accident report http://www.stlawu.edu/sites/default/files/resource/incident_report.pdf. Upon completion the form must be forwarded to the Human Resources Department.

Minor Fires

In the event of a fire:
Call Safety & Security (315) 229-5555
Safety and Security will report the fire to 911.

Although a properly trained individual with the appropriate ABC rated fire extinguisher may easily extinguish minor fires involving isolated pieces of equipment, fires in general are inherently extremely dangerous. Since university 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.

If the fire blocks your egress, personnel trained in the use of fire extinguishers may proceed to extinguish the fire as follows:

- **Retrieve** the appropriate ABC rated fire extinguisher staged from a safely accessible location, and alert someone near to you to notify Campus Safety;
- **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.

If the fire cannot be extinguished immediately it is now a Level 2 Emergency.

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 congregating 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.

Follow these actions in a Level 2 Emergency:

- Immediately notify and evacuate all personnel in the area of the emergency incident.
- Contact Campus Safety at 315-229-5555 from a secure location, and be prepared to provide the dispatcher with as much information relative to the emergency, including the following:
    - Your name and phone number;
    - The nature of the emergency incident;
    - Location of the incident (be as specific as possible);

    - The name and/or type of substance(s) involved (if known);
    - The approximate quantity of substance(s) released;
    - The hazards involved (i.e. flammables, explosives, corrosives, toxics, etc.);
    - Advise if there are any injuries thus requiring an ambulance.
- 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 university 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 Incident Commander 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 Emergency Response Manual.

Overexposure to Hazardous Material: Get medical help immediately by calling Safety and Security at (315) 229-5555. Check the MSDS for first aid instructions. The following general guidelines are appropriate initial procedures for overexposure to most chemicals.

- Eyes: Flush with water for fifteen minutes.
- Ingestion: Follow label and MSDS instruction.
- Skin contact on a substantial area of the body: Stand under emergency shower, activate the water flow, and remove contaminated clothing immediately.
- Inhalation: Get to fresh air and get prompt medical attention.

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 terrorist attack or downed airplane on campus.

In the event of a Level 3 emergency, emergency responders and local/state/federal authorities will likely assume on-site decision-making. See the University Emergency Preparedness plan for more information.

Other Emergencies

Power Failure:

- Loss of electric power could result in fume hood failure and loss of lighting, ventilation, refrigeration, computers, GCs, and other essentials. When loss of power occurs, hood sashes will be closed and heating elements, equipment, and other electrical devices will be turned off. If the power failure is prolonged (more than 3 hours) the department chair should be notified and generators will be arranged to preserve the contents of appropriate freezers.
- After being secured, evacuate the laboratory. When chemical reactions releasing hazardous chemicals are present, a sign will be posted and the hood(s) will be left on in that area. Re-entry to the area will be allowed only after power has been restored and a

suitable amount of time for ventilation of the area has occurred. Notify your professor of the situation.

Loss of Water:

- All hazardous laboratory work should cease in the event of water loss. Loss of water supply can render safety showers, eyewash fountains and reaction column cooling inoperative.

DOCUMENT HISTORY

Date	Change(s)	Contact Name
3/12/04	Original	Ted Coviello
8/2/05	Added appendices to all listed waste table, waste determination flowchart, SAA and waste pictures, updated peroxide table (same as in Chemical Hygiene Plan), updated accident reporting form (same as in CHP), added links to Canton POTW site with all local sewer regulations, added table of contents to this plan.	Sue Kenney
2/18/08	Updated name of Chemical Hygiene Officer and reformatted Appendix K	Suna Stone-McMasters
7/15/2015	Emergency Preparedness separated into 3 levels consistent with Chemical Hygiene Plan procedures. Updated contact names and information. Made all 5555 numbers complete with area code.	Suna Stone-McMasters

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, strongly 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 are otherwise contaminated, the following optional procedures may be followed:

General Procedures

- Receive authorization from your lab supervisor before performing any neutralizations.
- 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, 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, 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.

Wastewater Discharge/Drain Disposal
Local Sewer Use Prohibitions and Restrictions

Non-sanitary wastewater discharges at St. Lawrence are subject to the discharge prohibitions, and effluent limitations and concentrations specified in the Local Sewer Use Ordinance. These prohibitions and effluent limitations include but are not limited to:

1) **any wastewater having a** pH less than 5.0 or higher than 10.0**;**
2) **any wastewater with a closed-cup** flashpoint if less than 140ºF**,**
3) **any wastewater containing toxic pollutants in sufficient quantity to injure or interfere with any wastewater treatment process, constitute a hazard to humans or animals, or create a toxic effect in the receiving waters of the (Publicly Owned Treatment Works (POTW); and**
4) **any of the following pollutants in excess of the specified concentrations:**

PARAMETERS	DAILY ALLOWABLE EFFLUENT CONCENTRATION LIMIT (mg/l)
Arsenic	0.0998
Beryllium	0.248
Cadmium (Cd)	0.0103
Chromium, Total (Cr)	0.4484
Copper (Cu)	0.3969
Cyanide, Total (CN)	0.2447
Lead (Pb)	0.4629
Mercury (Hg)	0.0019
Nickel (Ni)	0.1717
Oil & Grease	100
Silver (Ag)	0.0295
Zinc (Zn)	0.6146
B.O.D.	250

Village of Canton Sewer Use Rules, §§ 259-82.B(3), (4), (6) and (13); and 259-83.A.

APPENDIX C
Safe Handling and Disposal of Peroxide Forming Chemicals
(Information adapted from University of Pittsburgh)

Certain chemicals can react with oxygen to create "peroxides", which are compounds that can explode with impact, heat, or friction. Peroxide-forming chemicals can be divided into four hazard classes based on the method of reaction as described in Tables 1-4.

GUIDELINES FOR SAFE HANDLING AND DISPOSAL

1. Purchase
   - 1.1. Do not purchase large quantities of peroxide forming chemicals. Purchase the amount that you will use in a 3-6 month time period.
   - 1.2. When possible, purchase peroxide forming chemicals that have peroxide inhibitors added by the manufacturer
   - 1.3. Label all peroxide forming chemicals with date received and date opened. Maintain an inventory of your peroxide forming chemicals and their expiration dates.
2. Storage
   - 2.1. Store peroxide forming chemicals in sealed, opaque, airtight containers with tight-fitting caps. DO NOT store these chemicals in open, partially empty, or transparent containers since these conditions promote peroxide formation.
   - 2.2. Store peroxide forming chemicals (especially those in Table 1) under nitrogen or other inert gas or in an inert atmosphere chamber. Note: Some inhibitors actually need small amounts of oxygen to prevent peroxide formation and it is recommended that inhibited chemicals are not stored under an inert atmosphere. Follow the manufacturer's recommendations.
3. Handling and Use
   - 3.1. Test for the presence of peroxides before distilling peroxide forming chemicals. Most explosions of peroxide forming chemicals occur when a material is distilled to dryness (leave at least 10-20% bottoms). Stir distillations with a mechanical stirrer or a bubbling inert gas. Never use air or an oxygen-containing mixture for bubbling or stirring a peroxide forming chemical.
   - 3.2. DO NOT OPEN the container of a peroxide forming chemical that has obvious crystal formation; the friction caused by opening a crystallized lid can cause an explosion. Do not handle the container or force open lid. Treat as potentially explosive material. CALL EH&S IMMEDIATELY at 315-229-5913.
4. Disposal
   - 4.1. With the exception of those provided in Table 1, discard all peroxide forming chemicals within 6 months of opening (or within 1 year if unopened). All peroxide forming chemicals must be properly disposed through the University's chemical waste program, as long as the chemical has not expired and no crystal formation is evident.
   - 4.2. If the peroxide forming chemical has expired and/or crystal formation is evident, CALL EH&S IMMEDIATELY at 315-229-5913.

PEROXIDE FORMING CHEMICALS

TABLE 1 - Severe Peroxide Hazard: Chemicals that can spontaneously decompose, becoming explosive after exposure to air without concentration. These chemicals must be stabilized or decontaminated and discarded within ***3 months*** of opening.

Isopropyl ether	Potassium amide	Divinylacetylene
Potassium metal	Sodium amide (sodamide)	Vinylidene chloride
Butadiene (liquid monomer)	Chloroprene (liquid monomer)	Tetrafluoroethylene (liquid monomer)

TABLE 2 - Concentration Hazard: These chemicals require external energy for spontaneous decomposition, forming explosive peroxides when distilled, evaporated or otherwise concentrated. These chemicals must be tested for peroxides and discarded within ***6 months*** of opening.

Acetal	Diethyl ether	2-Pentanol
Acetaldehyde	Diethylene glycol dimenthyl ether (diglyme)	4-Penten-1-ol
Benzyl alcohol	Dioxanes	1-Phenylethanol
2-Butanol	Ethylene glycol dimethyl ether (glyme)	2-Phenylethanol
Cumene	4-Heptanol	2-Propanol
Cyclohexanol	2-Hexanol	Tetrahydrofuran
2-Cyclohexen-1-ol	Methylacetylene	Tetrahydronaphthalene
Cyclohexene	3-Methyl-1-butanol	Vinyl ethers
Decahydronaphthalene	Methylcyclopentane	Other secondary alcohols
Diacetylene	Methyl isobutyl ketone	
Dicyclopentadiene	4-Methyl-2-pentanol	

TABLE 3 - Shock and Heat Sensitive: These chemicals are highly reactive and can autopolymerize as a result of internal peroxide accumulation. The peroxides formed in these reactions are extremely shock and heat sensitive. NOTE: The liquid chemicals in this group should be tested for peroxides and discarded within ***6 months*** of opening.

Acrylic acid	Methyl methacrylate	Vinyl chloride (gas)
Acrylonitrile	Styrene	Vinylpyridine
Butadiene (gas)	Tetrafluoroethylene (gas)	Vinyladiene chloride
Chloroprene	Vinyl acetate	
Chlorotrifluoroethylene	Vinylacetylene (gas)	

Table 4 - Potential Peroxide Forming Chemicals: Over 200 organic and inorganic compounds are capable of forming peroxides under the right conditions. The investigator should refer to the MSDS, contact the chemical manufacturer, or contact EH&S to determine if chemicals are potential peroxide formers.

Table 4 - Potential Peroxide Forming Chemicals: These organic and inorganic compounds are capable of forming peroxides under the right conditions. The investigator should refer to the MSDS, contact the chemical manufacturer, or contact EH&S to determine if their chemicals are potential peroxide formers.

Potential Peroxide Forming Chemicals		
Acrolein	Allyl ether	Allyl ethyl ether
Allyl phenyl ether	*p*-(*n*-Amyloxy)benzoyl chloride	*n*-Amyl ether
p-Anisaldehyde	m-Anisaldehyde	m-Anisyl alcohol
Azoxydianisole	Benzoin methyl ether	Benzyl *n*-butyl ether
Benzyl ether	Benzyl ethyl ether	Benzyl methyl ether
Benzyl 1-napthyl ether	1,2-Bis(2-chloroethoxy)ethane	Bis(2 ethoxyethyl)ether
Bis(2-(methoxyethoxy)ethyl) ether	Bis(2-chloroethyl) ether	Bis(2-ethoxyethyl) adipate
Bis(2-ethoxyethyl) phthalate	Bis(2ethoxyethyl)sebacate	Bis(2methoxyethoxy)ethane
Bis(2-methoxyethyl) carbonate	Bis(2-methoxyethyl) ether	Bis(2-methoxyethyl) phthalate
Bis(2-methoxymethyl) adipate	Bis(2-n-butoxyethyl) phthalate	Bis(pentyloxy)azoxybenzene
Bis(2-phenoxyethyl) ether	Bis(4-chlorobutyl) ether	Bis(chloromethyl) ether
pBromoanisole	2-Bromomethyl ethyl ether	2-Bromoethyl methyl ether
B-Bromophenetole	*o*-Bromophenetole	*p*-Bromophenetole
3-Bromopropyl phenyl ether	1,3-Butadiyne	Buten-3-yne
2-Butoxyethanol	2-(butoxyethoxy)ethyl acetate	*tert*-Butyl ethyl ether
tert-Butyl methyl ether	*n*-Butyl phenyl ether	*n*-Butyl vinyl ether
Chloroacetaldehyde diethylacetal	2-Chlorobutadiene	1-(2-Chloroethoxy)-2-phen-oxyethane
Chloroethylene	Chloromethyl methyl ether	B-Chlorophenetole
o-Chlorophenetole	p-Chlorophenetole	Cyclooctene
Cyclopropyl methyl ether	Decahydronaphthalene	Diallyl ether
p-Di-n-butoxybenzene	1,2-Dibenzyloxyethane	*p*-Dibenzyloxybenzene
1,2-Dichloroethyl ethyl ether	2,4-Dichlorophenetole	2,4-Dichlorophenoxyacetic acid
Diethoxymethane	2,2-Diethoxypropane	Diethyl ethoxymethylenemalonate
Diethyl fumarate	Diethyl acetal	Diethyketene
m,o,p-diethoxybenzene	2,3-Dihydro2,5dimethoxyfuran	1,2-Diethoxyethane
Diisobutylene(pract)	Dimethoxymethane	1,1-Dimethoxyethane
Dimethylketene	2,5-Dimethoxyaniline	3,4-Dimethoxybenzaldehyde
3,3'-Dimethoxy benzidine	2,4-Dimethoxybenzoic acid	4,4-Dimethoxy2butanone
1 ,2-Dimethoxyethane	Dimethoxymethane	2,2-Dimethoxypropane
3,3-Dimethoxypropene	2,4-Dinitrophenetole	2,5-Dimethoxytoluene
1,3-Dioxepane	p-Dioxane	1,3-Dioxolane
Di(1-propynyl)ether	Di(2-propynyl)ether	Di-*n*-propoxymethane
1,2-Epoxy-3-isopropoxypropane	1,2-Epoxy-3-phenoxypropane	*p*-Ethoxyacethophenone
p-Ethoxybenzaldehyde	o-Ethoxybenzoic acid	2-(2Ethoxyethoxy)ethanol
1-(2-Ethoxyethoxy)ethyl acetate	2-(2-Ethoxyethoxy)ethyl acetate	2-Ethoxyethyl acetate
(2-Ethoxyethyl)-o-benzoyl benzoate	1-Ethoxynaphthalene	p-Ethoxyphenol
o,p-Ethoxyphenyl isocyanate	1-Ethoxy-2-propyne	3-Ethoxyopropionitrile
2-Ethylacrylaldehyde oxime	2-Ethylbutanol	Ethyl *B*-ethoxypropionate

Potential Peroxide Forming Chemicals		
Ethylenebis-(2-oxyethyl acetate)	2-Ethylhexanal	Ethyl vinyl ether
p-Formylphenoxyaceticacid)	Furan	2,5-Hexadiyn-1-ol
4,5-Hexadien-2-yn-1-ol	*n*-Hexyl ether	p-Hexyloxybenzaldehyde
(pHydroxyphenoxy)acetic acid	*o,p*-Iodophenetole	Isoamyl benzyl ether
Isoamyl ether	Isobutyl vinyl ether	Isoeugenol
Isopentyl ether	Isophorane	Isophorone
Isoprene	*B*-Isopropoxy propionitrile	Isopropyl 2,4,5-trichlorophenoxy-acetate
Ligroine	Limonene	1,5-*p*-Methadiene
Methofuran	Methoxyaceticacid	p-Methoxybenzylamine
Methyl *p*-(*n*-amyloxy)benzoate	4-Methyl-2-pentanone	*n*-Methylphenetole
2-Methyltetrahydrofuran	3-Methoxy-1-butyl acetate	2-Methoxyethanol
2-(2Methoxyethoxy)ethanol	2-Methoxyethyl acetate	3-Methoxyethyl acetate
2-Methoxyethylamine	2-Methoxyethyl vinyl ether	1-Methoxynaphthalene
Methonxy-1,3,5,7-cycloocta-tetraene	4-Methoxy-2-nitroaniline	m-Methoxyphenol
Methoxyphenylacetic acid	o-Methoxyphenyl isocyanate	3-Methoxypropionitrile
B-Methoxypropionitrile	o-Methoxypropionitrile	m-Nitrophenetole
o-Nitrophenyl phenylether	2,5-Norbornadiene	1-Octene
Oxybis(2-ethyl acetate)	Oxybis(2-ethyl benzoate)	4,4'-Oxydiphenol
B,B-oxydipropionitrile	1-Pentene	p-Pentyloxyaniline
p-Pentyloxybenzaldehyde	p-Pentyloxybenzoylchloride	Phenoxyacetic acid
Phenoxyacetyl chloride	m-(mPhenoxyphenoxy)phenol	*a*-Phenoxypropionyl chloride
Phenyl *o*-propyl ether	*p*-Phenylphenetone	*n*-Propyl ether
n-Propyl isopropyl ether	Sodium 8,11,14-eicosa-tetraenoate	Sodium ethoxyacetylide
Tetrahydropyran	Tetraethylene glycol	Tetraethyleneglycolmonomethylether
Triethylene glycol diacetate	Triethylene glycol dipropionate	Trimethoxybenzaldehyde
1,3,3-Trimethoxypropene	1,1,2,3-Tetrachloro-1,3 Butadiene	4-Vinyl cyclohexene
Vinylene carbonate	Vinylidene chloride	

APPENDIX D
HAZARDOUS/UNIVERSAL/OTHER WASTE TRAINING DOCUMENTATION

The following individuals have been trained in accordance with the St. Lawrence University Waste Management & Minimization Plan, as specified below:

Training Instructor Name	Signature	Date of Training

Type of Training (Specify): _____

Name (Print)	Signature	Dept.

APPENDIX E: **D-List (Toxic Characteristics)**

EPA HW No.[1]	Contaminant	CAS No.[2]	Regulatory Level (mg/L)
D004	Arsenic	7440-338-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	5.0
D006	Cadmium	7440-43-9	1.0
D019	Carbon Tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0
D023	o-Cresol	95-48-7	[4]200.0
D024	m-Cresol	108-39-4	[4]200.0
D025	p-Cresol	106-44-5	[4]200.0
D026	Cresol		[4]200.0
D016	2,4-D	94-75-5	10.0
D027	1,4-Dichlorobezene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	[3]0.13
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its epoxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	[3]0.13
D033	Hexachlorobutadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentrachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	[3]5.0
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7

EPA HW No.[1]	Contaminant	CAS No.[2]	Regulatory Level (mg/L)
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

1 - Hazardous Waste number
2 - Chemical abstracts service number
3 - Quantation limit is greater than the calculated regulatory level. The quantation limit therefore becomes the regulatory level.
4 - If o-, m-, and p-Cresol concentrations cannot be differentiated the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/L.

APPENDIX F: U-List (Toxics)

Hazardous Waste No.	Chemical Abstract No.	Substance
U001	75-07-0	Acetaldehyde (I)
U034	75-87-6	Acetaldehyde, trichloro-
U187	62-44-2	Acetamide, N-(4-ethoxyphenyl)-
U005	53-96-3	Acetamide, N-9H-fluoren-2-yl-
U240	94-75-7	Acetic acid, (2, 4-dichlorophenoxy)-, salts & esters
U112	141-78-6	Acetic acid ethyl ester (I)
U144	301-04-2	Acetic acid, lead (2+) salt
U214	563-68-8	Acetic acid, thallium (1+) salt
seeF027	93-76-5	Acetic acid, (2, 4, 5-trichlorophenoxy)-
U002	67-64-1	Acetone (I)
U003	75-05-8	Acetonitrile (I,T)
U004	98-86-2	Acetophenone
U005	53-96-3	2-Acetylaminofluorene
U006	75-36-5	Acetyl chloride (C,R,T)
U007	79-06-1	Acrylamide
U008	79-10-7	Acrylic acid (I)
U009	107-13-1	Acrylonitrile
U011	61-82-5	Amitrole
U012	62-53-3	Aniline (I,T)
U136	75-60-5	Arsinic acid, dimethyl-
U014	492-80-8	Auramine
U015	115-02-6	Azaserine
U010	50-07-7	Azirino [2 1/4, 3 1/4:3, 4] pyrrolo [1, 2-a] indole-4, 7-dione, 6-amino-8-[[(aminocarbonyl) oxy]methyl] -1, 1a, 2, 8, 8a, 8b-hexahydro-8a-methoxy-5-methyl-, [1aS-(1aalpha, 8beta, 8aalpha, 8balpha)]-
U157	56-49-5	Benz[j] aceanthrylene, 1, 2-dihydro-3-methyl-
U016	225-51-4	Benz[c] acridine
U017	98-87-3	Benzal choride
U192	23950-58-5	Benzamide, 3, 5-dichloro-N-(1, 1-dimethyl-2-propynyl)-
U018	56-55-3	Benz[a] anthracene
U094	57-97-6	Benz[a] anthracene, 7, 12-dimethyl-
U012	62-53-3	Benzenamine (I,T)
U014	492-80-8	Benzenamine, 4, 4 1/4-carbonimidoylbis [N, N-dimethyl-
U049	3165-93-3	Benzenamine, 4-chloro-2-methyl-, hydrochloride
U093	60-11-7	Benzenamine, N, N-dimethyl-4-(phenylazo)-
U328	95-53-4	Benzenamine, 2-methyl-
U353	106-49-0	Benzenamine, 4-methyl-
U158	101-14-4	Benzenamine, 4, 4 1/4-methylenebis [2-chloro-
U222	636-21-5	Benzenamine, 2-methyl-, hydrochloride
U181	99-55-8	Benzenamine, 2-methyl-5-nitro
U019	71-43-2	Benzene (I, T)
U038	510-15-6	Benzeneaticacid, 4-chloro-alpha- (4-chlorophenyl)-alpha-hydroxy-, ethyl ester
U030	101-55-3	Benzene, 1-bromo-4-phenoxy-
U035	305-03-3	Benzenebutanoic acid, 4-[bis(2-choroethyl) amino]-
U037	108-90-7	Benzene, chloro-
U221	25376-45-8	Benzenediamine, ar-methyl-
U028	117-81-7	1, 2-Benzenedicarboxylic acid, bis (2-ethylhexyl) ester
U069	84-74-2	1, 2-Benzenedicarboxylic acid, dibutyl ester
U088	84-66-2	1, 2-Benzenedicarboxylic acid, diethyl ester

Hazardous Waste No.	Chemical Abstract No.	Substance
U102	131-11-3	1, 2-Benzenedicarboxylic acid, dimethyl ester
U107	117-84-0	1, 2-Benzenedicarboxylic acid, dioctyl ester
U070	95-50-1	Benzene, 1, 2-dichloro-
U071	541-73-1	Benzene, 1, 3-dichloro-
U072	106-46-7	Benzene, 1, 4-dichloro-
U060	72-54-8	Benzene, 1, 1 1/4-(2, 2-dichloroethylidene) bis [4-chloro-
U017	98-87-3	Benzene, (dichloromethyl)-
U223	26471-62-5	Benzene, 1, 3-diisocyanatomethyl- (R, T)
U239	1330-20-7	Benzene, dimethyl- (I, T)
U201	108-46-3	1, 3-Benzenediol
U127	118-74-1	Benzene, hexachloro-
U056	110-82-7	Benzene, hexahydro- (I)
U220	108-88-3	Benzene, methyl-
U105	121-14-2	Benzene, 1-methyl-2, 4-dinitro-
U106	606-20-2	Benzene, 2-methyl-1, 3-dinitro-
U055	98-82-8	Benzene, (1-methylethyl)- (I)
U169	98-95-3	Benzene, nitro-
U183	608-93-5	Benzene, pentachloro-
U185	82-68-8	Benzene, pentachloronitro-
U020	98-09-9	Benzenesulfonic acid chloride (C, R)
U020	98-09-9	Benzenesulfonyl chloride (C, R)
U207	95-94-3	Benzene, 1, 2, 4, 5-tetrachloro-
U061	50-29-3	Benzene, 1, 1 1/4-(2, 2, 2-trichloroethylidene) bis [4-chloro-
U247	72-43-5	Benzene, 1, 1 1/4-(2, 2, 2-trichloroethylidene) bis [4-methoxy-
U023	98-07-7	Benzene, (trichloromethyl)-
U234	99-35-4	Benzene, 1, 3, 5-trinitro-
U021	92-87-5	Benzidine
U202	81-07-2	1, 2-Benzisothiazol-3(2H) -one, 1, 1-dioxide, & salts
U203	94-59-7	1, 3-Benzodioxole, 5-(2-propenyl)-
U141	120-58-1	1, 3-Benzodioxole, 5-(1-propenyl)-
U090	94-58-6	1, 3-Benzodioxole, 5-propyl-
U064	189-55-9	Benzo[rst]pentaphene
U248	81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenyl-butyl)-, & salts, when present at concentrations of 0.3% or less
U022	50-32-8	Benzo[a]pyrene
U197	106-51-4	p-Benzoquinone
U023	98-07-7	Benzotrichloride (C, R, T)
U085	1464-53-5	2, 2 1/4-Bioxirane
U021	92-87-5	[1, 1 1/4-Biphenyl]-4, 4 1/4-diamine
U073	91-94-1	[1, 1^P-Biphenyl]-4, 4^P-diamine, 3, 3^P-dichloro-
U091	119-90-4	[1, 1^P-Biphenyl]-4, 4^P-diamine, 3, 3^P-dimethoxy-
U095	119-93-7	[1, 1^P-Biphenyl]-4, 4^P-diamine, 3, 3^P-dimethyl-
U225	75-25-2	Bromoform
U030	101-55-3	4-Bromophenyl phenyl ether
U128	87-68-3	1, 3-Butadiene, 1, 1, 2, 3, 4, 4-hexachloro-
U172	924-16-3	1-Butanamine, N-butyl-N-nitroso-
U031	71-36-3	1-Butanol (I)
U159	78-93-3	2-Butanone (I, T)
U160	1338-23-4	2-Butanone, peroxide (R,T)
U053	4170-30-3	2-Butenal
U074	764-41-0	2-Butene, 1, 4-dichloro- (I,T)
U143	303-34-4	2-Butenoic acid, 2-methyl-, 7-[2, 3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-

Hazardous Waste No.	Chemical Abstract No.	Substance
		oxobutoxy] methyl]-2, 3, 5, 7 a-tetrahydro-1H-pyrrolizin-1-yl-ester, [1S-[1 alpha(Z), 7(2S*, 3R*), 7aalpha]]-
U031	71-36-3	n-Butyl alcohol (I)
U136	75-60-5	Cacodylic acid
U032	13765-19-0	Calcium chromate
U238	51-79-6	Carbamic acid, ethyl ester
U178	615-53-2	Carbamic acid, methylnitroso-, ethyl ester
U097	79-44-7	Carbamic chloride, dimethyl-
U114	111-54-6	Carbamodithioic acid, 1, 2-ethanediylbis-, salts & esters
U062	2303-16-4	Carbamothioic acid, bis (1-methylethyl)-, S-(2, 3-dichloro-2-propenyl) ester
U215	6533-73-9	Carbonic acid, dithallium (1+) salt
U033	353-50-4	Carbonic difluoride
U156	79-22-1	Carbonochloridic acid, methyl ester (I, T)
U033	353-50-4	Carbon oxyfluoride (R, T)
U211	56-23-5	Carbon tetrachloride
U034	75-87-6	Chloral
U035	305-03-3	Chlorambucil
U036	57-74-9	Chlordane, alpha & gamma isomers
U026	494-03-1	Chlornaphazin
U037	108-90-7	Chlorobenzene
U038	510-15-6	Chlorobenzilate
U039	59-50-7	p-Chloro-m-cresol
U042	110-75-8	2-Chloroethyl vinyl ether
U044	67-66-3	Chloroform
U046	107-30-2	Chloromethyl methyl ether
U047	91-58-7	beta-Chloronaphthalene
U048	95-57-8	o-Chlorophenol
U049	3165-93-3	4-Chloro-o-toluidine, hydrochloride
U032	13765-19-0	Chromic acid H2Cr04, calcium salt
U050	218-01-9	Chrysene
U051		Creosote
U052	1319-77-3	Cresol (Cresylic acid)
U053	4170-30-3	Crotonaldehyde
U055	98-82-8	Cumene (I)
U246	506-68-3	Cyanogen bromide (CN)Br
U197	106-51-4	2, 5-Cyclohexadiene-1, 4-dione
U056	110-82-7	Cyclohexane (I)
U129	58-89-9	Cyclohexane, 1, 2, 3, 4, 5, 6-hexachloro-,1 alpha, 2 alpha, 3 alpha, 4 alpha, 5 alpha, 6 beta),
U057	108-94-1	Cyclohexanone (I)
U130	77-47-4	1, 3-Cyclopentadiene, 1, 2, 3, 4, 5, 5-hexachloro-
U058	50-18-0	Cyclophosphamide
U240	94-75-7	2, 4-D, salts & esters
U059	20830-81-3	Daunomycin
U060	72-54-8	DDD
U061	50-29-3	DDT
U062	2303-16-4	Diallate
U063	53-70-3	Dibenz[a, h] anthracene
U064	189-55-9	Dibenzo[a, i]pyrene
U066	96-12-8	1, 2-Dibromo-3-chloropropane
U069	84-74-2	Dibutyl phthalate
U070	95-50-1	o-Dichlorobenzene

Hazardous Waste No.	Chemical Abstract No.	Substance
U071	541-73-1	m-Dichlorobenzene
U072	106-46-7	p-Dichlorobenzene
U073	91-94-1	3, 3^P-Dichlorobenzidine
U074	764-41-0	1, 4-Dichloro-2-butene (I, T)
U075	75-71-8	Dichlorodifluoromethane
U078	75-35-4	1, 1-Dichloroethylene
U079	156-60-5	1, 2-Dichloroethylene
U025	111-44-4	Dichloroethyl ether
U027	108-60-1	Dichloroisopropyl ether
U024	111-91-1	Dichloromethoxy ethane
U081	120-83-2	2, 4-Dichlorophenol
U082	87-65-0	2, 6-Dichlorophenol
U084	542-75-6	1, 3-Dichloropropene
U085	1464-53-5	1, 2:3, 4-Diepoxybutane (I, T)
U108	123-91-1	1, 4-Diethyleneoxide
U028	117-81-7	Diethylhexyl phthalate
U086	1615-80-1	N, N^P-Diethylhydrazine
U087	3288-58-2	O, O-Diethyl S-methyl dithiophosphate
U088	84-66-2	Diethyl phthalate
U089	56-53-1	Diethylstilbesterol
U090	94-58-6	Dihydrosafrole
U091	119-90-4	3, 3^P-Dimethoxybenzidine
U092	124-40-3	Dimethylamine (I)
U093	60-11-7	p-Dimethylaminoazobenzene
U094	57-97-6	7, 12-Dimethylbenz[a]anthracene
U095	119-93-7	3, 3^P-Dimethylbenzidine
U096	80-15-9	alpha, alpha-Dimethylbenzylhydroperoxide (R)
U097	79-44-7	Dimethylcarbamoyl chloride
U098	57-14-7	1, 1-Dimethylhydrazine
U099	540-73-8	1, 2-Dimethylhydrazine
U101	105-67-9	2, 4-Dimethylphenol
U102	131-11-3	Dimethyl phthalate
U103	77-78-1	Dimethyl sulfate
U105	121-14-2	2, 4-Dinitrotoluene
U106	606-20-2	2, 6-Dinitrotoluene
U107	117-84-0	Di-n-octyl phthalate
U108	123-91-1	1, 4-Dioxane
U109	122-66-7	1, 2-Diphenylhydrazine
U110	142-84-7	Dipropylamine (I)
U111	621-64-7	Di-n-propylnitrosamine
U041	106-89-8	Epichloropydrin
U001	75-07-0	Ethanal (I)
U174	55-18-5	Ethanamine, N-ethyl-N-nitroso-
U155	91-80-5	1, 2-Ethanediamine, N, N-dimethyl-N^P-2-pyridinyl-N^P-(2-thienylmethyl)-
U067	106-93-4	Ethane, 1, 2-dibromo-
U076	75-34-3	Ethane, 1, 1-dichloro-
U077	107-06-2	Ethane, 1, 2-dichloro-
U131	67-72-1	Ethane, hexachloro-
U024	111-91-1	Ethane, 1, 1^P-[methylenebis(oxy)] bis[2-chloro-
U117	60-29-7	Ethane, 1, 1^P-oxybis-(I)
U025	111-44-4	Ethane, 1, 1^P-oxybis [2-chloro-
U184	76-01-7	Ethane, pentachloro-

Hazardous Waste No.	Chemical Abstract No.	Substance
U208	630-20-6	Ethane, 1, 1, 1, 2-tetrachloro-
U209	79-34-5	Ethane, 1, 1, 2, 2-tetrachloro-
U218	62-55-5	Ethanethioamide
U226	71-55-6	Ethane, 1, 1, 1-trichloro-
U227	79-00-5	Ethane, 1, 1, 2-trichloro-
U359	110-80-5	Ethanol, 2-ethoxy-
U173	1116-54-7	Ethanol, 2, 2^P-(nitrosoimino) bis-
U004	98-86-2	Ethanone, 1-phenyl-
U043	75-01-4	Ethene, chloro-
U042	110-75-8	Ethene, (2-chloroethoxy)-
U078	75-35-4	Ethene, 1, 1-dichloro-
U079	156-60-5	Ethene, 1, 2-dichloro-, (E)-
U210	127-18-4	Ethene, tetrachloro-
U228	79-01-6	Ethene, trichloro-
U112	141-78-6	Ethyl acetate (I)
U113	140-88-5	Ethyl acrylate (I)
U238	51-79-6	Ethyl carbamate (urethane)
U117	60-29-7	Ethyl ether (I)
U114	111-54-6	Ethylenebisdithiocarbamic acid, salts & esters
U067	106-93-4	Ethylene dibromide
U077	107-06-2	Ethylene dichloride
U359	110-80-5	Ethylene glycol monoethyl ether
U115	75-21-8	Ethylene oxide (I, T)
U116	96-45-7	Ethylenethiourea
U076	75-34-3	Ethylidene dichloride
U118	97-63-2	Ethyl methacrylate
U119	62-50-0	Ethyl methanesulfonate
U120	206-44-0	Fluoranthene
U122	50-00-0	Formaldehyde
U123	64-18-6	Formic acid (C, T)
U124	110-00-9	Furan (I)
U125	98-01-1	2-Furancarboxaldehyde (I)
U147	108-31-6	2, 5-Furandione
U213	109-99-9	Furan, tetrahydro-(I)
U125	98-01-1	Furfural (I)
U124	110-00-9	Furfuran (I)
U206	18883-66-4	Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-, D-
U206	18883-66-4	D-Glucose, 2-deoxy-2-[[methylnitrosoamino)-carbonyl] amino]-
U126	765-34-4	Glycidylaldehyde
U163	70-25-7	Guanidine, N-methyl-N^P-nitro-N-nitroso-
U127	118-74-1	Hexachlorobenzene
U128	87-68-3	Hexachlorobutadiene
U130	77-47-4	Hexachlorocyclopentadiene
U131	67-72-1	Hexachloroethane
U132	70-30-4	Hexachlorophene
U243	1888-71-7	Hexachloropropene
U133	302-01-2	Hydrazine (R, T)
U086	1615-80-1	Hydrazine, 1, 2-diethyl-
U098	57-14-7	Hydrazine, 1, 1-dimethyl-
U099	540-73-8	Hydrazine, 1, 2-dimethyl-
U109	122-66-7	Hydrazine, 1, 2-diphenyl-
U134	7664-39-3	Hydrofluoric acid (C, T)

Hazardous Waste No.	Chemical Abstract No.	Substance
U134	7664-39-3	Hydrogen fluoride (C, T)
U135	7783-06-4	Hydrogen sulfide
U135	7783-06-4	Hydrogen sulfide H2S
U096	80-15-9	Hydroperoxide, 1-methyl-1-phenylethyl- (R)
U116	96-45-7	2-Imidazolidinethione
U137	193-39-5	Indeno[1, 2, 3-cd] pyrene
U190	85-44-9	1, 3-Isobenzofurandione
U140	78-83-1	Isobutyl alcohol (I, T)
U141	120-58-1	Isosafrole
U142	143-50-0	Kepone
U143	303-34-4	Lasiocarpine
U144	301-04-2	Lead acetate
U146	1335-32-6	Lead, bis(acetato-O) tetrahydroxytri-
U145	7446-27-7	Lead phosphate
U146	1335-32-6	Lead subacetate
U129	58-89-9	Lindane
U163	70-25-7	MNNG
U147	108-31-6	Maleic anhydride
U148	123-33-1	Maleic hydrazide
U149	109-77-3	Malononitrile
U150	148-82-3	Melphalan
U151	7439-97-6	Mercury
U152	126-98-7	Methacrylonitrile (I, T)
U092	124-40-3	Methanamine, N-methyl- (I)
U029	74-83-9	Methane, bromo-
U045	74-87-3	Methane, chloro- (I, T)
U046	107-30-2	Methane, chloromethoxy-
U068	74-95-3	Methane, dibromo-
U080	75-09-2	Methane, dichloro-
U075	75-71-8	Methane, dichlorodifluoro-
U138	74-88-4	Methane, iodo-
U119	62-50-0	Methanesulfonic acid, ethyl ester
U211	56-23-5	Methane, tetrachloro-
U153	74-93-1	Methanethiol (I, T)
U225	75-25-2	Methane, tribromo-
U044	67-66-3	Methane, trichloro-
U121	75-69-4	Methane, trichlorofluoro-
U036	57-74-9	4, 7-Methano-1H-indene, 1, 2, 4, 5, 6, 7, 8, 8-octachloro-2, 3, 3a, 4, 7, 7a-hexahydro-
U154	67-56-1	Methanol (I)
U155	91-80-5-	Methapyrilene
U142	143-50-0	1, 3, 4-Metheno-2H-cyclobuta [cd] entalen-2-one, 1, 1a, 3, 3a, 4, 5, 5, 5a, 5b, 6-decachlorooctahydro-
U247	72-43-5	Methoxychlor
U154	67-56-1	Methyl alcohol (I)
U029	74-83-9	Methyl bromide
U186	504-60-9	1-Methylbutadiene (I)
U045	74-87-3	Methyl chloride (I, T)
U156	79-22-1	Methyl chlorocarbonate (I, T)
U226	71-55-6	Methyl chloroform
U157	56-49-5	3-Methylcholanthrene
U158	101-14-4	4, 4^P-Methylenebis (2-chloroaniline)

Hazardous Waste No.	Chemical Abstract No.	Substance
U068	74-95-3	Methylene bromide
U080	75-09-2	Methylene chloride
U159	78-93-3	Methyl ethyl ketone (MEK) (I, T)
U160	1338-23-4	Methyl ethyl ketone peroxide (R, T)
U138	74-88-4	Methyl iodide
U161	108-10-1	Methyl isobutyl ketone (I)
U162	80-62-6	Methyl methacrylate (I, T)
U161	108-10-1	4-Methyl-2-pentanone (I)
U164	56-04-2	Methylthiouracil
U010	50-07-7	Mitomycin C
U059	20830-81-3	5, 12-Naphthacenedione, 8-acetyl-10-[(3-amino-2, 3, 6-trideoxy)-alpha-L-lyxo-hexopyranosyl) oxy]-7, 8, 9, 10-tetrahydro-6, 8, 11-trihydroxy-1-methoxy-, (8S-cis)-
U167	134-32-7	1-Naphthalenamine
U168	91-59-8	2-Naphthalenamine
U026	494-03-1	Naphthalenamine, N, N^P-bis(2-chloroethyl)-
U165	91-20-3	Naphthalene
U047	91-58-7	Naphthalene, 2-chloro-
U166	130-15-4	1, 4-Naphthalenedione
U236	72-57-1	2, 7-Naphthalenedisulfonic acid, 3, 3^P-dimethyl[1, 1^P-biphenyl]-4, 4^P-diyl) bis(azo) bis[5-amino-4-hydroxy]-, tetrasodium salt
U166	130-15-4	1, 4-Naphthoquinone
U167	134-32-7	alpha-Naphthylamine
U168	91-59-8	beta-Naphthylamine
U217	10102-45-1	Nitric acid, thallium (1+) salt
U169	98-95-3	Nitrobenzene (I, T)
U170	100-02-7	p-Nitrophenol
U171	79-46-9	2-Nitropropane (I, T)
U172	924-16-3	N-Nitrosodi-n-butylamine
U173	1116-54-7	N-Nitrosodiethanolamine
U174	55-18-5	N-Nitrosodiethylamine
U176	759-73-9	N-Nitroso-N-ethylurea
U177	684-93-5	N-Nitroso-N-methylurea
U178	615-53-2	N-Nitroso-N-methylurethane
U179	100-75-4	N-Nitrosopiperidine
U180	930-55-2	N-Nitrosopyrrolidine
U181	99-55-8	5-Nitro-o-toluidine
U193	1120-71-4	1, 2-Oxathiolane, 2, 2-dioxide
U058	50-18-0	2H-1, 3, 2-Oxazaphosphorin-2-amine, N, N-bis(2-chloroethyl) tetrahydro-, 2-oxide
U115	75-21-8	Oxirane (I, T)
U126	765-34-4	Oxiranecarboxyaldehyde
U041	106-89-8	Oxirane, (chloromethyl)-
U182	123-63-7	Paraldehyde
U183	608-93-5	Pentachlorobenzene
U184	76-01-7	Pentachloroethane
U185	82-68-8	Pentachloronitrobenzene (PCNB)
See F027	87-86-5	Pentachlorophenol
U161	108-10-1	Pentanol, 4-methyl-
U186	504-60-9	1, 3-Pentadiene (I)
U187	62-44-2	Phenacetin
U188	108-95-2	Phenol
U048	95-57-8	Phenol, 2-chloro-
U039	59-50-7	Phenol, 4-chloro-3-methyl-

Hazardous Waste No.	Chemical Abstract No.	Substance
U081	120-83-2	Phenol, 2, 4-dichloro-
U082	87-65-0	Phenol, 2, 6-dichloro-
U089	56-53-1	Phenol, 4, 4^P-(1, 2-diethyl-1, 2-ethenediyl) bis-, (E)
U101	105-67-9	Phenol, 2, 4-dimethyl-
U052	1319-77-3	Phenol, methyl-
U132	70-30-4	Phenol, 2, 2^P-methylenebis[3, 4, 6-trichloro-
U170	100-02-7	Phenol, 4-nitro-
See F027	87-86-5	Phenol, pentachloro-
See F027	58-90-2	Phenol, 2, 3, 4, 6-tetrachloro-
See F027	95-95-4	Phenol, 2, 4, 5-trichloro-
See F027	88-06-2	Phenol, 2, 4, 6-trichloro-
U150	148-82-3l	L-Phenylalanine, 4-[bis(2-chloroethyl) amino]-
U145	7446-27-7	Phosphoric acid, lead (2+) salt (2:3)
U087	3288-58-2	Phosphorodithioic acid, O, O-diethyl S-methyl ester
U189	1314-80-3	Phosphorus sulfide (R)
U190	85-44-9	Phthalic anhydride
U191	109-06-8	2-Picoline
U179	100-75-4	Piperidine, 1-nitroso-
U192	23950-58-5	Pronamide
U194	107-10-8	1-Propanamine (I, T)
U111	621-64-7	1-Propanamine, N-nitroso-N-propyl-
U110	142-84-7	1-Propanamine, N-propyl- (I)
U066	96-12-8	Propane, 1, 2-dibromo-3-chloro-
U083	78-87-5	Propane, 1, 2-dichloro-
U149	109-77-3	Propanedinitrile
U171	79-46-9	Propane, 2-nitro- (I, T)
U027	108-60-1	Propane, 2, 26p-oxybis[2-chloro-
U193	1120-71-4	1, 3-Propane sultone
See F027	93-72-1	Propanoic acid, 2-(2, 4, 5-trichlorophenoxy)-
U235	126-72-7	1-Propanol, 2, 3-dibromo-, phosphate (3:1)
U140	78-83-1	1-Propanol, 2-methyl- (I, T)
U002	67-64-1	2-Propanone (I)
U007	79-06-1	2-Propenamide
U084	542-75-6	1-Propene, 1, 3-dichloro-
U243	1888-71-7	1-Propene, 1, 1, 2, 3, 3, 3-hexachloro-
U009	107-13-1	2-Propenenitrile
U152	126-98-7	2-Propenenitrile, 2-methyl- (I, T)
U008	79-10-7	2-Propenoic acid (I)
U113	140-88-5	2-Propenoic acid, ethyl ester (I)
U118	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester
U162	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester (I, T)
U194	107-10-8	n-Propylamine (I, T)
U083	78-87-5	Propylene dichloride
U148	123-33-1	3, 6-Pyradazinedione, 1, 2-dihydro-
U196	110-86-1	Pyridine
U191	109-06-8	Pyridine, 2-methyl-
U237	66-75-1	2, 4-(1H, 3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-
U164	56-04-2	4(1H)-Pyrimidinone, 2, 3-dihydro-6-methyl-2-thioxo-
U180	930-55-2	Pyrrolidine, 1-nitroso-
U200	50-55-5	Reserpine
U201	108-46-3	Resorcinol
U202	81-07-2	Saccarin, & salts

Hazardous Waste No.	Chemical Abstract No.	Substance
U203	94-59-7	Safrole
U204	7783-00-8	Selenious acid
U204	7783-00-8	Selenium dioxide
U205	7488-56-4	Selenium sulfide
U205	7488-56-4	Selenium sulfide SeS2 (R, T)
U015	115-02-6	L-Serine, diazoacetate (ester)
See F027	93-72-1	Silvex (2, 4, 5-TP)
U206	18883-66-4	Streptozotocin
U103	77-78-1	Sulfuric acid, dimethyl ester
U189	1314-80-3	Sulfur phosphide (R)
See F027	93-76-5	2, 4, 5-T
U207	95-94-3	1, 2, 4, 5-Tetrachlorobenzene
U208	630-20-6	1, 1, 1, 2-Tetrachloroethane
U209	79-34-5	1, 1, 2, 2-Tetrachloroethane
U210	127-18-4	Tetrachloroethylene
See F027	58-90-2	2, 3, 4, 6-Tetrachlorophenol
U213	109-99-9	Tetrahydrofuran (I)
U214	563-68-8	Thallium (I) acetate
U215	6533-73-9	Thallium (I) carbonate
U216	7791-12-0	Thallium (I) chloride
U216	7791-12-0	Thallium chloride Tlcl
U217	10102-45-1	Thallium (I) nitrate
U218	62-55-5	Thioacetamide
U153	74-93-1	Thiomethanol (I, T)
U244	137-26-8	Thioperoxydicarbonic diamide [(H2N)C(S)]2S2, tetramethyl-
U219	62-56-6	Thiourea
U244	137-26-8	Thiram
U220	108-88-3	Toluene
U221	25376-45-8	Toluenediamine
U223	26471-62-5	Toluene diisocyanate (R, T)
U328	95-53-4	o-Toluidine
U353	106-49-0	p-Toluidine
U222	636-21-5	o-Toluidine hydrochloride
U011	61-82-5	1H-1, 2, 4-Triazol-3-amine
U227	79-00-5	1, 1, 2-Trichloroethane
U228	79-01-6	Trichloroethylene
U121	75-69-4	Trichloromonofluoromethane
See F027	95-95-4	2, 4, 5-Trichlorophenol
See F027	88-06-2	2, 4, 6-Trichlorophenol
U234	99-35-4	1, 3, 5-Trinitrobenzene (R, T)
U182	123-63-7	1, 3, 5-Trioxane, 2, 4, 6-trimethyl-
U235	126-72-7	Tris (2, 3-dibromopropyl) phosphate
U236	72-57-1	Trypan blue
U237	66-75-1	Uracil mustard
U176	759-73-9	Urea, N-ethyl-N-nitroso-
U177	684-93-5	Urea, N-methyl-N-nitroso-
U043	75-01-4	Vinyl chloride
U248	81-81-2	Warfarin, & salts, when present at concentrations of 0.3% or less
U239	1330-20-7	Xylene (I)
U200	50-55-5	Yohimban-16-carboxylic acid, 11, 17-dimethoxy-18-[(3, 4, 5-trimethoxybenzoyl)oxy]-, methyl ester, (3 beta, 16 beta, 17 alpha, 18 beta, 20 alpha)-

Hazardous Waste No.	Chemical Abstract No.	Substance
U249	1314-84-7	Zinc phosphide Zn3P2, when present at concentrations of 10% or less

APPENDIX G: P-List (Acutely Toxics)

Particularly Hazardous Substances include all P-list chemicals and hydrofluoric acid

Hazardous Waste No.	Chemical Abstract No.	Substance
P023	107-20-0	Acetaldehyde, chloro-
P002	591-08-2	Acetamide, N-(aminothioxomethyl)-
P057	640-19-7	Acetamide, 2-fluoro-
P058	62-74-8	Acetic acid, fluoro-, sodium salt
P002	591-08-2	1-Acetyl-2-thiourea
P003	107-02-8	Acrolein
P070	116-06-3	Aldicarb
P004	309-00-2	Aldrin
P005	107-18-6	Allyl alcohol
P006	20859-73-8	Aluminum phosphide (R,T)
P007	2763-96-4	5-(Aminomethyl)-3-isoxazolol
P008	504-24-5	4-Aminopyridine
P009	131-74-8	Ammonium pierate (R)
P119	7803-55-6	Ammonium vandate
P099	506-61-6	Argentate (1-), bis(cyano-C)-, potassium
P010	7778-39-4	Arsenic acid H3As04
P012	1327-53-3	Arsenic trioxide
P038	692-42-2	Arsine, diethyl-
P036	696-28-6	Arsonous dichloride, phenyl-
P054	151-56-4	Aziridine
P067	75-55-8	Aziridine, 2-methyl-
P013	542-62-1	Barium cyanide
P024	106-47-8	Benzenamine, 4-chloro-
P077	100-01-6	Benzenamine, 4-nitro-
P028	100-44-7	Benzene, (chloromethyl)-
P042	51-43-4	1, 2-Benzenediol, 4-[1-hydroxy-2-(methylamino) ethyl]-, (R)
P046	122-09-8	Benzeneethanamine, alpha, alpha-dimethyl-
P014	108-98-5	Benzenethiol

Hazardous Waste No.	Chemical Abstract No.	Substance
P001	81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts, when present at concentrations greater than 0.3%
P028	100-44-7	Benzyl chloride
P015	7440-41-7	Beryllium
P017	598-31-2	Bromoacetone
P018	357-57-3	Brucine
P045	39196-18-4	2-Butanone, 3, 3-dimethyl-1-(methylthio)-, O-[methyliamino) carbonyl] oxime
P021	592-01-8	Calcium cyanide
P021	592-01-8	Calcium cyanide Ca(CN)2
P022	75-15-0	Carbon disulfide
P095	75-44-5	Carbon dichloride
P023	107-20-0	Chloroacetaldehyde
P024	106-47-8	p-Chloroaniline
P026	5344-82-1	1-(o-Chlorophenyl) thiourea
P027	542-76-7	3-Chloropropionitrile
P029	544-92-3	Copper cyanide
P029	544-92-3	Copper cyanide Cu(CN)
P030		Cyanides (soluble cyanide salts), not otherwise specified
P031	460-19-5	Cyanogen
P033	506-77-4	Cyanogen chloride
P033	506-77-4	Cyanogen chloride (CN)CI
P034	131-89-5	2-Cyclohexyl-4, 6-dinitrophenol
P016	542-88-1	Dichloromethyl ether
P036	696-28-6	Dichlorophenylarsine
P037	60-57-1	Dieldrin
P038	692-42-2	Diethylarsine
P041	311-45-5	Diethyl-p-nitrophenyl phosphate
P040	297-97-2	O, O-Diethyl O-pyarzinyl phosphorothioate
P043	55-91-4	Diisopropylfluorophosphate (DFP)
P004	309-00-2	1, 4, 5, 8-Dimethanonaphthalene, 1, 2, 3, 4, 10, 10-hexa-chloro- 1, 4, 4a, 5, 8, 8a, -hexahydro-(1alpha, 4alpha, 4abeta, 5alphaa, 8alpha)-, 8abeta)-

Hazardous Waste No.	Chemical Abstract No.	Substance
P060	465-73-6	1, 4, 5, 8-Dimethanonaphthalene, 1, 2, 3, 4, 10, 10-hexa-chloro-, 1, 4, 4a, 5, 8, 8a-hexahydro-, (1alpha, 4alpha, 4abeta, 5beta, 8 beta, 8abeta
P037	60-57-1	2,7:3, 6-Dimethanonaphth [2, 3-b] oxirene, 3, 4, 5, 6, 9, 9-hexachloro- 1a, 2, 2a, 3, 6, 6a, 7, 7a-octahydro-, (1aalpha, 2beta, 2alpha, 3beta, 6beta, 6aalpha, 7beta, 7aalpha)-
P051	72-20-8	2, 7:3, 6-Dimethanonaphth [2, 3-b]oxirene, 3, 4, 5, 6, 9, 9-hexachloro- 1a, 2, 2a, 3, 6, 6a,7, 7a-octahydro-, (1aalpha, 2 beta, 2abeta, 3alpha, 6alpha, 6abeta, 7beta, 7aalpha)-, & metabolites
P044	60-51-5	Dimethoate
P046	122-09-8	alpha, alpha-Dimethylphenethylamine
P047	534-52-1	4, 6-Dinitro-o-cresol, & salts
P048	51-28-5	2, 4-Dinitrophenol
P020	88-85-7	Dinoseb
P085	152-16-9	Diphosphoramide, octamethyl-
P111	107-49-3	Diphosphoric acid, tetraethyl ester
P039	298-04-4	Disulfoton
P049	541-53-7	Dithiobiuret
P050	115-29-7	Endosulfan
P088	145-73-3	Endothall
P051	72-20-8	Endrin
P051	72-20-8	Endrin, & metabolites
P042	51-43-4	Epinephrine
P031	460-19-5	Ethanedinitrile
P066	16752-77-5	Ethanimidothioic acid, N-[[(methylamino) carbonyl] oxyl]- methyl ester
P101	107-12-0	Ethyl cyanide
P054	151-56-4	Ethyleneimine
P097	52-85-7	Famphur
P056	7782-41-4	Fluorine
P057	640-19-7	Fluoroacetamide
P058	62-74-8	Fluoroacetic acid, sodium salt
P065	628-86-4	Fulminic acid, mercury (2+) salt (R,T)
P059	76-44-8	Heptachlor
P062	757-58-4	Hexaethyl tetraphosphate

Hazardous Waste No.	Chemical Abstract No.	Substance
P116	79-19-6	Hydrazinecarbothioamide
P068	60-34-4	Hydrazine, methyl-
P063	74-90-8	Hydrocyanic acid
P063	74-90-8	Hydrogen cyanide
P096	7803-51-2	Hydrogen phosphide
P060	465-73-6	Isodrin
P007	2763-96-4	3(2H)-Isoxazolone, 5-(aminomethyl)-
P092	62-38-4	Mercury, (acetato-O) phenyl-
P065	628-86-4	Mercury fulminate (R,T)
P082	62-75-9	Methanamine, N-methyl-N-nitroso-
P064	624-83-9	Methane, isocyanato-
P016	542-88-1	Methane, oxybis [chloro-
P112	509-14-8	Methane, tetranitro- (R)
P118	75-70-7	Methanethiol, trichloro-
P050	115-29-7	6, 9-Methano-2, 4, 3-benzodioxathiepin, 6, 7, 8, 9, 10, 10-hexachloro-1, 5, 5a, 6, 9, 9a-hexahydro-, 3-oxide
P059	76-44-8	4, 7-Methano-1H-indene, 1, 4, 5, 6, 7, 8, 8-heptachloro-3a, 4, 7, 7a-tetrahydro-
P066	16752-77-5	Methomyl
P068	60-34-4	Methyl hydrazine
P064	624-83-9	Methyl isocyanate
P069	75-86-5	2-Methyllactonitrile
P071	298-00-0	Methyl parathion
P072	86-88-4	alpha-Naphthylthriourea
P073	13463-39-3	Nickel carbonyl
P073	13463-39-3	Nickel carbonyl Ni(C0)4, (T-4)-
P074	557-19-7	Nickel cyanide
P074	557-19-7	Nickel cynaide Ni(CN)2
P075	54-11-5	Nicotine, & salts
P076	10102-43-9	Nitric oxide
P077	100-01-6	p-Nitroaniline
P078	10102-44-0	Nitrogen dioxide

Hazardous Waste No.	Chemical Abstract No.	Substance
P076	10102-43-9	Nitrogen oxide NO
P078	10102-44-0	Nitrogen oxide NO2
P081	55-63-0	Nitroglycerine (R)
P082	62-75-9	N-Nitrosodimethylamine
P084	4549-40-0	N-Nitrosomethylvinylamine
P085	152-16-9	Octamethylpyrophosphoramide
P087	20816-12-0	Osmium oxide Os04, (T-4)-
P087	20816-12-0	Osmium tetroxide
P088	145-73-3	7-Oxabicyclo[2.2.1] heptane-2, 3-dicarboxylic acid
P089	56-38-2	Parathion
P034	131-89-5	Phenol, 2-cyclohexyl-4, 6-dinitro-
P048	51-28-5	Phenol, 2, 4-dinitro-
P047	534-52-1	Phenol, 2-methyl-4, 6-dinitro-, & salts
P020	88-85-7	Phenol, 2-(1-methylpropyl)-4, 6-dinitro-
P009	131-74-8	Phenol, 2, 4, 6-trinitro-, ammonium salt (R)
P092	62-38-4	Phenyimercury acetate
P093	103-85-5	Phenylthiourea
P094	298-02-2	Phorate
P095	75-44-5	Phosgene
P096	7803-51-2	Phosphine
P041	311-45-5	Phosphoric acid, diethyl 4-nitrophenyl ester
P039	298-04-4	Phosphorodithioic acid, O, O-diethyl S-[2-(ethylthio) ethyl] ester
P094	298-02-2	Phosphorodithioic acid, O, O-diethyl S-[(ethylthio) methyl] ester
P044	60-51-5	Phosphorodithioic acid, O, O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
P043	55-91-4	Phosphorofluoridic acid, bis (1-methylethyl) ester
P089	56-38-2	Phosphorothioic acid, O, O-diethyl O-(4-nitrophenyl) ester
P040	297-97-2	Phosphorothioic acid, O, O-diethyl O-pyrazinyl ester
P097	52-85-7	Phosphorothioic acid, O-[4-(dimethylamino) sulfonyl] phenyl]O, O-dimethyl ester
P071	298-00-0	Phosphorothioic acid, O, O, -dimethyl O-(4-nitrophenyl) ester
P110	78-00-2	Plumbane, tetraethyl-

Hazardous Waste No.	Chemical Abstract No.	Substance
P098	151-50-8	Potassium cyanide
P098	151-50-8	Potassium cyanide K(CN)
P099	506-61-6	Potassium silver cyanide
P070	116-06-3	Propanal, 2-methyl-2-(methylthio)-O-[(methylamino) carbonyl] oxime
P101	107-12-0	Propanenitrile
P027	542-76-7	Propanenitrile, 3-chloro-
P069	75-86-5	Propanenitrile, 2-hydroxy-2-methyl-
P081	55-63-0	1, 2, 3-Propanetriol, trinitrate (R)
P017	598-31-2	2-Propanone, 1-bromo-
P102	107-19-7	Propargyl alcohol
P003	107-02-8	2-Propenal
P005	107-18-5	2-Propen-1-o1
P067	75-55-8	1, 2-Propylenimine
P102	107-19-7	2-Propyn-1-o1
P008	504-24-5	4-Pyridinamine
P075	54-11-5	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, & salts
P114	12039-52-0	Selenious acid, dithallium (1+) salt
P103	630-10-4	Selenourea
P104	506-64-9	Silver cyanide
P104	506-64-9	Silver cyanide Ag (CN)
P105	26628-22-8	Sodium azide
P106	143-33-9	Sodium cyanide
P106	143-33-9	Sodium cyanide Na (CN)
P107	1314-96-1	Strontium sulfide SrS
P108	57-24-9	Strychnidin-10-one, & salts
P018	357-57-3	Strychnidin-10-one, 2, 3-dimethoxy-
P108	57-24-9	Strychnine, & salts
P115	7446-18-6	Sulfuric acid, dithallium (1+) salt
P109	3689-24-5	Tetraethyldithiopyrophosphate
P110	78-00-2	Tetraethyl lead
P111	107-49-3	Tetraethyl pyrophosphate

Hazardous Waste No.	Chemical Abstract No.	Substance
P112	509-14-8	Tetranitromethane (R)
P062	757-58-4	Tetraphosphoric acid, hexaethyl ester
P113	1314-32-5	Thallic oxide
P113	1314-32-5	Thallium oxide T1203
P114	12039-52-0	Thallium (I) selenite
P115	7446-18-6	Thallium (I) sulfate
P109	3689-24-5	Thiodiphosphoric acid, tetraethyl ester
P045	39196-18-4	Thiofanox
P049	541-53-7	Thioimidodicarbonic diamide [(H2N)C(S)]2NH
P014	108-98-5	Thiophenol
P116	79-19-6	Thiosemicarbazide
P026	5344-82-1	Thiourea, (2-chlorophenyl)-
P072	86-88-4	Thiourea, 1-naphthalenyl-
P093	103-85-5	Thiourea, phenyl-
P123	8001-35-2	Toxaphene
P118	75-70-7	Trichloromethanethiol
P119	7803-55-6	Vanadic acid, ammonium salt
P120	1314-62-1	Vanadium oxide V205
P120	1314-62-1	Vanadium pentoxide
P084	4549-40-0	Vinylamine, N-methyl-N-nitroso-
P001	81-81-2	Warfarin, & salts, when present at concentrations greater than 0.3%
P121	557-21-1	Zinc cyanide

APPENDIX H: F-List (Spent Solvents)

Industry and EPA Hazardous Waste No.	Description	Hazard Code
F001	The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1, 1, 1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons;all spent solvent mixtures/blends used in degreasing containing, beforeuse, a total of ten percent or more (by volume) of one or more of the abovehalogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F002	The following spent halogenated solvents: Tetrachloroethylene,methylene chloride, trichloroethylene, 1, 1, 1-trichloroethane, chlorobenzene, 1, 1, 2-trichloro-1, 2, 2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1, 1, 2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	
F003	The following spent non-halogenated solvents: Xylene, acetone, ethylacetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, beforeuse, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, beofre use, one or more of the above non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T) (I)*
F004	The following spent non-halogenated solvents: Cresois and cresylic acid, and Nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F005	The following spent non-halogenated solvents: Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxy-ethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of ten prcent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I,T)
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) Sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and 96) chemical etching and milling of aluminum.	(T)
F007	Spent cyanide plating bath solutions from electroplating operations	(R,T)
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	(R,T)
F009	Spent stripping and cleaning bath solution from electroplating operations where cyanides are used in the process.	(R,T)

Industry and EPA Hazardous Waste No.	Description	Hazard Code
F010	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.	(R,T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.	(R,T)
F012	Quenching waste water treatment sludges from metal heat treating operations where cyanides are used in the process.	(T)
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can wash-ing when such phosphating is an exclusive conversion coating process.	(T)
F020	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol, or of intermediates used to produce their pesticide derivatives. (This listing does not include wastes from the production of hexachlorophene from highly purified 2, 4, 5-trichiorophenol.).	(H)
F021	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives.	(H)
F022	Wastes (except wastewater and spent carbon from hydrogen chloride purification)from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions.	(H)
F023	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenois. (This listing does not include wastes from equipment used only for the production or use of Hexachlorophene from highly purified 2, 4, 5-trichlorophenol.).	(H)
F024	Process wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes, from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution. (This listing does not include wastewaters, wastewater treatment sludges, spent catalysts, and wastes listed in § 261.31 or § 261.32.).	(T)
F025	Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and poisitions of chlorine substitution.	(T)
F026	Wastes 9except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions.	(H)
F027	Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This listing does not include formulations containing Hexachlorophene sythesized from prepurified 2, 4, 5-trichlorophenol as the sole component.).	(H)

Industry and EPA Hazardous Waste No.	Description	Hazard Code
F028	Residues resulting from the incineration of thermal treatment of soil contaminated with EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027.	(T)
F032[1]	Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with § 261.35 of this chapter and where the generator does not resume or initiate use of chlorophenolic formulations). This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol. (NOTE: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The listing for plants that have previously used chlorophenolic formulations is administratively stayed whenever these wastes are covered by the F034 or F035 listings. These stays will remain in effect until further administrative action is taken.).	(T)
F034[1]	Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving process generated at plants that use creosote formulations. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol. (NOTE: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The stay will remain in effect until further administrative action is taken.).	(T)
F035[1]	Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving process generated at plants that use inorganic preservatives containing arsenic or chromium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol. (NOTE: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The stay will remain in effect until further administrative action is taken.).	(T)
F037	Petroleum refinery primary oil/water/solids separation sludge - Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refineries. Such sludges include, but are not limited to, those generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather fow. Sludge generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units as defined in § 261.31(b)(2) including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing.	(T)
F038	Petroleum refinery secondary (emulsified) oil/water/solids separation sludge - Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges and floats generated in aggressive biological treatment units as defined in § 261.31(b)(2) (including sludges and floats generated in one or more additional units) and F037, K048, and K051 wastes are not included in this listing.	(T)

Industry and EPA Hazardous Waste No.	Description	Hazard Code
F039	Leachate (liquids that have percolated through land disposed wastes) resulting from the disposal of more than one restricted waste classified as hazardous under subpart D of this part. (Leachate resulting from the disposal of more than one restricted waste classified as hazardous under subpart D of this part. (Leachate resulting from the disposal of one or more of the following EPA Hazardous Wastes and no other Hazardous Wastes retains its EPA Hazardous Waste Number(s): F020, F021, F022, F026, F027, and/or F028.).	(T)

[1] The F032, F034, and F035 listings are administratively stayed with respect to the process area receiving drippage of these wastes provided persons desiring to continue operating notify EPA by August 6, 1991 of their intent to upgrade or install drip pads, and by November 6, 1991 provide evidence to EPA that they have adequate financing to pay for drip pad upgrades or installation, as provided in the administrative stay. They stay of the listings will remain in effect until February 6, 1992 for existing drip pads and until May 6, 1992 for new drip pads.

*(I,T) should be used to specify mixtures containing ignitable and toxic constituents.

APPENDIX I

St. Lawrence University
Universal Waste
Storage Area Requirements

Revision Date: February 23, 2004 (Original)

Waste lamps that contain mercury are considered Universal Wastes and must be managed in accordance with New York Department of Environmental Conservation (DEC) regulations which are designed to ensure that the lamps are recycled, and that the mercury inside the waste lamps is not released into the environment.

St. Lawrence University will manage all waste Mercury-Containing Lamps (includes all fluorescent, high density discharge, neon, mercury vapor, high pressure sodium, and metal halide bulbs/lamps) as follows:

1. In a way that prevents releases of universal waste to the environment (i.e., the waste lamps are to be stored in closed boxes indoors).
2. The containers used to store the waste lamps (i.e., cardboard boxes or fiberdrums) must be:
   - Kept **closed** (except when adding or removing lamps from the container);
   - Structurally sound;
   - Adequate to prevent breakage;
   - Compatible with the contents of the lamps; and
   - Lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.
3. The containers used to store waste lamps must be labeled:
   "Universal Waste"
   - Make sure the container in your area is labeled "Universal Waste."
   - Make sure the "Contents" line on the Universal Waste label is marked with one of the following phrases: "Lamps", or "Waste Lamps", or "Used Lamps" — pen this phrase in on the label if necessary.

   St. Lawrence University is not allowed to store waste lamps on campus for longer than one year, therefore:
4. The Universal Waste label must be marked with an "Accumulation Start Date."
   - Make sure the container used to store the waste lamps is marked with the date that the **first** waste lamp is placed in the box.
   - Mark this date on the bottom of the Universal Waste label in the space provided.

   When the Universal Waste container is full of waste lamps, notify your supervisor, who will arrange for pick-up and transportation to the main Universal Waste Storage Area at the Facilities Operations Center. In any case, notify your supervisor before the one year storage date expires on any container of waste lamps.

APPENDIX J

St. Lawrence University
Universal Waste/Hazardous Waste
Storage Area Requirements

Revision Date: February 23, 2004 (Original)

- Any Mercury-Containing Lamp that is broken or shows evidence of breakage, leakage, or damage must be placed in a container that is closed, and managed as Hazardous Waste.

  St. Lawrence University will manage all broken/damaged Mercury-Containing Lamps (includes all fluorescent, high density discharge, neon, mercury vapor, high pressure sodium, and metal halide bulbs/lamps) through the hazardous waste program as follows:

The following procedures should be used to clean up broken or damaged lamps:

- Always wear safety glasses and disposable rubber gloves when cleaning up broken lamps. Avoid skin contact with mercury or surfaces that have been contaminated with mercury. Wash your hands and face after cleaning up any universal waste spill.

- Place the broken glass and debris in an appropriate container (i.e., a sealable clear plastic bag).

- Scoop or wipe up as much of the discharged material as possible, and place the rags and any other clean-up items in the plastic bag(s).

- Wipe the spill area thoroughly with a wet sponge, and/or go over the area with masking tape to pick up small particles of mercury. Place sponge, tape, and/or rags in the plastic bag(s).

- Seal the plastic bag, and place the bag in a closed plastic 5 gallon pail.

- Make sure the container is kept closed, and is labeled "Hazardous Waste" and with other words identifying the contents (i.e., broken fluorescent lamps). **Do not put any dates on this label.**

- Contact your supervisor for waste pick-up when the hazardous waste container is full. Your supervisor will arrange for the pickup within 3 days to have the container moved to the designated "180-Day" Hazardous Waste Storage Area. The manager of the 180-Day Storage Area/EH&S will coordinate the acceptance, dating and logging in of the waste at the 180-Day Storage Area.

APPENDIX K

St. Lawrence University
Hazardous Waste
Satellite Accumulation Area (SAA)
Requirements

Revision Date: October 6, 2004 (Rev 2)

St. Lawrence University, as a Small Quantity Generator (SQG) of hazardous waste, can accumulate up to 55-gallons of hazardous waste or one quart of acute (P-listed) hazardous waste at or near the point of generation* in "Satellite Accumulation Areas" without regard to the 180 day storage area requirements, provided the **containers are**:

1. Under the control of the operator of the process generating the waste;

2. In good condition and not in danger of leaking (not leaking, bulging, rusted, or dented);

3. Compatible with the waste;

4. **Closed** except when necessary to add or remove waste;

5. Labeled with the words "Hazardous Waste", lists the full name of all of the chemicals and identifies the appropriate hazard class; and

6. ******Moved to the 180-day storage area within 3 days of the limit being exceeded and marked with an accumulation start date.****** **Note:** The accumulation start date is the date the waste is moved and logged into the 180-day storage area.

* Hazardous waste that is moved from one lab, classroom, or area to another lab, classroom, or area violates the **"at or near the point of generation" requirement.**

** Contact Sue Kenney at 229-5105 for waste pickup when the hazardous waste container is full. Sue will arrange for the pickup within 3 days, have the container(s) moved to the designated 180-Day Storage Area, mark the containers with the accumulation start date, and complete the inventory log. Contact Sue Kenney if you need empty waste containers, hazardous waste labels or if you have any questions (x-5105).