BALL STATE
UNIVERSITY

WASTE MANAGEMENT GUIDE

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Environmental Health and Safety Office
Ball State University

BALL STATE UNIVERSITY WASTE MANAGEMENT GUIDE

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1.0 OVERVIEW

It is the policy and directive of Ball State University (BSU) that all wastes generated be handled in accordance with local, state, and federal requirements; that the volume and toxicity of all waste materials be minimized and eliminated to the extent practicable; and that, when residual waste disposal is necessary, that the wastes be disposed in a safe and environmentally responsible manner.

The regulatory framework for solid (and chemical) waste regulation was established in 1976 by the Federal Resource Conservation and Recovery Act (RCRA). RCRA was enacted by Congress to protect human health and the environment from improper management of hazardous waste. RCRA introduced the concept that the generator of a waste is responsible for proper waste management from "cradle-to-grave" (i.e. from the shop or laboratory to the waste's ultimate destruction). The federal RCRA regulations may be found in 40 CFR Parts 260-279.

1.1 Solid Wastes (Refuse):

Non-recyclable solid wastes generated on campus are collected by the university or private vendors from the numerous dumpsters and roll-off containers located at university buildings and elsewhere on the campus grounds. BSU building maintenance and custodial staff collect the bagged solid waste from dormitories, laboratories, class rooms, offices, and service areas. These are then deposited in the refuse containers for pickup and off-site disposal. Smaller refuse containers are also located on the university grounds, the waste from which is routinely collected by university landscaping staff for proper disposal.

1.2 Recycling and Reuse:

Ball State University is also active in the community collection of recyclables by providing separate “recyclable” collection containers throughout the campus. “Blue bags” for the separate collection of recyclable items including beverage containers, glass, metal, plastics, cardboard, paper and magazines are also provided to all academic, professional, and staff employees, as well as students in dormitories and off campus students requesting these bags for recycling of candidate solid wastes. Depleted toner and ink cartridges will also be collected by Facilities Management staff for recycling. The collection and shipment of electronic wastes for off-site recycling or reuse is another ongoing program at Ball State.

Numerous cardboard box compactors or collection roll offs/dumpsters are maintained and used by BSU Dining Facilities and Central Receiving and Stores for the recycling of those materials. Other examples of our efforts include the collection and recycling of waste oils and coolants from vehicle and building maintenance, and recycling of cooking oils from the BSU Dining facilities. BSU’s recycling program for spent batteries and lamp bulbs are described later in this guidance.

Further, Ball State maintains a large recycling effort at BSU’s nearby Heath Farm for landscaping and wood wastes, as well as for concrete, brick, block, and other reclaimable building materials. Landscaping and wood wastes, such as pallets, are ground and composted for reuse as mulch on the campus. Concrete, block and other non-putrescible building wastes are stored at Heath Farm pending crushing for reuse or as fill material. Bricks, when possible are cleaned for reuse in buildings, landscaping, and repairs.

The BSU Landscape and Bus Garage both have equipment that allow the emptying and recycling of aerosol containers and their contents. The device punctures the containers in a closed chamber, uses activated carbon to capture any aerosol or propellant emissions, and contains the residual liquid contents in a 55-gallon steel drum. This allows the steel or aluminum aerosol container to be recycled as scrap metal, and the captured contents to be utilized in a supplemental fuel recovery program.

Scrap steel, particularly larger equipment not collected in the recycling containers on campus is collected by BSU Facilities Management staff and placed in designated roll-off containers, or a scrap pad at the Heath Farm for removal and recycling by our steel recycling vendor.

All University faculty and staff are encouraged to minimize the wastes they or their Department generate, recycle, reclaim, or reuse them as possible, and seek other potential users for surplus chemicals or materials they may come to possess.

1.3 Hazardous, Universal, and Special Wastes:

Other than the solid waste and recyclable waste streams discussed above, many other regulated wastes are generated by the various educational, research, laboratory, and facility maintenance activities performed on the BSU campus. These include hazardous wastes, toxic wastes, other chemical wastes, infectious wastes, universal wastes, and other wastes requiring particular care or handling for disposal or reclamation. For convenience, we will refer to those wastes that are not hazardous wastes, but which still require particular care, handling, recycling, or disposal procedures, as "Special Wastes".

At Ball State University, chemical waste disposal is coordinated by the Environmental Health and Safety (EHS) Office. Hazardous wastes, or other potentially hazardous chemicals are not allowed to be disposed of in the building drains (without EHS and Muncie Sanitary District approval), in the trash, or by evaporation.

There are specific regulatory requirements for the individuals, laboratories, or shops, which generate and accumulate chemical waste. First, and most importantly, these individuals must properly identify and properly label all hazardous wastes in their workplace. Second, they must properly categorize and see to the proper handling, storage, and disposal of other waste materials. As part of that, they must properly store and submit requests to the EHS for disposal of chemical wastes. Finally, they must minimize the amount of waste generated and recycle whenever possible. The purpose of this document is to assist labs, shops, and the various academic, administrative, support, and recreational Departments within the University to ensure both safety and regulatory compliance. Every lab and shop on campus is subject to unannounced inspections by both the Federal Environmental Protection Agency (EPA) and the Indiana Department of Environmental Management (IDEM). Lack of compliance can result in a Notice of Violation and, potentially, fines or other penalties. More importantly, failure to properly identify, characterize, and handle these wastes properly can lead to serious accidents or exposures for employees, students, visitors, or contractors.

The University does not maintain a permitted hazardous waste storage facility on the BSU Campus and it is therefore necessary for the Departments generating the wastes and the EHS Office to coordinate and accumulate them in accordance with the EPA/IDEM waste regulations - pending pickup for transport and off-site disposal. All chemical waste is required to be held in the generating location (this location is defined as a "Satellite

Accumulation Area") for subsequent pick-up, recycling, or disposal by EHS through an approved recycling or waste disposal vendor. Some wastes may be relocated by EHS staff to one of two chemical waste accumulation areas maintained by the University for secure storage--while awaiting removal and proper disposal or recycling by our approved waste disposal vendor.

The EHS Office will assist in any way possible with the identification and proper handling of wastes, including hazardous wastes, by the various Departments, laboratories, or other waste generators on the Ball State campus. The regulatory requirements or waste handling procedures covered in this document include the following general waste types:

Waste: A material/chemical that has no intended use or reuse, or for which a decision has been made to discard it, including chemicals and materials from a spill clean-up, or unused commercial chemical products. Wastes include everything from paper and food scraps to scrap metal, spent batteries, and electronic wastes, to toxic or flammable chemical wastes.

Hazardous Waste: A waste that is EPA listed, possesses one of the EPA's hazardous characteristics, or is determined to be hazardous by review of the material's SDS or other sources.

Special Waste: A waste that is *not a hazardous waste*, but either requires special handling or disposal, is recyclable or recoverable, or should otherwise not be disposed in refuse containers or dumpsters as a solid waste. Examples would be e-wastes, many liquid chemical wastes, aerosol cans, biological wastes, sharps, etc.

Universal Waste: Universal wastes are *hazardous wastes* that are generated by a wide variety of people that contain mercury, lead, cadmium, copper and other substances hazardous to human and environmental health. While a category of hazardous waste, specific regulations apply to these wastes to encourage their segregation and recycling and to discourage disposal as a solid waste or in landfills. Specifically, in Indiana, these wastes are spent batteries, waste lamps, and mercury containing devices.

The first step is to discuss and provide guidance for the characterization, or identification, of *hazardous wastes*. This is because the risks associated with misidentification, mishandling, or failure to comply with the applicable regulations are potentially the most severe for hazards wastes. Other, or special wastes, will then be discussed separately in Section 5 of this guide. *Special wastes* are those wastes that do not meet the definition or criteria for a hazardous waste, yet may require special handling or disposal methods compared to "normal" solid wastes, and are not to be disposed in campus refuse containers, solid waste dumpsters or roll

off containers.

The hazardous waste guidance in Sections 2 through 4 provides information and requirements for the following:

- Identification (waste determination) and handling of hazardous wastes;
- Labeling of hazardous waste containers; and,
- Accumulation of hazardous wastes.

Currently, Ball State University is considered a Small Quantity Generator (SQG) of hazardous waste under EPA and IDEM regulations. This means that less than 1,000 kilograms (2,200 pounds) of hazardous waste are generated monthly from all shops, laboratories, and maintenance activities, and no more than a total of 6,000 kg (13,200 lbs) of hazardous wastes are stored at any time. We endeavor to maintain this status through routine pickups of hazardous waste throughout the calendar year as the regulatory requirements are less onerous than those for a Large Quantity Generator (LQG) of hazardous waste.

The Top 10 Guidelines for Environmental Responsibility

1. Attend BSU environmental and waste management training.
2. Properly identify the waste hazards and correctly categorize the waste type: high hazard, hazardous, universal, or special waste.
3. Properly label and store all waste containers.
4. Keep waste in proper containers and segregate incompatible wastes.
5. Use secondary containment for liquid wastes.
6. Keep waste containers closed at all times.
7. Do not dispose of hazardous or special waste by evaporation, dumping down drains or sewers, or putting in trash containers.
8. Notify **BSU University Police (5-1111)** for a major chemical spill (beyond training or capability of employees to handle).
9. Use pollution prevention techniques. (Reduce, Reuse, Recycle).
10. If you have questions or need assistance with waste identification, handling, or spill cleanup call the **BSU EHS Office (285-2807)**.

2.0 IDENTIFYING A HAZARDOUS WASTE

The requirements described in this guide do not apply until a material becomes a waste. From a regulatory perspective, a waste is something that is spent, has no further use, or no intended use, and a decision is made that it is to be discarded. A determination must be made for every waste generated at Ball State University as to whether or not the waste should must be handled as a hazardous waste. Most of these determinations are simple, while others may be complex and require sampling and analysis of the waste. A waste is determined to be a "hazardous waste" by one of three means:

1. It is on one of the EPA's lists of hazardous chemicals;
2. It meets the definition of at least one of the EPA-defined characteristics of toxicity, ignitability, reactivity, or corrosiveness; or
3. The waste's generator, utilizing some outside source of information (SDS, manufacturer's website, etc.) determines that the waste should be treated as a hazardous waste due to its inherent danger.

The waste determination is an important requirement under the hazardous waste rules, but may be based on generator knowledge of the wastes generated, by testing of the waste, or by both methods. Failure to make a "waste determination", or to incorrectly classify a waste, is itself a violation under these regulations.

It should be stressed that not all chemical wastes constitute hazardous wastes, and should not therefore be identified as such. Wastes determined to be hazardous wastes are subject to more intensive regulatory oversight governing their identification, accumulation, handling, storage, transportation, and available means of disposal or recycling. While chemical wastes that are not hazardous wastes are not subject to such intensive oversight, it is still necessary to handle them carefully and ensure they are disposed or recycled properly. Many wastes that do not meet the criteria to be a *hazardous waste* may still have hazardous properties and require similar handling precautions. Non-hazardous, or special, wastes are picked up by the EHS at the same frequency as hazardous wastes and, very often, from the same locations.

2.1 Common sources of hazardous (or special or universal) wastes

The following are some common sources of wastes at Ball State University that must be considered as potential hazardous waste and for which waste determinations must be made:

- **Abandoned Unknowns.** This category is the most difficult. The problems of abandoned unknowns can be avoided with standard shop or laboratory protocol: label each container as to content, concentration, date, prepared or purchased, and your initials. Unknown or unidentified wastes are extraordinarily expensive for disposal--particularly unknown gases.

- **Orphan Wastes.** Waste chemicals from laboratories that are adopted, passed on to subsequent faculty members or researchers, or inherited with the laboratory. These chemicals sometimes date back to when government monies were widely available for science education and research at schools and universities.

- **Laboratory Wastes.** Wastes from laboratory demonstrations or research are often hazardous wastes. The principal investigator, faculty, or laboratory manager will need to know the ingredients and characteristics of the wastes generated in the laboratory. Ignitable (D001), corrosive (D002) and reactive (D003) wastes are common.

- **Shop Wastes.** Wastes from the BSU maintenance shops including paints, grindings, ash, used oils and coolants, aerosol cans, paint filters, dust collectors, etc.

- **Art Department Wastes.** Photographic development wastes, paints and solvents, metal working wastes and lubricants, grindings, etc.

- **Dining Wastes.** Used vegetable oils and greases, food wastes, drain cleaners, maintenance and sanitizing chemicals.

- **Building Maintenance and Custodial Wastes.** Cleaning compounds and liquids, broken glass, lamps from lighting fixtures.

- **Medical and Biological Wastes.** Wastes from biological, nursing, health center, human performance research, medical education, and health and physiological research activities.

- **Questionable Purity.** Chemicals of questionable purity should often not be used and should be considered waste.

- **Expiration Date Surpassed.** Please pay special attention to the expiration dates of peroxidizable chemicals. Use or disposal of peroxidizable chemicals before their expiration date is passed is very important.

- **Photographic Process Waste.** The spent chemicals, especially fixer, used in developing photographic and x-ray film contain silver, a RCRA waste. These solutions are collected and recycled.

- **Chemicals from Discontinued Research, Experiments, and Analysis.** When these materials are no longer useful or cannot be recycled, they are considered waste and must be characterized prior to disposal.

- **Excess Stock with No Likelihood of Use.** Stock with no likelihood of use is waste. Careful purchasing can reduce the volume of excess chemicals that have to be managed as hazardous waste.

- **Spent Cleaning and Wash Solvents.** Spent cleaning and organic solvents are almost always hazardous waste because the solvent or the materials which contaminate the solvent may be hazardous. Spent solvents from automotive parts and washing machines are recycled. Other generators of spent solvents should contact the EHS Office for management options.

- **Spent Acids and Caustics.** Used acids or bases from laboratory work or aqueous solvents used for building maintenance and cleaning purposes, floor stripping, etc.

- **Spent disinfectants.** Chemicals such as chlorine, quaternary ammonium compounds, and glutaraldehyde.

- **Preservatives.** Solutions of formaldehyde (formalin), or alcohols used in the preservation of biological specimens, with or without specimen presence in the waste

- **Waste Paints.** Waste paints containing hazardous metals such as lead or hazardous solvents have to be treated as hazardous waste. Most waste water based (latex) paints are not considered to be hazardous waste, whereas most oil-based paints are ignitable hazardous wastes when disposed.

- **Used Oil.** Oil (petroleum, vegetable, and synthetic) is to be recycled. Used oil filters may be disposed of as ordinary waste provided they are drained of free liquid and crushed.

- **Mercury.** Mercury is commonly found in instrumentation, thermostats, and thermometers. If released, spilled mercury and spill control equipment (absorbents, etc., must be disposed as a hazardous waste. Disposal of a broken mercury thermometer costs many times more than the purchase price of an electronic thermometer. If intact, mercury containing lamps, thermometers, etc., can be handled as universal wastes.

- **Electrical Transformers.** Older (1979 and before) electrical transformers often contain PCB dielectrics. Disposal of PCB dielectric fluids from equipment is very expensive as it is regulated under the federal Toxic Substances Control Act (TSCA). This includes the ballasts from fluorescent light fixtures. Any transformer or capacitor not bearing a "No PCBs" label must be handled as a PCB contaminated device.

- **Fluorescent or mercury-containing lamps.** Used fluorescent bulbs may be recycled for glass and mercury recovery as a universal waste if they are not broken. Broken bulbs must be handled and disposed as hazardous waste.

- **Batteries.** Intact, non-leaking batteries that are rechargeable may be recycled as a universal waste. Broken or leaking batteries may need to be disposed as a hazardous waste.

- **Donated or "Free" Chemicals.** The "free" chemicals acquired by various departments on campus have cost thousands of dollars to dispose of as hazardous waste. Accept no donated chemicals from any source without first consulting EHS.

Again, it is important to remember **two points** throughout this guidance document:

- *Not all chemical wastes are hazardous wastes as defined in the RCRA regulations; and,*

- *Although a waste chemical may not be defined as a hazardous waste under the RCRA regulations, such does not mean that it is safe to handle or dispose with other solid waste or refuse.* Procedures and precautions for the handling of other "special" wastes are included in this guidance.

As mentioned previously, there are basically two causes or means by which a particular waste or waste stream must be determined to be a hazardous waste: (1) if it is specifically listed as a hazardous waste due to its process use (F and K Lists) or by its chemical identity (P and U Lists); or, if it exhibits one of the four characteristics of a hazardous waste – ignitability, corrosivity, reactivity, or toxicity. These are discussed in more detail in the following section of this guidance and a simple flow chart is provided. Of course, a generator may also choose to have a

waste generated to be handled as a hazardous waste if he believes it's mishandling or disposal may create a physical or health hazard or endanger the environment.

2.2 EPA Characteristic Hazardous Wastes

Rather than being directly identified as comprising a hazardous waste by virtue of being on the F, K, P, or U lists, a waste is a hazardous waste if it exhibits any one of the four physical characteristics of a hazardous waste. The following are the four characteristics and a few examples of common wastes at the University:

2.2.1. Ignitable Wastes

a) Flammable Liquids- Flashpoint <140 F
   Examples: *Alcohols, Benzene, Toluene, Xylene, Acetonitrile*
b) Oxidizers
   Examples: *Nitrates, Perchlorates, Bromates, Permanganates, Peroxides, Periodates*
c) Organic Peroxides
   Examples: *Benzoyl Peroxide, Cumene Hydroperoxide, Methyl Ethyl Ketone Peroxide*

2.2.2. Corrosive Wastes – Aqueous liquids with a pH of ≤ 2 or ≥ 12.5

a) Inorganic Acids
   Examples: *Hydrochloric Acid, Sulfuric Acid, Nitric Acid, Phosphoric Acid*
b) Organic Acids
   Examples: *Formic Acid, Lactic Acid, Acetic Acid*
c) Bases
   Examples: *Hydroxide solutions, Amines*

2.2.3. Reactive Wastes –

Materials which can react violently with water, create toxic and /or flammable gases when mixed with water, ignite or react upon exposure to air, or are capable of detonation at standard temperature and pressure. Examples:

a) Sulfides and Cyanides
b) Peroxide formers
c) Alkali metals - Sodium, Potassium, Lithium
d) Dinitro - and Trinitro - compounds - Picric Acid
e) Carbonyl compounds
f) Isocyanates
g) Perchlorate crystal formers - Perchloric Acid

2.2.4. Toxic Wastes

A selected group of eight (8) heavy metals, ten (10) pesticides, and twenty-two (22) organic chemicals are classified as hazardous due to their toxicity characteristic. These materials constitute a hazardous waste if an extract (leachable constituents) of the waste exceeds the quantitative threshold for that constituent. For example, lead-based paint normally fails the TCLP test for lead. The complete list is located in **Appendix 'A'.**

If you are ever unsure of a waste's characteristics, contact the BSU EHS Office so that they can assist with the waste determination. Remember, under the regulations, it is the waste generator's responsibility to determine whether or not a particular waste constitutes a hazardous waste. If the faculty member or principal investigator makes an incorrect determination considerable liability and risk may result.

2.3 Listed Hazardous Wastes

A hazardous waste can be classified, or listed, as either a process waste or a discarded commercial chemical product. This distinction is particularly important when manifesting and labeling wastes.

2.3.1 Process wastes

A process waste is any waste that, by virtue of some use, process or procedure, no longer meets the manufacturer's original product specifications, has been exhausted, or contaminated to the extent it can no longer be used for its intended purpose. Examples of process wastes are chromatography effluents, spent solvents, electroplating wastes, diluted chemicals, reaction mixtures, contaminated paper, etc. These are referred to as "F" and "K" wastes under the EPA regulations and they are specifically listed by the industrial process or use through which they are generated. Few "K" listed wastes are generated by the University as, for the most part, those are byproducts of industrial scale production practices. Some "F" listed wastes are generated though, particularly F001 – F005 waste streams, from the use of solvents in laboratories and building maintenance activities. The regulatory criteria for the F001-F005 wastes are included in **Appendix B** to this guidance document.

2.3.2 Discarded commercial chemical products

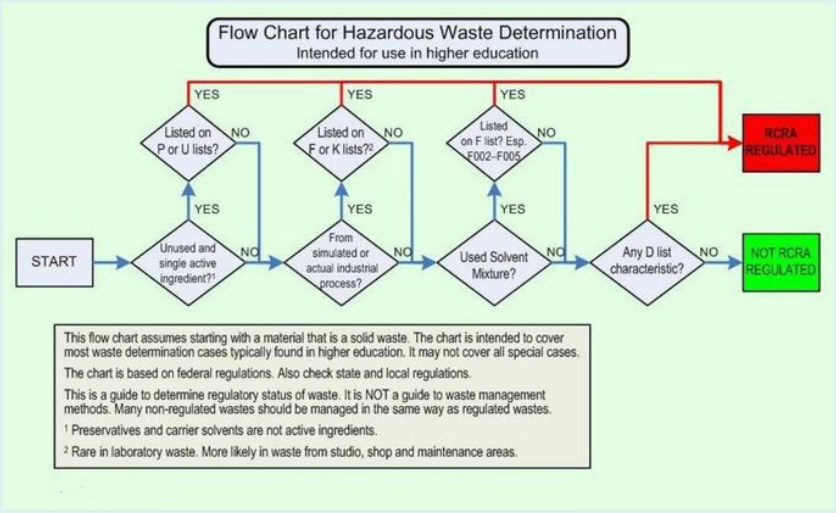
A discarded *commercial chemical product* is the original material. Examples are containers of unused or outdated chemicals from laboratories, darkrooms, or service areas. These are referred to as "P" and "U" wastes under the hazardous waste regulations.

Appendix B to this Guidance is a composite of approximately 850 chemicals that are recognized by the EPA and BSU EHS as possible constituents of hazardous wastes. It must be stressed that just because one of the chemicals appearing in **Appendix B** is present in a waste, that does not mean the waste is a hazardous waste. The particular chemical must be the sole active ingredient in the material, and the waste must not have been used for its intended purpose or mixed with any other chemical, compound, or product. Usually these wastes were "off-specification" or chemicals that were not used for whatever reason.

Acutely toxic hazardous wastes, also called "P-listed" wastes, comprise the first list of **Appendix B**. Any container that once held a P-listed waste must be given to EHS. Additionally, no more than 1 quart of a P-listed waste may be stored in a satellite accumulation area, whereas up to 55-gallons may be stored in such areas of other hazardous wastes, including the U-listed wastes.

The EHS Office should be notified if a shop or lab generates or intends to dispose of any quantity of a P-listed waste.

Everyone who generates a U or P-listed waste must be extremely careful not to mix that waste with any other waste--or the entire volume must then be identified, handled and disposed as a listed hazardous waste.



Identification Logic

There are many subtle exceptions and inclusions in the RCRA rules, but the following principles serve quite well for nearly all lab waste from higher education. See text below or the flow chart. A waste item must pass all of the following tests to be non-RCRA. Use your knowledge about the source of the waste to help answer the questions. If in doubt, you may need to supplement your knowledge with chemical analyses.

1. Is it unused with a single active ingredient? Note: Preservatives, propellants, solvents and fillers are not active ingredients. Check the P and U lists.
2. Did it come from a simulated or actual industrial process? (rare from labs, more likely from art studios, maintenance and shops)? Check F and K lists.
3. Is it a used solvent mixture? Check F list, specifically F002 through F005.
4. None of the above? Check for characteristic on D list.
5. If it passes all of these tests, it is not RCRA regulated.

By familiarizing yourself with the hazardous waste characteristics and listings you will be able to determine the waste classification of most materials-- provided you are knowledgeable of their physical and chemical properties. Manufacturer's (MSDS) are excellent sources of information about chemicals. In the interest of personal safety, one should not routinely handle a material unless you have studied not only its physical and chemical properties but also its health effects.

2.4 High Hazard Wastes

Particular precautions must be taken with some wastes such as picric acid, concentrated perchloric acid and others that are explosive, highly reactive, or extremely toxic. Others require

special care as they are regulated under other OSHA, ATFE, EPA, DEA, or fire prevention programs.

Some of these include:

- **Unknowns** - Special effort should be exercised to prevent the generation of unknown wastes, since characterization of unknown wastes significantly increases the cost of disposal. To have unknowns picked up, place a *Hazardous Waste label* on the container with the word *"Unknown"* in the constituent's column.

- **Picric Acid -** Picric acid is normally wet with >10% water and is relatively safe in this form. However, picric acid can become explosive if dried or combined with metals.
  - Never store in containers with metal caps.
  - Check frequently to ensure dampness. Add water if needed.
  - Keep cap tight and seal to keep moisture in.
  - If dry picric acid is found, notify HES.

- **Drugs** - There are many chemical and/or pharmaceutical compounds that are used in research that are also considered hazardous wastes by the EPA when disposed.

- **Peroxide Formers** – These compounds must be picked up by EHS within six (6) months after date of opening or one (1) year after date of receipt. Common peroxide formers are ethyl ether, ethylene glycol dimethyl ether (glyme), vinyl ethers, isopropyl ether, potassium metal, and sodium amide. Chemicals that form peroxides should be dated when received and checked periodically with potassium iodide (KI) paper to detect peroxides. High peroxide concentrations may occur without the presence of visible crystals. Do not even attempt to test containers that are severely outdated as opening the container could cause an explosion. Contact EHS for assistance if such outdated materials are encountered. Departments which do not have a documented and functioning program to prevent peroxide formation will be expected to share in the high cost of disposal for these materials. Additional information is available on request from EHS.

- **Dinitro and trinitro compounds** - These compounds must be picked up by EHS before the contents have dried. These crystals can become shock sensitive when the moisture content is less than 10%. Picric acid is a common example of this type of compound.
- **Ethidium bromide** – Concentrated stock solutions must be handled by EHS as a hazardous laboratory waste. The rinsate and de-stained gels can be placed down the sink and into the trash. EHS will provide a 5 gallon bucket for stained gels to be handled as a hazardous laboratory waste. Researchers concerned about discarding gels or solutions with lower or questionable amounts can have them handled as a hazardous laboratory waste. If a lab chooses to decontaminate their ethidium bromide, the filter and/or resin beads must be handled by EHS.
- **2.4.7 Common-Named Reagents** – The following reagents contain mercury and should be handled as hazardous waste:

Dobbin's Reagent	Nessler's Reagent	Sachsse's Solution
Millon's Reagent	Hubb's Reagent	Knapp's solution
Hayem's Solution	Rohrback's Solution	Speigler's Reagent
Morrell's Solution	Tyrosine Reagents	Tanret's Reagent
Hopkins-Cole Reagent	Jacquemart;s Reagent	Meyer's Solution

Other high hazard reagents include: Flemming's Solution (osmium, chromic acid), Folin-Dennis Solution (mercuric cyanide), Fisher's Reagent (phenyl hydrazine), and Erlicki's Solution (chromium).

- **Controlled Substances** - Disposal of controlled substances is regulated by the Drug Enforcement Administration (DEA). If requesting the disposal of a controlled substance, also include the DEA registration number and telephone number of the person who originally authorized the purchase of the material.

- **Stench Chemicals –** While not necessarily a hazardous waste, chemicals that emit a stench such as thiols and sulfur containing compounds should be disposed of in containers with tight fitting lids. They can be double sealed with Parafilm, tape, or overpacked in a slightly larger container.

- **Trace Contaminated Laboratory Waste** - This includes gloves, gowns, bench paper, etc., that have been contaminated with carcinogens, mutagens, teratogens, or heavy metals. Materials from spill cleanups are often included in this category. Sharps, empty or full reagent bottles, and non-contaminated trash should not be packaged with trace contaminated waste in order to minimize the amounts generated. Trace contaminated trash should be double plastic bagged, with each bag sealed, and placed in a sturdy cardboard box, which is sealed with tape and appropriately labeled. Include this material with your wastes for hazardous waste disposal.

- **Pyrophoric Chemicals -** Some chemicals react with air and ignite spontaneously. Pyrophorics should be stored in a tight container in an inert atmosphere. Some common examples are listed below:
    - Activated zinc
    - Butyl lithium
    - Diethyl zinc
    - Phosphorous
    - Raney nickel
    - Trimethyl aluminum

- **Water Reactive Chemicals -** Some chemicals react with water and produce excessive heat, and flammable or toxic gases. These must be identified and stored under conditions that prevent contact with water. Some examples are listed below:

    - Acid anhydrides, e.g., acetic anhydride
    - Acid halides, inorganic, e.g., phosphoryl chloride, sulfuryl chloride
    - Acid halides, organic, e.g., acetyl chloride
    - Alkali metals
    - Alkali metal amides or hydrides
    - Anhydrous metal halides, e.g., aluminum trichloride
    - Calcium carbide
    - Grignard reagents

- Metal alkyls
- Non-metal halides, e.g., boron trifluoride, phosphorous trichloride
- Phosphoric anhydride or phosphorous pentoxide
- Sodium dithionite

The EHS Office should be notified if any of these, or other materials are generated as wastes in a form or concentration that may present physical risks.

3.0 WASTE TRANSPORT AND STORAGE REQUIREMENTS

3.1 WASTE (AND CHEMICAL) TRANSPORTATION

U.S. Department of Transportation Hazardous Material (HazMat) standards regulate the labeling, packaging, and transportation of hazardous materials. The definition of *hazardous materials* encompasses many chemicals used in laboratories and campus maintenance activities. Training is also required by the DOT for employees handling hazardous materials. BSU employees are exempt from the training requirements when transporting hazardous materials in university vehicles on university business, but any persons shipping hazardous materials off campus by a non-university carrier are subject to the training requirements. The EHS Office should be contacted if you are shipping hazardous materials in regulated quantities or packaging off site.

Many precautions for transporting waste on campus apply to proper chemical handling as well.

- Hazardous materials must be transported and handled on campus in accordance with the BSU *DOT Hazardous Materials Shipping Security Plan.*

- Stock Room or chemical storage personnel should not dispense chemicals in breakable containers of any size unless the customer has an approved transport container in which to place the chemical for transporting before leaving the Stock Room. *Approved transport container* means a commercially available bottle carrier made of rubber, metal or plastic with carrying handle(s) which is large enough to hold the contents of the container transported if broken in transit. Lids or covers are desirable, but not necessary if secondary containment is available. Rubber or plastic should be used for acids/alkalis; and metal, rubber, or plastic for organic solvents.

- Laboratory Carts used to transport chemicals from one area to another must be stable and in good condition. Unless the chemical is in an *approved transport container,* secondary containment should be provided for the primary chemical container. Transport only a quantity which can be handled easily. Plan the route ahead of time so as to avoid all steps, stairs, or persons.

- Use freight elevators, not passenger elevators to transport hazardous chemicals whenever possible. The individual transporting the hazardous chemicals should operate the elevator alone if possible. Avoid getting on an elevator when a person is transporting hazardous chemicals. Request other persons to await the next elevator run rather than ride with the hazardous chemicals.

3.2 HAZARDOUS WASTE ACCUMULATION REQUIREMENTS

Once a waste is determined to constitute a RCRA *hazardous waste*, specific requirements apply to the labeling, accumulation, storage, transportation, and disposal of that waste. While this

section specifically addresses hazardous wastes, similar information should be provided and precautions be taken for any chemical wastes – although they would not be labeled as *hazardous waste.*

It is the responsibility of the shop, laboratory, or other generator to ensure that laboratory or other waste generation and storage areas are maintained in accordance with applicable rules and regulations. Waste is to be accumulated only in areas classified as "Satellite Accumulation areas." A *Hazardous Waste Satellite Accumulation Area Requirements* sheet **Appendix C** includes the required criteria to allow hazardous wastes to be stored in *satellite accumulation areas* pending removal for disposal. Information is provided for both shops and laboratory hazardous wastes being generated. The laboratory or shop must ensure that everyone in the lab has read and is familiar with the *Hazardous Waste Satellite Accumulation Area Requirements* sheet and this *Waste Management Guide.*

Hazardous waste at a satellite accumulation area can be accumulated as long as necessary, but the total quantity of all wastes at one Satellite Accumulation Area may never exceed a total of 55 gallons. Additionally, no more than 1 quart or 1 kilogram of an acutely hazardous waste (P-Listed Waste) may be accumulated at one time.

All waste containers must have at least one (1) inch of headspace to allow for expansion. The exterior of the container must be free of chemical contamination. Leaking or overfilled containers must be repackaged before they will be transported by EHS.

A Hazardous Waste label must be affixed to a container before any hazardous waste is put into the container. Refer to **Section 4** for additional labeling requirements. The container must be stored closed except when actively adding or removing wastes.

Incompatible chemicals must not to be placed in the same container and the container must be compatible with the wastes contained in it. **Appendix D** includes information on the compatibility of differing chemicals for storage purposes. When placing a chemical into the waste container, consider venting to prevent over-pressurization resulting from any abnormal reactions. Mixing of wastes should normally be done in a fume hood or well-ventilated area. A spill kit must be accessible to all lab personnel. The spill absorbent or neutralizer must be appropriate for the spilled chemical.

Do not hold unneeded chemicals or waste. Dispose of these promptly to ensure regulatory compliance and to maintain a safe workplace. If 55-gallons of hazardous waste are accumulated in one or more containers, contact the EHS office immediately, as it must then be removed from the satellite accumulation area within three (3) days. The EHS Office will pick up the wastes for continued storage in one of

our compliant hazardous waste accumulation areas on campus to await the next scheduled pickup.

Shops, laboratories, or other locations that generate hazardous wastes in satellite accumulation areas should also post emergency contact numbers including the following:

EMERGENCY PHONE NUMBERS

Fire, Explosion, or Major Spill	**5-1111 or 911 (University Police)**
Medical Emergency or exposure	**5-1111 or 911 (University Police)**
IDEM Emergency Response	**888-233-7745**
Gas Leak	**800-227-1376 (Vectren – after 911 call)**
BSU Work Control	**285-5082 (Craft shop assistance)**
University Health Center	**285-8431**
Poison Control	**800-382-9097**
Spill or Exposure Reporting	**285-2807 (EHS Office)**

Hazardous Waste Containers

All hazardous waste material **must** be stored in an appropriate container.

The containers must be:

- Compatible with the waste material being stored; check MSDS
- Sturdy and leak-proof
- An appropriate size
- Under the control of the person generating the waste
- Closed at all times except when adding waste, and have a tight-fitting cap
- Clearly identified with a hazardous waste label

Containers that previously held materials that might be incompatible with the waste to be stored (including food, beverage and detergent containers) are NOT suitable for storing waste.

Incompatible Materials

Certain hazardous wastes **cannot** be safely mixed or stored with other materials because a severe reaction or explosion can occur or an extremely toxic reaction product can result.

The chemical label and/or MSDS should provide information on incompatibilities. In general, hazardous waste containers should be segregated by hazard class as listed below:

- Ignitable/Flammable • Reactive with Water • Corrosive

Pyrophorics	• Reactive with Air	• Concentrated Acids
Explosive	• Peroxide Formers	• Concentrated Base
	•Oxidizers	•Reducers

3.3 OTHER CHEMICAL WASTE STORAGE

While not as onerous as the hazardous waste storage requirements, certain practices must be followed for the safe storage of other hazardous chemicals, regardless of whether they are wastes, on campus and in laboratories. This will prevent breakage or leakage from containers that would create a hazardous waste needing disposal:

- Chemicals should always be segregated according to compatibility. The segregation of chemicals assures the safety of the chemical user, other persons, EHS personnel, and regulatory compliance for the University. Refer to **Appendix D** in this guide, or other chemical compatibility charts.

- Excess or outdated chemicals should not be allowed to accumulate in any location. This would create an unsafe working environment for university personnel, students, or visitors.

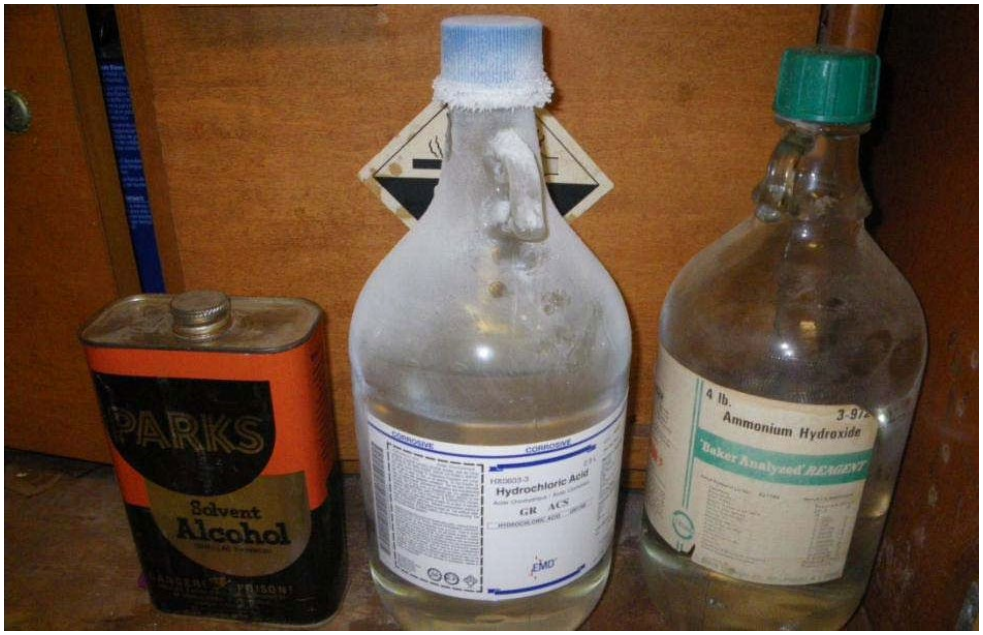
- Unknown materials cannot be disposed (under state and federal law) until the unknown has been properly identified. Make sure all materials in your work area are properly labeled and identified. If a label has corroded or falling off the container, be sure it is immediately replaced. Analytical services for identifying unknowns are very expensive.

- An inventory of all chemicals in every University facility should be conducted. Inventories will reduce the number of unknown chemicals and the tendency to stockpile chemicals. Additional information concerning inventory procedures and record keeping formats are contained in the BSU written *Hazard Communication* (for all BSU employees) and *Chemical Hygiene* (for laboratory workers) *Plans.*

- When possible, chemical containers with liquids should be provided with

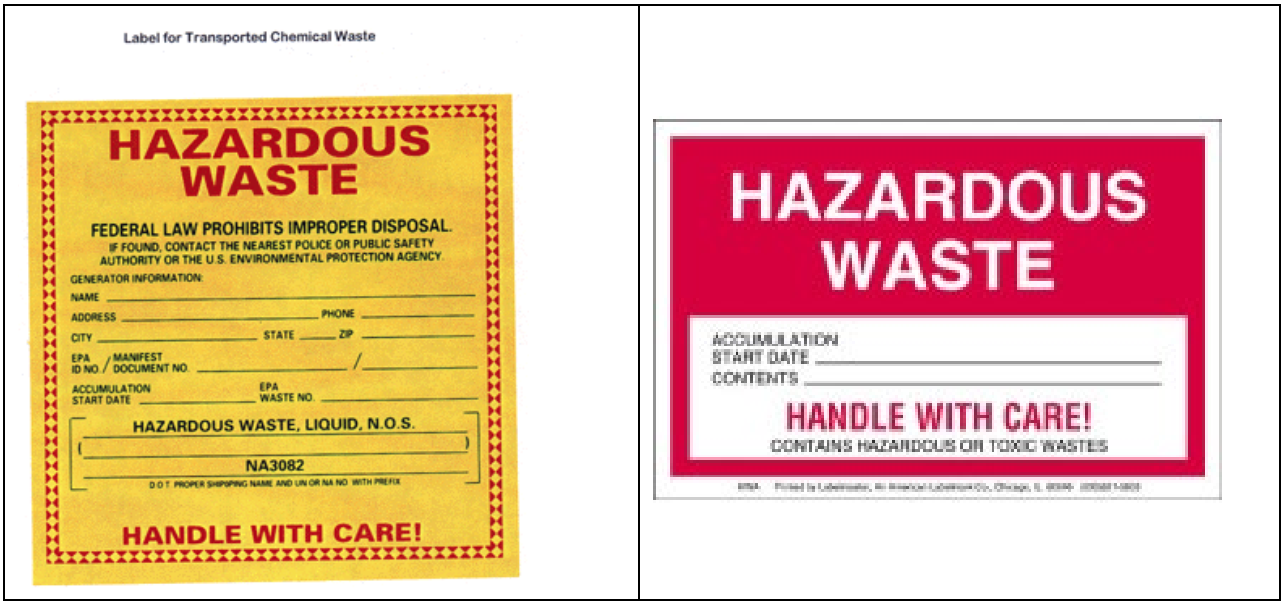
secondary containment or emergency devices (absorbents, drain seals, etc.) kept available to prevent the escape of any liquids to the environment or that may endanger persons.

- All containers must be tightly capped or closed at all times except when removing the chemical for use.
- All hazardous chemicals, depending on their hazards and quantities, must be stored in compliance with applicable OSHA, EPA, and fire authority standards.
- Ensure that an SDS is readily available for each hazardous chemical stored.
- Do not store hazardous chemicals near drains



4.0 HAZARDOUS WASTE LABELING REQUIREMENTS

All ***Hazardous Waste containers*** must be labeled correctly. Below are examples of Hazardous Waste Labels that must be affixed to each hazardous waste container:



Directions for Labeling

1. The *Hazardous Waste* label must be placed on the container BEFORE any waste is put into the container, or at such time that it is determined that the container is holding a waste to be discarded that meets the criteria for a hazardous waste.
2. Abbreviations and formulas are not permitted.
3. Ensure that the laboratory (waste generator), building, and room number are included on the label.
4. If the label is for satellite accumulation in a particular shop or laboratory, write in the words “Satellite Accumulation” in the space for “Accumulation Start Date”.
5. Laboratory wastes may utilize other label types as illustrated below due to the smaller size containers often involved. Regardless, the label must identify the waste as a Hazardous Waste, relate the contents, and either list a “start of accumulation” date or the words, “Satellite Accumulation”.
6. Laboratory wastes should identify all ingredients or components in the waste container.

Laboratory Labels

LAB WASTE

Accumulation Start Date: _____

Dept:_____Bldg/Rm:_____

Contact:_____Phone:_____

Waste Name: _____

Chemical Waste Composition %

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Hazard properties (check any known)**:**

☐ Toxin/Poison ☐ Heavy Metals: _____ ppm

☐ Flammable ☐ Oxidizer ☐ Pharmaceutical

☐ Corrosive: pH _____ ☐ Listed Const.:_____

☐ Reactive to: ☐ air ☐ water ☐ shock

☐ Cyanides: _____ ppm ☐ Sulfides: _____ ppm

☐ Carcinogen ☐ Irritant ☐ Sensitizer

☐ Solvents ☐ Chlorinated solvents

☐ Biohazard ☐ Peroxide former

Other: _____

EHS Use Only (unless known): Date:_____

☐ **Hazardous Waste or** ☐ **Non-Hazardous?**

Wastes must be removed within 6 months!

Contact the EHS Office (trhunt@bsu.edu, or 5-2807) with questions or for pickup.

The Lab Manager must ensure that the waste container label includes:

- The words "Hazardous Waste"
- The identity of the hazardous waste
- If the waste is a mixture, a list of all the components and the percentage of each (these should sum to 100%)
- The primary hazards presented by the waste (e.g. "toxic", "reactive")
- The name of the person responsible for the waste, their location and phone number

Remove or deface all extraneous container labels.

Particular labels or information is also required for some other wastes that are not hazardous wastes, but those will be presented in **Section 5** of this guidance.

5.0 SPECIAL AND UNIVERSAL WASTE MANAGEMENT PRACTICES

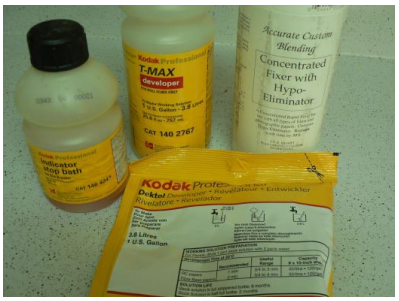
Certain wastes generated at the University may or may not be hazardous wastes, but have special handling ,labeling, management, or disposal requirements. While Universal Wastes, strictly speaking, are hazardous wastes--because of the lesser requirements applied to these materials to accommodate their recycling, they are discussed in this Section of the guidance.

5.1 Special Wastes

As noted previously, a number of types of wastes are not strictly defined as hazardous wastes, but nevertheless fall under other regulatory programs, present hazards that must be recognized, or must be recycled or pretreated (used oils, photo fixer solutions) rather than being directly disposed. Examples are:

5.1.1 Gas Cylinders - Users must establish accounts with suppliers who will allow the return of unused product and empty cylinders. If possible, the entire contents of the cylinder should be used up. Generators must ensure that aging cylinders are picked up by EHS before the integrity of the valve and cylinder is compromised. The department may be billed directly for cylinders that require special handling and disposal procedures such as unknown or old cylinders. Disposal of such cylinders can cost in the thousands of dollars. If empty, the cylinders must be so marked, and remain secured with cylinder caps attached pending removal.

5.1.2 Photo chemicals – BSU labs which use large quantities of photo chemicals should have a silver recovery unit installed. This unit treats the spent fixer so that it may be discharged down the drain. If a silver recovery unit is not used, EHS must handle the spent fixer. The developer and stop bath can, if approved by the EHS Office, be combined in a container to neutralize the solutions before being put down the sink. No concentrated photo chemicals of any kind can be placed in the trash or disposed in the sink.



5.1.3 Used Oil – Used oil includes all vacuum pump oil, synthetic oil, transmission and brake fluids, lubricating greases, etc. Used oil must be stored in securely closed containers provided with secondary containment. The secondary containment must have the capacity to hold 110 % of the volume of the largest container within the containment area. Each used oil container must be labeled clearly with the words "Used Oil". Used oil labels are available from the EHS Office.

5.1.4 Broken Glass - Broken glass (uncontaminated) should be placed into a cardboard box, or other puncture resistant container, be tightly taped shut, and clearly marked with the words: *Broken Glass*. The container can then be placed in with the normal trash.

5.1.5 Laboratory Glassware – Used or broken laboratory or other glassware that may be chemically or biologically contaminated must be placed in a proper *Broken Glass Container*. Such containers should be provided for all laboratories. If one is needed, please contact the EHS Office.

5.1.6 Sharps - This is a regulated waste stream and must not be disposed of in the regular solid waste. The term "sharps" is a regulatory waste classification associated with those

instruments used to puncture, cut, or scrape body parts and that, in a waste container, can cause punctures or cuts to solid waste handlers or the public. This means that all sharps waste must be placed in appropriate sharps containers for later decontamination prior to disposal. All sharps waste is to be placed in red sharps containers marked with the biohazard symbol. Use appropriate size sharps containers, and do not fill more than two-thirds full.


If a sharps container is needed, or a full container needs to be picked up for proper disposal, please contact the EHS Office. Several BSU Departments have arrangements with our disposal vendor for weekly pickup of sharps and biological wastes at their building or location.

5.1.7 Biological or Infectious Wastes – Potentially infectious or biological wastes will be picked up by the BSU biowaste disposal vendor. Biological waste is any material that contains or has been contaminated by a biohazardous agent. Biological waste includes, but is not limited to; Petri dishes, surgical wraps, culture tubes, syringes, needles, blood vials, absorbent material, personal protective equipment and pipette tips. The wastes should be placed in leak-proof containers, which are labeled with a biohazard label. The containers may be a pail with tight fitting lid for liquids or a box with an inner plastic liner, both of which bear a biohazard label.



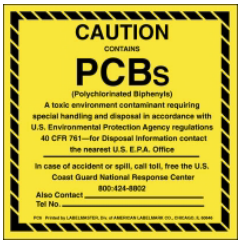
Noninfectious materials such as formaldehyde or alcohol preserved biology specimens may, if necessary, also be disposed as biological wastes by overpacking in a plastic container with a tight-fitting lid and biohazard label.

5.1.8 Electronic Wastes - E-waste is any waste that has one or more of these components: a circuit board, electronic component (diode, resistor, capacitor, or coil), display device,

computer, or electronic device. It does not include vehicles or white goods (refrigerators, ranges, water heaters, or other similar large appliances). These materials are normally collected by BSU Purchasing through Central Receiving for recycling and disposal through a commercial e-waste recycler.

5.1.9 Spilled Materials - the spilled chemical and the absorbent must be packaged and handled as hazardous waste if it exhibits a hazardous waste characteristic or the spill was of a listed hazardous waste (see Section 2). The *Hazardous Waste* label must name the chemical(s) and the absorbent used. See **Section 7.0** of this document for more details on spill response. Other material spills, such as oils, would not be a hazardous waste but may require solidification prior to disposal.

5.1.10 PCB Containing Materials – Waste or spent materials or devices that contain polychlorinated biphenyls (PCBs) require particular care. Such materials are not hazardous wastes under RCRA, but may be toxic wastes under the federal Toxic Substances Control Act (TSCA). The most common PCB articles to be disposed on the BSU campus are fluorescent light ballasts, though PCBs may be found in other electrical equipment such as switches, capacitors and transformers.



Any electrical ballasts or capacitors manufactured before 1979 should be presumed to contain PCBs unless the device has a label stating “NO PCBs” as shown above. PCB ballasts will be containerized for storage pending disposal at a permitted facility. Non-PCB ballasts can be shipped to a facility that disassembles the devices and recycles them. The EHS Office should be notified of any leaking or overheating PCB ballasts that are in service as cleanup and decontamination may be necessary.

5.1.11 Aerosol Containers –Common aerosol cans are: paint, cleaners, pesticides, coatings (i.e., polyurethane), deodorizers, and lubricants (ie;,WD-40). Aerosol cans contain both the product (i.e., paint, adhesive) and propellant (i.e., propane, butane) which may have hazardous properties (i.e ignitable, toxic). Aerosol cans may be handled as solid (non-hazardous) waste if they meet the following criteria:

- The aerosol container is “empty” – that is, the products have been used for their intended purposes so that when holding the cans upright and pressing down on their nozzles, not enough product comes out for them to be useful anymore; and,
  - (a) no more than 3% of the original net content weight remains in the cans; or,
  - (b) No more than one inch of liquid remains in the bottoms of the cans; and,
- The cans did not hold chemical formulations with sole active ingredients identified in the P-list hazardous waste listings.

Disposing of an aerosol can that still has product inside the can in the regular trash can be considered improper disposal of hazardous waste. To ensure compliance with hazardous waste regulations, non-empty aerosol cans should be collected and managed as hazardous wastes. As noted previously, the BSU Landscape Department and Bus Garage have devices to puncture and empty aerosol containers so that the residual contents can be used as a fuel substitute, the propellant gases are absorbed, and the steel or aluminum containers can then be recycled as scrap metals.

5.2 Universal Wastes

Universal Wastes are hazardous wastes, but the effect of the Universal Waste Rule is to reduce the regulatory requirements applying to the handling of these specific wastes, which otherwise would be subject to full hazardous waste regulation under RCRA. This in turn serves as an incentive to channel these wastes into collection and recycling programs, diverting them from less environmentally desirable modes of disposal such as landfilling or incineration. They include spent batteries, certain types of lamps, and mercury containing devices or equipment. All universal waste containers must be labeled clearly with the appropriate label when waste is first added. Universal Waste labels are available at no cost from the EHS Office.

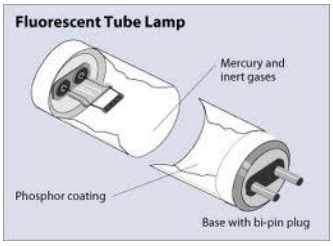
Universal wastes must be stored for no longer than one (1) year before being shipped to a permitted recycling facility.

5.2.1 Batteries – Alkaline batteries may be disposed of in the trash as their carbon footprint is small due to the availability of alkaline materials, and because heavy metals or other toxics are not used in their manufacture. Large storage batteries and other batteries which contain hazardous metals such as mercury, lithium, lead, silver, cadmium, nickel, and hydrides must be collected for recycling. The most common batteries collected for recycling include the following:

- Lead-acid (common in vehicles and large electronic and mechanical devices);
- Lithium (laptop computers and other electronics)
- Nickel-Cadmium or NiCad (power tools and portable devices)
- Silver oxide (watches, toys, medical devices – contain mercury)
- Nickel-metal hydride or NiMH (Hybrid vehicles, tools)

All used battery containers must be clearly labeled using one of the following phrases: "Universal Waste—Battery(ies)," or "Waste Battery(ies)," or "Used Battery(ies)." The electric terminals of the batteries must also be taped or the batteries placed in individual bags or containers to prevent "short-circuiting" and potential fires during storage or transport.

5.2.2 Light bulbs (Lamps) - fluorescent and high-intensity discharge (HID) bulbs contain mercury or other heavy metals and must be handled as Universal Waste. Other specialty bulbs which may contain mercury or other heavy metals (UltraViolet, High Intensity Discharge) must be handled by EHS as well for recycling. Departments which accumulate large quantities of bulbs may deliver them to BSU Central Receiving in the Service and Stores Building (Dock #4). Lamp boxes are also available at that location. Otherwise, BSU Facilities Management custodial staff can pick up exhausted bulbs from the buildings if they are containerized and accompanied by the red pickup form. All spent lamps must be packaged, preferably in the cardboard shipping containers in which they were received, and labeled clearly using one of the following phrases: "Universal Waste—Lamp(s)," or "Waste Lamp(s)," or "Used Lamp(s)".



It is important to remember that any bulbs intentionally broken must then be handled and disposed as a hazardous waste rather than a universal waste.

5.2.3 Mercury Containing Equipment – There are many types of electrical, temperature, and pressure sensing equipment that contain elemental mercury. Before disposing of any of these types of equipment, you should verify that they do not contain mercury. All used mercury containing equipment must be labeled clearly as "Universal Waste—Mercury Containing Equipment," "Waste Mercury-Containing Equipment," or "Used Mercury-Containing Equipment."

Examples include:

- Heating and air conditioning thermostats
- Tilt switches used in silent light switches, washing machine lids, chest type freezers
- Pressure gauges, displacement/plunger relays
- Sump pump float switches
- Thermometers, manometers, barometers

The mercury containing device should be packaged carefully to avoid breakage. It may be preferable to notify the EHS Office to pick up the device and that should always be done if there is any breakage or release of mercury to the environment. The EHS Office should be contacted immediately for assistance in the event of a mercury release.

6.0 CHEMICAL WASTE PICK-UP PROCEDURES

A. The EHS Office arranges for hazardous waste pickups on a bi-monthly basis. Some wastes (used oils, lamps, biowastes) are shipped for off-site disposal more frequently based on generation rates and storage capacity.

B. In order to have hazardous waste picked-up from your accumulation area, you should contact the BSU Chemical Health and Safety Officer (285-2807). Most Departments are notified approximately one (1) month in advance of the waste pickups and requested to identify the wastes to be picked up, the quantities, and their location.

C. Provide as much information about the contents of each waste or container as possible. As a minimum, the chemicals' names, the number of containers, and the total volume should be listed.

D. Be prepared to direct EHS personnel to the satellite accumulation area or waste location when they arrive to pick up the waste. The EHS Office may pick up in order to aggregate and consolidate the waste materials in one of BSU's hazardous waste accumulation areas.

E. If the waste needs to be picked up before, or more frequently than, the scheduled pickup dates, feel free to contact the BSU Chemical Health and Safety Officer.

7.0 SPILL RESPONSE AND CLEAN-UP PROCEDURES

This Section first briefly summarizes the necessary response to spills occurring on the general use buildings, areas, and grounds of the BSU Campus, and then provides greater detail on the response to spills in laboratory or chemical handling situations.

7.1 General Spill Response Procedures

A response to a release of petroleum compounds on the BSU campus should follow the procedures established in the *BSU Spill Prevention Control and Countermeasures (SPCC) Plan*. The response to the release of other chemicals or biological contaminants should be performed in accordance with the *BSU Spill Response Plan*.

In general, if there is an immediate danger to health, life, property, or risk of an environmental release (major spill), evacuate the area and contact emergency personnel immediately. Contact emergency authorities and response at 285-1111 or 911. Contact EHS at 285-2807. All spills occurring after normal working hours should be reported to the University Police Department (UPD) at 285-1111. A UPD representative will contact the necessary response agencies or an EHS representative if necessary.

In the event of a spill which does not meet the above major release criteria; stop the spill, contain the spill, notify other's in the area, and clean up the release immediately. All flames should be extinguished and spark-producing equipment turned off. All non-essential personnel should be evacuated. Each Department, shop, or laboratory should have a spill kit and personnel trained for response to minor or incidental spills. Personnel should have received training for response to minor releases through their OSHA Hazard Communication or Chemical Hygiene Plan training.

After cleaning up the spill, place the chemical and absorbents in a container with a *Hazardous Waste* label on it and contact the EHS Office.

The steps for immediate response and reporting of a spill are illustrated on the following page.

Do not attempt to clean up a chemical spill unless you are familiar with the chemical and have the training, personal protection, and spill control equipment to safely do so!

Chemical Spill Emergency Response

The following steps should be taken in the event of a chemical spill:

Evacuate:

- Alert others in the area and direct / assist them in leaving.
- Without endangering yourself: Remove injured to fresh air, remove contaminated clothing and flush contaminated skin and eyes with water for 15 minutes. If anyone has been injured or exposed to toxic chemicals or vapors, call **911 or 5-1111** and seek medical attention immediately.
- Leave the spill area.

Confine:

- Close all doors and isolate the area
- Ventilate the area if safe to do so
- Prevent people from entering the spill area.

Report:

- From a safe place call **911 or 5-1111**
- Report the emergency and give:

  - ✓ Your name, location and phone number
  - ✓ Location of the spill
  - ✓ The name and amount of the material spilled
  - ✓ The extent of the injuries
  - ✓ The safest route to the spill

Stay by that phone.

- Emergency services will respond to stabilize spills or clean up and provide medical attention.

Secure:

- Until emergency response personnel arrive; block off the areas leading to the spill.
- Post personnel near commonly-used entrances to the area to direct people to use other routes.
- Notify your supervisor.

Emergency Response

Call 911 or 5–111

7.1 Laboratory Spills

Possible Situations:
A minor or major spill of a known or unknown substance (toxic, radioactive, biohazardous, or flammable) is witnessed, observed, or reported. The spill is in your laboratory, on your floor, in another part of the building, or in a location that could affect the general area.

Definitions:

A ***minor spill*** is characterized by the confidence and capability of the staff to clean up the spill and return the area to normal working conditions without the assistance of emergency personnel. The individual or clean-up crew must be properly trained under OSHA *Hazard Communication* or *Laboratory Safety Program* standards, must don the appropriate personal protective gear, and must use suitable equipment and supplies.

A ***major chemical spill*** requires the assistance of emergency personnel from outside the Department - the Office of Environmental Health & Safety, or Police and/or Fire Departments. This may be necessary due to the location, quantity, toxicity, or physical hazards of the spill, the exposure of individuals, or any combination of those factors that prohibit or make it inadvisable or ineffective for the immediately available staff to confine or remediate the release.

SPILL ASSESSMENT:
Assess the severity of the spill and take the appropriate action: Does the material pose a substantial hazard to human health or is there immediate danger of fire or reaction? Identify the material and its hazards from its container. Send for or locate the material SDS.

- Avoid prolonged exposure to all vapors, fumes, and smoke during assessment;
- Remove all ignition sources from the area;
- Evacuate all students and unnecessary personnel from the area.

SPILL RESPONSE:

Response to a chemical spill occurs at several levels. For many employees and students, spills may be cleaned up at the first level - theirs. The Office of Environmental Health & Safety may need to be called to manage other spills, or outside authorities such as the Muncie Fire Department, Delaware County Emergency Management Agency, or private contractors may be necessary.

When is a spill really a spill?

A ***spill*** is defined as "*a material out of control*." In a particular sense, the quantity of material is not important. The essential issue is whether the hazards, the location, and the quantity cause the situation to be beyond the laboratory worker's capabilities, or beyond the intended use by a student.

Experience provides some guidelines whether a spill should be cleaned-up by laboratory personnel or by spill response personnel. For convenience and safety, a minimum quantity has been established beyond, which all spills, regardless of the substance, must be reported. All spills greater than 1 quart (1 liter) must be reported to the Environmental Health & Safety Office at 285-2807, or to Dispatch at 285-5081 during normal business hours or to the University Police at 285-1111, or 911. While this may seem overly stringent to some, experience indicates that over-reporting is preferable to under-reporting.
In addition to the minimum quantity, the following types of spills must be reported, regardless of the quantity:

- All spills of extremely flammable materials (flash point less than 20 degrees F);
- All spills of extremely toxic materials (5mg/kg LD50);
- All mercury spills;
- All personal contamination or exposure above OSHA, NIOSH, or ACGIH exposure limits;
- All leaking containers; and
- All uncontrolled compressed gas releases

Laboratories and personnel are responsible to have procedures to clean spills that are below the reportable level. The following must be addressed:

Personal Safety

The primary consideration for laboratory personnel when a material is spilled is safety. Safety for every person in the laboratory and in the building is of paramount importance.

If the spill could potentially harm someone, call 285-2807 or Dispatch at 285-5081. If after hours, call the University Police at 285-1111 or 911. Otherwise, the laboratory that will clean up the spill must follow specific procedures to do so safely and effectively.

Personal Protective Equipment (PPE)

Before attempting to clean up a spill, the lab responder must put on a minimum amount of personal protective equipment (PPE).

- Chemical safety goggles
- Lab Coat
- Nitrile or neoprene gloves (other glove materials based on the chemical involved)

Other or additional PPE (respirator, chemically resistant apron) may be necessary for response to certain chemical releases or situations to prevent exposure to the responder.

Clean-up Materials

Laboratories must have certain supplies available before attempting to clean a spill. The actual materials to be used will depend upon the hazards posed by the spilled material. The following is a recommended minimum list of supplies:

- Absorbent pads (for oil, water, coolant, solvents)
- Absorbent socks (for oil, water, coolant, solvents)
- Acid neutralizer
- Activated carbon
- Caustic neutralizer
- Dust pan & brush
- Heavy duty plastic trash bags
- Laboratory tongs
- One gallon or five gallon plastic bucket with lid
- Hazard labels for the recovered waste.

If materials such as hydrofluoric acid, or formaldehyde are present in the laboratory, specific absorbent or containment media for those chemicals must be available.

Note: This procedure is not applicable to spills of Mercury, PCBs or radioactive materials.

LABORATORY SPILL CLEANUP PROCEDURE:

Personal Protective Equipment (PPE)
Use the appropriate PPE. If, during the spill or subsequent actions, any person comes in contact with a chemical, refer to the manufacturers *Safety Data Sheet* (SDS) for First Aid guidance.

Control

Control the source of the spill, if it is still present. For example, a bottle which was knocked over may still have some material in it. The responder should carefully upright the container, place it on an absorbent pad in safe location, and replace the lid on the container. Any spread of spilled material must also be controlled. This is best done by placing absorbent pads or socks around and on the spill. Many laboratory spills involve broken glass. The spill responder must take precautions to avoid getting cut.

Absorb/Remove Liquids

Acid, Caustic, or other Non-Flammable Liquids

These are the most easily absorbed with polypropylene absorbent pads and socks. Neutralizing powders and liquids are also commercially available. Place used absorbent pads and socks in a trash bag. Frequently, laboratory spills will spread into drawers and behind or under equipment. The responder must be careful to locate all such contaminated areas.

Flammable Liquids

Flammable liquids should be absorbed on activated carbon or absorbent polypropylene pads and socks. Use approximately 2 pounds of activated carbon per pint (0.5 liters) of liquid. Use the dust brush or spatula to thoroughly mix the activated carbon with the liquid. Neutralizing powders are also commercially available. Use the dustpan and the brush to collect all residue. Remove large pieces of broken glass as described in step 4 and place all other debris in a plastic trash bag or appropriate container.

Liquids in General

Cover the liquid with a spill mix of vermiculite or equivalent absorbent to contain and absorb the material. A 1:1:1 mixture by weight of soda ash (sodium carbonate, Na_2CO_3), cla cat litter (bentonite) and sand is very effective in rapidly absorbing liquids, in neutralizing acids, in controlling fumes, and in moderating the hazard due to reactive materials. The liquid spill is covered with the mix and, after the liquid has been absorbed, the solid is collected into a heavy-walled plastic bag or container. Commercial powders for absorption of solvent spills are also available. The spill residue container is secured and labeled as material for disposal. Numerous manufactured loose absorbents, absorbent pads and socks are now available for response to oil, coolant, contaminated water, and solvent releases.

Handling Solids

Solid Caustic Alkalies

Recover the dry material using dry techniques for reuse if possible. The remaining dry, solid material should be carefully swept up, collected, and then dissolved in a beaker, neutralized with an acid in a controlled manner, and then flushed into the sink drain with large amounts of water. Delay in clean-up may allow absorption of moisture from the atmosphere and increase the difficulties of clean-up. Flush contaminated areas with water and neutralize with dilute acid, preferably acetic acid. Neutralizing liquids are available commercially that neutralize the pH to reduce the hazard and for ease of cleanup.

Solid Acids

Dry solid material may be carefully collected when possible for reuse as intended. The EHS Office can then be called to remove this material. Flush contaminated areas with water and neutralize with sodium bicarbonate or sodium carbonate. Neutralizing liquids are available commercially that can be applied to the spilled material to neutralize the pH for cleanup.

Remove broken glass

Using tongs, dustpan and brush, or by carefully using gloved fingers, remove all large pieces of glass and place them in a "broken glass" container for safe disposal.

Decontaminate

Acidic Liquids

Apply acid neutralizer on all surfaces affected by the spill. Soak up the neutralizer and apply fresh neutralizer. Remove the residue with absorbent pads or paper towels. Thoroughly wash the affected area with hot soapy water. Use absorbent pads to finish cleaning the area.

Caustic Liquids

Apply caustic neutralizer on all surfaces affected by the spill. Soak up the neutralizer and apply fresh neutralizer. Remove the residues with absorbent pads or paper towels. Thoroughly wash the affected area with hot soapy water. Use absorbent pads to finish cleaning the area.

Flammable Liquids

Thoroughly wash the area with hot soapy water. Use absorbent pads to finish cleaning the area.

Container

Use absorbent pads, neutralizers, and hot soapy water, as needed, to remove all traces of spilled material from the container. Remember to clean the bottom of the container.

Inspect

Carefully check the entire affected area for spilled residue, hidden contamination, or unsafe conditions, and act accordingly.

Package Spill Residues

Place all spill residues and contaminated PPE in plastic bags. Seal the bags and place in a bucket or other appropriate container. Attach the necessary hazard and waste identity labels on the outside of the container. Place the bucket in the Satellite Accumulation Area. Contact the BSU Chemical Health and Safety Officer at 285-2807 for removal.

Restock Spill Supplies

Gather and restock supplies as needed.

Evacuation Policy for Hazardous Material Spills:

- Evacuations are rarely needed in minor spills.
- Workers who are not involved in the minor cleanup of the affected areas may simply vacate the premises for a brief period.
- Evacuation of rooms, floors, or even buildings is usually necessary in major spills.

The decision to evacuate is made jointly between the Department and the Office of Environmental Health and Safety. Should the Fire Department or Police Department respond, the decision to evacuate or restrict access will be up to the Incident Commander. Be certain to alert all persons in the affected area to evacuate to the assembly area or to an alternate location if the assembly area is in the danger zone. Secure the area and control the perimeter to restrict access into or through the affected area. Delegate a person knowledgeable about the spill to coordinate with arriving emergency personnel. These procedures should be established in the laboratory's *Chemical Hygiene Plan*.

SAMPLE SCRIPT: *We have had a hazardous spill in your building. Evacuate to _____ immediately. Turn off all equipment. Take your personal belongings. Do not return to the building until you are notified that the spill is cleaned up.*

8.0 WASTE MINIMIZATION

Waste minimization is any action that reduces the amount and/or toxicity of chemical wastes that must be shipped off-site for disposal as hazardous waste. The success of any waste minimization program is dependent on the conscientious participation of every individual at Ball State University. There are three methods of waste minimization:

8.1 Source Elimination (Reduce)

Remove the source of the waste by eliminating the process or practice or by substituting another process that does not generate a waste, or generates only a secondary material that can be used as a raw material in another process. For example, some laboratory demonstrations necessitate the use of chemicals that are toxic or inherently dangerous to handle. Sometimes these demonstrations can be eliminated, reproduced by other means, or video demonstrations utilized rather than performing laboratory displays that generate hazardous wastes requiring disposal.

Do not dispose of chemicals unnecessarily. If you have no further need of a chemical, paint, oil, or reagent, determine if another Department or your colleagues can use it. Do not mix waste chemicals of different hazards or types. For example mixing of halogenated solvents with non-halogenated solvents reduces the amount of materials that may be reused or redistributed and increases disposal costs. If at all possible, do not combine other chemicals with organic solvents. Acids, bases, heavy metals, carcinogens, oxidizers, cyanides, sulfides, pesticides, and especially halogenated organic solvents (chloroform, methylene chloride, etc.) should be collected in separate, labeled, and dated waste containers.

8.2 Source Reduction (Reuse)

The second most desirable method of waste minimization is source reduction. This is any activity that reduces the generation of chemical hazardous waste at the source. This can be accomplished by good materials management, substitution of less hazardous materials, and good laboratory procedures. Examples include:

- Implement a waste minimization policy and train all employees and students.
- Re-evaluate procedures to see if a less hazardous or non-hazardous reagent could be used.
- Centralize purchasing of chemicals through one person in the department or laboratory.

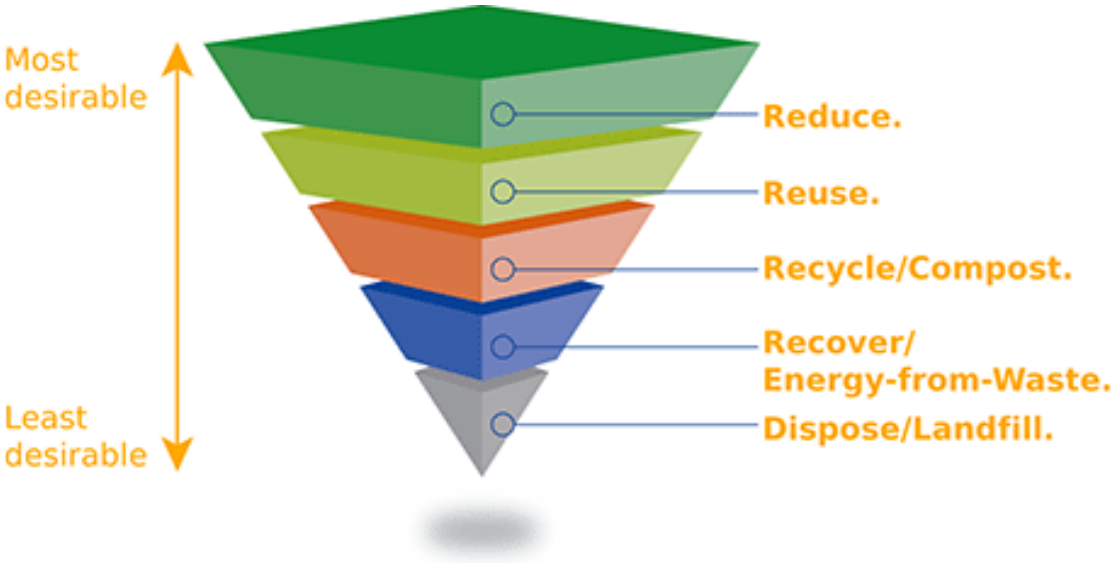
- Date chemical containers when received so that older ones will be used first.
- Keep SDS's for chemicals on file.
- Inventory chemicals and identify their location.
- Perform laboratory experiments or demonstrations on a smaller or micro-scale.
- Update inventory when chemicals are purchased or used up.
- Purchase chemicals in the smallest quantities needed.
- Label all chemical containers to prevent the generation of unknowns.
- When considering a new procedure, obtain the chemicals needed from another lab or purchase small quantities initially.
- Consider the use of pre-weighed or pre-measured reagent packets where waste generation is high.
- Avoid the use of reagents containing arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver.
- Eliminate the use of chromic acid cleaning solutions altogether. Use non-hazardous solutions such as Alconox and Pierce RBS35.
- Substitute red liquid (spirit-filled), digital, or thermocouple thermometers for mercury thermometers when it is feasible.
- Consider using detergent and hot water or citrus based products for cleaning parts instead of solvents.
- Use latex-based paints which are typically non-hazardous. Excess latex paints should be recycled. Excess non-latex paints must be handled by EHS as a hazardous waste.
- Utilize vendors that will recycle used antifreeze. Some vendors will recycle the antifreeze on site so the antifreeze never leaves the site.

8.3 Recycling

The third most desirable approach is recycling. When a waste material is used for another purpose, treated and reused in the same process, or reclaimed for another process, it is considered recycling. Examples include:

- When solvent is used for cleaning purposes, use contaminated solvent for initial cleaning and fresh solvent for final cleaning.
- If possible, with organic solvents, recover, redistill, and reuse your solvents.
- Purchase compressed gas cylinders (including lecture bottles) only from manufacturers who will accept empty cylinders.
- Return excess pesticides to the distributor.

- Have a silver recovery unit installed in photography laboratories. The unit removes the silver from the fixer solution.
- Do not contaminate used oil with solvents because this prevents the oil from being recycled.
- Increase solvent reuse through the use of solvent re-distillation.
- Recirculate unused or excess chemicals within the department.
- Collect metallic mercury for reclamation.

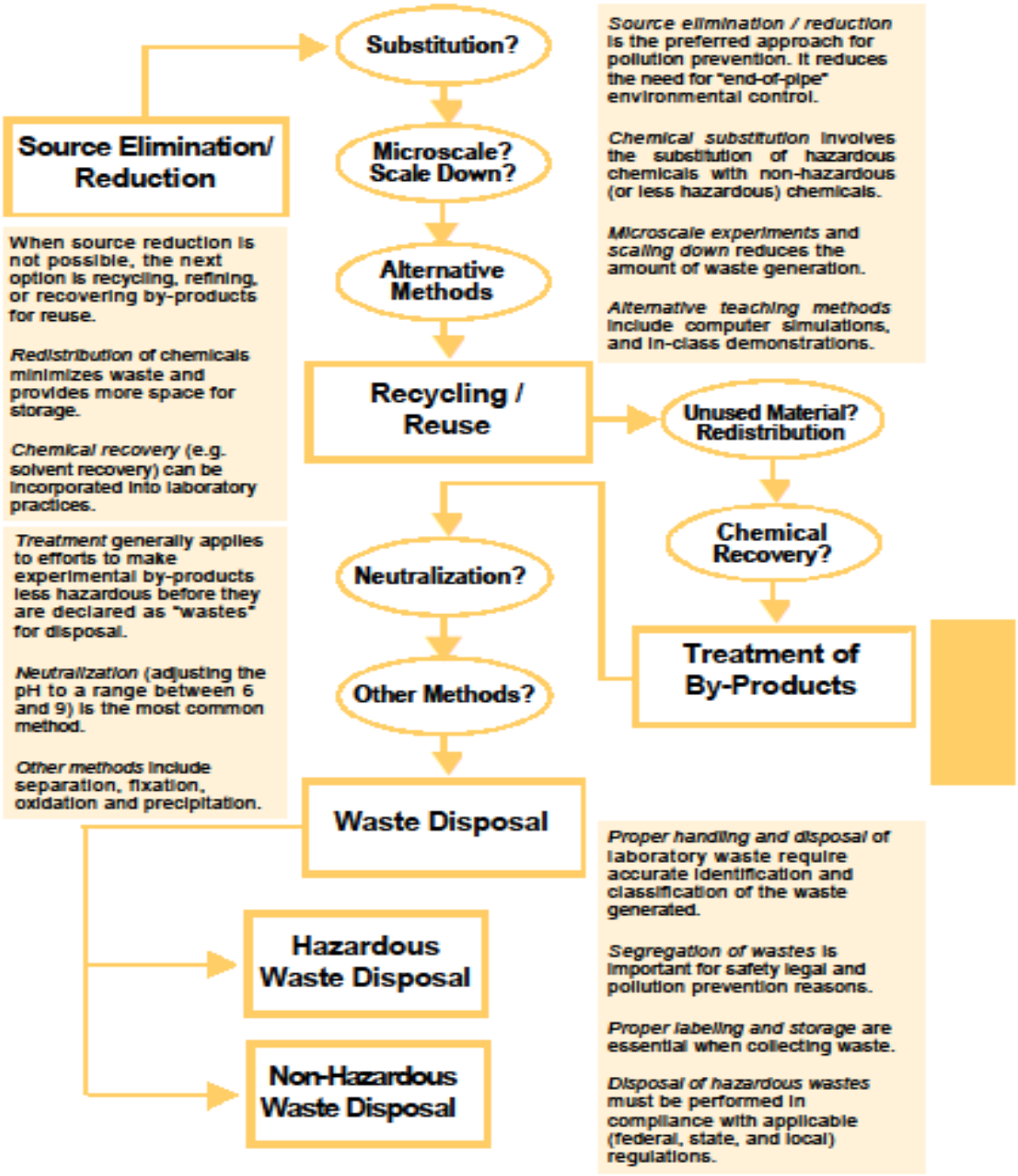


8.4 Laboratory Waste Minimization

The diagram on the following page applies these general waste minimization methods to a laboratory pollution prevention scenario.

Laboratory Pollution Prevention

The following diagram presents a methodology for development of pollution prevention alternatives. For more information on Pollution Prevention, please contact the BSU EHS Office



Appendices

Appendix A: TOXICITY CHARACTERISTICS (TCLP)

EPA HW #	Contaminant	Regulated Level (mg/l)
D004	Arsenic (As)	5.0
D005	Barium (Ba)	100.0
D018	Benzene	0.5
D006	Cadmium (Cd)	1.0
D019	Carbon Tetrachloride	0.5
D020	Chlordane	0.03
D021	Chlorobenzene	100.0
D022	Chloroform	6.0
D007	Chromium (Cr)	5.0
D023	o-Cresol	200.0
D024	m-Cresol	200.0
D025	p-Cresol	200.0
D026	Cresol	200.0
D016	2,4-D	10.0
D027	1,4-Dichlorobenzene	7.5
D028	1,2-Dichloroethane	0.5
D029	1,1-Dichloroethylene	0.7
D030	2,4-Dinitrotoluene	0.13
D012	Endrin	0.02
D031	Heptachlor	0.008
D032	Hexachlorobenzene	0.13
D033	Hexachlorobutadiene	0.5
D034	Hexachloroethane	3.0
D008	Lead (Pb)	5.0
D013	Lindane	0.4
D009	Mercury (Hg)	0.2
D014	Methoxychlor	10.0
D035	Methyl ethyl ketone	200.0
D036	Nitrobenzene	2.0
D037	Pentachlorophenol	100.0
D038	Pyridine	5.0
D010	Selenium (Se)	1.0
D011	Silver (Ag)	5.0
D039	Tetrachloroethylene	0.7
D015	Toxaphene	0.5
D040	Trichloroethylene	0.5
D041	2,4, 5-Trichlorophenol	400.0
D042	2,4,6-Trichlorophenol	2.0
D017	2,4,5-TP (Silvex)	1.0
D043	Vinyl Chloride	0.2

Appendix B: LISTED HAZARDOUS WASTES (F List –partial)

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, before use, a total of ten percent or more (by volume) of one or more of the above halogenated 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	(T)
F003	The following spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before 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	(I)*
F004	The following spent non-halogenated solvents: Cresols 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-ethoxyethanol, and 2-nitropropane; 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, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(I,T)

I – Ignitability T - Toxicity

Regulated Solvents (from above F-Listed):

F-Listed Non-Halogenated Solvents
Solvent Name
Acetone
Benzene
n-Butyl Alcohol
Carbon Disulfide
o-Cresol
m-Cresol
p-Cresol
Cyclohexanone
Ethyl Acetate
Ethyl Benzene
Ethyl Ether
2-Ethoxyethanol
Ethylene Glycol Monoethyl Ether
Isobutyl Alcohol
Methanol
Methyl Ethyl Ketone
Methyl Isobutyl Ketone
Nitrobenzene
2-Nitropropane
Pyridine
Toluene
Xylene

F-Listed Halogenated Solvents
Solvent Name
Carbon Tetrachloride
Chlorinated Fluorocarbons (CFCs)
Chlorobenzene
Chloroform
1,2-Dichlorobenzene
1,2-Dichloroethane
1,1-Dichloroethylene
Methylene Chloride (Dichloromethane)
Tetrachloroethylene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethylene
1,1,2-Trichloro-1,2,2-Trifluoroethane
Trichlorofluoromethane (Freon-11)

Common Solvents and Liquids that Contain the Above Regulated Chemicals:

Aromatic Hydrocarbons	Jet Fuels	Petroleum Ether
Creosote	Kerosene	Petroleum Naphtha
Degreaser Solvents	Lacquer Thinner	Stoddard Solvent
Diesel Fuel	Mineral Spirits	Thinner
Duplicating Fluid	Naphtha	Turpentine
Dry Cleaning Fluids	Oleum	Varsol
Fuel Oil	Paint Thinner	White Spirits
Gasoline	Petroleum Distillates	Spent Fixer & Developer

P-Listed Wastes

These wastes and their corresponding EPA Hazardous Waste Numbers are:

Hazardous Waste No.	Chemical abstracts 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
P203	1646–88–4	Aldicarb sulfone.
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 picrate (R)
P119	7803–55–6	Ammonium vanadate
P099	506–61–6	Argentate(1-), bis(cyano-C)-, potassium
P010	7778–39–4	Arsenic acid H_3AsO_4
P012	1327–53–3	Arsenic oxide As_2O_3
P011	1303–28–2	Arsenic oxide As_2O_5
P011	1303–28–2	Arsenic pentoxide
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
P127	1563–66–2	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate.
P188	57–64–7	Benzoic acid, 2-hydroxy-, compd. with (3aS-cis)-1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrolo[2,3-b]indol-5-yl methylcarbamate ester (1:1).
P001	[1]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 powder
P017	598–31–2	Bromoacetone
P018	357–57–3	Brucine
P045	39196–18–4	2-Butanone, 3,3-dimethyl-1-(methylthio)-, O-[(methylamino)carbonyl] oxime
P021	592–01–8	Calcium cyanide
P021	592–01–8	Calcium cyanide $Ca(CN)_2$
P189	55285–14–8	Carbamic acid, [(dibutylamino)- thio]methyl-, 2,3-dihydro-2,2-dimethyl- 7-benzofuranyl ester.
P191	644–64–4	Carbamic acid, dimethyl-, 1-[(dimethyl-amino)carbonyl]- 5-methyl-1H- pyrazol-3-yl ester.
P192	119–38–0	Carbamic acid, dimethyl-, 3-methyl-1- (1-methylethyl)-1H- pyrazol-5-yl ester.
P190	1129–41–5	Carbamic acid, methyl-, 3-methylphenyl ester.
P127	1563–66–2	Carbofuran.

P022	75–15–0	Carbon disulfide
P095	75–44–5	Carbonic dichloride
P189	55285–14–8	Carbosulfan.
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)
P202	64–00–6	m-Cumenyl methylcarbamate.
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)Cl
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-pyrazinyl 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,5alpha,8alpha,8abeta)-
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,8beta,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,2aalpha,3beta,6beta,6aalpha,7beta,

		7aalpha)-
P051	[1]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,2beta,2abeta,3alpha,6alpha,6abeta,7beta, 7aalpha)-, & metabolites
P044	60–51–5	Dimethoate
P046	122–09–8	alpha,alpha-Dimethylphenethylamine
P191	644–64–4	Dimetilan.
P047	[1]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
P185	26419–73–8	1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O- [(methylamino)- carbonyl]oxime.
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
P194	23135–22–0	Ethanimidothioic acid, 2-(dimethylamino)-N-[[(methylamino) carbonyl]oxy]-2-oxo-, methyl ester.
P066	16752–77–5	Ethanimidothioic acid, N-[[(methylamino)carbonyl]oxy]-, 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
P198	23422–53–9	Formetanate hydrochloride.
P197	17702–57–7	Formparanate.
P065	628–86–4	Fulminic acid, mercury(2+) salt (R,T)
P059	76–44–8	Heptachlor
P062	757–58–4	Hexaethyl tetraphosphate
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
P192	119–38–0	Isolan.
P202	64–00–6	3-Isopropylphenyl N-methylcarbamate.
P007	2763–96–4	3(2H)-Isoxazolone, 5-(aminomethyl)-
P196	15339–36–3	Manganese, bis(dimethylcarbamodithioato-S,S′)-,
P196	15339–36–3	Manganese dimethyldithiocarbamate.
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-
P198	23422–53–9	Methanimidamide, N,N-dimethyl-N′-[3-[[(methylamino)-carbonyl]oxy]phenyl]-, monohydrochloride.
P197	17702–57–7	Methanimidamide, N,N-dimethyl-N′-[2-methyl-4-[[(methylamino)carbonyl]oxy]phenyl]-
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-
P199	2032–65–7	Methiocarb.
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
P190	1129–41–5	Metolcarb.
P128	315–8–4	Mexacarbate.
P072	86–88–4	alpha-Naphthylthiourea
P073	13463–39–3	Nickel carbonyl
P073	13463–39–3	Nickel carbonyl $Ni(CO)_4$, (T-4)-
P074	557–19–7	Nickel cyanide
P074	557–19–7	Nickel cyanide $Ni(CN)_2$
P075	[1]54–11–5	Nicotine, & salts
P076	10102–43–9	Nitric oxide
P077	100–01–6	p-Nitroaniline
P078	10102–44–0	Nitrogen dioxide
P076	10102–43–9	Nitrogen oxide NO
P078	10102–44–0	Nitrogen oxide NO_2
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 OsO_4, (T-4)-
P087	20816–12–0	Osmium tetroxide
P088	145–73–3	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid

P194	23135–22–0	Oxamyl.
P089	56–38–2	Parathion
P034	131–89–5	Phenol, 2-cyclohexyl-4,6-dinitro-
P048	51–28–5	Phenol, 2,4-dinitro-
P047	[1]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)
P128	315–18–4	Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate (ester).
P199	2032–65–7	Phenol, (3,5-dimethyl-4-(methylthio)-, methylcarbamate
P202	64–00–6	Phenol, 3-(1-methylethyl)-, methyl carbamate.
P201	2631–37–0	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate.
P092	62–38–4	Phenylmercury 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
P204	57–47–6	Physostigmine.
P188	57–64–7	Physostigmine salicylate.
P110	78–00–2	Plumbane, tetraethyl-
P098	151–50–8	Potassium cyanide
P098	151–50–8	Potassium cyanide K(CN)
P099	506–61–6	Potassium silver cyanide
P201	2631–37–0	Promecarb
P070	116–06–3	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime
P203	1646–88–4	Propanal, 2-methyl-2-(methyl-sulfonyl)-, 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	107–18–6	2-Propen-1-ol
P067	75–55–8	1,2-Propylenimine
P102	107–19–7	2-Propyn-1-ol
P008	504–24–5	4-Pyridinamine
P075	[1]54–11–5	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, & salts
P204	57–47–6	Pyrrolo[2,3-b]indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-, methylcarbamate (ester), (3aS-cis)-.
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)
P108	[1]57–24–9	Strychnidin-10-one, & salts
P018	357–57–3	Strychnidin-10-one, 2,3-dimethoxy-
P108	[1]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
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 Tl_2O_3
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 $[(H_2N)C(S)]_2NH$
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-
P185	26419–73–8	Tirpate.
P123	8001–35–2	Toxaphene
P118	75–70–7	Trichloromethanethiol
P119	7803–55–6	Vanadic acid, ammonium salt

P120	1314–62–1	Vanadium oxide V_2O_5
P120	1314–62–1	Vanadium pentoxide
P084	4549–40–0	Vinylamine, N-methyl-N-nitroso-
P001	[1]81–81–2	Warfarin, & salts, when present at concentrations greater than 0.3%
P205	137–30–4	Zinc, bis(dimethylcarbamodithioato-S,S′)-,
P121	557–21–1	Zinc cyanide
P121	557–21–1	Zinc cyanide $Zn(CN)_2$
P122	1314–84–7	Zinc phosphide Zn_3P_2, when present at concentrations greater than 10% (R,T)
P205	137–30–4	Ziram.
P001	[1]81–81–2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts, when present at concentrations greater than 0.3%
P001	[1]81–81–2	Warfarin, & salts, when present at concentrations greater than 0.3%
P002	591–08–2	Acetamide, -(aminothioxomethyl)-
P002	591–08–2	1-Acetyl-2-thiourea
P003	107–02–8	Acrolein
P003	107–02–8	2-Propenal
P004	309–00–2	Aldrin
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,5alpha,8alpha,8abeta)-
P005	107–18–6	Allyl alcohol
P005	107–18–6	2-Propen-1-ol
P006	20859–73–8	Aluminum phosphide (R,T)
P007	2763–96–4	5-(Aminomethyl)-3-isoxazolol
P007	2763–96–4	3(2H)-Isoxazolone, 5-(aminomethyl)-
P008	504–24–5	4-Aminopyridine
P008	504–24–5	4-Pyridinamine
P009	131–74–8	Ammonium picrate (R)

P009	131–74–8	Phenol, 2,4,6-trinitro-, ammonium salt (R)
P010	7778–39–4	Arsenic acid H_3AsO_4
P011	1303–28–2	Arsenic oxide As_2O_5
P011	1303–28–2	Arsenic pentoxide
P012	1327–53–3	Arsenic oxide As_2O_3
P012	1327–53–3	Arsenic trioxide
P013	542–62–1	Barium cyanide
P014	108–98–5	Benzenethiol
P014	108–98–5	Thiophenol
P015	7440–41–7	Beryllium powder
P016	542–88–1	Dichloromethyl ether
P016	542–88–1	Methane, oxybis[chloro-
P017	598–31–2	Bromoacetone
P017	598–31–2	2-Propanone, 1-bromo-
P018	357–57–3	Brucine
P018	357–57–3	Strychnidin-10-one, 2,3-dimethoxy-
P020	88–85–7	Dinoseb
P020	88–85–7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-
P021	592–01–8	Calcium cyanide
P021	592–01–8	Calcium cyanide $Ca(CN)_2$
P022	75–15–0	Carbon disulfide
P023	107–20–0	Acetaldehyde, chloro-
P023	107–20–0	Chloroacetaldehyde
P024	106–47–8	Benzenamine, 4-chloro-
P024	106–47–8	p-Chloroaniline
P026	5344–82–1	1-(o-Chlorophenyl)thiourea
P026	5344–82–1	Thiourea, (2-chlorophenyl)-
P027	542–76–7	3-Chloropropionitrile
P027	542–76–7	Propanenitrile, 3-chloro-
P028	100–44–7	Benzene, (chloromethyl)-

P028	100–44–7	Benzyl chloride
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
P031	460–19–5	Ethanedinitrile
P033	506–77–4	Cyanogen chloride
P033	506–77–4	Cyanogen chloride (CN)Cl
P034	131–89–5	2-Cyclohexyl-4,6-dinitrophenol
P034	131–89–5	Phenol, 2-cyclohexyl-4,6-dinitro-
P036	696–28–6	Arsonous dichloride, phenyl-
P036	696–28–6	Dichlorophenylarsine
P037	60–57–1	Dieldrin
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,2aalpha,3beta,6beta,6aalpha,7beta,7aalpha)-
P038	692–42–2	Arsine, diethyl-
P038	692–42–2	Diethylarsine
P039	298–04–4	Disulfoton
P039	298–04–4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
P040	297–97–2	O,O-Diethyl O-pyrazinyl phosphorothioate
P040	297–97–2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
P041	311–45–5	Diethyl-p-nitrophenyl phosphate
P041	311–45–5	Phosphoric acid, diethyl 4-nitrophenyl ester
P042	51–43–4	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)-
P042	51–43–4	Epinephrine
P043	55–91–4	Diisopropylfluorophosphate (DFP)

P043	55–91–4	Phosphorofluoridic acid, bis(1-methylethyl) ester
P044	60–51–5	Dimethoate
P044	60–51–5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methyl amino)-2-oxoethyl] ester
P045	39196–18–4	2-Butanone, 3,3-dimethyl-1-(methylthio)-, O-[(methylamino)carbonyl] oxime
P045	39196–18–4	Thiofanox
P046	122–09–8	Benzeneethanamine, alpha,alpha-dimethyl-
P046	122–09–8	alpha,alpha-Dimethylphenethylamine
P047	[1]534–52–1	4,6-Dinitro-o-cresol, & salts
P047	[1]534–52–1	Phenol, 2-methyl-4,6-dinitro-, & salts
P048	51–28–5	2,4-Dinitrophenol
P048	51–28–5	Phenol, 2,4-dinitro-
P049	541–53–7	Dithiobiuret
P049	541–53–7	Thioimidodicarbonic diamide $[(H_2N)C(S)]_2NH$
P050	115–29–7	Endosulfan
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
P051	[1]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,2beta,2abeta,3alpha,6alpha,6abeta,7beta,7aalpha)-, & metabolites
P051	72–20–8	Endrin
P051	72–20–8	Endrin, & metabolites
P054	151–56–4	Aziridine
P054	151–56–4	Ethyleneimine
P056	7782–41–4	Fluorine
P057	640–19–7	Acetamide, 2-fluoro-
P057	640–19–7	Fluoroacetamide
P058	62–74–8	Acetic acid, fluoro-, sodium salt
P058	62–74–8	Fluoroacetic acid, sodium salt

P059	76–44–8	Heptachlor
P059	76–44–8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
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,8beta,8abeta)-
P060	465–73–6	Isodrin
P062	757–58–4	Hexaethyl tetraphosphate
P062	757–58–4	Tetraphosphoric acid, hexaethyl ester
P063	74–90–8	Hydrocyanic acid
P063	74–90–8	Hydrogen cyanide
P064	624–83–9	Methane, isocyanato-
P064	624–83–9	Methyl isocyanate
P065	628–86–4	Fulminic acid, mercury(2+) salt (R,T)
P065	628–86–4	Mercury fulminate (R,T)
P066	16752–77–5	Ethanimidothioic acid, N-[[(methylamino)carbonyl]oxy]-, methyl ester
P066	16752–77–5	Methomyl
P067	75–55–8	Aziridine, 2-methyl-
P067	75–55–8	1,2-Propylenimine
P068	60–34–4	Hydrazine, methyl-
P068	60–34–4	Methyl hydrazine
P069	75–86–5	2-Methyllactonitrile
P069	75–86–5	Propanenitrile, 2-hydroxy-2-methyl-
P070	116–06–3	Aldicarb
P070	116–06–3	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime
P071	298–00–0	Methyl parathion
P071	298–00–0	Phosphorothioic acid, O,O,-dimethyl O-(4-nitrophenyl) ester
P072	86–88–4	alpha-Naphthylthiourea
P072	86–88–4	Thiourea, 1-naphthalenyl-

P073	13463–39–3	Nickel carbonyl
P073	13463–39–3	Nickel carbonyl $Ni(CO)_4$, (T-4)-
P074	557–19–7	Nickel cyanide
P074	557–19–7	Nickel cyanide $Ni(CN)_2$
P075	[1]54–11–5	Nicotine, & salts
P075	[1]54–11–5	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, & salts
P076	10102–43–9	Nitric oxide
P076	10102–43–9	Nitrogen oxide NO
P077	100–01–6	Benzenamine, 4-nitro-
P077	100–01–6	p-Nitroaniline
P078	10102–44–0	Nitrogen dioxide
P078	10102–44–0	Nitrogen oxide NO_2
P081	55–63–0	Nitroglycerine (R)
P081	55–63–0	1,2,3-Propanetriol, trinitrate (R)
P082	62–75–9	Methanamine, -methyl-N-nitroso-
P082	62–75–9	N-Nitrosodimethylamine
P084	4549–40–0	N-Nitrosomethylvinylamine
P084	4549–40–0	Vinylamine, -methyl-N-nitroso-
P085	152–16–9	Diphosphoramide, octamethyl-
P085	152–16–9	Octamethylpyrophosphoramide
P087	20816–12–0	Osmium oxide OsO_4, (T-4)-
P087	20816–12–0	Osmium tetroxide
P088	145–73–3	Endothall
P088	145–73–3	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
P089	56–38–2	Parathion
P089	56–38–2	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
P092	62–38–4	Mercury, (acetato-O)phenyl-
P092	62–38–4	Phenylmercury acetate
P093	103–85–5	Phenylthiourea

P093	103–85–5	Thiourea, phenyl-
P094	298–02–2	Phorate
P094	298–02–2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
P095	75–44–5	Carbonic dichloride
P095	75–44–5	Phosgene
P096	7803–51–2	Hydrogen phosphide
P096	7803–51–2	Phosphine
P097	52–85–7	Famphur
P097	52–85–7	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester
P098	151–50–8	Potassium cyanide
P098	151–50–8	Potassium cyanide K(CN)
P099	506–61–6	Argentate(1-), bis(cyano-C)-, potassium
P099	506–61–6	Potassium silver cyanide
P101	107–12–0	Ethyl cyanide
P101	107–12–0	Propanenitrile
P102	107–19–7	Propargyl alcohol
P102	107–19–7	2-Propyn-1-ol
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)
P108	[1]157–24–9	Strychnidin-10-one, & salts
P108	[1]157–24–9	Strychnine, & salts
P109	3689–24–5	Tetraethyldithiopyrophosphate
P109	3689–24–5	Thiodiphosphoric acid, tetraethyl ester
P110	78–00–2	Plumbane, tetraethyl-

P110	78–00–2	Tetraethyl lead
P111	107–49–3	Diphosphoric acid, tetraethyl ester
P111	107–49–3	Tetraethyl pyrophosphate
P112	509–14–8	Methane, tetranitro-(R)
P112	509–14–8	Tetranitromethane (R)
P113	1314–32–5	Thallic oxide
P113	1314–32–5	Thallium oxide Tl_2O_3
P114	12039–52–0	Selenious acid, dithallium(1+) salt
P114	12039–52–0	Tetraethyldithiopyrophosphate
P115	7446–18–6	Thiodiphosphoric acid, tetraethyl ester
P115	7446–18–6	Plumbane, tetraethyl-
P116	79–19–6	Tetraethyl lead
P116	79–19–6	Thiosemicarbazide
P118	75–70–7	Methanethiol, trichloro-
P118	75–70–7	Trichloromethanethiol
P119	7803–55–6	Ammonium vanadate
P119	7803–55–6	Vanadic acid, ammonium salt
P120	1314–62–1	Vanadium oxide V_2O_5
P120	1314–62–1	Vanadium pentoxide
P121	557–21–1	Zinc cyanide
P121	557–21–1	Zinc cyanide $Zn(CN)_2$
P122	1314–84–7	Zinc phosphide Zn_3P_2, when present at concentrations greater than 10% (R,T)
P123	8001–35–2	Toxaphene
P127	1563–66–2	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate.
P127	1563–66–2	Carbofuran
P128	315–8–4	Mexacarbate
P128	315–18–4	Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate (ester)
P185	26419–73–8	1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-,

		O-[(methylamino)-carbonyl]oxime.
P185	26419–73–8	Tirpate
P188	57–64–7	Benzoic acid, 2-hydroxy-, compd. with (3aS-cis)-1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrolo[2,3-b]indol-5-yl methylcarbamate ester (1:1)
P188	57–64–7	Physostigmine salicylate
P189	55285–14–8	Carbamic acid, [(dibutylamino)-thio]methyl-, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester
P189	55285–14–8	Carbosulfan
P190	1129–41–5	Carbamic acid, methyl-, 3-methylphenyl ester
P190	1129–41–5	Metolcarb
P191	644–64–4	Carbamic acid, dimethyl-, 1-[(dimethyl-amino)carbonyl]-5-methyl-1H-pyrazol-3-yl ester
P191	644–64–4	Dimetilan
P192	119–38–0	Carbamic acid, dimethyl-, 3-methyl-1-(1-methylethyl)-1H-pyrazol-5-yl ester
P192	119–38–0	Isolan
P194	23135–22–0	Ethanimidthioic acid, 2-(dimethylamino)-N-[[(methylamino) carbonyl]oxy]-2-oxo-, methyl ester
P194	23135–22–0	Oxamyl
P196	15339–36–3	Manganese, bis(dimethylcarbamodithioato-S,S')-,
P196	15339–36–3	Manganese dimethyldithiocarbamate
P197	17702–57–7	Formparanate
P197	17702–57–7	Methanimidamide, N,N-dimethyl-N'-[2-methyl-4-[[(methylamino)carbonyl]oxy]phenyl]-
P198	23422–53–9	Formetanate hydrochloride
P198	23422–53–9	Methanimidamide, N,N-dimethyl-N'-[3-[[(methylamino)-carbonyl]oxy]phenyl]-monohydrochloride
P199	2032–65–7	Methiocarb
P199	2032–65–7	Phenol, (3,5-dimethyl-4-(methylthio)-, methylcarbamate

P201	2631–37–0	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate
P201	2631–37–0	Promecarb
P202	64–00–6	m-Cumenyl methylcarbamate
P202	64–00–6	3-Isopropylphenyl N-methylcarbamate
P202	64–00–6	Phenol, 3-(1-methylethyl)-, methyl carbamate
P203	1646–88–4	Aldicarb sulfone
P203	1646–88–4	Propanal, 2-methyl-2-(methyl-sulfonyl)-, O-[(methylamino)carbonyl] oxime
P204	57–47–6	Physostigmine
P204	57–47–6	Pyrrolo[2,3-b]indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-, methylcarbamate (ester), (3aS-cis)-
P205	137–30–4	Zinc, bis(dimethylcarbamodithioato-S,S')-,
P205	137–30–4	Ziram

U-Listed Wastes

These wastes and their corresponding EPA Hazardous Waste Numbers are:

Hazardous Waste No.	Chemical abstracts No.	Substance
U394	30558–43–1	A2213.
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	[1]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
see F027	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′,3′: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)]-
U280	101–27–9	Barban.
U278	22781–23–3	Bendiocarb.
U364	22961–82–6	Bendiocarb phenol.
U271	17804–35–2	Benomyl.
U157	56–49–5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
U016	225–51–4	Benz[c]acridine
U017	98–87–3	Benzal chloride
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′-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′-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	Benzeneacetic acid, 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-chloroethyl)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
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′-(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)
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′-(2,2,2-trichloroethylidene)bis[4-chloro-
U247	72–43–5	Benzene, 1,1′-(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
U278	22781–23–3	1,3-Benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate.
U364	22961–82–6	1,3-Benzodioxol-4-ol, 2,2-dimethyl-,
U203	94–59–7	1,3-Benzodioxole, 5-(2-propenyl)-
U141	120–58–1	1,3-Benzodioxole, 5-(1-propenyl)-
U367	1563–38–8	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-
U090	94–58–6	1,3-Benzodioxole, 5-propyl-
U064	189–55–9	Benzo[rst]pentaphene
U248	[1]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′-Bioxirane
U021	92–87–5	[1,1′-Biphenyl]-4,4′-diamine
U073	91–94–1	[1,1′-Biphenyl]-4,4′-diamine, 3,3′-dichloro-
U091	119–90–4	[1,1′-Biphenyl]-4,4′-diamine, 3,3′-dimethoxy-
U095	119–93–7	[1,1′-Biphenyl]-4,4′-diamine, 3,3′-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-oxobutoxy]methyl]-2,3,5,7a-tetrahydro-1H-pyrrolizin-1-yl ester, [1S-[1alpha(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
U372	10605–21–7	Carbamic acid, 1H-benzimidazol-2-yl, methyl ester.
U271	17804–35–2	Carbamic acid, [1-[(butylamino)carbonyl]-1H-benzimidazol-2-yl]-, methyl ester.
U280	101–27–9	Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester.
U238	51–79–6	Carbamic acid, ethyl ester
U178	615–53–2	Carbamic acid, methylnitroso-, ethyl ester
U373	122–42–9	Carbamic acid, phenyl-, 1-methylethyl ester.
U409	23564–05–8	Carbamic acid, [1,2-phenylenebis (iminocarbonothioyl)]bis-, dimethyl ester.
U097	79–44–7	Carbamic chloride, dimethyl-
U389	2303–17–5	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester.
U387	52888–80–9	Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester.
U114	[1]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
U279	63–25–2	Carbaryl.
U372	10605–21–7	Carbendazim.
U367	1563–38–8	Carbofuran phenol.
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 H_2CrO_4, 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-, (1alpha,2alpha,3beta,4alpha,5alpha,6beta)-
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	[1]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
U071	541–73–1	m-Dichlorobenzene
U072	106–46–7	p-Dichlorobenzene
U073	91–94–1	3,3′-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
U395	5952–26–1	Diethylene glycol, dicarbamate.
U086	1615–80–1	N,N′-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′-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′-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	Epichlorohydrin
U001	75–07–0	Ethanal (I)
U404	121–44–8	Ethanamine, N,N-diethyl-
U174	55–18–5	Ethanamine, N-ethyl-N-nitroso-
U155	91–80–5	1,2-Ethanediamine, N,N-dimethyl-N′-2-pyridinyl-N′-(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′-[methylenebis(oxy)]bis[2-chloro-
U117	60–29–7	Ethane, 1,1′-oxybis-(I)
U025	111–44–4	Ethane, 1,1′-oxybis[2-chloro-
U184	76–01–7	Ethane, pentachloro-
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-
U410	59669–26–0	Ethanimidothioic acid, N,N′-[thiobis[(methylimino)carbonyloxy]]bis-, dimethyl ester
U394	30558–43–1	Ethanimidothioic acid, 2-(dimethylamino)-N-hydroxy-2-oxo-, methyl ester.
U359	110–80–5	Ethanol, 2-ethoxy-
U173	1116–54–7	Ethanol, 2,2′-(nitrosoimino)bis-
U395	5952–26–1	Ethanol, 2,2′-oxybis-, dicarbamate.
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	[1]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′-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)
U134	7664–39–3	Hydrogen fluoride (C,T)
U135	7783–06–4	Hydrogen sulfide
U135	7783–06–4	Hydrogen sulfide H_2S
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]pentalen-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′-Methylenebis(2-chloroaniline)
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′-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′-[(3,3′-dimethyl[1,1′-biphenyl]-4,4′-diyl)bis(azo)bis[5-amino-4-hydroxy]-, tetrasodium salt
U279	63–25–2	1-Naphthalenol, methylcarbamate.
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)-
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-
U081	120–83–2	Phenol, 2,4-dichloro-
U082	87–65–0	Phenol, 2,6-dichloro-
U089	56–53–1	Phenol, 4,4′-(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′-methylenebis[3,4,6-trichloro-
U411	114–26–1	Phenol, 2-(1-methylethoxy)-, methylcarbamate.
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	148–82–3	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, 2,2′-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)

U373	122–42–9	Propham.
U411	114–26–1	Propoxur.
U387	52888–80–9	Prosulfocarb.
U194	107–10–8	n-Propylamine (I,T)
U083	78–87–5	Propylene dichloride
U148	123–33–1	3,6-Pyridazinedione, 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
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 SeS_2(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
U410	59669–26–0	Thiodicarb.
U153	74–93–1	Thiomethanol (I,T)
U244	137–26–8	Thioperoxydicarbonic diamide $[(H_2N)C(S)]_2S_2$, tetramethyl-
U409	23564–05–8	Thiophanate-methyl.
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
U389	2303–17–5	Triallate.
U011	61–82–5	1H-1,2,4-Triazol-3-amine
U226	71–55–6	1,1,1-Trichloroethane
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
U404	121–44–8	Triethylamine.
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	[1]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, (3beta,16beta,17alpha,18beta,20alpha)-
U249	1314–84–7	Zinc phosphide Zn_3P_2, when present at concentrations of 10% or less
U001	75–07–0	Acetaldehyde (I)
U001	75–07–0	Ethanal (I)
U002	67–64–1	Acetone (I)
U002	67–64–1	2-Propanone (I)
U003	75–05–8	Acetonitrile (I,T)
U004	98–86–2	Acetophenone
U004	98–86–2	Ethanone, 1-phenyl-
U005	53–96–3	Acetamide, -9H-fluoren-2-yl-
U005	53–96–3	2-Acetylaminofluorene
U006	75–36–5	Acetyl chloride (C,R,T)
U007	79–06–1	Acrylamide
U007	79–06–1	2-Propenamide
U008	79–10–7	Acrylic acid (I)
U008	79–10–7	2-Propenoic acid (I)
U009	107–13–1	Acrylonitrile
U009	107–13–1	2-Propenenitrile

U010	50–07–7	Azirino[2',3':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)]-
U010	50–07–7	Mitomycin C
U011	61–82–5	Amitrole
U011	61–82–5	1H-1,2,4-Triazol-3-amine
U012	62–53–3	Aniline (I,T)
U012	62–53–3	Benzenamine (I,T)
U014	492–80–8	Auramine
U014	492–80–8	Benzenamine, 4,4'-carbonimidoylbis[N,N-dimethyl-
U015	115–02–6	Azaserine
U015	115–02–6	L-Serine, diazoacetate (ester)
U016	225–51–4	Benz[c]acridine
U017	98–87–3	Benzal chloride
U017	98–87–3	Benzene, (dichloromethyl)-
U018	56–55–3	Benz[a]anthracene
U019	71–43–2	Benzene (I,T)
U020	98–09–9	Benzenesulfonic acid chloride (C,R)
U020	98–09–9	Benzenesulfonyl chloride (C,R)
U021	92–87–5	Benzidine
U021	92–87–5	[1,1'-Biphenyl]-4,4'-diamine
U022	50–32–8	Benzo[a]pyrene
U023	98–07–7	Benzene, (trichloromethyl)-
U023	98–07–7	Benzotrichloride (C,R,T)
U024	111–91–1	Dichloromethoxy ethane
U024	111–91–1	Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-
U025	111–44–4	Dichloroethyl ether
U025	111–44–4	Ethane, 1,1'-oxybis[2-chloro-
U026	494–03–1	Chlornaphazin

U026	494–03–1	Naphthalenamine, N,N'-bis(2-chloroethyl)-
U027	108–60–1	Dichloroisopropyl ether
U027	108–60–1	Propane, 2,2'-oxybis[2-chloro-
U028	117–81–7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester
U028	117–81–7	Diethylhexyl phthalate
U029	74–83–9	Methane, bromo-
U029	74–83–9	Methyl bromide
U030	101–55–3	Benzene, 1-bromo-4-phenoxy-
U030	101–55–3	4-Bromophenyl phenyl ether
U031	71–36–3	1-Butanol (I)
U031	71–36–3	n-Butyl alcohol (I)
U032	13765–19–0	Calcium chromate
U032	13765–19–0	Chromic acid H_2CrO_4, calcium salt
U033	353–50–4	Carbonic difluoride
U033	353–50–4	Carbon oxyfluoride (R,T)
U034	75–87–6	Acetaldehyde, trichloro-
U034	75–87–6	Chloral
U035	305–03–3	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-
U035	305–03–3	Chlorambucil
U036	57–74–9	Chlordane, alpha & gamma isomers
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-
U037	108–90–7	Benzene, chloro-
U037	108–90–7	Chlorobenzene
U038	510–15–6	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester
U038	510–15–6	Chlorobenzilate
U039	59–50–7	p-Chloro-m-cresol
U039	59–50–7	Phenol, 4-chloro-3-methyl-

U041	106–89–8	Epichlorohydrin
U041	106–89–8	Oxirane, (chloromethyl)-
U042	110–75–8	2-Chloroethyl vinyl ether
U042	110–75–8	Ethene, (2-chloroethoxy)-
U043	75–01–4	Ethene, chloro-
U043	75–01–4	Vinyl chloride
U044	67–66–3	Chloroform
U044	67–66–3	Methane, trichloro-
U045	74–87–3	Methane, chloro- (I,T)
U045	74–87–3	Methyl chloride (I,T)
U046	107–30–2	Chloromethyl methyl ether
U046	107–30–2	Methane, chloromethoxy-
U047	91–58–7	beta-Chloronaphthalene
U047	91–58–7	Naphthalene, 2-chloro-
U048	95–57–8	o-Chlorophenol
U048	95–57–8	Phenol, 2-chloro-
U049	3165–93–3	Benzenamine, 4-chloro-2-methyl-, hydrochloride
U049	3165–93–3	4-Chloro-o-toluidine, hydrochloride
U050	218–01–9	Chrysene
U051		Creosote
U052	1319–77–3	Cresol (Cresylic acid)
U052	1319–77–3	Phenol, methyl-
U053	4170–30–3	2-Butenal
U053	4170–30–3	Crotonaldehyde
U055	98–82–8	Benzene, (1-methylethyl)-(I)
U055	98–82–8	Cumene (I)
U056	110–82–7	Benzene, hexahydro-(I)
U056	110–82–7	Cyclohexane (I)
U057	108–94–1	Cyclohexanone (I)
U058	50–18–0	Cyclophosphamide

U058	50–18–0	2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)tetrahydro-, 2-oxide
U059	20830–81–3	Daunomycin
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)-
U060	72–54–8	Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-
U060	72–54–8	DDD
U061	50–29–3	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
U061	50–29–3	DDT
U062	2303–16–4	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-di chloro-2-propenyl) ester
U062	2303–16–4	Diallate
U063	53–70–3	Dibenz[a,h]anthracene
U064	189–55–9	Benzo[rst]pentaphene
U064	189–55–9	Dibenzo[a,i]pyrene
U066	96–12–8	1,2-Dibromo-3-chloropropane
U066	96–12–8	Propane, 1,2-dibromo-3-chloro-
U067	106–93–4	Ethane, 1,2-dibromo-
U067	106–93–4	Ethylene dibromide
U068	74–95–3	Methane, dibromo-
U068	74–95–3	Methylene bromide
U069	84–74–2	1,2-Benzenedicarboxylic acid, dibutyl ester
U069	84–74–2	Dibutyl phthalate
U070	95–50–1	Benzene, 1,2-dichloro-
U070	95–50–1	o-Dichlorobenzene
U071	541–73–1	Benzene, 1,3-dichloro-
U071	541–73–1	m-Dichlorobenzene
U072	106–46–7	Benzene, 1,4-dichloro-

U072	106–46–7	p-Dichlorobenzene
U073	91–94–1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-
U073	91–94–1	3,3'-Dichlorobenzidine
U074	764–41–0	2-Butene, 1,4-dichloro-(I,T)
U074	764–41–0	1,4-Dichloro-2-butene (I,T)
U075	75–71–8	Dichlorodifluoromethane
U075	75–71–8	Methane, dichlorodifluoro-
U076	75–34–3	Ethane, 1,1-dichloro-
U076	75–34–3	Ethylidene dichloride
U077	107–06–2	Ethane, 1,2-dichloro-
U077	107–06–2	Ethylene dichloride
U078	75–35–4	1,1-Dichloroethylene
U078	75–35–4	Ethene, 1,1-dichloro-
U079	156–60–5	1,2-Dichloroethylene
U079	156–60–5	Ethene, 1,2-dichloro-, (E)-
U080	75–09–2	Methane, dichloro-
U080	75–09–2	Methylene chloride
U081	120–83–2	2,4-Dichlorophenol
U081	120–83–2	Phenol, 2,4-dichloro-
U082	87–65–0	2,6-Dichlorophenol
U082	87–65–0	Phenol, 2,6-dichloro-
U083	78–87–5	Propane, 1,2-dichloro-
U083	78–87–5	Propylene dichloride
U084	542–75–6	1,3-Dichloropropene
U084	542–75–6	1-Propene, 1,3-dichloro-
U085	1464–53–5	2,2'-Bioxirane
U085	1464–53–5	1,2:3,4-Diepoxybutane (I,T)
U086	1615–80–1	N,N'-Diethylhydrazine
U086	1615–80–1	Hydrazine, 1,2-diethyl-
U087	3288–58–2	O,O-Diethyl S-methyl dithiophosphate

U087	3288–58–2	Phosphorodithioic acid, O,O-diethyl S-methyl ester
U088	84–66–2	1,2-Benzenedicarboxylic acid, diethyl ester
U088	84–66–2	Diethyl phthalate
U089	56–53–1	Diethylstilbesterol
U089	56–53–1	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)-
U090	94–58–6	1,3-Benzodioxole, 5-propyl-
U090	94–58–6	Dihydrosafrole
U091	119–90–4	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-
U091	119–90–4	3,3'-Dimethoxybenzidine
U092	124–40–3	Dimethylamine (I)
U092	124–40–3	Methanamine, -methyl-(I)
U093	60–11–7	Benzenamine, N,N-dimethyl-4-(phenylazo)-
U093	60–11–7	p-Dimethylaminoazobenzene
U094	57–97–6	Benz[a]anthracene, 7,12-dimethyl-
U094	57–97–6	7,12-Dimethylbenz[a]anthracene
U095	119–93–7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-
U095	119–93–7	3,3'-Dimethylbenzidine
U096	80–15–9	alpha,alpha-Dimethylbenzylhydroperoxide (R)
U096	80–15–9	Hydroperoxide, 1-methyl-1-phenylethyl-(R)
U097	79–44–7	Carbamic chloride, dimethyl-
U097	79–44–7	Dimethylcarbamoyl chloride
U098	57–14–7	1,1-Dimethylhydrazine
U098	57–14–7	Hydrazine, 1,1-dimethyl-
U099	540–73–8	1,2-Dimethylhydrazine
U099	540–73–8	Hydrazine, 1,2-dimethyl-
U101	105–67–9	2,4-Dimethylphenol
U101	105–67–9	Phenol, 2,4-dimethyl-
U102	131–11–3	1,2-Benzenedicarboxylic acid, dimethyl ester
U102	131–11–3	Dimethyl phthalate

U103	77–78–1	Dimethyl sulfate
U103	77–78–1	Sulfuric acid, dimethyl ester
U105	121–14–2	Benzene, 1-methyl-2,4-dinitro-
U105	121–14–2	2,4-Dinitrotoluene
U106	606–20–2	Benzene, 2-methyl-1,3-dinitro-
U106	606–20–2	2,6-Dinitrotoluene
U107	117–84–0	1,2-Benzenedicarboxylic acid, dioctyl ester
U107	117–84–0	Di-n-octyl phthalate
U108	123–91–1	1,4-Diethyleneoxide
U108	123–91–1	1,4-Dioxane
U109	122–66–7	1,2-Diphenylhydrazine
U109	122–66–7	Hydrazine, 1,2-diphenyl-
U110	142–84–7	Dipropylamine (I)
U110	142–84–7	1-Propanamine, N-propyl-(I)
U111	621–64–7	Di-n-propylnitrosamine
U111	621–64–7	1-Propanamine, N-nitroso-N-propyl-
U112	141–78–6	Acetic acid ethyl ester (I)
U112	141–78–6	Ethyl acetate (I)
U113	140–88–5	Ethyl acrylate (I)
U113	140–88–5	2-Propenoic acid, ethyl ester (I)
U114	[1]111–54–6	Carbamodithioic acid, 1,2-ethanediylbis-, salts & esters
U114	[1]111–54–6	Ethylenebisdithiocarbamic acid, salts & esters
U115	75–21–8	Ethylene oxide (I,T)
U115	75–21–8	Oxirane (I,T)
U116	96–45–7	Ethylenethiourea
U116	96–45–7	2-Imidazolidinethione
U117	60–29–7	Ethane, 1,1'-oxybis-(I)
U117	60–29–7	Ethyl ether (I)
U118	97–63–2	Ethyl methacrylate

U118	97–63–2	2-Propenoic acid, 2-methyl-, ethyl ester
U119	62–50–0	Ethyl methanesulfonate
U119	62–50–0	Methanesulfonic acid, ethyl ester
U120	206–44–0	Fluoranthene
U121	75–69–4	Methane, trichlorofluoro-
U121	75–69–4	Trichloromonofluoromethane
U122	50–00–0	Formaldehyde
U123	64–18–6	Formic acid (C,T)
U124	110–00–9	Furan (I)
U124	110–00–9	Furfuran (I)
U125	98–01–1	2-Furancarboxaldehyde (I)
U125	98–01–1	Furfural (I)
U126	765–34–4	Glycidylaldehyde
U126	765–34–4	Oxiranecarboxyaldehyde
U127	118–74–1	Benzene, hexachloro-
U127	118–74–1	Hexachlorobenzene
U128	87–68–3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U128	87–68–3	Hexachlorobutadiene
U129	58–89–9	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1alpha,2alpha,3beta,4alpha,5alpha,6beta)-
U129	58–89–9	Lindane
U130	77–47–4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
U130	77–47–4	Hexachlorocyclopentadiene
U131	67–72–1	Ethane, hexachloro-
U131	67–72–1	Hexachloroethane
U132	70–30–4	Hexachlorophene
U132	70–30–4	Phenol, 2,2'-methylenebis[3,4,6-trichloro-
U133	302–01–2	Hydrazine (R,T)
U134	7664–39–3	Hydrofluoric acid (C,T)
U134	7664–39–3	Hydrogen fluoride (C,T)

U135	7783–06–4	Hydrogen sulfide
U135	7783–06–4	Hydrogen sulfide H_2S
U136	75–60–5	Arsinic acid, dimethyl-
U136	75–60–5	Cacodylic acid
U137	193–39–5	Indeno[1,2,3-cd]pyrene
U138	74–88–4	Methane, iodo-
U138	74–88–4	Methyl iodide
U140	78–83–1	Isobutyl alcohol (I,T)
U140	78–83–1	1-Propanol, 2-methyl- (I,T)
U141	120–58–1	1,3-Benzodioxole, 5-(1-propenyl)-
U141	120–58–1	Isosafrole
U142	143–50–0	Kepone
U142	143–50–0	1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-
U143	303–34–4	2-Butenoic acid, 2-methyl-, 7-[[2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy]methyl]-2,3,5,7a-tetrahydro-1H-pyrrolizin-1-yl ester, [1S-[1alpha(Z),7(2S*,3R*),7aalpha]]-
U143	303–34–4	Lasiocarpine
U144	301–04–2	Acetic acid, lead(2+) salt
U144	301–04–2	Lead acetate
U145	7446–27–7	Lead phosphate
U145	7446–27–7	Phosphoric acid, lead(2+) salt (2:3)
U146	1335–32–6	Lead, bis(acetato-O)tetrahydroxytri-
U146	1335–32–6	Lead subacetate
U147	108–31–6	2,5-Furandione
U147	108–31–6	Maleic anhydride
U148	123–33–1	Maleic hydrazide
U148	123–33–1	3,6-Pyridazinedione, 1,2-dihydro-
U149	109–77–3	Malononitrile
U149	109–77–3	Propanedinitrile

U150	148–82–3	Melphalan
U150	148–82–3	L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-
U151	7439–97–6	Mercury
U152	126–98–7	Methacrylonitrile (I,T)
U152	126–98–7	2-Propenenitrile, 2-methyl- (I,T)
U153	74–93–1	Methanethiol (I,T)
U153	74–93–1	Thiomethanol (I,T)
U154	67–56–1	Methanol (I)
U154	67–56–1	Methyl alcohol (I)
U155	91–80–5	1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-
U155	91–80–5	Methapyrilene
U156	79–22–1	Carbonochloridic acid, methyl ester (I,T)
U156	79–22–1	Methyl chlorocarbonate (I,T)
U157	56–49–5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
U157	56–49–5	3-Methylcholanthrene
U158	101–14–4	Benzenamine, 4,4'-methylenebis[2-chloro-
U158	101–14–4	4,4'-Methylenebis(2-chloroaniline)
U159	78–93–3	2-Butanone (I,T)
U159	78–93–3	Methyl ethyl ketone (MEK) (I,T)
U160	1338–23–4	2-Butanone, peroxide (R,T)
U160	1338–23–4	Methyl ethyl ketone peroxide (R,T)
U161	108–10–1	Methyl isobutyl ketone (I)
U161	108–10–1	4-Methyl-2-pentanone (I)
U161	108–10–1	Pentanol, 4-methyl-
U162	80–62–6	Methyl methacrylate (I,T)
U162	80–62–6	2-Propenoic acid, 2-methyl-, methyl ester (I,T)
U163	70–25–7	Guanidine, -methyl-N'-nitro-N-nitroso-
U163	70–25–7	MNNG
U164	56–04–2	Methylthiouracil

U164	56–04–2	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
U165	91–20–3	Naphthalene
U166	130–15–4	1,4-Naphthalenedione
U166	130–15–4	1,4-Naphthoquinone
U167	134–32–7	1-Naphthalenamine
U167	134–32–7	alpha-Naphthylamine
U168	91–59–8	2-Naphthalenamine
U168	91–59–8	beta-Naphthylamine
U169	98–95–3	Benzene, nitro-
U169	98–95–3	Nitrobenzene (I,T)
U170	100–02–7	p-Nitrophenol
U170	100–02–7	Phenol, 4-nitro-
U171	79–46–9	2-Nitropropane (I,T)
U171	79–46–9	Propane, 2-nitro- (I,T)
U172	924–16–3	1-Butanamine, N-butyl-N-nitroso-
U172	924–16–3	N-Nitrosodi-n-butylamine
U173	1116–54–7	Ethanol, 2,2'-(nitrosoimino)bis-
U173	1116–54–7	N-Nitrosodiethanolamine
U174	55–18–5	Ethanamine, -ethyl-N-nitroso-
U174	55–18–5	N-Nitrosodiethylamine
U176	759–73–9	N-Nitroso-N-ethylurea
U176	759–73–9	Urea, N-ethyl-N-nitroso-
U177	684–93–5	N-Nitroso-N-methylurea
U177	684–93–5	Urea, N-methyl-N-nitroso-
U178	615–53–2	Carbamic acid, methylnitroso-, ethyl ester
U178	615–53–2	N-Nitroso-N-methylurethane
U179	100–75–4	N-Nitrosopiperidine
U179	100–75–4	Piperidine, 1-nitroso-
U180	930–55–2	N-Nitrosopyrrolidine

U180	930–55–2	Pyrrolidine, 1-nitroso-
U181	99–55–8	Benzenamine, 2-methyl-5-nitro-
U181	99–55–8	5-Nitro-o-toluidine
U182	123–63–7	1,3,5-Trioxane, 2,4,6-trimethyl-
U182	123–63–7	Paraldehyde
U183	608–93–5	Benzene, pentachloro-
U183	608–93–5	Pentachlorobenzene
U184	76–01–7	Ethane, pentachloro-
U184	76–01–7	Pentachloroethane
U185	82–68–8	Benzene, pentachloronitro-
U185	82–68–8	Pentachloronitrobenzene (PCNB)
U186	504–60–9	1-Methylbutadiene (I)
U186	504–60–9	1,3-Pentadiene (I)
U187	62–44–2	Acetamide, -(4-ethoxyphenyl)-
U187	62–44–2	Phenacetin
U188	108–95–2	Phenol
U189	1314–80–3	Phosphorus sulfide (R)
U189	1314–80–3	Sulfur phosphide (R)
U190	85–44–9	1,3-Isobenzofurandione
U190	85–44–9	Phthalic anhydride
U191	109–06–8	2-Picoline
U191	109–06–8	Pyridine, 2-methyl-
U192	23950–58–5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-
U192	23950–58–5	Pronamide
U193	1120–71–4	1,2-Oxathiolane, 2,2-dioxide
U193	1120–71–4	1,3-Propane sultone
U194	107–10–8	1-Propanamine (I,T)
U194	107–10–8	n-Propylamine (I,T)
U196	110–86–1	Pyridine

U197	106–51–4	p-Benzoquinone
U197	106–51–4	2,5-Cyclohexadiene-1,4-dione
U200	50–55–5	Reserpine
U200	50–55–5	Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester,(3beta,16beta,17alpha,18beta,20alpha)-
U201	108–46–3	1,3-Benzenediol
U201	108–46–3	Resorcinol
U203	94–59–7	1,3-Benzodioxole, 5-(2-propenyl)-
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 SeS_2(R,T)
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]-
U206	18883–66–4	Streptozotocin
U207	95–94–3	Benzene, 1,2,4,5-tetrachloro-
U207	95–94–3	1,2,4,5-Tetrachlorobenzene
U208	630–20–6	Ethane, 1,1,1,2-tetrachloro-
U208	630–20–6	1,1,1,2-Tetrachloroethane
U209	79–34–5	Ethane, 1,1,2,2-tetrachloro-
U209	79–34–5	1,1,2,2-Tetrachloroethane
U210	127–18–4	Ethene, tetrachloro-
U210	127–18–4	Tetrachloroethylene
U211	56–23–5	Carbon tetrachloride
U211	56–23–5	Methane, tetrachloro-
U213	109–99–9	Furan, tetrahydro-(I)
U213	109–99–9	Tetrahydrofuran (I)

U214	563–68–8	Acetic acid, thallium(1+) salt
U214	563–68–8	Thallium(I) acetate
U215	6533–73–9	Carbonic acid, dithallium(1+) salt
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	Nitric acid, thallium(1+) salt
U217	10102–45–1	Thallium(I) nitrate
U218	62–55–5	Ethanethioamide
U218	62–55–5	Thioacetamide
U219	62–56–6	Thiourea
U220	108–88–3	Benzene, methyl-
U220	108–88–3	Toluene
U221	25376–45–8	Benzenediamine, ar-methyl-
U221	25376–45–8	Toluenediamine
U222	636–21–5	Benzenamine, 2-methyl-, hydrochloride
U222	636–21–5	o-Toluidine hydrochloride
U223	26471–62–5	Benzene, 1,3-diisocyanatomethyl- (R,T)
U223	26471–62–5	Toluene diisocyanate (R,T)
U225	75–25–2	Bromoform
U225	75–25–2	Methane, tribromo-
U226	71–55–6	Ethane, 1,1,1-trichloro-
U226	71–55–6	Methyl chloroform
U226	71–55–6	1,1,1-Trichloroethane
U227	79–00–5	Ethane, 1,1,2-trichloro-
U227	79–00–5	1,1,2-Trichloroethane
U228	79–01–6	Ethene, trichloro-
U228	79–01–6	Trichloroethylene
U234	99–35–4	Benzene, 1,3,5-trinitro-
U234	99–35–4	1,3,5-Trinitrobenzene (R,T)

U235	126–72–7	1-Propanol, 2,3-dibromo-, phosphate (3:1)
U235	126–72–7	Tris(2,3-dibromopropyl) phosphate
U236	72–57–1	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl[1,1'-biphenyl]-4,4'-diyl)bis(azo)bis[5-amino-4-hydroxy]-, tetrasodium salt
U236	72–57–1	Trypan blue
U237	66–75–1	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-
U237	66–75–1	Uracil mustard
U238	51–79–6	Carbamic acid, ethyl ester
U238	51–79–6	Ethyl carbamate (urethane)
U239	1330–20–7	Benzene, dimethyl- (I,T)
U239	1330–20–7	Xylene (I)
U240	[1]94–75–7	Acetic acid, (2,4-dichlorophenoxy)-, salts & esters
U240	[1]94–75–7	2,4-D, salts & esters
U243	1888–71–7	Hexachloropropene
U243	1888–71–7	1-Propene, 1,1,2,3,3,3-hexachloro-
U244	137–26–8	Thioperoxydicarbonic diamide $[(H_2N)C(S)]_2S_2$, tetramethyl-
U244	137–26–8	Thiram
U246	506–68–3	Cyanogen bromide (CN)Br
U247	72–43–5	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-
U247	72–43–5	Methoxychlor
U248	[1]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
U248	[1]81–81–2	Warfarin, & salts, when present at concentrations of 0.3% or less
U249	1314–84–7	Zinc phosphide Zn_3P_2, when present at concentrations of 10% or less
U271	17804–35–2	Benomyl

U271	17804–35–2	Carbamic acid, [1-[(butylamino)carbonyl]-1H-benzimidazol-2-yl]-, methyl ester
U278	22781–23–3	Bendiocarb
U278	22781–23–3	1,3-Benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate
U279	63–25–2	Carbaryl
U279	63–25–2	1-Naphthalenol, methylcarbamate
U280	101–27–9	Barban
U280	101–27–9	Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
U328	95–53–4	Benzenamine, 2-methyl-
U328	95–53–4	o-Toluidine
U353	106–49–0	Benzenamine, 4-methyl-
U353	106–49–0	p-Toluidine
U359	110–80–5	Ethanol, 2-ethoxy-
U359	110–80–5	Ethylene glycol monoethyl ether
U364	22961–82–6	Bendiocarb phenol
U364	22961–82–6	1,3-Benzodioxol-4-ol, 2,2-dimethyl-,
U367	1563–38–8	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-
U367	1563–38–8	Carbofuran phenol
U372	10605–21–7	Carbamic acid, 1H-benzimidazol-2-yl, methyl ester
U372	10605–21–7	Carbendazim
U373	122–42–9	Carbamic acid, phenyl-, 1-methylethyl ester
U373	122–42–9	Propham
U387	52888–80–9	Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester
U387	52888–80–9	Prosulfocarb
U389	2303–17–5	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester
U389	2303–17–5	Triallate
U394	30558–43–1	A2213

U394	30558–43–1	Ethanimidothioic acid, 2-(dimethylamino)-N-hydroxy-2-oxo-, methyl ester
U395	5952–26–1	Diethylene glycol, dicarbamate
U395	5952–26–1	Ethanol, 2,2'-oxybis-, dicarbamate
U404	121–44–8	Ethanamine, N,N-diethyl-
U404	121–44–8	Triethylamine
U409	23564–05–8	Carbamic acid, [1,2-phenylenebis (iminocarbonothioyl)]bis-, dimethyl ester
U409	23564–05–8	Thiophanate-methyl
U410	59669–26–0	Ethanimidothioic acid, N,N'-[thiobis[(methylimino)carbonyloxy]]bis-, dimethyl ester
U410	59669–26–0	Thiodicarb
U411	114–26–1	Phenol, 2-(1-methylethoxy)-, methylcarbamate
U411	114–26–1	Propoxur
See F027	93–76–5	Acetic acid, (2,4,5-trichlorophenoxy)-
See F027	87–86–5	Pentachlorophenol
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-
See F027	93–72–1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
See F027	93–72–1	Silvex (2,4,5-TP)
See F027	93–76–5	2,4,5-T
See F027	58–90–2	2,3,4,6-Tetrachlorophenol
See F027	95–95–4	2,4,5-Trichlorophenol
See F027	88–06–2	2,4,6-Trichlorophenol

[1]CAS Number given for parent compound only.

The primary hazardous properties of these materials have been indicated by the letters T (Toxicity), and R (Reactivity). Absence of a letter indicates that the compound only is listed for acute toxicity. Wastes are first listed in alphabetical order by substance and then listed again in numerical order by Hazardous Waste Number.]

Appendix C: HAZARDOUS WASTE SATELLITE ACCUMULATION AREA REQUIREMENTS

1. **Mark** all waste containers with the words "**Hazardous Waste**."
2. **Label** all waste containers accurately indicating the contents.
3. **Limit** the satellite area waste volume to no more than 55 gallons of waste, or one quart of a "P" waste at any one time. For assistance in identifying waste types contact the EHS Chemical Health and Safety Officer.
4. **Close** all containers during accumulation except when necessary to add or remove wastes. Do not overfill containers. Leave adequate headspace for expansion.
5. **Funnels** must be removed from containers when not in immediate use. All waste must be collected in sealable containers.
6. **Seal** all containers tightly. No beakers or open containers shall be used for waste accumulation.
7. **Ensure** waste is compatible with other wastes in the container, and with the type of container it is stored in. The exterior of the container must be free of chemical contamination; leaking containers must be over-packed. Segregate containers of incompatible waste to prevent reactions.
8. **Biohazard** waste, radioactive waste, and hazardous waste must not be mixed.
9. **Keep** the waste containers near the process generating the waste - within the same laboratory and under the control of the waste generator.
10. **Inform** all students and employees of waste accumulation site requirements.
11. **Know** the location of your spill kit, emergency shower, fire extinguisher, and exits.

Clean up any spillage immediately. Contact the BSU Chemical Health and Safety Officer at 285-2807 if assistance is needed. Call 285-1111 for outside emergency assistance if warranted by the nature of the chemical spill, exposed persons, or sensitive location of the release.

Laboratory Hazardous Waste Accumulation Area

Laboratory Hazardous Waste Accumulation Area: An area in the laboratory where small quantities of hazardous waste are temporarily stored prior to collection for disposal by the BSU EHS Office. Laboratory Hazardous Waste Accumulation Area could be a room, a bench top, or a laboratory hood.

Such accumulation areas are regulated by federal and state law. To ensure compliance with these regulations and the College's requirements, the following conditions must be met:

- Mark with the words "HAZARDOUS WASTE ACCUMULATION AREA."
- Locate in the laboratory and under the control of the person generating the waste.

- All containers must meet the container and labeling requirements outlined in this BSU guidance.
- Segregate incompatible substances; do not mix in the same container.
- Liquid waste containers should have secondary containment.
- No more than one container of each type of hazardous waste generated should be in use at one time.
- No more than 55 gallons of hazardous waste or one (1) quart of acutely hazardous (P-listed) waste can be stored at one time.
- Emergency response information must be posted:
  - emergency phone numbers
  - location of fire extinguishers and fire alarms
  - location of spill control materials and SDSs
- Must contain appropriate spill control kits for chemicals used in that laboratory.

APPENDIX D: WASTE INCOMPATIBILITY

Source: EPA's RCRA Chemical Waste Compatibility List

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

Group 1-A	Group 1-B
Acetylene sludge	Acid sludge
Alkaline caustic liquids	Acid and water
Alkaline cleaner	Battery acid
Alkaline corrosive liquids	Chemical cleaners
Alkaline corrosive battery fluid	Electrolyte, acid
Caustic wastewater	Etching acid liquid or solvent
Lime sludge and other corrosive alkalis	Pickling liquor & other corrosive acids
Lime wastewater	Spent acid
Lime and water	Spent mixed acid
Spent caustic	Spent sulfuric acid

Potential consequences: Heat generation; violent reaction

Group 2-A	Group 2-B
Aluminum	Any waste in Group 1-A or 1-B
Beryllium	
Calcium	
Lithium	
Magnesium	
Potassium sodium	
Zinc powder	
Other reactive metals and metal hydroxides	

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

Group 3-A	Group 3-B
Alcohols	Any concentrated waste in Groups1A or 1B
Water	Calcium
	Lithium
	Metal hydrides
	Potassium
	SO_2Cl_2, $SOCl_2$, PCl_3, CH_3SiCl_3 Other water-reactive waste

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

Group 4-A	Group 4-B
Alcohols	Concentrated Group 1-A or 1-B wastes
Aldehydes	Group 2-A wastes
Halogenated hydrocarbons	
Nitrated hydrocarbons	
Unsaturated hydrocarbons	
Other reactive organic compounds & solvents	

Potential consequences: Fire, explosion, or violent reaction

Group 5-A	Group 5-B
Spent cyanide and sulfide solutions	Group 1-B wastes

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

Group 6-A	Group 6-B
Chlorates	Acetic acid and other organic acids
Chlorine	Concentrated mineral acids
Chlorites	Group 2-A wastes
Chromic acid	Group 5-A wastes
Hypochlorites	Other flammable and combustible wastes
Nitrates	
Nitric acid, fuming	
Perchlorates	
Permanganates	
Peroxides	
Other strong oxidizers	

Potential consequences: Fire, explosion, or violent reaction

Note: Numerous other chemical compatibility charts are available if none of the waste compounds or categories of concern are included above. SDSs and other references should also be consulted if there are any doubts as to chemical compatibilities. For some waste mixtures of unknown ingredients or concentrations, bench scale testing may be necessary to verify waste characteristics and compatibilities.