Copies of this plan will be made available to all members of the campus community that may potentially generate or handle hazardous wastes

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I. Purpose

The purpose of this document is to present procedures to be followed in complying with the Resource Conservation and Recovery Act (RCRA) and New York State Environmental Conservation Law (ECL) Section 27-0900 et seq. This document compiles in one location many of the items necessary to document compliance with RCRA and New York ECL.

II. Responsibilities

College of Staten Island (CSI) faculty, staff, students, contractors, and other parties that handle or generate hazardous wastes are required to properly handle, store and label hazardous wastes and to comply with applicable federal and state regulations. They are responsible to follow the policies and procedures set forth in this Hazardous Waste Management Plan and the Appendices to this Plan. It is the responsibility of all faculty, staff, students, contractors and other parties to see that hazardous wastes are managed in a safe, healthy, and environmentally sound manner. The Environmental Health & Safety Office (EHSO) and campus administration are responsible for ensuring that all parties who may or do generate hazardous waste on campus comply with these requirements.

Included among the responsibilities of CSI’s EHSO is the oversight of hazardous waste management services at CSI. These services include the determination of whether or not a waste is a hazardous waste (see Appendix A), and waste pickup, storage, and shipment.

Under federal and state regulations, generators of hazardous waste are accountable for the management of these wastes from "cradle to grave," that is, their point of generation to ultimate disposal. This responsibility includes taking steps to minimize the amount of waste generated, and to minimize the release of hazardous waste. Civil and criminal penalties may result from failure to comply with these requirements. At CSI, generators of hazardous wastes may be academic facilities such as laboratories or art rooms, as well as various facility operations. While CSI is responsible for maintaining compliance, a student, faculty member, staff person, supervisor, or department head could have individual liability in the event of a violation of environmental requirements. Personnel from federal or state environmental regulatory agencies have the authority to inspect laboratories, storage areas, and other related locations for compliance with applicable regulatory requirements at any time.

Within the CUNY/CSI system the following responsibilities are identified.

CSI President is responsible for:

- Implementation of the Hazardous Waste Management Plan at CSI;
- Communicating the importance of the Hazardous Waste Management Plan throughout the organization; and
- Adherence to the CUNY Laboratory Safety Manual.

CSI Vice President for Finance and Administration is responsible for:
• Providing adequate human, fiscal, and administrative resources to help assure compliance with hazardous waste regulations and the Hazardous Waste Management Plan;
• Tracking and reviewing hazardous waste compliance performance; and
• Ensure DASNY/EHSO interaction to support hazardous waste compliance in construction projects.

CSI Department Chairs are responsible for:

• Communicating the importance of the Hazardous Waste Management Plan throughout the Department;
• Assuring that departmental staff and facilities comply with these policies;
• Notifying the EHSO Officer or Director 30 days prior to the departure of any Principal Investigator; and
• Planning and implementing the removal of waste materials from any generator leaving CSI for any reason.

CSI Director of Environmental Health & Safety is responsible for:

• Reading and understanding federal, state, and city laws, rules, and regulations relating to hazardous waste and staying current with changes in the laws, rules, and regulations.
• Overseeing the development of CSI’s Hazardous Waste Management Plan which addresses the particular needs of CSI with respect to the management of hazardous wastes and achieves the goal of regulatory compliance.
• Interfacing with Federal, State and New York City regulatory agencies.
• Implementing CSI’s Hazardous Waste Management Plan.
• Maintaining required documents and records of hazardous waste training, generation, shipment, and disposal.
• Directing training of faculty, staff, students and contractors at CSI for the performance of their tasks as they may relate to hazardous wastes in an efficient and competent fashion and the provision of instruction regarding the impact that their activities can have on the environment if performed incorrectly.
• Assuring regular inspection of areas where hazardous wastes are stored to ensure that hazardous wastes have been properly identified, labeled, segregated, and stored for collection and disposal and to prevent the accumulation of old, unused, and abandoned chemicals.
• Awareness of the current legal requirements concerning hazardous waste disposal and to contact the CUNY Office of General Counsel when questions arise.
• Managing the arrangement of hazardous waste pickups and ensuring that disposal performed is safely and completely.
• Attending DASNY project meetings and obtaining contractor training records and any manifests.
Hazardous Materials Users/Hazardous Waste Generators

CSI personnel who use or generate hazardous materials or wastes are responsible to:

- Read and understand, to the extent appropriate to their work, this Hazardous Waste Management Plan, and associated RCRA documentation;
- Actively participate in CSI’s waste minimization program by conducting their work in a manner to minimize potential adverse environmental impacts resulting from their work;
- Plan the activity/experiment to consume, to the extent feasible, all hazardous materials and to minimize the amount and toxicity of waste materials produced;
- Be familiar with the properties, health risks, and precautions required for handling their respective hazardous waste streams;
- Become familiar with available data concerning the chemicals; use reference books, articles, Material Safety Data Sheets (MSDSs), CSI's Chemical Hygiene Plan (CHP), and appropriate Standard Operating Procedures (SOPs);
- Select and use all appropriate Personal Protective Equipment (PPE) (e.g., gloves, goggles, lab coat, or other measures as may be applicable) required to safely work with hazardous materials; and
- Use proper engineering controls such as fume hoods, secondary containment and self-closing funnels to minimize exposures and hazards.
- Contact the EHSO with any questions regarding chemical or waste management, including training, chemical/waste identification, regulations, reference materials or any aspect of chemical or waste management.

DASNY (Dormitory Authority of the State of New York)

DASNY also has responsibility for hazardous waste that it generates during activities it and its contractors conduct on campus:

Hazardous waste storage
- DASNY and its contractors to coordinate, in advance and throughout the project, with campus EHSO to evaluate environmental implications of activity; establish specific environmental regulatory responsibilities with respect to any and all DASNY projects. CSI’s EHSO will verify that compliance is being maintained.
- DASNY must establish its own hazardous waste storage area, train its personnel, have a contingency plan, and comply with applicable RCRA requirements, or ensure that its contractors comply with requirements. Copies of training records, hazardous waste manifests, etc. to be provided to the EHSO.
- DASNY generated hazardous waste is to be clearly segregated from campus hazardous waste while in storage.

USEPA I.D. Number
- DASNY must obtain its own USEPA I.D. number for the management and disposal of hazardous wastes generated during its projects.

Hazardous Waste Manifests
- DASNY personnel cannot sign manifests that use CSI’s USEPA I.D. number.
All faculty, staff, students, contractors and other parties (including DASNY and its contractors) engaged in activities on CSI campus are subject to periodic internal environmental assessments of their facilities by personnel of CSI’s Office of Environmental, Health and Safety, by CUNY personnel, or a third party engaged by CSI or CUNY. If issues of non-compliance with policies of CUNY or CSI are discovered during the course of an audit/assessment, responses are required. Depending on the severity of the non-compliance, additional disciplinary actions may take place.

III. Hazardous waste management

Handling hazardous chemicals and wastes requires the use of proper laboratory safety procedures. CSI’s Chemical Hygiene Plan (CHP) should be consulted for appropriate procedures, including the use of PPE. Copies of the CHP are provided throughout the campus. If a copy is not available, contact the EHSO at extension 4300. If there are any questions or doubts regarding hazardous waste management, chemical waste management, or chemical management, contact the EHSO at extension 4300. This section will tell you about:

- how to properly identify if a hazardous waste is generated
- how and where hazardous waste must be accumulated and labeled in your work area
- hazardous waste pickup procedures from your area to the storage area in 6S – Laboratory Science Building
- how hazardous waste must be stored and packaged for shipment
- hazardous waste disposal
- inspections

A. Hazardous waste generation and identification

The success of the hazardous waste management program begins with how well individuals that generate hazardous wastes are aware of their responsibilities, beginning with the accurate characterization of waste materials. Following characterization, hazardous wastes must be properly packaged, labeled, and stored at the accumulation points until they are moved to the on-site hazardous waste storage area. Chemical wastes must be properly identified and documented to prevent the generation of unknown waste materials. CSI hazardous waste labels (available from EHSO) must be applied to waste containers located at the satellite accumulation areas. These labels identify the material, and provide the building name, floor and room number as well as accumulation date. If in doubt of any aspect of the waste identification, call the EHSO at extension 4300 for guidance.

Every effort should be made to minimize the amount of hazardous waste that is generated. Every individual who will handle or generate laboratory waste must receive training in the safety procedures for chemical storage and waste management outlined in Section VIII of this Plan. This training is arranged by the EHSO; please call the EHSO at extension 4300 to schedule your attendance if you have not received this training or are unsure as to whether you should receive this training.
Waste identification

At CSI, hazardous wastes are generated at two types of areas: academic settings (such as laboratories and art studios), and from facility operations (such as maintenance operations). A waste is any solid, liquid, or contained gaseous material that is discarded by being disposed of, burned or incinerated, or recycled. (There are some exceptions for recycled materials.) Even materials that are recyclable or can be reused in some way (such as burning solvents for fuel) might be considered waste. If you are recycling waste materials, contact the EHSO so that the recycling can be performed and documented in accordance with applicable regulations.

Hazardous waste can be one of two types:

1. **LISTED WASTE.** A waste is considered hazardous if it appears on one of five lists published in the Code of Federal Regulations and 6 NYCRR 371. These five groups include:

   - **F- Listed Hazardous Waste from Non-specific Sources** (40 CFR 261.31, 6 NYCCR 371.4 (b)). These wastes are designated with a four-digit code beginning with the letter "F". Typical wastes CUNY may generate that are considered F-wastes include spent solvents from laboratory operations. These wastes are typically designated as one of the F001 through F005 listings.
   - **K - Listed Hazardous Waste from Specific Sources** (40 CFR 261.32, 6 NYCCR 371.4(c)). These wastes are wastes generated from specific industrial sources, such as wastes from petroleum refining. These wastes are designated with a four-digit code beginning with the letter "K". CUNY does not currently generate these types of waste streams.
   - **U - Listed Hazardous Wastes which are Discarded, Commercial Chemical Products, or Off-Specification Commercial Chemical Products or Spill Residues** (40 CFR 261.33(f), 6 NYCCR 371.4(d)(6)). These wastes are typically: (1) virgin chemicals or hazardous materials that are intended to be discarded; (2) formulations in which the sole active ingredient is the listed constituent; and (3) spill residues and debris contaminated with the spilled material. These wastes are designated with a four-digit code beginning with the letter "U".
   - **P - Listed Acute Hazardous Wastes** (40 CFR 261.33(e), 6 NYCCR 371.4(d)(5)). These wastes are similar to the U-listed wastes but are considered acutely hazardous and are designated with a four-digit code beginning with the letter "P". In addition to the P-wastes, certain Hazardous Wastes from Non-specific Sources (F020, F021, F022, F023, F026, F027 and F028) are also considered acute hazardous wastes. Examples of acutely hazardous waste include streams which have been generated at CUNY include sodium cyanide (P-106) and osmium tetroxide (P-087).
   - **NY Listed PCB Hazardous Wastes** (6 NYCCR 371.4(e)). In New York State, wastes containing greater than 50 ppm by weight or greater of PCBs are listed hazardous wastes. The NY DEC has segregated this PCB waste stream into seven categories (B001 through B007).

Currently, more than 500 wastes are listed. When conducting waste stream determinations consult your EHSO for assistance in reviewing the regulatory exclusions prior to finalizing your determination.
2. **CHARACTERISTIC WASTES.** If the waste does not appear on one of the hazardous waste lists, it still might be considered hazardous if it demonstrates one or more of the following characteristics:

- **Ignitability** (6 NYCCR 371.3(b)) – The waste catches fire under certain conditions. Ignitable waste streams include: liquids with a flashpoint less than 140°F; non-liquids which burn and cause fire under normal temperature and pressure, ignitable compressed gas; or DOT oxidizer. Examples are some solvents, paints and degreasers. These wastes are designated with the four-digit code D001.

- **Corrosivity** (6 NYCCR 371.3(c)) – The waste corrodes steel at a rate of greater than 0.25-inches per year at 55°C (130°F) or has a pH less than 2 or greater than 12.5. This is known as a corrosive waste. Examples are some acids, caustics, or cleaning fluids. These wastes are designated with the four-digit code D002.

- **Reactivity** (6 NYCCR 371.3 (d)) – The waste is unstable and explodes, or produces toxic fumes, gases, and vapors when mixed with water or under other conditions such as heat or pressure. This is known as a reactive waste. Examples are certain cyanides or sulfide-bearing wastes. These wastes are designated with the four-digit code D003.

- **Toxicity** (6 NYCCR 371.3 (e)) – The waste is harmful or fatal when ingested or absorbed by an organism. A waste stream that contains one of the listed forty (40) toxic chemicals that will leach into the soil or ground water when disposed of on land above the specified concentration, is known as a toxic waste. Examples are wastes that contain high concentrations of heavy metals, such as cadmium, lead, or mercury. These wastes are designated with the four-digit code D004 through D043, depending on the constituents.

For more information, contact EHSO at extension 4300.

**The list of hazardous waste in New York State may be found at**


**Unidentified wastes**

If a source (example: a laboratory or studio) has a container with unidentified contents, all available information on the material should be gathered by the faculty, student, or staff member. This information may be helpful in narrowing the steps needed to suitably identify the material. Identification of unknown materials can be an expensive, time consuming and potentially dangerous process. Any information that can narrow the potential range of waste materials can be useful. Besides safety issues, costs for classifying even small amounts of unknown materials are significant, and can range up to several thousand dollars. In many cases, personnel in a research group can, by process of elimination and knowledge of lab operations, provide valuable information on the chemical constituents.

Laboratories must manage unknown materials with great care. Containers must not be moved or opened when there is any question as to the safety of such an operation. This is because some materials are friction or shock sensitive and even the act of opening the cap can cause a violent reaction.

The laboratory must be able to certify that the container does not have highly reactive or explosive components.
EHSO staff will assist in this identification process, but the laboratory must provide the background information. Reasonable attempts to identify unknowns must be made by the laboratory personnel. If highly reactive materials cannot be ruled out, laboratory staff must not handle the material, and the EHSO staff will arrange for proper identification and disposal.

It is important to note: The best way to prevent the generation of unknown waste materials is to properly use, label, and manage chemical materials and byproducts, including solutions and mixtures prepared on campus.

If a faculty member should leave the college for any reason, the EHSO should be notified immediately so that plans can be made for the disposition of chemicals and wastes under the responsibility of that faculty member.

**B. Hazardous waste packaging and labeling**

Every member of the campus community is responsible for the proper management of wastes. Containers used to store hazardous wastes at the accumulation areas must be labeled with a written description of the waste material and the words "Hazardous Waste." Use labels provided by EHSO and fill them out completely using full chemical names. A chemical formula is not sufficient as a description. For example, the words “Sulfuric Acid” should be written on the label. The formula “H₂SO₄” by itself is not sufficient as a label description. In addition, the building name, floor and room number must also be identified. CSI has prepared blank labels specifically for this purpose, and one of these labels must be affixed to all containers of hazardous wastes. Keep containers TIGHTLY CLOSED except when adding material to them. This is to prevent spills, leaks, fires and the release of fumes. **This is required by state and federal regulations.** Each container must contain compatible wastes (see waste categories listed below). Segregate containers according to the compatibility of their contents, and use separate secondary containment as necessary. Secondary containment devices such as trays, tubs, or buckets should be able to contain the contents of the largest container, if ruptured.

The first step in the waste disposal process involves obtaining a suitable container for the waste. Use the following guidelines when selecting a container:

- Use plastic or glass containers compatible with the waste.
- Containers must have a secure cap.
- Empty containers in which the chemicals were supplied are usually adequate.
- Containers must be clean and free of residue that might react with waste.
- Container must be in good condition. DO NOT USE rusted, dented or degraded containers.
- 5-gallon or larger containers must be approved by EHSO.
- Do not use beakers, or other labware, coffee cans, plastic milk jugs, soda bottles, or any container that resembles a drinking glass, cup, mug, etc.
- Do not use rubber stoppers, corks, or glass stoppers
- EHSO will provide assistance with container selection for new waste streams.
- Do not use containers that formerly contained P-listed wastes.
DO NOT store incompatible wastes in the same container. These wastes must be collected and stored in separate containers. If there is any suspicion that mixed waste materials may react, or are incompatible in any way, these materials should not be combined, and should be kept segregated.

Use separate containers for each of the following types of waste:

- Halogenated Organic Solvents
- Non-halogenated Organic Solvents
- Acids
- Bases
- Heavy Metals
- Mercury
- Reactives
- Oxidizers
- Toxic (Poisons)

If you do not know what category your waste fits, or you are unsure whether you should mix wastes, consult the Material Safety Data Sheets and contact the EHSO office at extension 4300.

A funnel may help prevent spills when adding waste to containers. If used, the funnel should be clean and free of residues. Do not leave funnels on containers, unless the funnel is permanently attached and can be capped when not in use. Segregate waste containers according to chemical compatibility just as you would unused chemicals. Flammables, oxidizers, reactive materials, corrosive acids and bases must be stored separately. Reactive and ignitable wastes must be protected from sources of reaction and/or ignition and be grounded. Use secondary containment for liquid waste. Secondary containment may be a tray, pan, bucket or other container capable of holding the contents of the primary container. Secondary containment also aids in separating incompatible waste and in containing leaks and spills.

It is good practice for all empty chemical containers to be triple-rinsed with water or another solvent capable of removing the original material. In some cases, such triple rinsing is required or else the container itself is hazardous waste. Follow the specific procedures below depending on whether the container is to be reused or disposed of.

Empty containers should be managed as follows:

**If the container previously held a hazardous chemical or waste and will not be reused:**

- Complete draining of the contents of the container for its original use.
- Triple-rinse the container with water or an appropriate solvent. Rinse solvent (rinsate) may require collection as hazardous waste - contact EHSO for guidance. Whenever possible, reuse the rinse solvent for cleaning until it is spent; use fresh solvent only for the final rinse.
- Remove or mark over the old label.
- Mark the container with the words "This Container is Triple Rinsed and Safe for Disposal," and dispose of properly.

**If the container will be reused for a chemical (not waste):**
• Reuse the container only with compatible new materials.
• Clearly re-label the container with the full chemical name of the contents. Include a hazard warning if appropriate (e.g. corrosive, flammable, etc.)

If the container will be reused for a hazardous waste:

• Reuse the container only with compatible waste.
• Clearly re-label the container with the full chemical name of the contents using the EHSO-supplied hazardous waste label.

Call the EHSO to arrange for disposal of large containers, containers contaminated with highly toxic or acutely toxic materials and other containers that you may have questions about.

C. Accumulation areas

Federal and state regulations require that the hazardous waste must be accumulated at or near the point of generation. In laboratories and other work locations where hazardous wastes are generated, such areas are referred to as “Satellite Accumulation Areas” (SAAs). Waste must be accumulated in the room or laboratory where they were generated. Waste generated in multiple rooms should not be centrally accumulated in one room/laboratory. A general rule of thumb is that you must be able to see the waste containers from the point of generation and waste should not be moved through doorways. SAAs in laboratories are typically located in fume hoods, or under sinks. Waste containers and secondary containment bins should be positioned as to not block vents and potentially inhibit proper airflow. Waste containers can be stored in cabinets under fume hoods as long as they are being stored with other compatible chemicals. Waste containers should not be stored on the floor where they could create a tripping hazard and result in spills. Store all wastes with attention to FDNY flammable quantity storage limits, compatibility with other chemicals, and general prudent laboratory practices.

The containers holding the waste must be maintained in good condition (e.g., no rust or structural defects). If a container begins to leak, the contents must be transferred to another container in good condition. Hazardous waste must be collected in a container that is compatible to prevent damage to the container and leakage of the hazardous waste. As previously discussed, hazardous waste containers must be kept closed except when waste is being added. Hazardous waste containers should be kept in a SAA that is marked with the Hazardous Waste Accumulation Area sign provided by the EHSO. Before moving the accumulation area or adding another area, the EHSO must be contacted so that the area may be documented and properly posted.

Each SAA can accumulate up to 55 gallons total of hazardous waste, or up to one quart of acutely hazardous wastes. Most laboratories will call for a pick-up before these quantities are reached. However, if these limits are reached, the generator must label the container with the date the accumulation limit was reached (when the container was filled) and the wastes must be moved to the Hazardous Waste Storage Facility within three days. SAAs should be inspected regularly by the designated laboratory Waste Coordinator to help assure that the containers are properly stored, labeled, do not leak, and that the area is in compliance with the requirements outlined in this section.
D. Hazardous waste pickup procedures

Before requesting a chemical waste pickup, make sure you have followed the procedures previously discussed regarding container selection, labeling, handling, and storage of hazardous waste. Make sure containers are clean on the outside and have caps that are tightly closed, and are properly labeled. Call the EHSO at extension 4300 with your pickup request. Be ready to give the following information:

- your name
- phone number
- department name
- building
- room number
- P.I. name and phone number
- the type and quantity of waste to be picked up
- size of containers to be picked up
- physical state of the material

E. Hazardous waste storage areas

The campus hazardous waste storage area in the basement of Building 6S is the primary storage location for hazardous wastes prior to being shipped off campus. A current inventory of the wastes collected will be continuously maintained by EHSO. Proper labeling and segregation techniques will be employed. The facility will be properly identified as a Hazardous Waste Storage Area by the EHSO and have limited access to personnel having specific assignments, and have “No Smoking” signs posted.

In addition, the hazardous waste storage area must:

- document that the waste is stored less than 180-days in the area
- label the containers with the contents, the start date, and other required words
- segregate incompatible wastes
- store waste in compatible containers
- not stack more than 2 drums high along with adequate aisle space between rows
- keep containers closed except when adding or removing wastes
- have spill kits and emergency equipment available
- have a means of communication and Personal Protective Equipment (PPE) readily available
- be inspected and inspections documented weekly
- be managed to minimize the potential for a release
- have ignitable waste containers grounded
- have signage to: show locations of emergency equipment (fire extinguisher, spill material, emergency eyewash/shower, etc.), instructions for reporting fire, spill, release

At the time the waste is generated, it must be labeled as a hazardous waste. After waste pickup and transfer to the Hazardous Waste Main Accumulation Area (MAA), the waste is subject to a 180-day accumulation time limitation. At no time shall hazardous waste be stored in excess of the 180-day period. Extension of this time frame will occur only when situations beyond the control of the campus prevent the
timely removal of the waste. Only the EHSO, in conjunction with the campus administration, shall have the authority to extend the storage time. In the event that storage over 180-days occurs, written notification must be made immediately to the NYSDEC.

F. Hazardous waste disposal procedures

The selection of a contractor for the removal, transportation, and/or disposal of hazardous waste will be conducted in a thorough and safety conscious manner. Prospective contractors must address all safety issues raised by CSI before an authorization is awarded. EHSO is the only entity that can engage a hazardous waste disposal firm. EHSO will follow CSI purchasing procedures in selecting the disposal firms, and should evaluate the compliance and financial resources of the waste disposal firms.

G. Inspections

The EHSO performs inspections of the hazardous waste storage area in compliance with USEPA and NYSDEC regulations. A copy of the inspection form is included in Appendix C.

H. General practices

Treatment
Although treatment of hazardous waste without a permit is prohibited by federal and state regulations, elementary neutralization is allowed. That is, waste that is hazardous only because of corrosive characteristics (and is not toxic, ignitable, reactive, or a listed waste), may be neutralized by the addition of bases or acids (as appropriate), producing a waste that is no longer hazardous. Only experienced personnel should conduct neutralization procedures.

Sanitary sewer disposal
Some materials can be safely discharged into the sanitary sewer. However, some materials can cause explosive conditions within the sewer system, damage the environment, or interfere with the operations of the wastewater treatment plant.

If a waste chemical is all of the following, the material may be suitable for disposal in a laboratory sink drain:

- water soluble,
- has a pH greater than 2 and less than 12.5 S.U.,
- is not considered toxic as defined by RCRA or New York Hazardous Waste Regulations, and
- is readily biodegradable and if it is an organic compound

If there is the slightest question about whether something can be disposed in a drain, call EHSO. Only sinks with good flow should be used for disposal purposes, and only with small volumes of wastes. Do not use floor drains. Use appropriate personal protective equipment. Pour waste materials slowly into the drain with a stream of running water. Follow disposal by flushing with excess water. Strong acids and bases must be neutralized to a pH between 5.0 and 9.0 S.U. (to meet City sewer use requirements prior to drain disposal).
Examples of chemicals suitable for drain disposal include the following:

- Readily Soluble
- Organic sugars
- Nucleotides
- Vitamins
- Surfactants
- Strongly acidic or basic solutions must be neutralized before drain disposal

Examples of chemicals that are **not** suitable for drain disposal include the following:

- Flammable substances
- Solvents
- Oils and oil sludges
- Petroleum hydrocarbons
- Paints
- Water soluble polymers that could form gels in the sewer system
- Toxic chemicals such as carcinogens, mutagens, acutely toxic substances
- Phenols

**Putting these materials down the drain is illegal and could be dangerous.**

Other materials that are not suitable include any solid or viscous substances capable of causing obstruction to the flow of sewers.
I. Other hazardous waste management

Mercury waste
Elemental mercury can be recycled, and the EHSO should be contacted to evaluate this option. Mixtures of mercury compounds and other wastes are difficult waste streams to dispose of. Thermometers and measuring instruments containing mercury should be replaced with equipment that uses non-hazardous fluids or electronic devices. Call EHSO for collection of old mercury containing devices, including mercury thermometers, for proper disposal as hazardous wastes. If a mercury spill should occur, immediately contact EHSO.

Flammable and combustible waste
Flammable and combustible liquids include turpentine, mineral spirits, naphtha, petroleum distillates, oil-based paint, adhesives, and others. If a material is suspected of being flammable or combustible, check labels or the appropriate material safety data sheet. If the flash point of a waste material is at or less than 140°F, the material is considered to be a hazardous waste by ignitability, and must be disposed of as a hazardous waste. Flammable waste liquids should only be collected in a designated and approved flammable liquids waste safety can. Call the EHSO for questions about waste cans. Oily rags and rags/paper soaked with flammable liquids must also be collected in designated flammable waste disposal cans. **OILY RAGS CAN SPONTANEOUSLY IGNITE.** Notify the EHSO for a pickup when waste containers become 80% full.

Never dispose of flammable liquids down the drain since vapors in an enclosed sewer system can result in potential explosive or flammable conditions. **City, state and federal sewer regulations also prohibit the disposal of ignitable wastes in the sewer system.**

Paint, pigment and finishes
Paint, varnish, stain, finish or sealant may be flammable or contain heavy metals such as lead, chromium, arsenic or cadmium. Paint and pigment-containing hazardous materials must not be put in the regular trash. Call EHSO to arrange for a waste pickup of expired or unwanted paint, pigment, varnish, stain, finish or sealants. Empty paint containers (with no free liquids) of oil based paints may be placed in the regular trash. Dry, water-based paint and pigments, including latex, acrylic or vinyl acrylic constituents, may be placed in the regular trash. Be sure there are no metal-containing pigments present. Contact the EHSO for assistance with checking labels for hazardous materials.

Ceramics
Clay and glazes may contain heavy metals such as lead, arsenic, barium, cadmium, chromium, and selenium. When clay or glaze containing these materials is discarded, they must be handled as hazardous waste. When arranging disposal of these materials, check labels to determine if the clay or glaze contains hazardous materials. When possible, use lead-free clay and heavy metal-free glazes.

Etching
Acids and bases used in etching are corrosive materials; they must not be poured down the drain. Waste acids may also contain metals such as zinc and copper. Heavy metal disposal to the sewers is regulated. Collect and store waste acids using the original containers in which they were supplied. Obtain hazardous
waste labels from EHSO. Fill out the label with the requested information. Do not fill containers completely; leave about 2” of headspace to prevent buildup of pressure.

**Waste photographic fixer**
Waste fixer may contain silver, a valuable metal that should be recovered. New York City prohibits pouring photographic solutions down the drain. Waste fixer must be treated in a silver recovery unit or collected as hazardous waste. Call the EHSO to arrange for the installation or maintenance of a treatment unit.

**Stop baths and developer**
Stop baths [and developers] may contain hazardous waste; these solutions should not be poured down the drain since they may result in exceedances of New York City Sewer Use Ordinance discharge limitations. Check labels and MSDSs to assure there are no metals in the solutions, and ask the EHSO for help with determining whether hazardous materials are present. Although most of these materials are not considered hazardous waste, they must be at a neutral pH prior to disposal through a drain. Collect stop bath and developer solutions using containers in which they were originally supplied. Do not fill containers completely; leave about 2” of headspace to prevent buildup of pressure.

**UNIVERSAL WASTES**
The Universal Waste Rule was written to streamline environmental regulations for wastes generated by large numbers of businesses in relatively small quantities. It is designed to reduce the amount of hazardous waste disposed of in municipal solid waste, encourage the recycling and proper disposal of certain common hazardous wastes, and reduce the regulatory burden for businesses that generate these wastes. Universal wastes are items commonly thrown into the trash by households and small businesses. Although handlers of universal wastes can meet less stringent standards for storing, transporting, and collecting these wastes, handlers must still comply with the full hazardous waste requirements for final recycling, treatment, or disposal. By providing a waste management structure that removes these wastes from municipal landfills and incinerators, this rule ensures stronger safeguards for public health and the environment.

CSI has a separate Universal Waste Management Plan. Please refer to that plan for details of Universal Waste on campus.

Universal wastes include:

- **Battery recycling and disposal**
  Batteries contain hazardous components that must not be disposed of in the regular trash. Specially designed battery collection containers are available from the EHSO. Containers that remain in good condition are reusable. Containers should be placed in central locations that are easily accessible to generators of used batteries. Contact EHSO (extension 4300) for waste battery pickup when the containers are full. Collect only the following batteries in battery collection containers:
  
  - Alkaline and Non-alkaline household type batteries (AA, AAA, C, D, 9 volt)
  - Rechargeable batteries such as nickel-cadmium type, nickel metal hydride (NiMH)
  - "Button" batteries found in watches, calculators
The following items should **NOT** be placed in battery collection containers:

- Leaking batteries - these should be attended to immediately. Call EHSO for assistance.
- Batteries containing liquids, such as car batteries
- Other batteries not listed above

Call EHSO to arrange for the proper handling and disposal of these types of batteries.

- **Fluorescent lamp disposal program**
  There is a fluorescent lamp disposal program for the correct disposal of fluorescent bulbs on campus. Most used fluorescent lamps are classified as universal waste when not broken. The inside of a fluorescent tube is coated with chemicals and the tube contains a small amount of mercury vapor. Fluorescent lamps should not be placed in the regular trash. Lamps must be disposed of by contacting the Office of Buildings and Grounds for disposal of used fluorescent lamps.

- **Pesticides**
Pesticides that have been recalled or banned from use, are obsolete, have become damaged, or are no longer needed due to changes in facility needs may qualify as universal wastes. Contact EHSO at extension 4300 to arrange for proper disposal.

- **Thermostats**
Thermostats can contain as much as 3 grams of liquid mercury and are located in almost any building, including commercial, industrial, agricultural, community, and household buildings.

- **Compressed gas cylinder disposal**
Compressed gases may be contained in large cylinders, lecture bottles, propane and butane fuel bottles, and aerosol cans. Most compressed gas cylinders used at CSI are leased from the vendor and are returned for reuse or disposal. Cylinder purchases are strongly discouraged because of the expense and difficulty associated with disposing of unused gases and cylinders. Prior to ordering a compressed gas cylinder, a disposal or return plan should be agreed upon in writing with the vendor. This plan should spell out all procedures necessary for returning the cylinder to the vendor. If no arrangements were made prior to purchase, attempts to return unwanted cylinders to the distributor or the manufacturer must still be made by the college purchaser. If a vendor does not accept a gas cylinder for return, it may be necessary to treat the cylinder and contents as hazardous waste. EHSO can accept and dispose of most empty gas cylinders and those containing atmospheric gases if vendor's arrangements can't be made.

If a compressed gas cylinder is to be shipped, request appropriate instructions from the vendor. A valve cover must be present on the gas cylinder, and the correct US Department of Transportation (USDOT) description for the contents must be on the cylinder. Gas cylinder contents must be clearly identified with stamps, adhesive labels, or stencils. Applicable USDOT regulations must be adhered to before and after a cylinder is shipped. Additionally, the carrier may have its own requirements that must be followed.

A gas cylinder with unknown contents must be handled as a hazardous waste through EHSO. Every attempt must be made by the user to identify the vendor and contents of an unknown cylinder. Purchase records and other documents should be searched to attempt to identify the cylinder’s contents. Characterization and disposal costs for cylinders with unknown contents can be extremely expensive.
Proper labeling and record keeping can prevent the cost and effort necessary to identify a tank containing unknown gases. For more information on handling of compressed gas cylinders, call EHSO.

IV. Managing used oil

In most cases, used oil is not classified as a hazardous waste in New York State. However, depending on the materials that the oil may have been in contact with and how waste oil is disposed of, used oil may become a hazardous waste. For example, if oil was mixed with a listed hazardous waste (i.e. F-listed waste) it would be a hazardous waste.

Even though used oil generated at CSI is likely to be non-hazardous, a discussion of the management of used oil has been included in this Plan due to the unique nature of used oil disposal. USEPA’s used oil management standards are a set up as “good housekeeping” requirements that encourage used oil handlers to recycle used oil instead of disposing of it. Used oil can be collected, refined and recycled, and used again—for the same job or a completely different task. Used oil is defined as “any oil that has been refined from crude oil or any synthetic oil that has been used and, as a result of such use, is contaminated by physical or chemical impurities.” To meet USEPA’s definition of used oil, a substance must meet each of the following criteria:

- **Origin.** Used oil must have been refined from crude oil or made from synthetic materials. Animal and vegetable oils are excluded from USEPA’s definition of used oil. (However, animal and vegetable oils are included in USEPA’s definition of oil under the requirements for Spill Prevention, Control, and Countermeasure (SPCC) Plans.) CSI has a SPCC Plan; see the EHSO for specifics.

- **Used oils used as lubricants, hydraulic fluids, heat transfer fluids, buoys, and for other similar purposes are considered used oil. Unused oil, such as bottom clean-out waste from virgin fuel oil storage tanks or virgin fuel oil recovered from a spill, do not meet USEPA’s definition of used oil because these oils have never been used. USEPA’s definition also excludes products such as cleaning agents used solely for their solvent properties, as well as certain petroleum-derived products such as antifreeze and kerosene.

- **Contaminants.** To meet USEPA’s definition, used oil must become contaminated as a result of being used. This includes residues and contaminants generated from handling, storing, and processing used oil. Physical contaminants can include dirt, metal scrapings, or sawdust. Chemical contaminants could include solvents, halogens, or saltwater.
V. Waste minimization

A goal of the Hazardous Waste Management Program is to reduce the amount of hazardous waste generated to the lowest practical quantity in order to conserve energy and natural resources through a program of effective waste minimization procedures (including recycling, reuse, product substitution, and treatment).

**Purchasing procedures can minimize waste**

Good purchasing decisions are the first steps in minimizing hazardous waste. Every effort must be made to keep purchased quantities to a minimum. Stockpiling products for future use or to take advantage of unit cost savings may not be appropriate since disposal costs of unused chemicals may exceed the initial savings from bulk purchases. The average cost to dispose of unused hazardous materials and other chemicals may be two to three times the original purchase cost. Purchase only the quantity of material that will be completely used within a reasonable time frame. Other practices that help in minimizing the potential for waste disposal include the following:

- Limit the amount of ordered materials to expected volumes of use.
- Do not stockpile chemicals unnecessarily. Many chemicals, including organic compounds, degrade over time and lose their usefulness.
- Check inventories to avoid ordering chemicals that are already in stock.
- As a prudent practice, rotate chemical stocks to use up chemicals before their shelf lives expire.
- Laboratories should investigate pre-weighed packaging options now available from chemical vendors. Particularly with highly toxic materials (e.g. carcinogens, teratogens, etc.), the purchase of pre-weighed materials avoids unnecessary handling, storage and disposal of excess toxic materials. Micro-scale packing is also available.

**Source Reduction**

Source reduction refers to practices that reduce, avoid or eliminate hazardous waste at the point of generation.

- Use smaller quantities of chemicals in your experiment or process.
- If possible, substitute less toxic or non-hazardous chemicals for their toxic counterparts.
- Plan the activity/experiment to consume hazardous materials to the full extent possible, and to minimize the amount and toxicity of waste materials produced.
- Do not dispose of chemicals as hazardous waste when they can be recycled or reused. If you have no further need of a hazardous material, determine whether your colleagues can use it.
- Do not mix chemical wastes. Mixing reduces the likelihood that materials may be reused or redistributed and often increases disposal costs. If non-hazardous wastes are mixed with hazardous wastes, the combined volume is considered hazardous waste under state and federal regulations, and must be handled and disposed of as hazardous waste at increased costs compared to regular waste. If at all possible, do not combine other chemicals with organic solvents. Acids, bases, heavy metals, carcinogens, oxidizers, cyanides, sulfides, pesticides, non-halogenated solvents, and especially halogenated organic solvents (chloroform, methylene chloride, etc.) must be collected in separate, labeled, waste containers.
VI. Spill control

In the event of a chemical or oil spill or leak, the person discovering the release must immediately initiate the following actions:

1. Extinguish all sources of ignition and isolate incompatible or reactive chemical substances. If it is safe to do so without endangering yourself or others.

2. If there is an immediate threat to human health, evacuate the immediate area.

3. Attempt to stop or contain the spill/release at the source (provided there are no health or safety hazards and there is a reasonable certainty of the origin of the leak)

4. Isolate all potential environmental receptors such as floor drains, catch basins, sumps, exposed soil, and runoff areas (if it is safe to do so without endangering yourself or others).

5. Contact the Public Safety Office 718-982-2111 to provide information regarding a spill event. Be prepared to provide Security with the following information:
   
a) Building, Room No.
b) Material spilled and quantity
c) If radioactive or infectious agents are involved
d) Other hazardous conditions that might exist in the area
e) Time of the spill
f) Damages or injuries caused by the spill
g) Cause of spill, actions taken

The Spill Response Team Coordinator will direct and coordinate the spill clean-up activities and evaluate if an environmental contractor will be required to perform the clean-up activities. The Spill Response Team Coordinator will then initiate any notification procedures.

VII. Standard operating procedures

Standard operating procedures such as the “Chemical Waste Management” and “Unattended Operations” SOP’s can be found in the CSI Chemical Hygiene Plan. In cases where specialized SOPs are required they must be created by the PIs and laboratory staff if one is not readily available from existing sources. For guidance and SOP template, contact EHSO at extension 4300.
VIII. Training

General

CSI personnel who generate hazardous waste are required to have training appropriate to their level of responsibility. This training will be provided initially at their time of employment, and on an annual basis. The training is arranged by the EHSO and will be given at least twice per year. Special training will also be provided by EHSO upon request to areas with unusual hazardous waste management requirements. Training for hazardous waste management on campus will be updated to reflect the most current regulatory requirements. Training includes the following topics at a minimum:

- identification of hazardous waste
- container use, marking, labeling, and on-site transportation
- accumulation area requirements
- 180-day storage area requirements
- emergency procedures

Special training

Individuals with specialized duties, and anyone with oversight responsibility for packaging and transportation of hazardous materials, are required by law to have additional training. Individuals who supervise or prepare hazardous materials for transport and/or sign manifest documents must complete course work that meets USDOT regulations. No CSI personnel may arrange for disposal, transport, shipment or sign hazardous waste manifest documents without completing the appropriate training.

IX. Recordkeeping

Recordkeeping requirements are as follows:

- The EHSO, or his or her designee, will sign CSI hazardous waste manifests. Hazardous waste contracts are developed and managed by the EHSO and include general hazardous waste, medical waste, and spill response.
- Records of all hazardous waste manifests will be kept on site for a minimum of three years from the TSDF returned copy date. Manifests beyond this date may be stored on site or stored in archives for a minimum of thirty years to serve as an accurate accounting of material shipped to potential CERCLA (Superfund) Sites.
- Written communication that the designated TSD facility is authorized for the hazardous wastes being offered for shipment, has capacity to accept such hazardous waste, and will assure the ultimate disposal method is followed.
- Land Disposal Restriction (LDR) notices, LDR determination records, Hazardous Waste Profile Sheets, and Exception Reports will be kept with the associated manifests. These documents are to be kept with the manifest for the time period indicated herein.
- Annual Reports will be kept on-site for a minimum of three years from the established submittal date. Annual Reports will be kept with manifest archives for the established time period (thirty years).
• Waste determinations and laboratory analytical reports will be kept with the hazardous waste manifests for the established time period (three years on site, thirty years archived). Note that laboratory analytical reports may be kept with hazardous waste profiles, in contract files, permitting files, or in individually designated files depending on the nature of the contract and/or waste materials.
• Personnel training records on current personnel will be kept until closure of the facility. Training records on former employees must be kept for at least three years from the date the employee last worked at the facility.
• Although currently classified as a Small Quantity Generator, a Hazardous Waste Contingency Plan will be prepared and maintained at CSI during any period it stores hazardous waste as a Large Quantity Generator.
• Notification and documentation to prove secondary material is not “Solid Waste” will be maintained until closure.
• Time, date, details of incidents requiring implementation of Contingency Plan will be kept until closure.
• Note that the periods of retention referred to in this procedure are automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the USEPA Administrator (per 40 CFR 262.40(d)).

X. Information and contacts

City University of New York; Laboratory Safety Manual
CSI; RCRA Hazardous Waste Training Materials
USEPA, Hazardous Waste Regulations; 40 CFR 260 et seq.
NYSDEC Hazardous Waste Regulations; 6 NYCRR 370 et seq.

CSI Environmental Health & Safety Office Telephone 718-982 –Extension 4300
CSI Hazardous Waste Pickup 718-982- Extension 4300
Appendix A
Hazardous Waste Determination Form

College of Staten Island
Health and Safety Office

Hazardous Waste Determination Form

Department, Building & Room: ________________________________

Principal Investigator: ______________________________________

Material Description: (General information, MSDS review, description of generation
process, and/or constituents and %)

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

Complete the following table related to the waste stream:  Yes  No

1  Is the waste material excluded from regulation 40 CFR 261.2
   If yes the material is not a hazardous waste. If no proceed.

2  Is the material a listed waste per (40 CFR 261.2)

3  Is the material ignitable (40 CFR 261.21)

4  Is the material a corrosive (40 CFR 261.22)

5  Is the material a toxic waste (40 CFR 261.23)

6  Is the waste a reactive material (40 CFR 261.24)

If the answer to 2 – 6 is yes, the material is a hazardous waste.

STATEMENT OF DETERMINATION:

After careful review of all pertinent information, I have concluded that the
waste material described above___is /___is not a hazardous waste.
All hazardous wastes shall be disposed of from the main accumulation area
in accordance with applicable federal, state and local regulations.

Signature ___________________________ Date __________
Appendix B
Hazardous Waste Inspection Checklist

Hazardous Waste Inspection Checklist

All hazardous waste must be accumulated at or near the point of generation of the waste. Specifically, this means within the control, room, or within sight of the person(s) generating the waste. This point of generation is defined as a Satellite Accumulation Area (SAA). Inspect area on a regular basis (at least weekly).

☐ There is a designated waste area or SAA
☐ Emergency contact information is posted at each SAA

Containers:
☐ Is waste compatible with the type of container?
☐ Have existing labels been removed, defaced or covered?
☐ Are wastes that could react together stored in separate containers?
☐ Kept in secondary containment tray?
☐ In good condition?
☐ Tightly capped except when adding material?

Waste labels have the following information:
☐ Words “Hazardous Waste”?
☐ Contents clearly identified?
   (If contents are too numerous, they should be recorded on a separate sheet of paper maintained near the container.)
☐ Full proper chemical names (no formulas or abbreviations)?
☐ Approximate percentage of each waste mixture components?
☐ Hazard characteristic of waste (e.g., corrosive, flammable, etc.)?

Are full containers removed within 3 days?

If you should have any question, need assistance, or schedule a waste pick-up, please contact EHS Office at ext. 4300.
Appendix C
Hazardous Waste Labels

HAZARDOUS WASTE
Container must be securely capped at all times.

Room: ______________________

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<th>Chemical Name(s)</th>
<th>Percentage</th>
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Characteristics: □ Toxic □ Flammable
□ Reactive □ Corrosive

Call 4300 for pick up when full
Start Date: ______________________
Accumulation Date: ______________________

NON-HAZARDOUS WASTE
Consult with CSI - EHS to determine proper disposal of non-hazardous wastes
Waste Determination Form on File? Yes □ No □

Generator Name ______________________ EXT

Description of material:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Check only one Solid □ Liquid □ Gas □ Sludge □ (Store as liquid)
Call Environmental Health and Safety @ X – 3906
for pick up of all NON-hazardous wastes unless otherwise instructed.
Bldg-Rm ______________________ Date ______________________

EHS received ______________________ Requisition # ______________________

CSEHS 2006
Appendix D
Hazardous Waste Accumulation Area Sign

Hazardous Waste Accumulation Area

Storage Requirements
Containers must be:
- Capped at all times
- Compatible with contents
- In good condition
Segregate chemicals by compatibility
- Use secondary containment trays for segregation

Call for waste pick-up when any container is **80% full**

Labeling Requirements
- Label hazardous waste containers with words “Hazardous Waste”
- Each container MUST be labeled with the full name of the chemical contents. Abbreviations or chemical formulas are **not** acceptable.

Accumulation Areas Must be at or Near Point of Waste Generation

This posting is required in each area where hazardous waste is accumulated.

Call James Saccardo @ Ext. **3906** with any questions or for waste pick-up

The College of Staten Island
Environmental Health & Safety Office
2800 Victory Blvd.
Staten Island, NY 10314