NORTHEAST STATE

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HAZARDOUS WASTE MANAGEMENT MANUAL

Northeast State Community College
Office of Environmental Health and Safety
423.354.5224

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Introduction

Northeast State Community College is committed to excellence and leadership in protecting the environment. In keeping with this policy, employees must implement steps to reduce waste and emissions. Northeast State Community College strives to minimize any adverse impact on the air, water, and land through excellence in waste reduction. By successfully reducing waste at its source, Northeast State Community College can achieve cost savings, increase operational efficiencies, improve the quality of our products and services, and maintain a safe and healthy workplace for our employees and students. Additionally, Northeast State Community College promotes environmentally sound recycling, reuse, and management of all waste streams.

As both a responsible citizen and Northeast State employee, everyone is responsible for reducing waste by fully complying with all waste reduction programs established as well as applicable Federal and State laws dealing with hazardous waste. Northeast State Community College's primary objectives are:

- Achieve a significant reduction in the generation of hazardous waste.
- Work towards developing reliable means to measure hazardous waste reduction efforts.
- Research and develop activities and programs with a focus on finding substitutes for hazardous waste used on campus.
- Maintain a safe and healthy workplace for staff, faculty, and students.

These objectives and goals cannot be reached without the cooperative effort of the staff and faculty through adherence to these guidelines.

Purpose

The purpose of the Northeast State Community College Hazardous Waste Management Program is to protect the college and community environment and to ensure that all chemicals generated are collected, stored, and disposed of in a safe, proper, and cost-effective manner.

Scope and Application

The Hazardous Waste Management Plan establishes the requirements to ensure that Northeast State Community College's hazardous waste is properly managed. This plan describes the requirements relating to the identification, management, labeling, and disposal and manifesting of hazardous waste. It also outlines applicable emergency procedures, prevention, response requirements, training, and record-keeping requirements.

The guidance that follows applies to all research, teaching, and/or support functions within Northeast State Community College that either generate hazardous waste as a product of

its function; or dispose of excess, old, or unknown hazardous chemicals found within the facilities owned or used by the college.

Regulatory Basis

In regulatory terms, a Resource Conservation and Recovery Act (RCRA) hazardous waste is waste that appears on one of the four hazardous waste lists (F-list, K-list, P-list, or U-list) or exhibits at least one of four characteristic toxicities, reactivity, ignitability, or corrosivity. Hazardous waste is regulated under the Resource Conservation and Recovery Act (RCRA) Subtitle C.

Under RCRA, all hazardous materials destined for disposal must be considered hazardous wastes unless determined otherwise. Only individuals who are properly trained in the regulatory definitions of hazardous wastes may make waste determinations. When knowledge of the hazard characteristics cannot be determined, or are unknown, waste analysis is required to be completed. Once a waste determination is made, the waste is managed appropriately as hazardous waste or discarded as non-hazardous waste. All waste determinations must be maintained in writing and on file for a minimum of three years.

A chemical must never be placed in the building solid waste (trash) or poured down a drain unless it has been determined that the chemical is not hazardous waste and is acceptable for disposal through such means. Liquids should never be placed in the building solid waste as liquids are not acceptable for landfill disposal because they can migrate or leach into the groundwater.

Chemical wastes are classified as hazardous waste by being specifically listed as hazardous waste in federal and/or state regulations, or based on characteristics of ignitability, reactivity, corrosivity, or toxicity.

Hazardous Waste Definition / Characteristics

Ignitability:

A substance is ignitable if it displays any of the following properties:

- A liquid with a flashpoint of less than 60° C (140° F);
- A non-liquid that is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture, or spontaneous chemical changes, and when ignited, burns so vigorously and persistently that it creates a hazard;
- An ignitable compressed gas;
- An oxidizer (such as chlorate or peroxide).

Corrosivity – Corrosive wastes are acids or bases (pH less than or equal to 2, or greater than or equal to 12.5) that are capable of corroding metal containers, such as storage tanks, drums, and barrels. Battery acid is an example. A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

- It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5.
- It is a liquid and corrodes steel at a rate greater than 0.250 inches per year at a

temperature of 55 °C (130 °F).

Note: A waste that is not aqueous and contains no liquid falls outside the definitions of EPA corrosivity.

Reactivity – A solid waste that exhibits any of the following properties:

- Normally unstable and readily undergoes violent changes without detonating.
- Reacts violently with water.
- Forms a potentially explosive mixture with water.
- A cyanide or sulfide-bearing waste that can generate fumes in a quantity sufficient to present a danger to human health.
- Capable of detonation
- A forbidden explosive or a Class A of Class B explosive, as defined in Department of Transportation regulations in 49 CFR Part 173.

Details on the reactivity characteristic are included in 40 CFR 261.23.

Toxicity – Toxic wastes are harmful or fatal when ingested or absorbed (e.g., containing one of the four characteristics ignitability, corrosivity, reactivity, or toxicity.

A substance is toxic if it exceeds the concentration for contaminants listed in the "**Maximum Concentration of Contaminants for the Toxicity Characteristic"** table present in 40 CFR 261.24. A specific test, the **Toxicity Characteristic Leaching Procedure (TLCP)** must be conducted to determine if the waste is classified as toxic. Details on the toxicity characteristic are included in 40 CFR 261.24.

- EPA designates specific standardized test methods that are to be used when determining the characteristics of a waste. These techniques are listed in the above-mentioned sections.

Table 1 —Maximum Concentration of Contaminants for the Toxicity Characteristic

EPA HW No. [1]	Contaminant	CAS No. [2]	Regulatory Level (mg/L)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0
D023	o-Cresol	95-48-7	[4] 200.0
D024	m-Cresol	108-39-4	[4] 200.0
D025	p-Cresol	106-44-5	[4] 200.0
D026	Cresol		[4] 200.0
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	[3] 0.13
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its epoxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	[3] 0.13
D033	Hexachlorobutadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	[3] 5.0

D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

Other-

A waste is also hazardous if the Environmental Protection Administration (EPA) names it on one of the following three lists developed:

- F-list: (Non-specific Source Wastes) – These are generic wastes produced by manufacturing and industrial processes.
- K-list: (Specific Source Wastes) – These are wastes from specifically identified industries.
- P-list and U-list: (Commercial Chemical Products) – The list consists of specific commercial chemical products or manufacturing chemical intermediates.

Academic Institutions as Hazardous Waste Generators

Until 1984, most academic institutions that generated hazardous waste were exempt from many of the RCRA requirements for generators because they generated less than 1,000 kg per month of hazardous waste. However, when the limit was lowered to 100 kg per month to conditionally exempt small-quantity generators, almost all colleges and universities fell under the regulations established by the Resource Conservation and Recovery Act (RCRA).

RCRA Enforcement

Generators share in the responsibility for the safe management and ultimate disposal of all waste. If the transporter or disposal facility fails to take proper care of the waste or does not prevent the waste from being released into the environment, the generator can and has been held responsible.

The EPA is authorized to seek civil and criminal penalties for RCRA violations. Educational institutions have not been excluded. Several universities and colleges have been found guilty of RCRA violations and have had to pay substantial penalties. Individuals guilty of RCRA violations can be personally brought to court and face mandatory penalties, as well as possible imprisonment. One substantial penalty for violation of EPA Regulations is that the institution may not receive Federal funds.

Due to these developments, universities and colleges must ensure that staff, faculty, and students are properly trained concerning waste management practices.

Hazardous Waste Minimization

Northeast State Community College is committed to the protection of human health and the environment. To meet these commitments, the College encourages everyone to utilize chemical waste minimization techniques to reduce both the volume and toxicity of chemical wastes they produce. The following are some of the common waste minimization techniques:

Purchasing – Purchase only the quantity of chemicals required for specific projects. Find the minimum amount required for an experiment and order accordingly. Do not stockpile chemicals unnecessarily.

Product Substitution – Substitute non-hazardous or less toxic materials in chemical processes and experiments. Some examples are:

- Using water-based inks instead of solvent-based inks in printing operations.
- Substituting detergents and enzymatic cleaners for sulfuric acid/potassium dichromate (chromerge) cleaning solutions and ethanol/potassium hydroxide cleaning solutions.
- Use "low or zero Volatile Organic Compound (VOC)" paints (ex: water base versus oil base).
- Avoid using known carcinogens, mutagens, or extremely hazardous chemicals where possible.

Process Modification – Laboratories are encouraged to modify experimental or standard processes to decrease the quantity of hazardous chemicals used and generated. Micro and semi-micro techniques should be used to reduce the amount of waste generated.

Segregation and Characterization

- ❖ Do not mix hazardous waste with non-hazardous waste.
- ❖ Completely fill out all hazardous waste labels that are placed on containers.

Chemical Redistribution. Unopened or unused portions of chemicals may be redistributed within the Northeast State Community College campus. If you have a chemical, you no longer need, contact the **Assistant Director of Environmental Health and Safety.**

Recycling. Northeast State Community College collects some precious metals and valuable chemicals for recycling by outside contractors to reduce waste treatment costs. Some examples include:

- Photo fixer is processed to reclaim silver.
- Mercury is collected for re-distillation.
- Fuel-grade solvents are reclaimed for use as an energy source or recycled.
- Used motor or pump oil is collected and recycled.

Management. Audits need to be conducted regarding chemical supplies on hand and use inventory control procedures aimed at purchasing and maintaining the minimum amount of hazardous waste possible. Managers need to substitute non-hazardous chemicals for

hazardous chemicals whenever possible.

Training. Train employees in waste minimization concepts. Training should include an explanation of the concepts described above and a discussion of how each department can implement specific waste minimization measures.

Generator Guidelines

The Assistant Director of Environmental Health and Safety, administrators, staff, and faculty share the responsibility for implementing the procedures in this manual jointly.

The Assistant Director of Environmental Health and Safety is responsible for the overall management of all chemical waste (hazardous and non-hazardous) generated by Northeast State. The Assistant Director of Environmental Health and Safety or designee will manage the collection, transportation, and off-campus disposal of hazardous waste generated in day-to-day operations, academic teaching, and research. Department supervisors, where hazardous waste is generated, are responsible for the implementation of the hazardous waste program and must ensure all staff under their supervision are properly trained in the proper labeling, handling, collection, and disposal of hazardous waste. Anyone who manages the collection and disposal of hazardous waste must receive annual DOT and RCRA training.

Assistance is required from the staff and faculty during both the generation and disposal phases of this process. RCRA regulations require specific methods of collecting and storing the waste at the point of generation. The Chemical Waste Handling Guidelines listed below state guidelines that need to be followed to keep Northeast State in compliance with applicable federal and state law as well as assisting the Assistant Director of Environmental Health and Safety in the safe handling and proper disposal of hazardous waste.

Department supervisors, staff, and faculty who deal with hazardous waste must be familiar with the college's overall hazardous waste management program contained in this manual. Their duties include the following:

- Give instructions on the safe methods and use of all items.
- Implement the procedures contained in this manual for the well-being of the staff, faculty, and students at Northeast State.
- Make systematic checks of the equipment and supplies to be sure they are in safe operational order and to correct immediately any deficiencies noted.
- Motivate students and peers to make safety a priority by implementing safe practices and encouraging individuals to report any safety concerns.
- Immediately correct, if possible, and report any issues relating to unsafe handling or storage of hazardous waste to the Assistant Director of Environmental Health and Safety. Students should be instructed that all rules and procedures are for their well-

being and should carry these practices not only in school but at their future job sites. The student's responsibilities under Northeast State's program include the following:

- Obeying all rules and observing all safety practices always listed in this manual.
- Notifying the staff/faculty of any unsafe condition so corrective action can be taken.

Chemical Waste Handling Guidelines

All chemical waste must be in an appropriate sealed container, i.e., glass or plastic bottles with screw-on caps. No corks or ground glass stoppers should be used. The chemical waste must be stored in an appropriate container that will not react with the waste.
Do not add experimental material to a waste container until it has gone through its complete reaction.

Waste containers must be kept closed except when waste is being added. This prevents hazardous vapors from being released and reduces the amount of exposure to humans.

Proper labeling aids in the correct determination of the type of hazardous waste present, as well as the final disposal method. Proper labels also provide vital information to emergency response personnel. Labels must be typed or printed using indelible ink (no pencils, markers, or cursive writing). Labels must be securely attached to each container. Each label must contain a specific list of the chemical constituents and an approximate percentage of each (no generalizations i.e., acids, organics, or trade names, i.e., Clorox for sodium hypochlorite).

Verify that correct spelling has been used on the labels. All waste should be stored in a designated, appropriate, safe area in each lab.

Questions concerning the proper labeling, handling, or storage of chemical waste, should be addressed to the Assistant Director of Environmental Health and Safety at (423)354.5224 or extension 5224.

Chromic Acid

The use of sodium or potassium dichromate dissolved in concentrated sulfuric acid as a cleaning solution presents special handling and disposal problems. Chromic acid is a powerful oxidizing agent, and as such, has the potential to explode on contact with certain oxidizable organic materials. In addition, it is both toxic and corrosive. Instances of burns to both skin and clothing due to spillage of chromic acid cleaning solutions have occurred. Department managers who work with hazardous waste should consider the following lists of alternate cleaning agents that have been proven to be satisfactory as cleaners and significantly less toxic and hazardous.

- Alconox (powder)
- S/P Contract 70 (concentrated liquid)

- S/P Laboratory Detergent Concentrate (powder)
- Fisher brand Sparkleen (powder)
- FL-70 Concentrate (concentrated liquid)
- Liquinox Liquid Detergent
- NoChromix
- Isoclean (concentrated liquid)
- Count-Off (concentrated liquid)
- Lift Away Concentrated Decontaminant (liquid)
- RBS 35 Concentrate (concentrated liquid)

Separation of Halogenated and Non-halogenated Wastes

Separated and well-defined wastes are easier and less expensive to dispose of than mixed and unknown wastes. Since high volumes of halogens (Chlorine, Bromine, Iodine, and Fluoride) in the organic solvents cannot be properly destroyed in most incinerators, several disposal agencies are not approved by EPA to handle these wastes. Therefore, it is essential to indicate the composition of all waste liquids and, if a mixture, the approximate percentage by volume of each constituent. The percentage composition must be clearly indicated on the "Hazardous Waste Tag." Departments should attempt to keep the halogen content of their organic solvents below 1.0% by volume.

The following provide guidelines for placing waste in the differing waste solvent containers:

- Acceptable as:
    - Non-halogenated waste solvents
    - Non-halogenated organic solvents
    - Solutes containing small amounts of halogens

- Halogenated solvents that should be in separate containers:
    - Halogenated organic solvents
    - Solvent mixtures with more than 1% halogenated solvent by volume
    - Organic solvents with large amounts of halogenated solute

- Substances that should not be put in containers with organic solvents:
    - Solutions of acids or bases
    - Aqueous solutions of toxic organic chemicals
    - Metallic compounds containing Ag, As, Ba, Cd, Cr, Hg, Ni, Pb, Sb.
    - Sulfides or inorganic cyanides
    - Strong oxidizers or reducers
    - Water-reactive substances
    - Large amounts of water

Hazardous Waste Manifesting and Turn-in

Each container of hazardous waste must have a hazardous waste tag filled out and securely

attached to the container. When the waste is ready to be picked up, contact the Assistant Director of Environmental Health and Safety in writing or through the campus e-mail system. The request must list the hazardous waste to be picked up by chemical name and the estimated amount in pounds.

"Empty" Waste Containers (40 CFR 261.7)

A container or an inner liner removed from a container that has held any hazardous wastes, except a compressed gas or an acute hazardous waste, is empty if all wastes have been removed that can be removed using the practices commonly used to remove materials from that type of container (i.e., pouring or pumping) and the following conditions are met:

- No more than 1" of residue remains on the bottom of the container.
- No more than 3% by weight of the total capacity of the container remains in the container if the container is less than or equal to 119 gallons in size.
- No more than 0.3 % by weight of the total capacity of the container remains in the container if the container is greater than 119 gallons in size.

A container that has held a hazardous compressed gas is empty when the pressure in the container approaches atmospheric conditions.

A container or inner liner that has held an acute hazardous waste is empty if the container or inner liner has been triple-rinsed using a solvent capable of removing the chemical product or if the container has been cleaned by another method that has been shown in the scientific literature, or by tests conducted by the generator, to achieve equal removal.

Non-hazardous Waste Disposal

The following list comprises water-soluble compounds of low-toxic hazard cautions and low-toxic hazard anions. Compounds of any of these ions that are strongly acidic or basic should be neutralized before disposal down the drain.

Examples of non-hazardous waste are listed below. These chemicals were selected because they have oral-rat LD50 toxicity values higher than 500 mg/kg and have no positive determination for carcinogenicity according to the National Institute of Occupational Safety and Health (NIOSH) 1979 Registry of Toxic Effects of Chemical Substances.

List of Solid Non-hazardous Waste

Acid, Ascorbic
Acid, Benzoic
Acid, Boric
Acid, Casamino
Acid, Citric
Acid, Oleic
Acid, Lactic
Acid, Phosphotungstic
Acid, Phthalic
Acid, Salicylic
Acid, Silicic
Acid, Stearic
Acid, Succinic
Acid, Tartaric
Agar
Albumen
Aluminum Hydroxide
Aluminum Metal
Aluminum Oxide
Amino Acids (naturally occurring)
Ammonium Bicarbonate
Ammonium Carbonate
Ammonium Chloride
Ammonium Citrate
Ammonium Lactate
Ammonium Phosphate
Ammonium Sulfate
Ammonium Sulphamate
Barium Carbonate
Barium Sulphate
Brain Heart Infusion
Brom Phenol Blue
Magnesium Citrate
Magnesium Lactate
Magnesium Oxide
Broth, Nutrient
Calcium Borate
Calcium Carbonate
Calcium Chloride
Calcium Citrate
Calcium Lactate
Calcium Phosphate
Calcium Sulphate
Cobalt Oxide
Copper Oxide
Crystal Violet
Dextrose
Drierite
Extract, Malt
Extract, Yeast
Ferrous Ammonium Sulphate
Galactose
Gelatin
Graphite
Gum, Arabic
Gum, Guaic
Hematoxylin
Iron Oxide
Kaolin
Lactose
Lithium Carbonate
Lithium Chloride
Lithium Sulphate
Magnesium Borate
Magnesium Carbonate
Magnesium Chloride
Magnesium Phosphate
Magnesium Oxide
Magnesium Sulphate
Maltose
Manganese
Manganese Acetate
Manganese Chloride
Manganese Dioxide
Manganese Oxide
Methyl Red
Methyl Salicylate
Methylene Blue
Paraffin
Pepsin
Peptone
Petroleum Jelly
Potassium Acetate
Potassium Bicarbonate
Potassium Bisulphate
Potassium Bitartrate
Potassium Borate
Potassium Bromate
Potassium Bromide
Potassium Carbonate
Potassium Citrate
Potassium Chloride
Potassium Iodide
Potassium Lactate
Potassium Phosphate
Potassium Sodium Tartrate
Potassium Sulphate
Potassium Sulphite
Potassium Sulphocyanate
Pumice
Sodium Acetate
Sodium Ammonium Phosphate
Sodium Benzoate
Sodium Bicarbonate
Sodium Bisulphate
Sodium Bisulphite
Sodium Borate
Sodium Bromide
Sodium Carbonate
Sodium Chloride
Sodium Citrate
Sodium Dodecyl Sulfate (SDS)
Sodium Formate
Sodium Iodide
Sodium Lactate
Sodium Phosphate
Sodium Salicylate
Sodium Silicate
Sodium Succinate
Sodium Sulphate
Sodium Thioglycollate
Sodium Thiosulphate
Sodium Tungstate Starch
Strontium Carbonate
Strontium Phosphate
Strontium Sulfate
Sulphur
Sugars Sucrose
Talcum Powder Thymol
Tin Metal
Tin Oxide
Trypticase
Tryptone
Urea
Wax, Bee's
Zinc Oxide

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Disposal of Infectious Waste

Contaminated or used sharps must be separated into a separate category. The packaging of infectious waste must be puncture-resistant, tear-resistant, and distinctively red/orange-colored containers with a universal biohazard label.

This type of waste should not be compacted prior to treatment. Users of sharps should ensure the container is emptied prior to becoming full. Contact the Division Chair, Health Related Professions, or the Assistant Director of Environmental Health and Safety for disposal.

Storage

- Only store sharps in an authorized container.
- Minimize storage time.
- Limit access to the storage area.
- Universal biological hazard signs should be posted on storage area doors, containers, etc.

Planning for Chemical Spill Emergencies

1. Two people in the lab or service areas will act as on-site emergency coordinators and backup emergency coordinators. These people should know what hazards exist in your area and how to implement this spill response plan (contingency plan) for the area. They will act as advisors to police, fire department, and safety personnel.
2. Train employees in chemical spill procedures when they are first hired and yearly thereafter. Document the training and have the employee and supervisor sign the documentation form to certify that the training was given.
3. Purchase spill cleanup material and personal protective equipment, if needed (respirators, chemical-resistant suits and gloves, safety goggles, etc. **Note**: Make sure all personnel protective equipment meets the standards established by OSHA. Know what the limitations of personal protective equipment are. If you have any questions about the personal protective equipment, contact the director of Police and Safety.

Hazardous Chemical Spill Cleanup Guidelines

Chemical spills or hazardous materials emergencies should be handled as a fire emergency. Initial response in a fire situation can be summarized as RESCUE, CONFINE, REPORT, SECURE, and CLEANUP (FIGHT FIRE). These principles can also be applied to a hazardous materials spill situation.

Rescue

Just as you are not to re-enter a burning building, do NOT go back into an area where a chemical spill has occurred unless you have the proper equipment and training. In many documented cases, rescuers not wearing proper protective equipment have been overcome by toxic or asphyxiating gases trying to rescue other victims and died as a result. Do not make this mistake.

As you leave an area involved in a chemical spill, assist people exiting the area.

- Evacuate personnel from the spill area.
- Direct personnel to the nearest fire exit.
- Alert neighbors.
- Attend to the victims.

First Aid

General

- Remove the victim from the spill area to fresh air (but do not endanger your own life by entering areas with toxic gases).
- Immediately remove contaminated clothing.
- Wash skin with soap and water.
- Flush skin and/or eyes with water for at least 15 minutes (You may not feel any immediate effect from chemical spills, but it is very important to wash quickly and thoroughly as many chemicals can cause severe tissue damage which is not apparent until hours later).
- Get medical attention for victims.

Chemical spills over large body area

- Remove contaminated clothing while under the shower.
- Flood affected body area in cool water for at least fifteen minutes.
- Resume washing water if pain returns.
- Wash off chemicals with mild detergent and water; do not use neutralizing chemicals, unguents, creams, lotions, or salves.

- Get medical attention for the victim.
- Notify medical personnel exactly what chemicals are involved.

Victims of Bromine spills

- Flush with cold water; apply compress saturated with dilute sodium or potassium thiosulfate.
- Get immediate medical help.
- Victims of Hydrogen Fluoride (HF) spills
- Flush with cool water until any whitening of tissue disappears.
- Swath injured areas with soaking wet, iced cloths.
- Get immediate medical help.

Confine

- Close fire doors.
- Isolate area.
- Establish exhaust ventilation, if possible.
- Vent fumes or vapors only to the outside of the building.
- Open windows, if possible, without exposing yourself to fumes or vapors.
- If fumes or vapors are in the room, which is not vented outside of the building, close off the room.

Report

Call 911 and the Office of Police and Safety (extension 3255) for the following:

- Spills that involve injury requiring medical treatment.
- Spills that involve fire or explosion hazards.
- Spills that are potentially life-threatening.

Call the Office of Police and Safety for

- Chemical spill situations that do not require emergency medical assistance.
- Spills of one gallon of a chemical or more, or any quantity of a highly reactive or toxic

material.

- Spills of an unknown chemical.
- Spills for which you have any questions or doubts about your ability to clean up the spill.

Secure

- Until Emergency Responders arrive on the scene, you and your staff will have to block off entrances to the spill site and prevent people from entering the contaminated area.
- Lock doors leading to the chemical spill and post signs on doors warning of the spill.
- Tape or rope off stairwells and elevators leading to the spill and hang signs on the tape.
- When chemical fumes are being spread through a building's air handling system, call the Physical Plant to have the ventilation system shut off.
- Post staff by commonly used entrances to the spill site so they can warn people to use other routes.
- For large outdoor spills, keep people upwind from the site.

Cleanup

Based on the chemical spill situations, decide who will do the cleanup. If you are going to do the cleanup, follow the procedures listed in the "What to Do When You Clean up a Chemical Spill" section below.

Who Cleans Up a Chemical Spill?

The following guidelines are offered to help you decide if you should clean up a chemical spill.

You Clean Up The Spill

For chemical spills that do not involve injury, do not represent a fire hazard, are less than one gallon, and for which you have the proper training and proper protective equipment to do the cleanup, you clean up the spill.

Emergency Responders Clean Up The Spill

For all other chemical spill situations, including those for which you have any questions or doubts about your ability to clean up the spill, call the Office of Police and Safety at extension 3255. Report all injuries, fires, explosions, and potentially life-threatening situations first to 911 and then to the Office of Police and Safety.

What to Do When You Clean Up a Chemical Spill

- If you have the proper training, proper personal protective equipment, and the proper material to absorb and clean up your chemical spill, and no one has been injured, the spill is contained, and the spill is not life-threatening or a fire or explosion hazard, then follow these procedures:

- Locate the spill kit.
- Choose appropriate personal protection.
- Remove ignition sources
  - Turn off hot plates, stirring motors, and flame sources.
  - Shut down all equipment.
  - If unable to shut off sources of ignition, notify 9-1-1.
- Confine or contain the spill.
  - Cover with an absorbent mixture.
  - Clean up minor spills with paper towels or sponge if they won't react.
  - Sweep solid materials into a dustpan, place in sealed container.
  - If acid-base, first add a neutralizing agent; sodium bicarbonate for acids, sodium bisulfate for bases.
- For small amounts of inorganic acids/bases, use a neutralizing agent and absorbent material.
- For small amounts of other materials, absorb with non-reactive material (e.g., vermiculite, sand, towels, Floor-Dri).
- For large amounts of inorganic acids/bases, neutralize and call 9-1-1.
- For large amounts of other materials, make a judgment call: depending on the amount, toxicity, or what the substance can run into or react with, you may handle it yourself or call for help.

The following spills require special handling:

- Acid Chlorides
  - Use Oil-Dri, Zorb-all or dry sand
  - Avoid water
  - avoid sodium bicarbonate
- Mercury
  - Small spills – open window, if possible, and ventilate the area while cleaning
  - Use an aspirator bulb or suction device (available from Edmund Scientific and Markson Scientific)
- Alkali Metal (e.g. Sodium or Potassium Metals)

    - Smother with dry sand
    - Put in hood
    - If possible, dispose of by reaction with isopropyl alcohol

- White (Yellow) Phosphorus
    - Blanket with wet sand or wet absorbent
    - Remove absorbent material with a broom and dustpan.
    - Place in a plastic bag or other appropriate container.
    - If the spilled chemical is a volatile solvent, transfer the plastic bag to fume hood for evaporation of solvent.
        - After evaporation, discard with other non-hazardous solid wastes.
        - If spilled material is a non-volatile, hazardous chemical, dispose as hazardous chemical waste.

Appendix A

Waste Streams

Northeast State Community College has the following active Waste Streams:

Waste Stream 3

Labpack Chemicals

How generated: Chemicals used in various chemistry, biology, and physics lab experiments.

Waste reduction measures: Neutralize chemicals if possible. Substitute non-hazardous chemicals for hazardous chemicals whenever feasible.

Waste Stream 5

Paints and Thinners

How generated: Paints and Thinners are used primarily for Plant Operations.

Waste reduction measures: Substitute paints and thinners, which contain non-hazardous waste.

Waste Stream 6

Monoethanolamine

How generated: Cleaning automotive parts.

Waste reduction measures: Implement teaching methods to reduce the amount generated.

Waste Stream 7

Aqueous Brake Solution

Updated 2024

How generated: Cleaning automotive parts.

Waste reduction methods: Implement teaching methods to reduce the amount of waste generated.

Appendix B

Glossary

Container – Any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled.

Department – The Tennessee Department of Environment and Conservation (formerly the Tennessee Department of Health and Environment).

Designated Facility – A hazardous waste treatment, storage, or disposal facility, that has been designated on the manifest by the generator. The facility must have interim status or have received a permit from the Environmental Protection Agency (EPA) or be similarly authorized/regulated under the laws and regulations of the State of Tennessee.

Discharge/Hazardous Waste Discharge – The accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water.

Disposal – The discharge, deposit, injection, dumping, spilling, leaking, or placing of any hazardous waste into or on any land, water, or air so that such hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters including ground waters.

Disposal facility – A facility or part of a facility at which hazardous waste is intentionally placed into or on any land or water, and at which waste will remain after closure.

Environmental Protection Agency – The federal agency responsible for enforcement of policies and procedures governing the generation, handling, and disposal of hazardous waste.

Generation – The act or process of producing hazardous waste.

Generator – Any person, by site, whose act or process produces hazardous waste or whose act first causes a hazardous waste to become subject to regulation.

Hazardous Waste – Hazardous waste as defined by the definition of beginning on page 1 of this manual.

Manifest – The shipping document originated and signed by the generator, which contains the information required.

Conditionally Exempt Small Quantity Generator – Generates less than 220 pounds in any month or does not accumulate more than 2,200 pounds of hazardous waste onsite before shipping offsite.

Small Quantity Generator – Generates more than 220 pounds but less than 2,200 pounds in any given month.

Large Quantity Generator – Generates more than 2,200 pounds of hazardous waste in any given month.