



ENVIRONMENTAL MANAGEMENT PROGRAM

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1.0 General Information

1.1 Purpose

The University of the District of Columbia (UDC) is committed to providing a safe and environmentally-conscious campus for its students, faculty and staff, and for the local community. As part of this commitment, the University has developed this Environmental Management Program (EMP) in order to:

- Ensure that UDC fully complies with all environmental laws and regulations regarding the handling, storage, and management of hazardous materials and wastes;
- Provide optimum guidance and training for laboratory supervisors and technicians, students, and University Services, power plant and physical plant staff;
- Develop consistent practices to be implemented University-wide;
- Ensure common awareness of environmental management practices;
- Maintain accountability; and
- Manage change.

UDC's EMP describes the management system that the University will implement to achieve compliance with regulatory requirements and University policies. The EMP describes services provided by the Office of Environmental, Health and Safety, such as assistance in the management of laboratory chemical wastes, regular facility inspections and tracking of regulatory requirements; recordkeeping; and requirements for administrators, faculty, staff and students. The EMP consists of a coordinated set of policy statements and implementation plans that include assignment of specific roles and responsibilities, documentation and recordkeeping procedures to be followed, and specific forms to be used. Individual schools or departments, at their discretion, may impose more stringent



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requirements than those outlined in the EMP as long as they do not conflict with regulatory requirements or University policy.

1.2 Availability

UDC will ensure that the EMP is readily available to faculty, laboratory technicians, power plant and physical plant staff, students, vendors, employee representatives, on-campus contractors and, upon request, to government representatives. The Environmental Protection Specialist in the Office of Environmental, Health and Safety will maintain the master copy of the EMP and disseminate revisions to members of the UDC community.

1.3 Responsibilities

In order to be effective, the EMP requires the cooperation of all members of the University community. Responsibilities of specific groups within the University community are outlined below.

1.3.1 – Supervisors. Primary implementation of the EMP is the responsibility of faculty and classroom instructors, research investigators, laboratory technicians, Office of Environmental, Health and Safety, power plant and physical plant staff, and other individuals who have direct supervisory authority and whose responsibilities could affect the physical environment. UDC employees and faculty have a responsibility to comply with health, safety, and environmental regulations issued by the United States and the District of Columbia governments, and policies/rules issued by the University's Administration, its Deans and its Department Chairs. UDC employees must follow safe materials handling and disposal practices, attend required training, use appropriate safety devices/equipment, and maintain adequate housekeeping in their work areas. Employees and faculty are to report certain spills, releases or discharges and all serious potentially unsafe materials management activities to their supervisors. Individuals with supervisory authority are to foster a positive attitude towards health, safety and environmental concerns.

1.3.2 – Academic and Administrative Management. UDC Vice Presidents, Deans and Department Chairs are accountable for the health and safety of employees engaged in activities under their supervision and for the prevention of adverse environmental consequences resulting from activities under their control. University



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management should ensure that sufficient resources are made available such that:

a) all on-campus areas are free of or are designed to mitigate potential environmental hazards; b) proper operating procedures are developed and implemented for materials management and to protect human health and safety; and c) employees and students receive proper training in environmental, health and safety practices. University management also must investigate accidents/incidents resulting in potential or certain actual spills, releases or discharges of known hazardous materials and take corrective actions to minimize the likelihood of future occurrences.

1.3.3 – Department of Public Safety and Emergency Management, Office of Environmental, Health and Safety. UDC’s Office of Environmental, Health and Safety has primary responsibility for staying current with regulatory requirements and making recommendations to the University community for remaining in compliance. In conjunction with administration and faculty support, a dedicated Environmental Protection Specialist hired within the Department of Public Safety and Emergency Management will periodically update the EMP (at least annually), monitor University compliance and ensure enforcement of regulatory requirements and University policies, assist in training, and function in an advisory and consultative capacity, providing general environmental support to the University community. In addition, the Environmental Protection Specialist will be responsible for general oversight of waste management practices by University contractors and will ensure that other UDC personnel receive appropriate training in order to have back-up capabilities on-campus.

1.3.4 – UDC Environmental Management Committee. The functions of UDC’s Environmental Management Committee are to: a) assist the Environmental Protection Specialist in the annual revision/update of the EMP; b) approve formal changes to the EMP; c) recommend outreach and service activities and programs that enhance UDC’s visibility and recognition within the local community on environmental and ecological issues; d) periodically inventory and evaluate current uses of University facilities with respect to environmental issues; and e) recommend specific projects to enhance the ecological and environmental aspects of UDC and community sites and changes that improve the physical facilities and real estate to acknowledge and demonstrate UDC’s ongoing commitment to fulfilling its environmental responsibilities.



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The composition of the Environmental Management Committee should broadly reflect the University community, represented by as many University constituencies as possible. The President of UDC will appoint members to the Environmental Management Committee after receiving recommendations from the Vice President of Academic Affairs. The Environmental Protection Specialist has the authority to make and sign off on EMP revisions approved by the Committee and to interact with University and local community representatives.

At a minimum, the Environmental Management Committee should meet annually.

1.3.5 – Campus Police. The UDC Campus Police (202 274-5050) are the primary contact for all on-campus emergencies. The Campus Police Office will maintain a copy of the EMP, and assist in the investigation of accidents/incidents resulting in potential or certain actual spills, releases or discharges of known hazardous materials, and other chemical-related emergencies reported to it. The Campus Police will notify the Environmental Protection Specialist and appropriate municipal authorities and/or government agencies when required.

1.4 Annual Program Review

The EMP is considered an “evergreen” document intended to be regularly reviewed and revised to maintain compliance with regulatory requirements and consistent with University policies. The EMP will be reviewed at least annually by the UDC Environmental Management Committee or its designated representatives and the Environmental Protection Specialist to ensure that it remains current, adequate and effective in order to address the issues associated with academic and laboratory research, facility operations and grounds maintenance, materials handling, and changes in the regulatory climate.

1.5 Revisions

All proposed changes to this plan will be considered and changes will be documented in writing. Revisions to the EMP can be proposed by anyone and submitted to the Office of Environmental, Health and Safety using the EMP Revision Request Form (see Appendix A1.5). For issues related to regulatory compliance for which the University could become out of compliance prior to the annual EMP review, the Environmental Protection Specialist will bring proposed revision(s) with recommendations to the UDC Environmental



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Management Committee for immediate review. Non time-critical changes will be reviewed by the UDC Environmental Management Committee at least annually. The University can make changes to the EMP only with the approval of the Environmental Management Committee. No revisions may be made that conflict with regulatory requirements. Changes that may conflict with existing University rules or policies must be cleared with University Counsel. Revised pages to the EMP must be signed by the Environmental Protection Specialist.

Original copies of the change procedures form will be maintained by the Office of Environmental, Health and Safety for at least three years. The most current version of the EMP will be maintained by the Environmental Protection Specialist within the Office of Environmental, Health and Safety.

1.6 Emergency Contact Information

At the discretion of the individuals who have direct supervisory authority, a “minor” or “localized” environmental, health or safety incident (e.g., odor complaint, small quantity spill, plumbing failure or water leak) that can be resolved through the implementation or use of existing University resources or with limited outside help does not require on-campus emergency authorities to be notified.

For any environmental, health or safety incident that results in a release of hazardous materials to the environment or has the potential to affect human health (e.g., building fire, large quantity chemical spill, extensive power or utility outage, suspicious packages, or injury necessitating immediate medical attention), UDC Campus Police should be contacted at 202 274-5050 (in addition to Campus Police access via regular telephone service on-campus, emergency telephones also are housed in red Call Boxes, in all elevators, on support columns highlighted by orange stripes in the UDC Parking Garage and Yellow Emergency Call Boxes located throughout the campus). Although municipal emergency services may be accessed by calling 9-1-1, Campus Police: a) are the first and central contact for all types of on-campus emergencies, b) provide initial emergency response coordination, and c) are responsible for contacting the Environmental Protection Specialist and off-campus emergency responders, municipal authorities and/or government agencies.

Each on-campus area where potentially hazardous materials (e.g., laboratory chemicals, cleaning supplies) are stored or used should have emergency contact and response



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information posted in one or more visible locations. Emergency contact information should include the Campus Police telephone number (202 274-5050) and telephone numbers of applicable supervisory personnel. Emergency response information should include a map/figure depicting the location of emergency response resources (e.g., fire extinguishers, fire alarms, spill kits), Material Safety Data Sheets (MSDSs) for chemicals stored or used in that area, and building evacuation routes.

The individual(s) with direct supervisory authority are responsible for posting and periodically updating (at least annually) emergency contact and response information in each area where hazardous materials are regularly stored or used. Emergency contact and response posting is not a requirement for the short-term use of facility construction or maintenance materials (e.g., paints, floor tile mastics, drywall muds, plumbing materials, welding supplies, epoxies and glues, oils and greases, floor cleaning and buffing solutions, window cleaning solutions, etc.) by physical plant personnel or on-site contractors.



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2.0 Environmental Policy

As a public institution of higher education, the University of the District of Columbia acknowledges that university administration, faculty, staff and students have a responsibility to undertake and manage their academic activities and support services as responsible stewards of the physical environment and members of the local community. University administration, faculty and staff have a responsibility to employ, where possible, educational instruction and training to promote environmental awareness.

As a leader in the local community, the administration, faculty, staff and students of the University of the District of Columbia will strive to:

- Meet or, where practical, exceed the requirements imposed by all relevant environmental laws and regulations;
- Conduct activities in a manner that safeguards the environment and protects the health and safety of faculty, staff, students and the local community;
- Reduce the use of toxic or hazardous substances and the generation of wastes, promoting strategies to reuse and recycle materials, where practical;
- Manage and dispose of waste materials in an environmentally-sound manner; and
- Seek to identify processes, practices, materials or products that avoid or reduce waste generation through process changes, more efficient use of resources or material substitution.

As it fulfills its academic mission as an institute of higher education, the University of the District of Columbia also will strive to:

- Foster a greater understanding of and a duty to protect natural resources and the physical environment;
- Conduct research and teaching in an environmentally responsible manner; and



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- Provide appropriate training in order to impart to faculty, staff and students: (1) an awareness of UDC’s environmental policies and procedures; (2) excellence in the implementation of UDC’s environmental policies and procedures; (3) information about the environment and potential health issues that affect their disciplines; and (4) information about their individual roles and responsibilities in support of this Environmental Management Program.

In order to promote continuous improvement and manage change, the University of the District of Columbia will regularly review and revise the Environmental Management Program and any associated documentation to ensure its currency with regulatory requirements and changes in policy within the University community.



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3.0 Waste Management Operational Procedures

3.1 Laboratories at UDC

3.1.1 Definition of Laboratory. UDC operates more than 100 teaching and research laboratories, storage rooms and stockrooms, preparation rooms, workshops and studios (including art and photography studios). For the purposes of this EMP, these various on-campus academic-related facilities will hereafter be collectively referred to as “laboratories.”

3.1.2 Definition of Laboratory Personnel. Those people who are assigned to handle hazardous chemicals and materials, as defined in Section 3.3, in laboratories areas, including faculty researchers, technicians, students and other UDC employees who have received training to work in UDC laboratories, will hereafter be collectively referred to as “laboratory personnel” for the purposes of the EMP.

3.1.3 Laboratory Personal Protective Equipment. UDC requires that laboratory personnel use Personal Protective Equipment (PPE) in order to minimize the risk of chemical exposure and other potential hazards. Commensurate with the hazardous nature of the materials to be handled, PPE items can include, but are not limited to, chemical splash resistant goggles, lab coats or aprons, disposable gloves, protective foot and headgear, earplugs and respirators.

Depending on the nature and type of materials to be used, supervisors have primary responsibility for determining and enforcing the use of PPE in individual laboratory areas under their oversight, providing or arranging training on proper PPE usage, and ensuring that laboratory personnel are using and caring for PPE properly. PPE should be inspected and cleaned at regular intervals. In laboratories, PPE (e.g., goggles, aprons, gloves) should be removed and properly stored prior to exiting the laboratory. For facility construction or maintenance activities either in laboratories or non-laboratory areas (e.g., physical plant or power plant personnel or on-site contractors working at specific job sites on-campus), PPE equipment specific to the tasks being performed will be worn at all times while working in that area.

3.1.3.1 – Chemical Splash Resistant Goggles and Other Protective Eyewear. At a minimum, laboratory personnel must wear chemical splash resistant goggles or other



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protective eyewear (e.g., safety glasses, welding hoods, face shields) when using or working in the vicinity of chemicals or other materials that may pose an eye hazard. Laboratory supervisors may enforce more stringent standards (e.g., wearing protective eyewear at all times) at their discretion.

3.1.3.2 – Gloves. Laboratory supervisors should allow the use of or make gloves available to laboratory personnel, upon request, when using or working in the vicinity of potentially hazardous or harmful chemicals and where gloves are not specifically required by University policy. When selecting the appropriate chemical-resistant gloves, laboratory personnel should consider the types of chemicals being used, the task being performed, and the particular hazards involved. Gloves should be inspected for physical integrity prior to their usage. If possible, laboratory personnel should clean gloves prior to removing them to prevent contaminant contact with the skin. Upon removal of gloves, laboratory personnel should wash their hands.

3.1.3.3 – Respiratory Protection. In situations where respiratory protection cannot be adequately provided by existing engineering controls (e.g., fume hoods, room ventilation), a personal respirator may be necessary. In such cases, strict attention must be paid to respirator selection, medical approval and surveillance, fit testing, training, and proper usage and maintenance.

3.1.4 Fume Hoods. The primary method of preventing exposure to potentially harmful vapors during laboratory operations is through the use of fume hoods. Therefore, laboratory personnel should conduct all chemical work involving potentially harmful vapors in properly functioning fume hoods. For non-laboratory activities, supervisors should ensure that adequate natural or forced ventilation is available when working with materials that can generate potentially harmful vapors.

3.1.4.1 – Proper Fume Hood Usage. To reduce exposure to vapor emissions and to minimize the release of vapor emissions into the environment from laboratory fume hoods, laboratory personnel should:

- Ensure that containers in fume hoods are closed and capped tightly at all times, except when material is being added or removed;



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- Avoid storing chemicals, including wastes, in fume hoods, except:
 - 1) where manufacturer instructions mandate storage within a fume hood;
 - 2) during periods when materials are being added to or removed from the chemical containers (e.g., properly labeled waste containers may be staged within a fume hood during an academic laboratory session for ready access by students, but should be stored within an approved storage cabinet prior to removal for disposal); or 3) where appropriate storage cabinets (e.g., flammable or acid cabinets) are not available;
- Keep the slots in fume hood baffles free of obstruction;
- Keep all chemicals and equipment at least six inches inside fume hoods;
- Place no body parts other than hands and forearms in fume hoods;
- Avoid rapid movements that cause air turbulence in front of fume hoods that might alter proper air flow;
- Not use fume hoods to evaporate materials as a method of waste disposal;
- Keep fume hood sashes at or below the height indicated on certification stickers;
- Ensure that proper usage instructions are posted in all labs with fume hoods (where such information is either on or near the fume hood and readily apparent); and
- Inform the Office of Environmental Health, and Safety immediately of any suspected fume hood malfunctions.

3.1.4.2 – Fume Hood Annual Inspections. The Office of Environmental, Health and Safety will oversee annual inspections of all University fume hoods. Inspection results and repair requirements should be completed at the end of the spring



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semester. Fume hood inspections will include a visual evaluation in order to ensure that:

- Only materials compatible with a particular fume hood are being used;
- Chemical storage is not taking place in fume hoods, except as noted in Section 3.1.4.1;
- Fume hoods are not physically damaged;
- Sashes are able to open, close and remain in a stationary position; and
- Flow indicators and alarms, if present, are functioning properly.

In addition, annual fume hood inspections will include face velocity measurements using an approved measuring device. Fume Hood Certification Stickers will be affixed to all inspected fume hoods and will indicate the sash position at which a face velocity of 100 feet per minute is attained. Laboratory personnel should always keep sashes at or below this marked position when using fume hoods.



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3.1.6 Reuse and Redistribution of Laboratory Material. In order to promote pollution prevention, UDC will develop and implement a procedure for redistributing laboratory chemicals for reuse (see Section 7.4.1). When usable chemicals that are no longer needed are identified either during routine laboratory inspections or during laboratory clean-outs, laboratory supervisors should contact the Office of Environmental, Health and Safety. If the Office of Environmental, Health and Safety can readily identify reuse options in a timely manner, chemicals will be transferred from one location to another.

3.1.7 Monthly Laboratory Self-Inspections. To ensure healthy working conditions and compliance with applicable regulations, laboratory supervisors will conduct self-inspections at least monthly in all laboratories that handle hazardous chemicals. Copies of completed Monthly Laboratory Self-Inspection Forms (see Appendix A3.1b) must be submitted to the Office of Environmental, Health and Safety within two weeks of inspections. Monthly Laboratory Self-Inspection Forms will be maintained in individual laboratories for at least one year and at the Office of Environmental, Health and Safety for at least three years.

Laboratory supervisors have primary responsibility for correcting issues noted during monthly self-inspections. In addition, personnel at the Office of Environmental, Health and Safety will review Monthly Laboratory Self-Inspection Forms and conduct follow-up inspections and make recommendations, as necessary.

The Monthly Laboratory Self-Inspection Form should be reviewed annually and modified, as needed, by the Office of Environmental, Health and Safety, to ensure that areas of potential need are being addressed.

3.2 On-Campus Operations and Maintenance Facilities

3.2.1 Definition of Operations and Maintenance (O&M) Facilities. In addition to “laboratories,” as defined in Section 3.1.1, power plant and physical plant personnel and on-site contractors typically have operations based in non-academic, on-campus maintenance facilities, the boiler house, and/or materials storage and supply areas. In order to broadly encompass those on-campus operations, maintenance or construction areas where chemicals are regularly used or stored, these areas will be predominantly subject to the same chemical handling and materials management requirements as “laboratories,” as defined in the EMP.



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3.2.2 Definition of O&M Personnel. Those people who are assigned to handle hazardous chemicals and materials, as defined in Section 3.3, in non-academic, on-campus areas,¹ including technicians, power plant and physical plant staff (e.g., carpenters, electricians, plumbers, painters, other construction workers, custodians), and other UDC employees or on-site contractors, will hereafter be collectively referred to as “O&M personnel” for the purposes of the EMP.

3.2.3 O&M Personal Protective Equipment. UDC requires that O&M personnel use Personal Protective Equipment (PPE), as necessary, in order to eliminate or minimize unacceptable risks due to potential chemical exposure. Commensurate with the hazardous nature of the materials to be handled, PPE items can include, but are not limited to, protective eyewear, work gloves, foot and headgear, garments, earplugs and respirators.

Depending on the nature and type of materials to be used, supervisors have primary responsibility for determining and enforcing the use of PPE in individual work areas under their oversight, providing or arranging training on proper PPE usage, and ensuring that O&M personnel are using and caring for PPE properly. PPE should be inspected and cleaned at regular intervals. For on-campus construction or O&M activities (e.g., O&M personnel or on-site contractors working at specific job sites on-campus), PPE equipment specific to the tasks being performed will be worn at all times while working in that area.

3.2.3.1 – Safety Glasses and Other Protective Eyewear. At a minimum, O&M personnel must wear safety glasses or other protective eyewear (e.g., chemical splash resistant goggles safety glasses, welding hoods, face shields) when using or working in the vicinity of chemicals or other materials that may pose an eye hazard. Supervisors may enforce more stringent standards (e.g., wearing protective eyewear at all times) at their discretion.

3.2.2.2 – Hard Hats and Other Head Protection Equipment. For those O&M tasks involving overhead or elevated work areas, O&M personnel will wear hard hats or

¹ Certain O&M or construction assignments may be conducted in an on-campus area defined herein as a “laboratory;” however, the purpose of such assignments is not associated with academic pursuits.



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other head protection deemed necessary by supervisors to ensure protection from drips, spills, releases or other discharges of chemicals or other work place hazards.

3.2.3.3 – Work Gloves. Supervisors should allow the use of or make gloves available to O&M personnel, upon request, when using or working in the vicinity of potentially hazardous or harmful chemicals and where gloves are not specifically required by University policy. When selecting the appropriate chemical-resistant gloves, O&M personnel should consider the types of chemicals being used, the task being performed, and the particular hazards involved. Gloves should be inspected for physical integrity prior to their usage. If possible, O&M personnel should clean gloves prior to removing them to prevent contaminant contact with the skin. Upon removal of gloves, O&M personnel should wash their hands.

3.2.3.4 – Respiratory Protection. In situations where respiratory protection cannot be adequately provided by existing engineering controls in O&M work areas (e.g., fume hoods, room ventilation), a personal respirator may be necessary. In such cases, strict attention must be paid to respirator selection, medical approval and surveillance, fit testing, training, and proper usage and maintenance.

3.2.3.5 – Other Personal Protective Equipment. Commensurate with the O&M tasks to be performed, other PPE deemed necessary by supervisors will be worn to ensure protection from chemical or other work place hazards.

3.3 Hazardous Chemical Handling and Storage

3.3.1 – Definition of Hazardous Chemical. For the purposes of this EMP, a hazardous chemical is a chemical that poses a physical or health hazard. A chemical presents a physical hazard if there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable, reactive, or water-reactive. A chemical presents a health hazard if there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees.



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Both laboratory and O&M supervisors are primarily responsible for determining and implementing appropriate chemical hygiene practices for the use, storage and disposal of hazardous chemicals on-campus; however, the Office of Environmental, Health and Safety personnel must regularly audit hazardous chemical management practices to ensure compliance with applicable regulations and University policies.

3.3.2 – Material Safety Data Sheets. Chemical materials used on-campus must have proper documentation to identify potential environmental and human health hazards. Typically, this information is provided by a manufacturer or supplier in an MSDS when a material shipment is received on-campus. In many instances, copies of MSDSs can be obtained from a manufacturer or supplier for internal review prior to ordering any new material.

When planning to use a new hazardous material on-campus (e.g., this chemical would be considered new to the particular area of intended use, although not necessarily new to the University), a supervisor should ensure that an MSDS accompanies the container in which the material was shipped and submit a copy of the MSDS to the Environmental Protection Specialist in the Office of Environmental, Health and Safety along with the New Chemical Notification Form (A3.3). New Chemical Notification Forms will be retained by the Environmental Protection Specialist for three years.

If an MSDS sheet does not accompany the receipt of the new material, the supervisor should take one of the following steps:

- Contact the manufacturer or supplier and request that an MSDS be provided by facsimile or in electronic form via e-mail.
- Visit the Internet web site of the manufacturer or supplier and obtain a copy of the MSDS.
- Contact the Environmental Protection Specialist in the Office of Environmental, Health and Safety. UDC has obtained a CD-ROM compilation of MSDSs from a commercial vendor and should be able to provide a copy from this source.



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The supervisor and the Environmental Protection Specialist will review an MSDS to ensure that the constituents present in the new material do not conflict with UDC's Environmental Policy (Section 2.0). If a conflict with the University policy is identified, the supervisor must demonstrate that alternative materials are not readily available or are cost prohibitive to obtain.

3.3.3 – Hazardous Chemical Containers. Hazardous chemical containers must be closed at all times unless material is being added or removed. The exterior of the container should contain a clean, legible label identifying the contents of the container (this can be the original manufacturer's label or a "handmade" label that is securely attached). Chemical containers should always be compatible with the chemicals being stored to ensure the integrity of the containers. The integrity of containers should be inspected on a weekly basis, at a minimum. Weekly inspections of chemical containers and chemical storage areas should be undertaken by the supervisor, technician or designated representative.

3.3.4 – Labeling of Hazardous Waste Containers. Labels are necessary for identifying the potential physical or health hazards of a specific chemical waste. At a minimum, all hazardous waste containers must be labeled with:

- The words "Hazardous Waste;"
- The names of the hazardous chemicals or constituents comprising the waste;
- Major health and physical hazards associated with the chemical; and
- The name and on-campus location of the waste generator.

When transferring any hazardous chemical to a new container, laboratory or O&M personnel must appropriately label the new container with the name of the hazardous chemical and major health and physical hazards associated with the chemical. Laboratory or O&M personnel should not use chemicals in unlabeled containers until the contents and associated hazards have been identified.

3.3.5 – Hazardous Chemical Storage. The hazards associated with storing a chemical must be assessed for that chemical individually and in relation to other chemicals in the storage area. Incompatible chemicals must be stored in separate



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storage areas based on hazard class. Laboratory and O&M supervisors and technicians should ensure that general hazardous chemical types are appropriately segregated.

3.4 Emergency Preparedness and Response Procedures

3.4.1 – Definition of Emergency. For the purposes of this EMP, an emergency includes, but is not limited to, equipment failure, rupture of containers or failure of control equipment, which results in a potential uncontrolled release of a hazardous chemical into the environment that requires government agency or fire department notification and/or reporting. An uncontrolled release would be any spill or discharge that cannot be readily contained within the laboratory or work area. If an emergency poses an actual or potential threat to human health or safety, UDC requires an immediate evacuation of all individuals from the affected area(s). In such situations, Campus Police should be contacted immediately at 202 274-5050.

3.4.2 – Emergency Preparedness Measures. All laboratories and non-laboratory O&M facilities should post emergency notification and response procedures, and all UDC personnel should be aware of the presence and location of the following emergency preparedness measures:

- Emergency eye wash stations
- Emergency showers
- First aid kits
- Appropriate fire extinguishers
- Fire alarm pull stations
- Appropriate chemical spill kits
- Emergency contact information
- Evacuation routes

3.4.3 – Fire. In the event of a fire, UDC Campus Police should be contacted immediately at 202 274-5050. In the case of small, incipient fires that appear easy to extinguish, personnel who have been trained in the use of fire extinguishers may fight the fire from an easily escapable position. Small fires may also be smothered with a book or a cloth. Otherwise, the building fire alarm should be sounded and the



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building evacuated. Campus Police are responsible for contacting District emergency fire and medical response providers in the event of a fire.

3.4.4 – Chemical Exposure to the Skin. Individuals exposed to a hazardous material through dermal contact should immediately wash or drench the exposed area with water for 15 minutes or until medical help arrives. While rinsing, all contaminated clothing and jewelry should be removed. Check the MSDS for other recommended response measures that should be undertaken in the event of an exposure incident and to identify potential health effects that may be expected from exposure to the chemical.

3.4.5 – Chemical Exposure to the Eyes. Individuals exposed to chemicals in the eyes should flush eyes with water for at least 15 minutes. The affected eyeballs must be rotated to ensure that all surfaces have been washed. If applicable, remove contact lenses while rinsing. Seek medical attention whether or not the incident appears to be serious.

3.4.6 – Chemical Inhalation. Individuals suffering from headaches, nose or throat irritation, dizziness, drowsiness, or other symptoms of chemical inhalation should immediately close all containers, increase ventilation into the laboratory or work area, and go outside. If symptoms persist, seek medical attention. Check the MSDS for health effects that may be expected from chemical inhalation.

3.4.7 – Chemical Ingestion. In cases of accidental ingestion of chemicals, seek medical attention immediately. Check the MSDS for health effects and medical response information that can be given to emergency medical personnel or to Poison Control (202 625-3333). Do not induce vomiting unless directed to do so by a health care provider.

3.4.8 – Reporting Incidents. On-campus personnel involved in incidents of hazardous chemical or waste spills, hazardous chemical exposures, or other emergency situations must submit an Environmental Incident Report (see Appendix A3.4) to the Office of Environmental, Health and Safety. Office of Environmental, Health and Safety personnel and Campus Police are then responsible for investigating, documenting, and, if necessary, reporting the incident to regulatory



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authorities. Office of Environmental, Health and Safety personnel are also responsible for overseeing the implementation of appropriate corrective actions.



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4.0 Waste Handling and Management

4.1 Introduction to Solid and Hazardous Wastes

There are several categories of solid and hazardous waste generated at the University, each of which must be handled in accordance with federal and district regulations. Non-chemical solid wastes (e.g., paper, plastic, office trash, clean glass, and food and beverage waste) should generally be disposed of in sinks, trash cans or recycling containers. However, some non-chemical wastes, such as computer equipment, fluorescent light bulbs, and batteries, should be segregated from regular waste streams, picked up by the Office of Environmental, Health and Safety (or other designated UDC department or contractor), and recycled or disposed of off-site, as appropriate. Flowcharts depicting general determinations for solid and hazardous waste are presented for laboratories, art and photography studios, and O&M work areas in Figures 4.1a, 4.1b and 4.1c, respectively.

If in doubt about the proper management of any material intended for disposal, contact the Environmental Protection Specialist in the Office of Environmental, Health and Safety, who will make arrangements for UDC’s Hazardous Waste contractor to make that determination.

Chemical waste generated at UDC should be categorized as “hazardous” or “nonhazardous” at the time of generation, based on the nature of the waste. A waste is considered hazardous, as regulated by district regulations, if it: (1) is specifically listed as hazardous in 20 DCMR §4108 and §4109; or (2) exhibits a characteristic hazard. Characteristic hazards include:

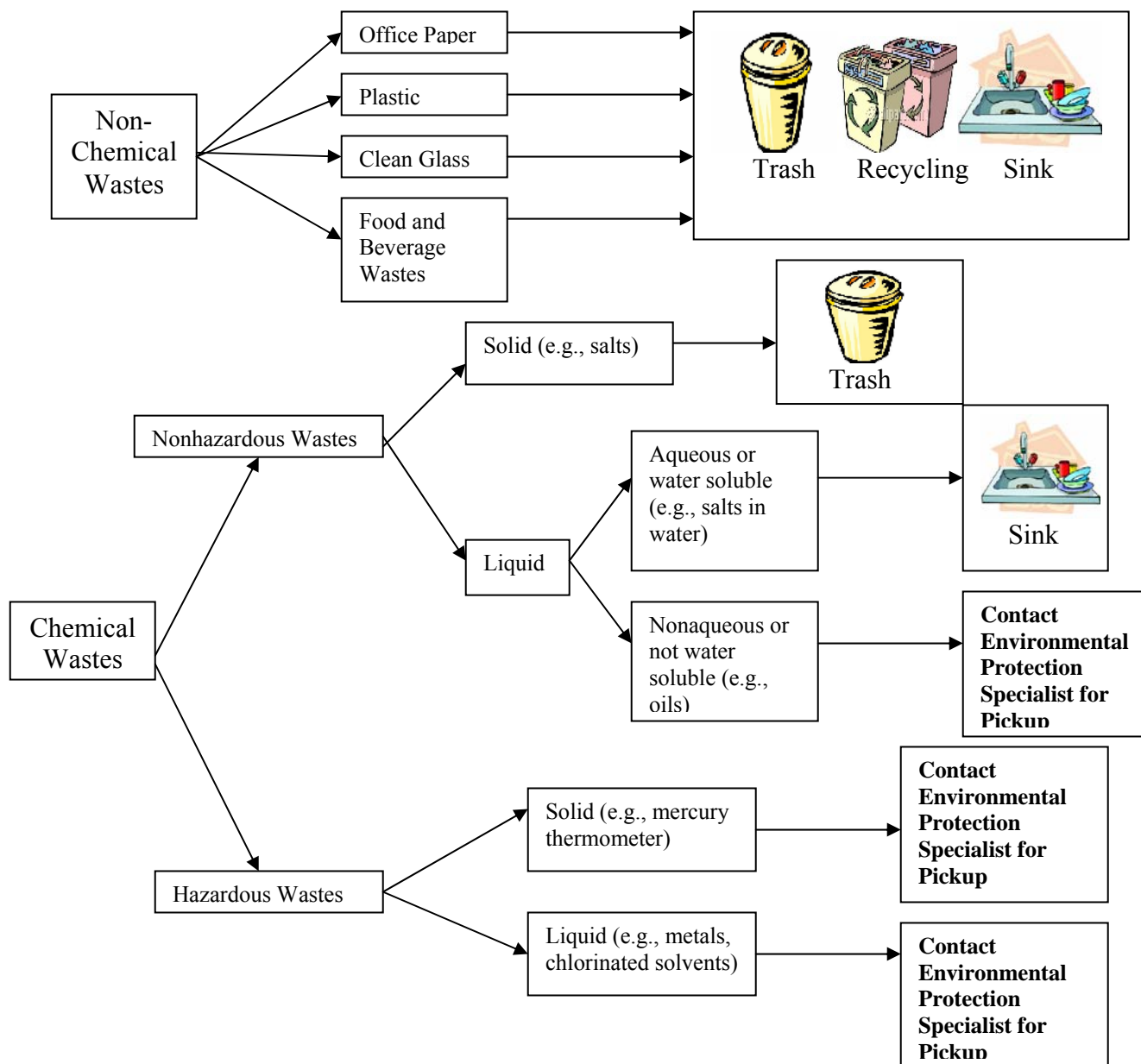
- Ignitability (e.g., liquid with flash point below 140 degrees Fahrenheit);
- Corrosivity (e.g., aqueous solution with pH less than or equal to 2 or greater than or equal to 12.5);
- Reactivity (e.g., material that reacts violently or explosively with water); and
- Toxicity (e.g., metals or organic compounds that exceed Toxic Characteristic Leaching Procedure [TCLP] standards).

Chemical waste that is nonhazardous must be disposed of in accordance with University procedures depending upon the type of waste. Solid chemical waste that is nonhazardous (e.g., nonhazardous salts) can generally be disposed of with the regular trash. Nonhazardous



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Figure 4.1a – Solid and Hazardous Waste Determination - Laboratory Flowchart

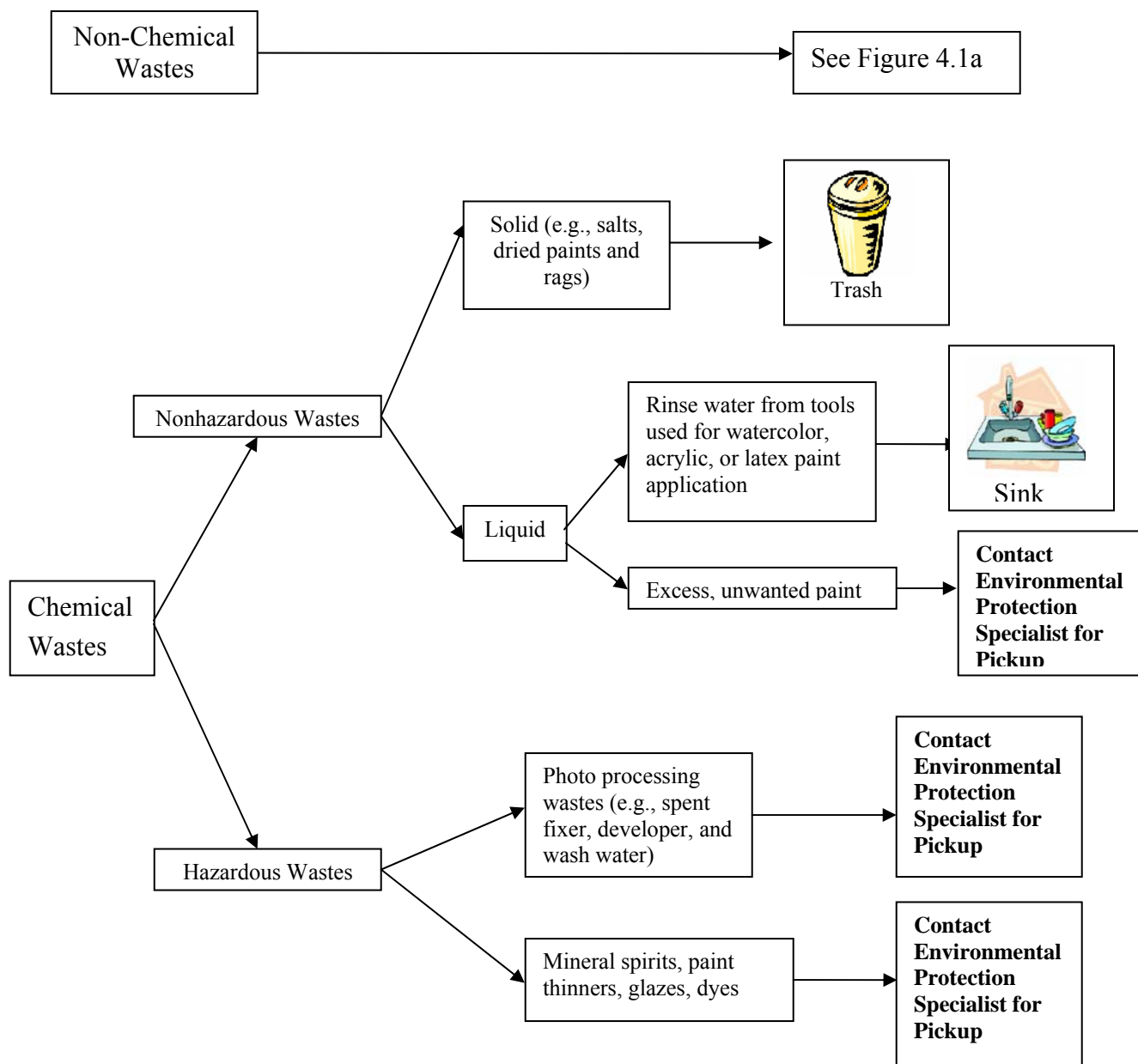


Note: The flowchart above outlines general disposal practices for common types of laboratory waste. Specific disposal procedures may deviate from the above flowchart, depending upon the specific waste and the particular laboratory. For assistance in determining the proper disposal practices for a specific laboratory waste, please contact the Office of Environmental, Health and Safety.



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Figure 4.1b – Solid and Hazardous Waste Determination – Art Studio Flowchart

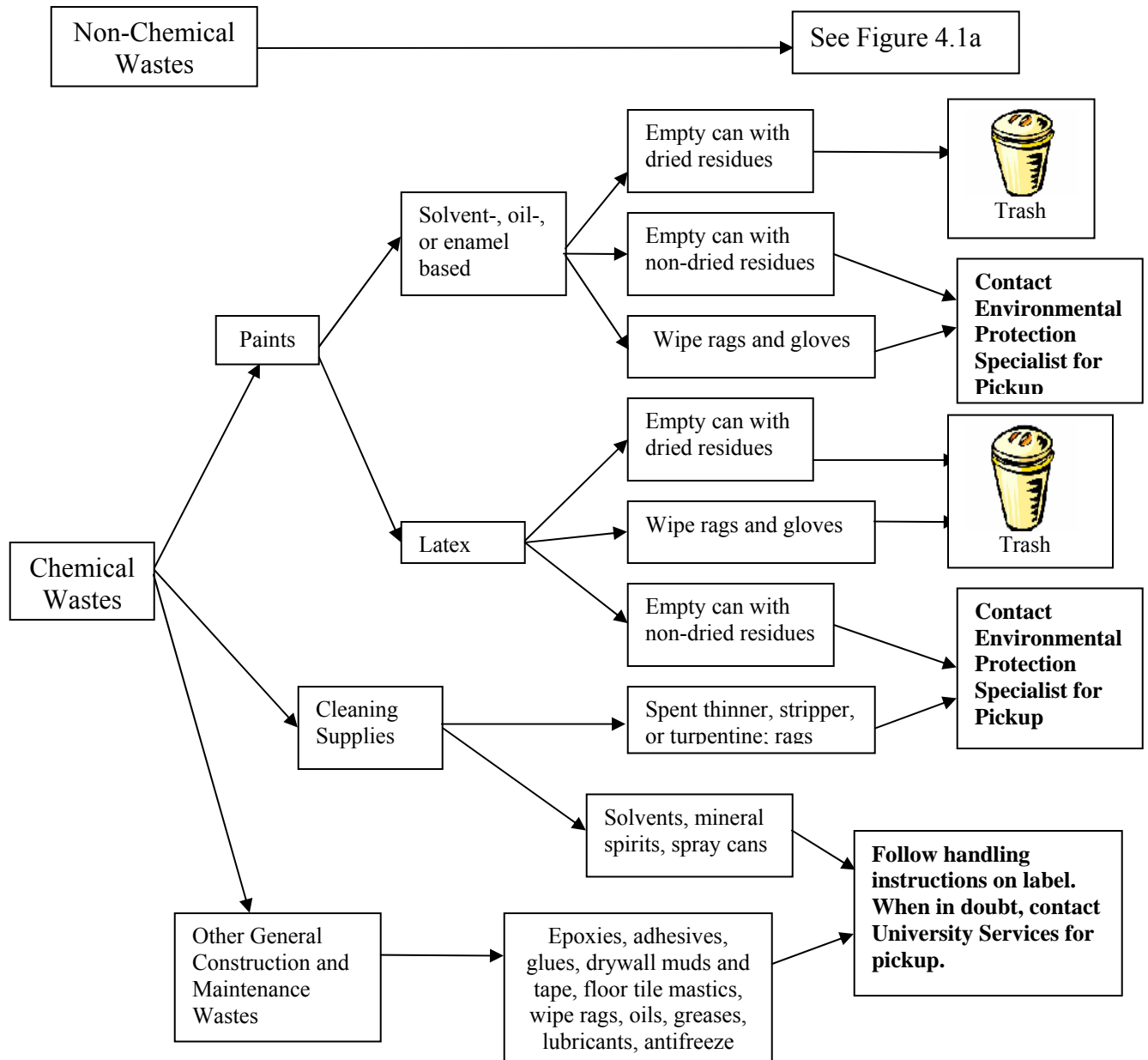


Note: The flowchart above outlines general disposal practices for common types of art studio, photography studio, and printing laboratory waste. Specific disposal procedures may deviate from the above flowchart, depending upon the specific waste and the particular studio. For assistance in determining the proper disposal practices for a specific studio waste, please contact the Office of Environmental, Health and Safety.



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Figure 4.1c – Solid and Hazardous Waste Determination –O&M Work Area Flowchart



Note: The flowchart above outlines general disposal practices for common types of O&M (non-laboratory) waste. Specific disposal procedures may deviate from the above flowchart, depending upon the specific waste and the particular work area. For assistance in determining the proper disposal practices for a specific waste, please contact the Office of Environmental, Health and Safety.



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liquid waste that is aqueous (e.g., salts in water) can generally be disposed of in the sink. However, nonhazardous liquid waste that is not soluble in water (e.g., oils) cannot be disposed of in the sink and should instead be collected by the Office of Environmental, Health and Safety for off-site disposal/recycle.

Chemical waste that is hazardous must be handled and disposed of in accordance with the procedures outlined in the remaining sections of this Chapter. As addressed in Section 4.4.1, UDC personnel may not discharge hazardous liquids (e.g., heavy metals in water, heavy metals in solvents, chlorinated solvents, non-chlorinated solvents, transformer fluid, corrosive materials) down any sink or drain into the municipal sewer system, with the exception of trace quantities associated with cleaning and washing operations. As discussed in Section 4.4.2, UDC personnel may not dispose of hazardous solids (e.g., mercury thermometers) as ordinary solid waste. All hazardous waste must be disposed of through the Office of Environmental, Health and Safety.

In cases of uncertainty as to the proper procedure for disposing of a particular waste, UDC personnel should contact the Office of Environmental, Health and Safety for assistance.

4.2 Wastes Generated at UDC

For the purposes of this EMP, laboratory waste is defined as a chemical or compound that results from laboratory-scale or other academic (e.g., art studios, photography studios, printing department) activities. Similarly, non-laboratory waste is defined as a chemical or compound that results from facility construction, upgrade and/or maintenance activities.

4.3 UDC Waste Determination

Chemicals become wastes when they are:

- Waste from research and/or class experiments or facility construction, upgrade or maintenance activities resulting from the use of hazardous chemicals;
- Off-specification or out-of-date chemicals; or
- Hazardous chemical spill cleanup material.

4.3.1 Laboratory Wastes. Laboratory personnel, Office of Environmental, Health and Safety personnel, and/or the University's hazardous waste contractor will make the determination whether laboratory materials should be classified as laboratory hazardous



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waste. With limited exception (see Section 4.7), once laboratory hazardous waste is generated, it must be removed and transferred to the 90-day storage area by Office of Environmental, Health and Safety personnel or UDC’s hazardous waste contractor within 24 hours.

4.3.2 O&M Wastes. UDC physical plant or power plant personnel, other University-based individuals generating O&M hazardous waste, the Environmental Protection Specialist and/or the University’s hazardous waste contractors will make the determination whether such materials should be classified as hazardous waste. Once O&M hazardous waste is generated, it must be removed and transferred to the 90-day storage area by properly trained University personnel or UDC’s hazardous waste contractor within 24 hours. A listing of “representative” O&M wastes generated at UDC is presented in Table 4.3.

In cases of uncertainty as to the proper characterization of a particular waste, UDC personnel should contact the Office of Environmental, Health and Safety for assistance.

TABLE 4-3 Representative O&M Chemical Wastes Generated at UDC		
Waste Type	Determination ¹	Method of Disposal
Latex-based paints Empty can with dried residues Empty can with non-dried residues Latex-containing wipe rags and gloves	Nonhazardous Nonhazardous Nonhazardous	Regular trash Requires special handling ² Regular trash
Solvent-, oil- or enamel-based paints Empty can with dried residues Empty can with non-dried residues Solvent-containing wipe rags and gloves Spent thinner/stripper/turpentine	Nonhazardous Hazardous Hazardous Hazardous	Regular trash Hazardous waste Hazardous waste Hazardous waste
Cleaning solvents Mineral spirits Floor cleaning solutions	Can be either hazardous or nonhazardous, depending on the constituents present.	Sink disposal or hazardous waste. Follow manufacturer’s handling instructions on label.
Oils and greases Antifreeze/glycol/refrigerants	Typically nonhazardous if recycled	Requires special handling ²
Epoxies, adhesives and glues Floor tile mastics Drywall muds and tape Plumbing pipe dope Aerosol spray cans Lawn and garden products	Can be either hazardous or nonhazardous, depending on the constituents present.	Regular trash or hazardous waste. Follow manufacturer’s handling instructions on label.
¹ These waste determinations are intended to provide preliminary guidance for “representative” waste categories. In case of uncertainty, contact the Office of Environmental, Health and Safety to ensure wastes are properly managed. ² Where special handling is noted, check with the Office of Environmental, Health and Safety for recommendations on the appropriate method(s) for disposal. Regular trash disposal typically is not an appropriate option for these materials.		



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4.4 Discharge of Waste

UDC is committed to preventing the discharge of hazardous chemicals into the air, land and water.

4.4.1 – Sink Disposal of Waste. UDC personnel may not discharge hazardous materials down any sink or drain into the municipal sewer system, with the exception of trace quantities associated with cleaning and washing operations. Specifically, UDC personnel are prohibited from discharging the following materials into the sanitary sewer:

- Materials that may create a fire or explosion hazard;
- Materials that could cause corrosive damage to the plumbing or sewer system (i.e., corrosive materials with pH less than or equal to 2 or greater than or equal to 12.5, or any discharges of low pH material that would cause the wastewater in the sewer to fall below 5.0);
- Solid or viscous materials in amounts that obstruct flow or interfere with operations;
- Any material at a flow rate or in a concentration that would cause interference with treatment processes at the municipal wastewater treatment plant, or contamination of sludge or effluent from the wastewater treatment plant so as to violate its permit;
- Heat discharges that inhibit biological activity or increase the municipal wastewater treatment plant influent above 104 degrees Fahrenheit;
- Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through at the municipal wastewater treatment plant; and



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- Pollutants that could result in the presence of toxic gases, vapors, or fumes within the municipal wastewater treatment plant in a quantity that may cause acute worker health and safety problems.

Based on the restrictions described above, supervisors will determine whether specific materials can appropriately be disposed of through the sanitary sewer. In cases of uncertainty, UDC personnel and contractors can contact the Office of Environmental, Health and Safety, which will then consult the appropriate regulatory authority, as necessary.

4.4.2 – Trash Disposal of Waste. UDC personnel must maintain separate containers for hazardous waste and regular trash and may not dispose of hazardous waste as ordinary solid waste. Supervisors will determine whether specific materials can appropriately be disposed of through the ordinary trash. In cases of uncertainty, UDC personnel and contractors can contact the Office of Environmental, Health and Safety, which will then consult the appropriate regulatory authority, as necessary.

In addition, Office of Environmental, Health and Safety personnel will meet with UDC’s custodial services contractor to review information that should be given to all custodial staff working in areas that generate hazardous waste. Custodial staff should report any suspected improperly disposed wastes to their supervisor(s), who will be responsible for contacting the Office of Environmental, Health and Safety.

4.5 Labeling Waste Containers


A Hazardous Waste label must be affixed to each hazardous waste container, with the following information:

- The words “Hazardous Waste;”
- Chemical name(s) and relative amounts;
- Room number and generator name;
- Date of waste generation; and
- General hazards (e.g., ignitable, corrosive, toxic, reactive, etc.).

Containers must be labeled when laboratory waste is first added. If a label is too large for a particular waste container, the label must be affixed to a larger secondary container.



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HAZARDOUS WASTE	
Supervisor/Generator:	On-campus Phone Number:
Chemical:	%
.....	
.....	
.....	
.....	
HAZARDS <input type="checkbox"/> Ignitable <input type="checkbox"/> Toxic <input type="checkbox"/> Corrosive <input type="checkbox"/> Reactive <input type="checkbox"/> Other _____	Date:
	Department:
	Building/Room:
 Office of Environmental Safety University of the District of Columbia Washington, D.C.	

4.6 Container Collection of Waste

Wastes should be managed in a manner so as to minimize the potential for accidental release. As such, UDC personnel should adhere to the following procedures:

- Waste containers should be appropriately sized;
- Waste containers should be compatible with the waste being collected to ensure the integrity of the container;
- Incompatible wastes should be segregated;
- Waste may not be stored at the point of generation or other storage areas outside the 90-day storage area for more than 24 hours after generation; and



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- Waste containers should be closed with a secure cap, lid or funnel (with attached lid) at all times unless waste is being added or removed, with the exception of in-line waste collection systems.

In-line waste collection refers to systems that are directly connected to or part of laboratory-scale activity and which automatically collect laboratory waste. Such systems must be constructed and operated in such a manner as to prevent releases to the environment and must be equipped with secondary containment. In addition, these systems must either be attended at all times or periodically inspected by trained personnel at a frequency that would preclude accidental overflows. At present, only one UDC laboratory is using an in-line system for the collection of a hazardous waste stream.

4.7 Removal of Waste

Hazardous waste will be removed on a daily basis from individual generating locations (i.e., laboratories, work shops, O&M areas) by properly trained University personnel or other UDC-designated contractors. UDC personnel should place waste containers awaiting removal in a designated pick up area within their laboratories or work areas (e.g., flammable or corrosives cabinet). Each hazardous waste container must have a completed Hazardous Waste label.

In addition, UDC personnel must document all hazardous waste designated for removal on the Hazardous and Nonhazardous Material Removal Form or Request For Hazardous Waste Removal Form (see Appendix A4.7a and A4.7b). The Removal Forms log all waste removed from an O&M work area/department or a particular laboratory, and includes:

- Date of waste generation, the name of the generating department, name of the responsible faculty or staff person, and contact number; and
- The identity and amount of each waste being removed.

Except for TCE wastes generated in the asphalt testing laboratory, Office of Environmental, Health and Safety personnel cannot remove any hazardous waste container unless a completed Hazardous Waste label is affixed to each waste container and all wastes are documented on the Waste Removal Form. Copies of Waste Removal Forms must be completed and submitted to the Office of Environmental, Health and Safety each month.



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Nominal quantities of TCE are periodically used in the asphalt testing laboratory, which is located near the 90-day storage area. Upon completion of daily testing activities, faculty or other designated individuals in the Civil Engineering Department will transfer spent TCE to the 55-gallon TCE storage drum located on a containment pallet within the 90-day storage area.

The quantity of hazardous waste generated may be recorded in units of mass or volume, which must be recorded on the Hazardous and Nonhazardous Material Removal Form. For mass units, the weight of the container and its tare weight should be recorded on the label. For volume units, the approximate volume may be estimated based on the size of the container or other relevant estimating techniques.



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5.0 Waste Handling and Management in 90-Day Storage Areas

5.1 Transferring Waste to 90-Day Storage Areas

At present, UDC maintains two 90-day storage areas on campus. One is located outside Building 42, Room C10. The second 90-day storage area is located in Building 42, room 110. For security reasons, this room has a locked entry with key access limited to specific individuals designated by the University.

Hazardous waste will be removed daily from designated areas in individual laboratories or O&M work areas/departments and taken to designated 90-day storage areas. Hazardous waste must be transported to 90-day storage areas by properly trained University personnel (or other trained individuals approved by the University) and in a manner protective of human health and the environment. As such, the following procedures should be adhered to:

- Chemical containers should be placed in secondary, non-breakable containment when being transported outside the laboratory;
- Carts must be used for transporting two or more containers of hazardous waste;
- Spill containment must be immediately available;
- Caps on containers should be checked and tightened prior to transport; and
- Personnel must wear appropriate PPE when transporting hazardous waste.

Prior to transferring waste to the 90-day storage area, Office of Environmental, Health and Safety personnel (or other trained individuals approved by the University) must compare the Hazardous and Nonhazardous Material Removal Form and the Request For Hazardous Waste Removal Forms (see Appendix A4.7a and A4.7b) with the wastes designated for removal. Where no discrepancies are found, hazardous wastes are transferred to the 90-day storage area. However, in situations where either the Hazardous Waste Removal Form or Hazardous Waste labels are not filled out adequately, or if a discrepancy exists between the Hazardous Waste Removal Form and the wastes designated for removal, Office of



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Environmental, Health and Safety personnel (or other trained individuals approved by the University) cannot remove the waste until the discrepancy is resolved. Discrepancies must be resolved as soon as possible, but no later than 24 hours after they are discovered.

5.2 Quantification of Hazardous Waste

In order to determine the total amount of hazardous waste generated each month by both University laboratories and O&M work areas/departments, Office of Environmental, Health and Safety personnel will review individual laboratories' monthly Hazardous Waste Removal Forms. Office of Environmental, Health and Safety personnel will compile results of all Hazardous Waste Removal Forms from all on-campus generating locations monthly to determine the total hazardous waste generated University-wide each month and on a twelve-month rolling average. The Office of Environmental, Health and Safety must maintain copies of the Hazardous Waste Removal Forms for at least three years.

5.3 Hazardous Waste Storage in 90-Day Storage Areas

Hazardous waste in 90-day storage areas must be managed in accordance with applicable regulations and in a manner that prevents spills, leaks and releases. As such, the following procedures should be adhered to:

- Waste containers should be labeled with a legible and complete UDC Hazardous Waste label;
- Containers of hazardous waste must be intact and securely closed with a sealed cap;
- Hazardous waste containers must be compatible with the wastes stored;
- Hazardous waste containers should be stored only in compatible groupings, based on waste label information;
- Secondary containment should be provided for liquid wastes; it shall have the capacity to contain 10% of the volume of all the containers or the entire volume of the single largest container, whichever is greater;



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- Access to storage areas should be controlled (e.g., locked door); and
- Individual hazardous waste containers cannot be stored in 90-day storage areas for more than 90 days.
- Aggregation of similar wastes within the 90-day storage area will be performed by a University-appointed contractor. Labels on containers of aggregated hazardous wastes should reflect the earliest date of initial accumulation for the individual containers that were consolidated. When practical, consolidation should involve commingling of compatible hazardous wastes within a single container. Otherwise, individual hazardous waste containers are to be treated as lab packs, placed as distinct units into a larger container.

5.4 90-Day Storage Area Inspections

The Environmental Protection Specialist or a University-retained contractor will be responsible for conducting a comprehensive inspection of the 90-day storage areas weekly for evidence of spills or releases and for compliance with applicable storage requirements. Weekly inspections should be performed on a routine schedule, whenever possible, and must be logged on the 90-Day Storage Area Weekly Inspection Log (see Appendix A5.4). The Office of Environmental, Health and Safety is responsible for correcting issues noted during weekly inspections within one week (or initiating the correction process where the issue cannot be readily resolved in one week). A copy of 90-Day Storage Area Weekly Inspection Logs should be kept in the 90-day storage area and back-up copies should be maintained by the Office of Environmental, Health and Safety. The 90-Day Storage Area Weekly Inspection Form should be reviewed annually and modified, as needed, by the Office of Environmental, Health and Safety.

The EPS will be responsible for general oversight of waste management practices by University contractors, and will ensure that appropriate UDC personnel receive training related to the work performed by contractors in order to have back-up capabilities on-campus.



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6.0 Laboratory Administrative Procedures

6.1 Annual Laboratory Inspections

Generation of hazardous wastes at UDC is primarily associated with academic teaching and research laboratories, studios and workshops. In order to ensure compliance with University procedures and applicable regulations, the Office of Environmental, Health and Safety (or other designated party) will conduct annual inspections in all laboratories that handle hazardous chemicals. Inspections may be unannounced, but faculty members should be included in inspections of their work areas whenever possible. Results of annual inspections will be provided to laboratory supervisors within one week of inspections through Annual Laboratory Inspection Results Forms (see Appendices A6.1a and A6.1b).

Completed Annual Laboratory Inspection Forms will be maintained by the Office of Environmental, Health and Safety for at least three years. The Annual Laboratory Inspection Form should be reviewed annually and modified, as needed, by the Environmental Protection Specialist.

6.2 Laboratory Corrective Action

Laboratory personnel should perform any necessary corrective action as soon as possible to address noncompliance issues that are noted during annual inspections. Laboratory supervisors must return a signed copy of the Annual Laboratory Inspection Results Form, which requires documentation of all corrective actions performed, to the Office of Environmental, Health and Safety within one month of the date on the form. The Office of Environmental, Health and Safety will then take further actions, as necessary.

If laboratory personnel do not perform appropriate corrective actions or the Environmental Protection Specialist notes a significant noncompliance in two successive inspections, the Environmental Protection Specialist will notify the Department Chair. In cases where a significant issue is noted in three successive inspections, the Dean or Vice President will be notified, and disciplinary actions may be warranted until appropriate corrective actions are completed.

The Office of Environmental, Health and Safety and senior administration officials are authorized to order the termination of hazardous activity in laboratories in cases of potential



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imminent danger to life, health or the environment. In such cases, laboratory operations will resume only once measures have been taken to mitigate or entirely eliminate the danger.

6.3 Recordkeeping

6.3.1 – Office of Environmental, Health and Safety. The Office of Environmental, Health and Safety is responsible for maintaining the following records:

- Current version of the Environmental Management Program
- EMP-related Training Attendance Sheets;
- Laboratory Personnel Training Records;
- Annual Laboratory Inspection Forms;
- Annual Laboratory Inspection Results Forms;
- Monthly Laboratory Self-Inspection Forms;
- 90-Day Storage Area Weekly Inspection Logs;
- Annual Waste Generation Logs;
- Laboratory Clean-Out Notification Forms;
- Environmental Incident Reports;
- Hazardous Waste Removal Forms;
- Biennial Hazardous Waste Reports;
- Hazardous waste manifests/exception reports;
- Records of nonconformance/corrective actions;
- Regulations (local, state, federal);
- List of Principal Investigators and associated laboratories;
- Fume hood inspection documentation;
- Environmental Management Program Revision Request Forms; and
- Combined Hazardous Materials Management and Spill Prevention Control and Countermeasure Plan.

6.3.2 – Department Offices/Individual Laboratories. Depending upon the individual departmental policies, individual laboratories or department offices are responsible for maintaining the following documents/records:

- Environmental Management Program;



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- List of Principal Investigators or Supervisors and associated laboratories;
- Fume Hood Certification Stickers (most current, where applicable);
- Material Safety Data Sheets
- Hazardous Waste Removal Forms (for current month);
- Laboratory Personnel Training Records (most current);
- Monthly Laboratory Self-Inspection Forms (for one year minimum); and
- Annual Laboratory Inspection Results Forms (for one year minimum).

6.4 Identification and Tracking of Legal Requirements

The Environmental Protection Specialist in the Office of Environmental, Health and Safety, with support from UDC counsel and outside counsel, has primary responsibility for identifying and tracking legal requirements applicable to laboratory and hazardous waste management and communicating these requirements to appropriate University personnel.

In order to determine whether any regulatory requirements that affect laboratory waste management on-campus have been changed, the Office of Environmental, Health and Safety will identify and track legal requirements at least once each month by:

- Reviewing applicable journals;
- Checking relevant Internet websites and/or e-mail lists;
- Attending meetings of professional organizations; or
- Speaking with environmental regulatory officials.

The Office of Environmental, Health and Safety will communicate changes in legal requirements to applicable University personnel through some or all of the following:

- Memoranda sent to faculty and staff in particular departments;
- Meetings with particular departments or other University meetings; and
- Laboratory personnel training.

6.5. Training

Although hazardous waste generation primarily occurs in UDC laboratories, as defined in the EMP, UDC is committed to providing both laboratory and O&M personnel with specialized information and training to promote the understanding and implementation of



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the EMP. With respect to laboratory operations, training will be provided to faculty, researchers, technicians, research assistants, and any students who work with chemicals in laboratories in a generally unsupervised capacity. With respect to O&M operations, training will be provided to supervisors, physical plant and power plant personnel, and other UDC personnel or contractors who would generate or are likely to work with hazardous chemicals or compounds.

UDC is not required to provide training to contracted custodial staff, but the Environmental Protection Specialist will meet with UDC's custodial services contractor to review information that should be given to all custodial staff working in areas that generate hazardous waste.

UDC personnel should undergo EMP training not later than six months of being assigned to work in an area where waste is generated. Personnel should receive additional training when a new or unique hazard is introduced that was not covered in previous trainings. Training sessions will be offered by Office of Environmental, Health and Safety at the start of each semester. Additional training specific to an individual laboratory or other O&M work area may be required at the discretion of UDC administrators, department heads, the EPS, or supervisors.

At the start of each University-coordinated EMP training session, all participants must sign the EMP Training Attendance Sheet. Records of attendance at EMP training sessions will be maintained by the Office of Environmental, Health and Safety. The Office of Environmental, Health and Safety, in conjunction with Deans, Department Chairs and faculty, are responsible for ensuring that all applicable personnel have attended EMP training sessions.

EMP training will include the following general topics:

- Laboratory or O&M work area standard operating procedures;
- The content and location of the EMP, MSDSs, and other reference materials;
- Methods for detecting the presence or release of a hazardous substance;
- Hazardous waste identification;
- Proper handling and disposal of hazardous waste;



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- Chemical and physical hazards associated with hazardous materials and wastes;
- Measures for protecting human health and the environment; and
- Pollution prevention procedures.



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7.0 Pollution Prevention and Waste Minimization

UDC is committed to reducing the generation of pollutants and waste in University laboratories and minimizing the toxicity of the waste that is generated. Pollution prevention and waste minimization ultimately benefit the University by:

- Reducing the University's waste disposal costs;
- Reducing the University's chemical purchasing costs;
- Mitigating hazards in both the laboratory and non-laboratory work areas;
- Decreasing the University's long term liabilities; and
- Encouraging environmental awareness.

UDC will implement several measures in accordance with this commitment to pollution prevention and waste minimization in University laboratories and non-laboratory areas.

7.1 Process Modification

Whenever feasible, laboratories should modify processes to minimize the quantity of hazardous materials required and generated. Modifications may include:

- Updating laboratory equipment to more "environmentally-friendly" models;
- Modifying experimental procedures to reduce hazardous materials required;
- Running experiments to their least toxic endpoints;
- Reducing toxicity of wastes (e.g., neutralization, precipitation); and
- Micro-scaling experiments.

7.2 Toxic Chemical Substitution

Whenever feasible, less hazardous or nonhazardous chemicals should be used in place of hazardous chemicals traditionally employed in certain processes. For instance, cleaning solvents should be replaced with less toxic detergents when possible. In addition, mercury-bearing materials, including fluorescent light bulbs, thermometers, and other instruments, should be replaced with non-mercury alternatives.



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7.3 Inventory Management

Chemicals should be purchased shortly before they are needed to prevent chemical expiration, storage problems, and excess chemicals due to last minute changes in laboratory procedures. Chemicals should be purchased in small quantities as they are required for specific projects. Stock should be rotated such that older chemicals are used before newer chemicals.

Good housekeeping should be employed to prevent chemical waste due to leaks, spills, or accidental releases. Chemical containers should be clearly labeled to prevent uncertainty over the contents of containers or their expiration dates.

7.4 Reuse and Recycling

In situations where hazardous material source reduction and product substitution are not feasible, UDC is committed to reducing hazardous waste generation through programs that encourage reuse and recycling.

7.4.1 – Chemical Reuse and Redistribution Program. UDC will develop and implement a procedure for redistributing laboratory chemicals for reuse in order to minimize the amount of hazardous waste disposed. When usable chemicals that are no longer needed are identified either during routine laboratory inspections or during laboratory clean-outs, laboratory supervisors should contact the Office of Environmental, Health and Safety. Through the development of an information sharing system (such as an intranet site), Office of Environmental, Health and Safety personnel will establish a listing of excess/usable/ recyclable chemical materials. This listing of chemical inventory will be made available to other UDC laboratory supervisors, who can then request and obtain these chemicals free of charge.

7.4.2 – Compressed Gas Cylinders. To minimize the need for compressed gas cylinder disposal, laboratories should either rent cylinders or only purchase cylinders from manufacturers that accept returns of empty cylinders.

7.5 Segregation and Characterization

To minimize waste disposal costs, hazardous and nonhazardous wastes should not be mixed, as this integration typically renders the entire mixture hazardous.



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7.6 Environmental Awareness Training

All laboratory and O&M personnel will be trained in pollution prevention and waste minimization during EMP training. Training will emphasize UDC's commitment to pollution prevention and specific pollution prevention strategies. During EMP training, UDC personnel will be encouraged to identify and employ pollution prevention practices within their individual laboratories or work areas/departments and share these practices with Office of Environmental, Health and Safety personnel for possible implementation in other on-campus facilities.

7.7 Individual Pollution Prevention Projects

Laboratory and O&M personnel are encouraged to identify pollution prevention and waste minimization opportunities during everyday operations. UDC personnel should inform Office of Environmental, Health and Safety staff of those pollution prevention measures that could be successfully implemented in other laboratories or facilities University-wide. If the Office of Environmental, Health and Safety determines that individual pollution prevention measures should be adopted by other laboratories or the University community, the measure can be:

- Suggested to supervisors during department meetings;
- Suggested to supervisors through memoranda;
- Incorporated into EMP training; or
- Incorporated into standard operating procedures through revisions of the EMP.



Subject	Targets and Objectives in Implementing the EMP		
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8.0 Targets and Objectives in Implementing the EMP

In order to evaluate the University's progress in implementing the measures laid out in the EMP, UDC has established the following targets and objectives:

Objective	Target
Chemicals are properly managed	No chemicals exceed their defined "shelf life"
Chemicals are properly inventoried each year	100% completion of yearly chemical inventories
Pollution prevention	Conduct pollution prevention opportunity assessments in each laboratory annually
Pollution prevention	Initiate chemical redistribution and reuse and develop target reduction goals within 5 years
Pollution prevention	10% reduction in hazardous waste generation within 5 years
Environmental awareness	Improvement in scores of environmental awareness surveys given to lab personnel
Environmental awareness	Increase in number of laboratory personnel given environmental awareness training
Successful implementation of EMP	Evaluation of EMP success by an outside auditor
Proper use, storage, and disposal of hazardous chemicals	All hazardous chemicals are registered through the Office of Environmental, Health and Safety as checked during annual inspections



Subject	Appendix A – Environmental Forms		
EMS Procedure	A0.1	Revision Number	3
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APPENDIX A

Environmental Forms



Subject	EMP Revision Request Form		
EMS Procedure	A1.5	Revision Number	1
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Environmental Management Program Revision Request Form

Revision request submitted by: _____

Date: _____

EMP Section: _____

Recommended revision: _____

Reason for revision: _____

UDC Reviewer: _____

Reason for revision: _____

UDC Environmental Management Committee	Date:
Approved Denied Hold Other	Authorized by:



Subject	Laboratory Clean-Out Notification Form		
EMS Procedure	A3.1a	Revision Number	1
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Laboratory Clean-Out Notification Form

Laboratory Location: _____ Department: _____

Laboratory Supervisor: _____ Phone Number: _____

Today's Date: _____

Reason for laboratory clean-out (e.g., inventory reduction, renovation, relocation, change in lab supervision, etc.):

Date(s) of chemical disposal/transfer (at least two weeks from above date): _____

Anticipated laboratory waste (use multiple sheets, as necessary):

Waste Description	Amount	Container Type	Disposal Date
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Anticipated material transfer (use multiple sheets, as necessary):

Material Description	Amount	Container Type	Transfer Date
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Description of Materials or Services Needed (e.g., refrigeration of chemicals, waste labels, etc.):



Subject	Monthly Laboratory Self-Inspection Form		
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Monthly Laboratory Self-Inspection Form

Building/Room _____ Department _____ Date _____
 Lab Supervisor _____ Inspector _____

Mark "Y" for yes, "N" for no, and "NA" for not applicable. For all marked "N," indicate when the issue was corrected.

HOUSEKEEPING	Yes/No/NA	Correction Date
Aisles are clear of obstructions.		
Work areas are free of debris and in good condition.		

CHEMICAL STORAGE	Yes/No/NA	Correction Date
Chemical containers are securely sealed.		
All containers are clearly labeled with the chemical name and potential hazards.		
Chemical containers are in good condition (no evidence of leakage or deterioration).		
Chemicals have been checked for shelf life expiration dates.		
Chemicals are stored on shelves (not on floors, high shelves, aisles or in food-use refrigerators).		
Chemicals are stored in compatible groupings.		
MSDS sheets are available for all chemicals currently used.		

LABORATORY WASTE	Yes/No/NA	Correction Date
All laboratory waste is removed daily, with no evidence of waste accumulation.		
Waste collection containers are sealed and in good condition.		
Waste collection containers show no evidence of leakage or deterioration.		
Waste collection containers contain a completed UDC Laboratory Waste Label.		

EMERGENCY EQUIPMENT	Yes/No/NA	Correction Date
Fire extinguishers are visible, unobstructed, inspected and appropriately tagged.		
Safety shower is visible, unobstructed, inspected and appropriately tagged.		
Emergency eyewash is visible, unobstructed, inspected, and appropriately tagged.		
Fire blanket is present and accessible (or is not required).		
Chemical spill kits are present, accessible and well stocked.		
First aid kits are present, accessible and well stocked.		
Fire doors are unobstructed and unlocked.		

FUME HOODS	Yes/No/NA	Correction Date
All fume hoods are functioning properly.		
Inspection tags on all fume hoods are current.		
Fume hoods are not being used for chemical storage and/or waste disposal.		

MISCELLANEOUS	Yes/No/NA	Correction Date
Adequate Personal Protective Equipment is available and used.		
Gas cylinders are secured.		
There is no evidence of food or drink in the laboratory.		
Training records are up-to-date.		
Chemical inventory records are up-to-date.		

Comments: _____
 Date of previous inspection: _____ Date of next inspection: _____



Subject	Laboratory Incident Report		
EMS Procedure	A3.4	Revision Number	1
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Environmental Incident Report

Person(s) Involved: _____ Date/Time of Incident: _____

Location of Incident: _____ Supervisor: _____

Chemicals involved	Concentration	Amount
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Narrative: (incident description, causal factors, individuals involved, resolution)

Recommendations for Corrective Actions:

Supervisor signature: _____ Date: _____

Office of Environmental, Health and Safety signature: _____

Date: _____



Subject	Waste Management Operational Procedures		
EMS Procedure	A3.3	Revision Number	2
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New Material Notification Form

Purchaser Must Complete the Following

Faculty/Staff Name: _____ Submission Date: _____

Name of Chemical or Product: _____

Manufacturer: _____

Is this a new product: Yes No

Where will the chemical or product be used or tested?

Briefly describe how this chemical or product will be used (e.g. in performing what task or function).

Where will this chemical be stored when not in use?

Building: _____ Floor: _____ Room: _____

Check each of the following Personal Protective Equipment required when handling this product or chemical (listed in MSDS):

- Gloves Eye/Face Protection Respirator
- Disposable Clothing/Apron Other: _____

This section to be completed by Environmental Protection Specialist

Chemical or Product Evaluated By: _____ Date: _____

MSDS Filed as Required: _____

Chemical List Updated: _____



Subject	90-Day Weekly Inspection Log		
EMS Procedure	A4.7b	Revision Number	2
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Date Picked Up: _____ Picked Up By: _____	Request For Hazardous Waste Removal	Environmental Protection Specialist UDC Bldg #52, Room 408 Phone: 202-207-4148 (cell)
Date: _____ Dept.: _____ Responsible Faculty/Staff Person: _____		Contact Person: _____ Phone: _____ Bldg. & Room No.: _____

Industry & EPA Hazardous Waste No.	Identification/Description of Chemicals	Physical State	Number of Containers	Vol./Wt. of Container
	# _____			
	# _____			
	# _____			
	# _____			

Certification: "I hereby declare that the identification/description of chemicals is accurate and complete to the best of my knowledge."

Department Head Signature: _____ Date: _____



Subject	Annual Laboratory Inspection		
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Annual Laboratory Inspection Form (Page 1 of 2)

Building/Room: _____ Department: _____ Date: _____
 Lab Supervisor: _____ Inspector: _____ Type of Lab: _____

Mark "Y" for yes, "N" for no, and "NA" for not applicable. For all marked "N," indicate when the issue was corrected.

GENERAL LABORATORY SAFETY	Yes/No/NA	Correction Date
NFPA Diamonds are posted and correct.		
Egress passageways are unobstructed and fire doors are unlocked.		
All personnel are trained in emergency procedures.		
All fire doors are kept closed.		
Emergency sprinkler system heads are unobstructed.		
There is no evidence of food or drink in the laboratory.		
The laboratory is locked when not in use.		
Pipetting is never done by mouth.		
Bunsen burner hose connections are undamaged and securely connected.		

EMERGENCY EQUIPMENT	Yes/No/NA	Correction Date
Fire extinguishers are visible, unobstructed, inspected and appropriately tagged.		
Safety shower is visible, unobstructed, inspected and appropriately tagged.		
Emergency eyewash is visible, unobstructed, inspected, and appropriately tagged.		
Fire blanket is present and accessible (or is not required).		
Chemical spill kits are present, accessible and well stocked.		
First aid kits are present, accessible and well stocked.		

CHEMICAL STORAGE	Yes/No/NA	Correction Date
Chemicals are stored in compatible groupings.		
All containers are clearly labeled with the chemical name and potential hazards.		
Chemical containers are securely sealed.		
Chemical containers are in good condition (no evidence of leakage or deterioration).		
No chemicals have exceeded their shelf life expiration dates.		
Chemicals are stored on shelves (not on floors, high shelves, aisles, or in food-use refrigerators).		
MSDS sheets are available for all chemicals currently used.		
Peroxide forming reagents are dated once opened and disposed of after expiring.		

TRAINING	Yes/No/NA	Correction Date
All laboratory personnel are trained in the Environmental Management Program.		
All laboratory personnel know how to obtain MSDSs.		
Applicable personnel have received Hazard Communication training.		
Applicable personnel have received Bloodborne Pathogen training.		
Applicable personnel have received Radiation Safety training.		
Applicable personnel have received other job-specific training.		

FUME HOODS	Yes/No/NA	Correction Date
All fume hoods are functioning properly.		
Inspection tags on all fume hoods are current.		
Fume hoods are not being used for chemical storage and/or waste disposal.		
No materials are blocking air flow.		



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HOUSEKEEPING	Yes/No/NA	Correction Date
All unused chemicals are properly stored away.		
Broken glass is properly handled and disposed of.		
General housekeeping is good.		

PERSONAL PROTECTIVE EQUIPMENT	Yes/No/NA	Correction Date
Proper personal protective equipment is available to all laboratory personnel.		
Safety glasses are worn when working with chemicals.		
Face shields are worn when required.		
Gloves are worn and in suitable types and sizes.		
Appropriate clothing is worn (closed footwear, lab coats, no shorts).		
Personnel using respirators have been appropriately fit tested and trained.		

LABORATORY WASTE	Yes/No/NA	Correction Date
All laboratory waste is removed daily, with no evidence of waste accumulation.		
Waste collection containers are sealed and in good condition.		
Waste collection containers show no evidence of leakage or deterioration.		
Waste collection containers are labeled with the UDC Laboratory Waste Tag.		
Waste collection containers are compatible with the laboratory wastes stored.		
Waste chemicals, biologicals, sharps, and glass segregated and packaged properly.		

COMPRESSED GAS CYLINDERS	Yes/No/NA	Correction Date
All compressed gas cylinders are secured to prevent falling.		
All compressed gas cylinders are legibly marked with the contents.		
Protective caps are in place on compressed gas containers not in use.		
Flammable gases (e.g., acetylene, hydrogen) have flash-back arresters.		

ELECTRICAL	Yes/No/NA	Correction Date
All electrical appliance cords are in good condition.		
Extension cords are used properly.		
Circuit breaker panels and cut-off switches are accessible.		
All new installations and modifications are made by a qualified electrician.		

DOCUMENTATION	Yes/No/NA	Correction Date
The laboratory maintains a copy of the Environmental Management Program.		
The laboratory maintains copies of Monthly Laboratory Self-Inspection Forms.		
The laboratory maintains up-to-date copies of laboratory chemical inventory lists.		
The laboratory maintains up-to-date training records.		

Other Issues: _____

Date of previous inspection: _____

Date of next inspection: _____



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Annual Laboratory Inspection Results Form

Laboratory Supervisor: _____ Department: _____
 Building/Room _____
 Inspector: _____ Inspection Date: _____

1. Results of Inspection: (to be completed by inspector)

- ___ **No action required:** No noncompliance issues were noted during the inspection.
 ___ **Action required:** Corrective action required within one month of the date on this form.

Areas of noncompliance (attach additional sheet(s) to document specific findings):

- | | |
|-----------------------------------|------------------------------|
| ___ General Laboratory Safety | ___ Chemical Storage |
| ___ Emergency Equipment | ___ Compressed Gas Cylinders |
| ___ Personal Protective Equipment | ___ Laboratory Waste |
| ___ Training | ___ Electrical |
| ___ Documentation | ___ Fume Hoods |
| ___ Housekeeping | ___ Other _____ |

2. Corrective Actions: (to be completed by laboratory supervisor)

- ___ **No corrective actions were required.**
 ___ **The following corrective actions were taken based on the inspection results noted above:**

Corrective Action	Date	Personnel Involved

Lab supervisor's signature: _____ Date: _____

Return this form to the Office of Environmental, Health and Safety within one month of the above date.

