

Chemical Waste Self-Audit Definitions

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PERSONAL PROTECTIVE EQUIPMENT (PPE):

Eye protection used?

Eye protection is required during chemical and glassware use. While safety glasses with side shields protect against injury from flying particles they do not provide complete protection against splashes and sprays. Consequently, goggles are recommended in situations where splashing or spraying may occur. A face shield worn over splash goggles should be worn when using large volumes, highly corrosive materials, or when the procedure may result in a violent reaction.

Protective clothing used?

Protective clothing not only keeps street clothes from becoming soiled; they provide an additional layer of protection against skin exposures. In laboratories where hazardous chemicals are in use, appropriate laboratory coats, buttoned with sleeves rolled down, or laboratory aprons shall be worn to protect the skin and clothing.

Gloves used?

Gloves appropriate to the hazard must be used at all times to protect against chemical burns and skin absorption. Proper glove selection is vital, as there is no glove effective against all classes of chemicals. One of the most common gloves in use (disposable latex gloves) is virtually useless with organic solvents and many other common laboratory chemicals. When selecting gloves, refer to permeation and degradation data provided by glove manufacturers or seek assistance from Environmental Health and Safety (EHS).

Feet entirely covered?

Shoes that fully cover the feet are necessary to protect against spilled or splashed chemicals. Steel-toed shoes may be necessary in areas where mechanical work is being done or when moving heavy objects. Protective shoe covers may be required for work with especially hazardous materials or during spill clean-up.

EMERGENCY RESPONSE:

Chemical spill kit available?

EHS recommends that appropriate spill cleanup materials are available in each area where chemicals are used. In addition, a hydrofluoric acid (HF) spill control kit is required in all areas using or storing hydrofluoric acid. Cleanup materials must be sufficient to contain the hazard type and volume of materials being used. While EHS does maintain all types of spill cleanup materials, response time is not immediate. Please ensure that spill cleanup material is easily accessible and that all staff is informed as to their location and proper use.

Areas clean and free from spills?

Personnel in a well-maintained work area clean up chemical spills at the time of their release. Even small spills must be cleaned up immediately since they can add to personal exposures through inhalation or skin absorption. Biologically, small exposures to a multitude of chemicals can interact in unpredictable ways over the span of a working lifetime. Contamination from bench tops can spread beyond the laboratory. Consequently, EHS personnel will look for evidence of unattended chemical spills in the inspection area.

Chemicals stored with secondary containment? In the event a chemical container is compromised, secondary containment must be available to hold the chemical until transfer can be made to another container. The secondary container must be made of appropriate material to contain the chemical.

Eyewash station available and working? Eyewash stations are required where corrosive materials are in use. They must be located within 25 feet of the hazard. Water flow and spray direction must allow for simultaneous irrigation of both eyes. Staff should practice quickly locating the nearest eyewash station while blindfolded since a chemical splash to the eyes effectively blinds a person for at least several minutes following the injury. Portable eyewash stations are not recommended and cannot be used in place of fixed stations since they are incapable of flushing both eyes simultaneously and cannot supply copious amounts of water. Laboratory staff should flush eyewash stations on a weekly basis.

Shower available and accessible? Safety showers are required where injurious materials are present. As with eyewash stations, a safety shower blocked by refrigerators, carts or other items is unavailable in the event of an emergency. The immediate availability of a safety shower is necessary for first aid treatment of chemical splashes and for extinguishing clothing fires. Safety showers must be located within 25 feet of the hazard.

EGRESS AND FIRE PREVENTION:

Aisles uncluttered and w/o tripping hazard? Means of egress must be kept open for evacuation during an emergency.

Exitways free and unobstructed? Obstructed exitways cannot only hinder the exit of occupants in an emergency situation but can also hinder or endanger emergency response personnel. In most cases, two means of egress are required to prevent entrapment during a fire or other emergency.

Fire extinguishers available and unobstructed? Since fires are one of the most common types of laboratory accidents, fire extinguishers are required in all chemical laboratories. Fire extinguishers underneath lab coats, hidden behind refrigerators, or otherwise blocked cannot be located or reached during the vital seconds following initiation of a fire, when extinguishing efforts are most likely to be effective. For these reasons, fire extinguishers must be prominently located and easily accessible.

In the event of a fire always remember to pull the fire alarm and notify Security (746-0911) of the situation. Only apply one fire extinguisher to a fire. Situations not remedied after this 30-second period require professional fire fighting assistance. Close, but do not lock, the laboratory door, pull the alarm and notify the proper authorities.

Fire Extinguisher Types Appropriate to Hazards? Fire extinguishers are required in all chemical laboratories. For most situations, carbon dioxide, dry chemical, or multipurpose (ABC) fire extinguishers are appropriate. Areas where flammable metals are stored must have a Class D fire extinguisher selected for the particular metal or other appropriate media.

STORAGE PRACTICES:

Less than 1 Quart acutely toxic hazardous waste?

To maintain Satellite Accumulation Area (SAA) status, no more than 1 quart of acutely toxic hazardous waste may be collected in a laboratory. A complete listing of acutely toxic chemicals is available in the Waste Disposal Procedures available on EHS' website.

Generally, WCMC personnel should submit a disposal request form to EHS immediately upon the generation of any acutely-hazardous waste.

However, if a laboratory accumulates in excess of 500 ml of acutely-hazardous waste (total volume for laboratory), WCMC personnel must contact EHS immediately to request the removal of the acutely-hazardous waste.

Less than 55G hazardous waste?

To maintain Satellite Accumulation Area status, no more than 55 gallons of hazardous waste may be collected in a laboratory.

Containers securely closed when not in use?

Hazardous waste containers must be securely closed with a screw-type lid during all times when waste is not being added. Alternative caps such as ground glass stoppers or parafilm on waste containers are prohibited.

No containers compromised?

Chemical containers must be kept in good condition and free of leaks or other perforations. Materials in compromised containers must be transferred to a new, compatible (i.e., non-reactive) container, or placed in an overpack container for chemical waste disposal.

Containers properly labeled?

All hazardous waste containers must have attached the hazardous waste label available from EHS and contain the name(s) of chemicals in the container.

Non-hazardous chemical waste must be labeled in a way which identifies the container's contents.

Flammables away from sources of ignition?

Ignition sources include electrical outlets and light sockets, as well as heat and flame. Use of open flame must be limited to areas free of flammable vapors or flashback risk.

Chemicals stored at or below eye level?

Chemicals should not be stored where they will be hard to see or reach. This is particularly true of large (4 liter or larger) glass bottles.

Chemicals segregated and stored properly?

To prevent uncontrolled reactions from taking place during an emergency situation, shelf failure, or waste collection, chemicals must be segregated according to hazard class with incompatible chemicals separated. Chemical wastes should be kept in an area designated by a "Waste Area" sign. Waste containers should be stored separately from product containers. Use of storage bins or other means of containment is required, as they will serve, as secondary containment should a container break. Never separate chemicals solely on an alphabetical basis. A quick chemical storage rule of thumb is to separate flammables and other solvents, oxidizers, inorganic acids, organic acids, inorganic bases and organic bases. A more comprehensive chemical segregation scheme is available from EHS.

Glass bottles stored above or off floor?	Tripping over bottles of chemicals stored on laboratory floors can lead to injury from both the fall and chemical exposure.
No inherently waste-like chemicals in storage?	Hazardous materials stored as “product” that have waste-like characteristics must be disposed of via EHS. Examples include expired peroxide formers, dry picric acid, or salt formations around exterior of lid must be disposed of via EHS.
Waste is compatible with container?	Waste must be compatible with the container that it is in. Acids will destroy metal, and some organic solvents will dissolve of certain plastic containers. In addition, containers must be designed and constructed to hold hazardous materials and waste during the stresses and rigors of container handling and transportation. No single container has been designed that is appropriate for the accumulation of all hazardous waste (also see ‘Chemicals segregated and stored properly’).

MANAGEMENT PRACTICES:

Waste disposal guide available?	A waste disposal guide must be made available to all laboratory personnel. Additional copies are available from EHS.
Collection request forms submitted for chemical waste?	All hazardous waste must be sent off-site for disposal within 90 days of generation. The generation date is considered the date the waste container is full or the date the request form was completed. It is imperative that EHS be notified once one of the above factors has been met so waste collection can begin. EHS personnel will look for any waste containers that are full or duplicated (i.e., two containers half full of the same waste) and will check that accumulation dates are in conformance with requirements.
Chemical wastes stored at or near the point of generation?	All chemical waste must be stored in the same room it was generated. There are limited exceptions to this which must be approved by EHS.
Area designated for chemical waste accumulation?	An area of the laboratory should be designated for the accumulation of hazardous waste.
Food and drink forbidden in chemical areas?	Storage and consumption of food, drink or other consumable products is strictly prohibited in any area where chemicals are used or stored. These items can easily become contaminated from airborne materials. Unapparent surface contamination will contaminate hands and eating surfaces. Handling food or contact lenses, smoking cigarettes, or applying cosmetics will then carry these harmful substances into the body. EHS will confiscate such items if found in the laboratory.
Training requirements met?	Generators of chemical waste must receive annual training in hazardous waste procedures (spill cleanup, etc.). This is accomplished through annual chemical hygiene training provided by EHS. Personnel falling under these regulations include faculty, staff and students. To ensure compliance, EHS personnel will compare training records to a roster of employees and students in the work area.

Warning signs posted?

At least one Emergency Contingency Plan sign must be posted in all areas where hazardous chemicals are used or stored. These signs are available from EHS and must be properly completed by the area supervisor or their designated employee before being posted. WCMC personnel are responsible for ensuring that the Plans remain in place and visible at all times.

Peroxide formers dated when received and opened; and disposed of or tested after expiration?

All chemicals must be dated upon receipt. Additionally, if the container is a known peroxide former it must be labeled with the date it was opened and an expiration date. After the expiration date, the container must be disposed through EHS or checked for the presence of peroxides. If peroxides are present, the container must be sent for chemical waste disposal; if peroxides are not present, a new expiration date must be established. A list of common peroxide forming chemicals is available from EHS.

No containers dated?

Containers located in satellite accumulation areas must not be dated. See 'Containers properly labeled?' for specifics on container labeling.

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