ENVIRONMENTAL COMPLIANCE

Environmental Health & Safety develops and maintains plans to ensure environmental safety and compliance. Our duties include stormwater pollution prevention, oil spill prevention, hazardous waste management and indoor air quality.

- Indoor Air Quality
- Hazardous Waste Management
- Spill Prevention Control and Countermeasures
- Stormwater Pollution Prevention

Indoor Air Quality

Indoor air quality covers a broad range of issues including temperature extremes, stuff in the air and unpleasant odors. If you suspect a problem with the air quality in your space, please contact the EHS department or complete the Health and Safety Concern form.

Indoor Air Quality (IAQ) refers to the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants. Understanding and controlling common pollutants indoors can help reduce your risk of indoor health concerns.

Health effects from indoor air pollutants may be experienced soon after exposure or, possibly, years later.

Immediate Effects

Some health effects may show up shortly after a single exposure or repeated exposures to a pollutant. These include irritation of the eyes, nose, and throat, headaches, dizziness, and fatigue. Such immediate effects are usually short-term and treatable. Sometimes the treatment is simply eliminating the person's exposure to the source of the pollution, if it can be identified. Soon after exposure to some indoor air pollutants, symptoms of some diseases such as asthma may show up, be aggravated or worsened.

The likelihood of immediate reactions to indoor air pollutants depends on several factors including age and preexisting medical conditions. In some cases, whether a person reacts to a pollutant depends on individual sensitivity, which varies tremendously from person to person. Some people can become sensitized to biological or chemical pollutants after repeated or high level exposures.

Certain immediate effects are similar to those from colds or other viral diseases, so it is often difficult to determine if the symptoms are a result of exposure to indoor air pollution. For this reason, it is important to pay attention to the time and place symptoms occur. If the symptoms fade or go away when a person is away from the area, for example, an effort should be made to identify indoor air sources that may be possible causes. Some effects may be made worse by an inadequate supply of outdoor air coming indoors or from the heating, cooling or humidity conditions prevalent indoors.

Long-Term Effects

Other health effects may show up either years after exposure has occurred or only after long or repeated periods of exposure. These effects, which include some respiratory diseases, heart disease and cancer, can be severely debilitating or fatal. It is prudent to try to improve the indoor air quality in your home even if symptoms are not noticeable.

While pollutants commonly found in indoor air can cause many harmful effects, there is considerable uncertainty about what concentrations or periods of exposure are necessary to produce specific health problems. People also react very differently to exposure to indoor air pollutants. Further research is needed to better understand which health effects occur after exposure to the average pollutant concentrations found in homes and which occurs from the higher concentrations that occur for short periods of time.

Primary Causes of Indoor Air Problems

Indoor pollution sources that release gases or particles into the air are the primary cause of indoor air quality problems. Inadequate ventilation can increase indoor pollutant levels by not bringing in enough outdoor air to dilute emissions from indoor sources and by not carrying indoor air pollutants out of the area. High temperature and humidity levels can also increase concentrations of some pollutants.

Pollutant Sources

There are many sources of indoor air pollution. These can include:

- Fuel-burning combustion appliances
- Tobacco products
- Building materials and furnishings as diverse as:
  - Deteriorated asbestos-containing insulation
  - Newly installed flooring, upholstery or carpet
  - Cabinetry or furniture made of certain pressed wood products
- Products for household cleaning and maintenance, personal care, or hobbies
- Central heating and cooling systems and humidification devices
- Excess moisture
- Outdoor sources such as:
  - Radon
  - Pesticides
  - Outdoor air pollution.

The relative importance of any single source depends on how much of a given pollutant it emits and how hazardous those emissions are. In some cases, factors such as how old the source is and whether it is properly maintained are significant. For example, an improperly adjusted gas stove can emit significantly more carbon monoxide than one that is properly adjusted.

Some sources, such as building materials, furnishings and products like air fresheners, can release pollutants more or less continuously. Other sources, related to activities like smoking, cleaning, redecorating or doing hobbies release pollutants intermittently. Unvented or malfunctioning appliances or improperly used products can release higher and sometimes dangerous levels of pollutants indoors.

Pollutant concentrations can remain in the air for long periods after some activities.

Learn more about indoor air pollutants and sources of:

- Asbestos
- Biological Pollutants
- Carbon Monoxide (CO)
- Formaldehyde/Pressed Wood Products
- Lead (Pb)
- Nitrogen Dioxide (NO2)
- Pesticides
- Radon (Rn)
- Indoor Particulate Matter
- Secondhand Smoke/ Environmental Tobacco Smoke
- Stoves and Heaters
- Fireplaces and Chimneys
- Volatile Organic Compounds (VOCs)

Inadequate Ventilation

If too little outdoor air enters indoors, pollutants can accumulate to levels that can pose health and comfort problems. Unless buildings are built with special mechanical means of ventilation, those designed and constructed to minimize the amount of outdoor air that can "leak" in and out may have higher indoor pollutant levels.

How Outdoor Air Enters a Building

Outdoor air can enter and leave a building by: infiltration, natural ventilation, and mechanical ventilation. In a process known as infiltration, outdoor air flows into buildings through openings, joints, and cracks in walls, floors, and ceilings, and around windows and doors. In natural ventilation, air moves through opened windows and doors. Air movement associated with infiltration and natural ventilation is caused by air temperature differences between indoors and outdoors and by wind. Finally, there are a number of mechanical ventilation devices, from outdoor-vented fans that intermittently remove air from a single room, such as bathrooms and kitchen, to air handling systems that use fans and duct work to continuously remove indoor air and distribute filtered and conditioned outdoor air to strategic points throughout the house. The rate at which outdoor air replaces indoor air is described as the air exchange rate. When there is little infiltration, natural ventilation, or mechanical ventilation, the air exchange rate is low and pollutant levels can increase.

Indoor Air Quality and Community-based Actions

The Agency recognizes that communities must be the impetus for implementing local solutions for environmental health problems including indoor air. However, far too many communities lack the capacity to truly affect their environmental conditions. This includes some conditions found indoors, as well as conditions caused by outdoor impacts (such as climate change).

Many reports and studies indicate that the following populations may be disproportionately impacted by indoor asthma triggers, secondhand smoke, mold, radon and other indoor pollutants:

- children
- elderly
- low-income
- minority
- Tribes and indigenous people.

EPA's Indoor Environments Division (IED) provides guidance and programs to help build the capacity of communities to understand and avoid indoor and outdoor health impacts. IED's main objective is to improve indoor air quality in buildings where people live, learn and work.

Read more about:

- Indoor Air Quality and Community-Based Action

Hazardous Waste Management

Hazardous Waste Management covers the management of hazardous chemicals once they are ready to be disposed.

Purpose: Introduction The management of hazardous waste is governed by the Environmental Protection Agency (EPA) regulations, specifically, 40CFR260-262. These regulations are the implementation of the Resource Conservation and Recovery Act (RCRA). Some states, of which Arkansas is one, are authorized by the EPA to run their own hazardous waste program; these are known as agreement states. In Arkansas, this function is executed by the Arkansas Department of Environmental Quality (ADEQ) and the regulations are codified in AR regulation 23 rather than 40CFR 260-262. While the ADEQ regulations are almost a duplicate copy of the EPA regulations, they are slightly more stringent. This increased stringency affects both small quantity and large quantity generators of hazardous waste. The word hazardous in the context of waste generation has a very specific and limited meaning. While hazardous in general uses means something that is a threat to human health, ADEQ takes the approach of environmental protection. When the word hazardous is used when referring to waste, it strictly means that the waste is subject to the regulations. A waste could legitimately be a threat to human health, but if it is not regulated according to regulation 23, it is not a hazardous (regulated) waste. Alternatively, a waste may be little or no threat to human health and still meet the regulatory definition of a hazardous waste. If a waste is determined to be hazardous by the regulations, its disposal options are explicitly defined by the hazardous waste management regulations; however, disposal options are not defined for non-regulated waste. Local ordinances may preclude disposal of chemical waste in the sewer or landfill so no chemical should be poured down the drain without written approval from the EHS director including container residues. Definitions Acutely Hazardous Waste means unused chemicals to be discarded that appear on the P-list or a spent chemical that appears on the F-list from F027-F033. The limit for accumulation at any one time of acutely hazardous waste for SQGs and CESQGs is one kilogram or one quart. Central Accumulation Area (CAA) means where hazardous waste is accumulated once a satellite accumulation area container is full. Characteristic Waste means any material that is a hazardous waste because it has certain characteristics. The characteristics are defined on the D-list. Conditionally Exempt Small Quantity Generator (CESQG) means a generator of hazardous waste that generates less than 100 kg per month (approximately 27 gallons) of hazardous waste and less than 1 kg of acutely hazardous waste and accumulates less than 1000 kg of hazardous waste and less than 1 kg of acutely hazardous waste on site at any one time. Corrosive means any material that has a pH of less than 2.0 or more than 12.5 or corrodes steel at a rate of more than 0.25 inches per year. D-list means the list that determines whether or not a waste is a hazardous waste based on the characteristics of that waste. DOT means US Department of Transportation. Environmental Health and Safety (EHS) means an individual trained to make a hazardous waste determination that will move chemical waste from the satellite accumulation area to the central accumulation area. F-list means the list that contains spent chemicals from non-specific sources. If a waste appears on this list, it is a hazardous waste. Flash point means the temperature at which a chemical can form an ignitable mixture with air (will ignite if a flame or spark is applied to the mixture). This information can be found on the Safety

Data Sheet (SDS) for the chemical. Generator means any person that generates hazardous waste. It can also mean the entity that generates hazardous waste with respect to the generator status of an entity. Hazardous Waste means any waste that is regulated under RCRA. This includes both characteristic and listed waste. The word “hazardous” in this context may be used interchangeably with the word “regulated”. Ignitable means any material that has a flash point that is less than 140 degrees Fahrenheit (60 degrees Celsius). K-list means the list that contains spent chemicals from specific sources. If a waste appears on this list, it is a hazardous waste. Large Quantity Generator (LQG) means a generator of hazardous waste that generates more than 1000 kg per month of hazardous waste or more than 1 kg of acutely hazardous waste or accumulates more than 6000 kg of hazardous waste or more than 1 kg of acutely hazardous waste on site at any one time. Listed Waste means any material that is a hazardous waste because appears on one of the EPA lists: F-list, K-list, P-list or U-list. Manifest means the shipping paperwork that must accompany a shipment of hazardous waste. Mixed Waste means hazardous waste that is mixed with biological or radioactive waste. Oxidizer means a material that has the ability to provide oxygen to help sustain a combustion reaction. P-list means the list that contains unused chemicals that are going to be discarded. If a waste appears on this list, it is an acutely hazardous waste. Reactive means is any material that is unstable, explosive, reacts violently with water or air or forms toxic gases when exposed to water or air at ambient temperature. Satellite Accumulation Area (SAA) means the area where waste is initially generated that is under the control of the generator. A room or lab would be considered one SAA. SDS means safety data sheet. This sheet is provided by the manufacturer and it contains information about a material such as the hazards associated with the chemical, the signs and symptoms of exposure to the chemical as well as some of the materials chemical and physical properties. Small Quantity Generator (SQG) means a generator of hazardous waste that generates more than 100 kg per month (approximately 27 gallons) of hazardous waste but less than 1000 kg per month, less than 1 kg of acutely hazardous waste and accumulates less than 6000 kg of hazardous waste and less than 1 kg of acutely hazardous waste on site at any one time. Toxic means any material that contains an amount over the regulatory limit of one or more of the 40 chemicals designated by the EPA as causing to have the characteristic of toxicity. These 40 chemicals are given on the D-list. U-list means the list that contains unused chemicals that are going to be discarded. If a waste appears on this list, it is a hazardous waste. Roles and Responsibilities Generator in a laboratory or laboratory support area: The responsibilities of this type of generator are as follows: 1. The generator must be trained before hazardous waste is generated. This is the only way a generator will know how to properly manage their chemical waste. 2. The generator must apply a label to the waste container before waste is added to the container. The label must use the words “chemical waste”, a description of the waste and the date waste was first added to the container. A label template is available on the EHS website. 3. The generator must make sure the labeled container is closed tightly unless waste is being added to the container. 4. When the container is full, the generator must arrange for pickup of the full container with EHS via the online request form. EHS will take the container from the point of generation to the CAA for processing. 5. If a generator wishes to discard unused chemicals, the generator must notify EHS so that the disposition of the chemicals can be determined. 6. A generator must not pour chemicals down the drain without written approval from EHS. 7. A generator must not move waste from one SAA into another. Movement within one lab or room may be allowed, but check with the EHS first. 8. A generator may have a working container for chemical waste that can remain open while a process is ongoing. The working container must be emptied at the end of the process or the end of the day, whichever comes first, into an appropriately labeled

and dated container. 9. A generator must provide his or her own container for chemical waste. If large volumes of waste will be generated, EHS may provide a container upon request. When using a container that previously contained a chemical for storage of chemical waste, the container must: a. Be thoroughly rinsed to be sure no residue of the previous chemical is left. b. Have the label defaced and a chemical waste label placed on it so that there is no confusion about the contents of the container. c. Be compatible with the waste that is going to be added to it. Generator in non-laboratory support areas: The responsibilities of this type of generator are as follows: 1. The generator must be trained before hazardous waste is generated. This is the only way a generator will know how to properly manage their hazardous waste. 2. The generator must apply a label to the waste container before waste is added to the container. The label must use the words “hazardous waste” and a description of the waste. A label template is available on the EHS website. 3. The generator must make sure the container is closed tightly unless waste is being added to the container. 4. When the container is full, the generator must arrange for pickup of the full container with EHS via the online request form. EHS will take the container from the point of generation to the CAA for processing. 5. If a generator wishes to discard unused chemicals, the generator must notify EHS so that the disposition of the chemicals can be determined. 6. A generator must not pour chemicals down the drain without written approval from EHS. 7. A generator must not move waste from one SAA into another. Movement within one room may be allowed, but check with the EHS first. 8. A generator must provide his or her own container for chemical waste. If large volumes of waste will be generated, EHS may provide a container upon request. When using a container that previously contained a chemical for storage of chemical waste, the container must: a. Be thoroughly rinsed to be sure no residue of the previous chemical is left. b. Have the label defaced and a hazardous waste label placed on it so that there is no confusion about the contents of the container. c. Be compatible with the waste that is going to be added to it. Environmental Health and Safety: The responsibilities of EHS are as follows: 1. EHS must be fully trained to handle hazardous waste. This includes: a. Training for RCRA on an annual basis b. Training for DOT every 3 years c. HAZWOPER training as often as appropriate 2. EHS must deliver training for all hazardous waste generators. 3. EHS must maintain control of the CAA. 4. EHS must perform weekly inspections of the CAA. The inspections shall include checking container integrity and compatibility with the materials stored, checking for appropriate labeling and checking for appropriate closure of the containers. 5. EHS must collect waste from the satellite accumulation areas for storage in the CAA upon request from generators. For waste generated in laboratories or laboratory support areas, pickup of containers will be accomplished upon request or less than six months from the date on the label, whichever comes first. For all other areas, pickup of containers of waste will be accomplished upon request or when the volume at a particular SAA exceeds 55 gallons, whichever comes first. 6. When waste is taken to the CAA, EHS must be sure the waste is added to a container that is properly labeled. The label must have: a. The words: “Hazardous Waste: Federal and state law prohibit improper disposal” b. A description of the waste c. The appropriate EPA waste codes d. The date the container was brought to the CAA 7. EHS must assure that waste is removed from the CAA within 180 days from the date waste was first brought into the CAA. 8. EHS must arrange for removal of hazardous waste from the CAA when appropriate. 9. EHS must assure that the hazardous waste manifest is completed appropriately and sign the document. 10. EHS is also the emergency coordinator (EC) for the site. EHS or an appropriately trained designee must respond to all emergencies, 24 hours a day, 7 days a week. EHS shall ensure that someone is on call to respond to emergencies, as defined in the emergency response section, outside of business hours. 11. EHS shall ensure that a return copy of the manifest for

hazardous waste is received within 60 days of the shipment leaving the site. If this does not occur, EHS shall send a copy of the unsigned manifest and a letter of explanation to ADEQ. 12. EHS shall ensure that all waste manifests are kept on site for at least 3 years. 13. EHS shall ensure that an annual declaration is sent to ADEQ each year before January 31 and that the appropriate fees, if applicable, have been paid. 14. EHS shall ensure that if any hazardous waste is analyzed that the records are kept on site for three years. Procedures Hazardous Waste Determination Ultimately, the determination about whether or not a waste is truly regulated will be made by EHS upon waste being placed in the central accumulation area when the waste is generated in a laboratory or a laboratory support area. In all other areas, it is the responsibility of the generator to determine whether or not a waste is a hazardous waste. It is important for all generators to understand how a waste becomes a hazardous waste to ensure proper disposal procedures are followed. Improper disposal of hazardous waste can lead to hefty fines and can be a danger to the environment and human health. A waste can gain the designation of hazardous waste by demonstrating a hazardous characteristic or by being listed. The characteristics of a waste that can make it a hazardous waste are ignitability, corrosivity, reactivity and toxicity and cause these wastes to carry a D code as indicated below: D001: Ignitable- A waste is ignitable if it has a flash point below 130F. Information about the flash point of a material can be found on the SDS for the material. In general, aqueous solutions with >80% water are not ignitable. All oxidizers are also considered to be ignitable and carry the D001 code. D002: Corrosive- A waste is corrosive if it has a pH below 2.0 or above 12.5 or if it corrodes steel at a rate greater than 0.25 inches per year. D003: Reactive- A waste is reactive if it readily and violently reacts with air or water at ambient temperatures, is shock sensitive, or a number of other conditions. If the SDS for a material describes the material as “unstable”, “explosive”, “dangerous when wet”, “generates toxic gas when exposed to air or water” or any other similar verbiage, the waste should be considered reactive. D004-D043: Toxic- A waste is toxic if it contains any of the 40 chemicals indicated in appendix A at the indicated level. Note that the term toxic in this context has a very limited meaning. Note that D codes apply if the material is used OR unused. There are four lists of hazardous wastes. The F-list contains chemicals that become waste from non-specific sources. The K-list contains waste from processes that are specific sources (wastes from this list are unlikely to be generated at Arkansas State University). The P-list and U-list contain unused chemicals that are hazardous waste if discarded or abandoned. Codes that are obtained by listed waste are designated by the list from which they come (ex. F-list contains chemicals that will receive F-codes). The primary way a chemical can obtain an F-code is by being used as a solvent. An important thing to remember is that concentration of one of these solvents within the waste cannot cause it to be removed from the list. In other words, if your waste contains one drop of a material that has an F-code (F003 is an exception), then it is a regulated waste. Common examples of solvents that carry F-codes are methylene chloride (F002), acetone (F003), methanol (F003) and toluene (F005). The complete F-list is contained in Appendix B. A chemical cannot obtain a U-code unless it is discarded unused. While used chemicals receive D, F or K-codes, a used chemical cannot receive a U-code (or a P-code). Since generated waste must be generated from the same process to be consolidated, adding unused chemicals to the waste drums is not allowed. Common examples of chemicals that have U-codes are acetone (U002), chloroform (U044), methanol (U154) and methylene chloride (U080). The complete Ulist is contained in Appendix C. A chemical cannot obtain a P-code unless it is discarded unused. Chemicals on the P-list are considered acutely hazardous by the EPA. Since generated waste must be generated from the same process to be consolidated, adding unused chemicals to the waste drums is not allowed. Furthermore, adding P-list waste to a container makes the entire mixture an acutely hazardous.

Therefore, adding P-list waste to a drum would result in a jump to the most regulated generator status, LQG, because the limit for accumulation of acutely hazardous waste for SQG and CESQG is 1 kg (2.2 lbs). Common examples of chemicals that have P-codes are sodium azide (P105), osmium tetroxide (P087), vanadium pentoxide (P120) and nicotine (P075). The complete P-list is contained in Appendix D. Generating used chemical waste in laboratories and laboratory support areas 1. Review a process before beginning to determine if waste is going to be generated. 2. Label the container with the words “chemical waste”, a description of the waste and the date that waste was first added to the container. The use of the chemical waste label template is strongly encouraged. 3. Only open the container when waste is going to be added. The container shall remain closed at all other times. 4. Once the waste container is full, the process is complete and the container is no longer needed, the date on the container is within 30 days of reaching six months from the date on the container or the amount of waste in the SAA exceeds 55 gallons, contact EHS for pickup of the container. The waste shall be removed within 3 days if the amount of waste in the SAA exceeds 55 gallons. 5. Upon collection of a SAA chemical waste container, EHS shall transport the container to the CAA. At that point, EHS shall determine if the chemical waste is regulated hazardous waste and label and store the container appropriately. 6. While the vendor normally completed the hazardous waste manifest and applies the appropriate shipping labels, ensure that all of the following are done before the waste leaves the site: a. The hazardous waste manifest is correct including EPA ID number, address, telephone numbers, proper shipping names of materials and amounts. b. The appropriate DOT hazard labels are applied to the shipping containers. c. The appropriate hazardous waste label is applied to the shipping containers. This includes the following: i. ii. iii. The words “Hazardous Waste- Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the US Environmental Protection Agency.” The generator name and address The generator EPA ID number iv. The manifest tracking number v. The appropriate waste codes Generating used chemical waste in all other areas 1. Review a process before beginning to determine if waste is going to be generated. 2. By analyzing the waste or using generator knowledge, determine if the waste is a hazardous waste. 3. If the waste is a hazardous waste, label the container with the words “hazardous waste” and a description of the waste. The use of the hazardous waste label template is strongly encouraged. If the waste is not a hazardous waste, it should be labeled as a non-hazardous waste (preferably with the label template on the website). For nonhazardous wastes, the rest of the following steps are encouraged, but not required. 4. Only open the container when waste is going to be added. The container shall remain closed at all other times. 5. Once the waste container is full, the process is complete and the container is no longer needed or the amount of waste in the SAA exceeds 55 gallons, contact EHS for pickup of the container. The waste shall be removed within 3 days if the amount of waste in the SAA exceeds 55 gallons. 6. Upon collection of a SAA chemical waste container, EHS shall transport the container to the CAA and apply the appropriate label (if necessary) and date. 7. While the vendor normally completed the hazardous waste manifest and applies the appropriate shipping labels, ensure that all of the following are done before the waste leaves the site: a. The hazardous waste manifest is correct including EPA ID number, address, telephone numbers, proper shipping names of materials and amounts. b. The appropriate DOT hazard labels are applied to the shipping containers. c. The appropriate hazardous waste label is applied to the shipping containers. This includes the following: i. ii. iii. The words “Hazardous Waste- Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the US Environmental Protection Agency.” The generator name and address The generator EPA ID number iv. The manifest tracking number v. The appropriate waste codes Discarding unused materials in laboratories and laboratory support

areas 1. Before deciding to discard unused materials, determine if the chemicals can be used by someone else in the lab. 2. If the chemicals cannot be used by someone else, make a list of the chemicals you wish to dispose in a spreadsheet. The spreadsheet should include: the chemical name, the size of the container, the amount in the container (include units; this will also indicate whether or not the material is a liquid or solid) and what the material from which the container is made (plastic, glass, metal, etc.). A template is available on the EHS website. EHS may be available to assist with this process. 3. Email a copy of the spreadsheet to EHS and arrange a time when the chemicals can be removed from the area. 4. Do not discard unused materials into the trash or down the drain without prior written approval from EHS. 5. Once unused chemicals are collected, they must be labeled with the CAA hazardous waste label and then stored in the CAA. The date must also be applied. 6. Unused chemicals must be placed in secondary containers and stored in the same secondary container with compatible chemicals only. 7. Refer to the section on used chemical waste to see the shipping requirements prior to the waste leaving the site (step 6). Discarding unused materials in all other areas 1. Before deciding to discard unused materials, determine if the chemicals can be used by someone else. 2. If it is a single chemical or only a few chemicals, use the online request form to request removal of the chemicals. If there are multiple chemicals that need to be disposed, make a list of the chemicals you wish to dispose in a spreadsheet. The spreadsheet should include: the chemical name, the size of the container, the amount in the container (include units; this will also indicate whether or not the material is a liquid or solid) and what the material from which the container is made (plastic, glass, metal, etc.). A template is available on the EHS website. EHS may be available to assist with this process. 3. Email a copy of the spreadsheet to EHS and arrange a time when the chemicals can be removed from the area. 4. Do not discard unused materials into the trash or down the drain without prior written approval from EHS. 5. Once unused chemicals are collected, they must be labeled with the CAA hazardous waste label and then stored in the CAA. The date must also be applied. 6. Unused chemicals must be placed in secondary containers and stored in the same secondary container with compatible chemicals only. 7. Refer to the section on used chemical waste to see the shipping requirements prior to the waste leaving the site (step 7). Laboratory Cleanout When there are many chemicals that require disposal in a laboratory or laboratory support area, a laboratory cleanout may be required. The advantage of a laboratory cleanout is that any chemicals disposed as a part of the process do not count toward the university’s generator status. If 20 or more unused chemicals need to be removed from the lab, a laboratory cleanout will be scheduled. The following is the procedure for initiating and completing a laboratory cleanout. 1. Segregate the chemicals that will potentially be disposed from those that will be left in the lab. If the desire is to dispose of all chemicals in the lab, this step may be skipped. 2. Make a spreadsheet list of all the chemicals that will potentially be disposed. A template is available on the EHS website. 3. Provide the list to someone within your department that can distribute the list to other faculty/staff within the department. This will allow the potential for a chemical to be used rather than being disposed. 4. After one week, the remaining chemicals will be disposed. The list must be submitted to EHS at this point. This will be the beginning date of the laboratory cleanout. The laboratory cleanout must be completed within 30 days of the beginning date. 5. EHS will remove the chemicals from the laboratory and transport them to the CAA. The chemicals will be appropriately labeled and stored when they are brought into the CAA. Materials with Special Considerations Discuss with EHS handling of any of the following materials prior to disposal: Biological materials Sharps Fluorescent bulbs Batteries (other than alkaline) Used oil Anything containing mercury Central Accumulation Area (CAA) The central accumulation area must stay under the control of EHS

at all times. Unauthorized personnel may not enter the CAA without being escorted by authorized personnel. Storage in CAA Storage in the CAA must follow ADEQ regulations. All chemically incompatible wastes must be segregated. For example, corrosive materials should be segregated from organic materials. Adequate aisle space must be maintained between secondary containment pallets, a minimum of three feet. All containers must be oriented in such a way that the hazardous waste label is clearly visible. Safety Equipment in CAA The best way to avoid an incident is for all personnel to be fully trained to their job duties (described in the next section) and to have access to the appropriate fully-functioning safety equipment. The following equipment should be available in or near the CAA: A portable fire extinguisher Spill cleanup materials including: Absorbent material Containers to store contaminated spill cleanup materials Scoop or shovel for cleaning up the spill Appropriate PPE to safely clean up the spill Combination safety shower/eyewash Maintenance of this equipment is also important. A checklist should be maintained for materials contained in the spill kit. Portable fire extinguishers require annual certification and a monthly visual inspection. Safety showers must be flushed monthly. Eyewashes should be flushed weekly. Personnel in control of the CAA must be trained on how to use all the safety equipment and in what situations it should be used. Inspection in CAA The CAA must be inspected on a weekly basis. The following items should be checked: 1) Is the CAA secure? 2) Are all of the containers in good conditions (no leaks, properly closed and no evidence of spills? 3) Are wastes segregated based on compatibility? 4) Are all containers labeled and dated? 5) Do all containers have the appropriate waste codes on the label? 6) Is there less than 1000 kg (2206 lbs.) of waste accumulated in the last month? 7) Is there less than 6000 kg (13224 lbs.) of total waste stored? 8) Is there adequate aisle space (minimum 3 feet)? 9) Are all spill and decontamination materials present and in good working order? 10) Is the fire extinguisher at appropriate pressure and the annual inspection up to date? 11) Has the safety shower/eyewash been flushed? Generator training: A generator must be trained on how to identify whether or not a generated waste is a hazardous waste. This is accomplished by classroom (or online) training. This training should be attended within 6 months of initial assignment to a job where waste may be generated. While attendance of this training is only required once, it is recommended that each generator attend classroom (or online) training annually. Live training will be given by EHS upon request. The training will describe how a waste becomes classified as a hazardous waste as well as specific instruction on how to handle waste materials. Training records shall be kept by EHS. Environmental Health and Safety (EHS) personnel training: If EHS is also a generator, then he/she must attend or give hazardous waste generator training on an annual basis. Beyond that, there are additional requirements for EHS because they work in the CAA. These workers will, for the remainder of this section, be referred to as operators. Operators of the CAA will need the following training: Hazardous waste management (annual) HAZWOPER 24 hour (initial only), must also review who on site is responsible for safety and health, the hazards present on site and where to access safety equipment and PPE. HAZWOPER 8 hour refresher (annual), must also review who on site is responsible for safety and health, the hazards present on site and where to access safety equipment and PPE. DOT hazardous materials shipping training (every 3 years) Fire extinguisher training (annual) A copy of all training records shall be kept by EHS. A job description for each operator must also be kept with the training records along with their duties regarding management of hazardous waste. Emergency Response Emergencies must be addressed by the emergency coordinator (EHS) or designee only. A phone must be designated for use to report hazardous waste incidences and the emergency coordinator’s (EC) number must be posted by this phone. The location of fire extinguishers, spill control materials and fire alarms must also be posted by this phone. Each of the following situations would be

considered an emergency: Fire: The EC or designee shall call the fire department to extinguish the fire unless it is in incipient stage (less than pallet size and the chemicals involved in the fire are known to be non-toxic and do not break down to toxic components when burned). Spill: The EC or designee shall contain the spill and clean it up as soon as possible. The spill residues will need to be containerized and labeled appropriately before being stored in the CAA. If the spill leaves the site as defined below, it will be considered a threat to human health and should be reported as described below. Unauthorized access: If the CAA is accessed by someone unauthorized to do so, the EC or designee shall investigate. If necessary, the EC or designee shall contact the police department. If there is a threat to human health outside of the facility, it is required to contact the National Response Center and ADEQ Emergency Response once the appropriate local authorities have been contacted. This needs to be done as soon as possible, normally within 15 minutes. Each agency will need the following information: The name, address and EPA ID number of the facility The date, time and type of incident The quantity and type of hazardous waste The extent of injuries (if any) The quantity and disposition of recovered materials The following situations would be considered a threat to human health outside the facility: A fire where the formation of toxic compound(s) occur upon combustion of the waste. Any spill that leaves the site including onto the ground (unless all material can be recovered), into storm drains or into water (creek, stream, lake, river, etc.) including rainwater runoff that leads to a water source or storm drain. Any incident with hazardous waste that leads to injuries beyond the facility borders. Theft of hazardous waste if the waste makes it beyond the facility borders. Phone numbers of the local authorities as well as the national and state response centers with the information needed for calling them is in Appendix E. Recordkeeping The following are the record keeping requirements for hazardous waste: All hazardous waste manifests must be maintained on site for a minimum of 3 years. If a closed manifest is not received within 60 days, an unsigned copy of the manifest and a written explanation must be sent to ADEQ. An annual declaration must be sent to ADEQ by January 31 of each calendar year. If any hazardous waste is sent for analysis, records of the analysis must be kept for 3 years. Note that analysis for waste determination must be done by an ADEQ approved laboratory. A list of these is available on the ADEQ website. A written report of attempts to reduce the amount of hazardous waste generated (a waste minimization report) should be included with the annual declaration.

Spill Prevention Control and Countermeasures

Spill prevention deals with the university's efforts to prevent pollution (oil and other hazardous materials) from entering our waterways.

Stormwater Pollution Prevention

Along with trying to keep our waterways clean, the university must also make measured efforts to keep pollution from entering stormwater, which will end up in our waterways.