Waste Minimization Plan

Florida Institute of Technology (Florida Tech)
Environmental Health & Safety (EH&S)
150 W University Blvd, Melbourne, FL 32901
Email: ehs@fit.edu
Website: https://www.fit.edu/office-of-environmental-health-and-safety/

REVISION HISTORY

Revision Number	Revision Date	Revised By	Description of Change
00	06/26/2020	Carolyn Martinsen	Initial plan creation and implementation.

Contents

INTRODUCTION

Florida Institute of Technology (Florida Tech) is classified as a large quantity generator of hazardous waste by the Florida Department of Environmental Protection and the U.S. Environmental Protection Agency. These agencies enforce the Resource Conservation and Recovery Act of 1984, which requires a "large quantity generator" to certify that it has a program in place to reduce the volume and toxicity of waste generated to the extent economically practical. Waste minimization is necessary to reduce present and future risks to human health and the environment. The Florida Tech Waste Minimization Plan presents guidelines that can be used by University personnel and organizations to reduce the amount and toxicity of wastes generated at Florida Tech.

DEFINITIONS

Corrosive Hazard
Wastes that are hazardous due to the corrosivity characteristic include aqueous wastes with a pH of less than or equal to 2, a pH greater than or equal to 12.5 or based on the liquids ability to corrode steel.

Hazardous Waste
Hazardous waste is a legal term defined in Subtitle C of RCRA that describes certain toxic, ignitable, corrosive, or reactive solid wastes generated by manufacturing or other processes.

Flammable Hazard
Wastes that are hazardous due to the ignitability characteristic include liquids with flash points below 60 °C, non-liquids that cause fire through specific conditions, ignitable compressed gases and oxidizers.

Large Quantity Generator (LQG)
Large Quantity Generators (LQGs) generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.

RCRA
RCRA stands for the Resource Conservation and Recovery Act of 1976. Congress outlined four major programs in RCRA, including:

- Solid Waste (Subtitle D): Focuses on traditional nonhazardous solid waste, such as municipal garbage and industrial waste that is not classified as hazardous waste;
- Hazardous Waste (Subtitle C): Requires EPA to develop and manage a nationwide program that identifies wastes that are hazardous and set standards for safely managing this waste from the moment it is generated, through storage, transportation, recycling, treatment, and ultimate disposal. Other components of the hazardous waste program are described here;

- Medical Waste (Subtitle J): Lays out a two-year pilot program to track the generation and management path of infectious waste;
- Underground Storage Tanks (UST--Subtitle I): Requires EPA to establish standards for the design and operation of USTs to prevent leaks into the ground.

Recycling

Reclaiming value from production by-products, can often be used when waste reduction is not economically practical. Recycling includes the reuse or recovery of in-process materials or materials generated as by-products that can be processed further on-site or sent offsite to reclaim value. Recycling is a broad term that encompasses the reuse of materials in original or changed forms rather than discarding them as wastes. Recycling can also be thought of as the collection and reprocessing of a resource so it can be used again, though not necessarily for its original purpose

Treatment

Any method, technique, or process designed to physically, chemically, or biologically change the nature of a hazardous waste.

Waste Minimization

Waste Minimization refers to the use of source reduction and/or environmentally sound recycling methods prior to energy recovery, treatment, or disposal of wastes. Waste minimization does not include waste treatment, that is, any process designed to change the physical, chemical, or biological composition of waste streams.

Waste Reduction

Commonly known as pollution prevention (P2), waste reduction reduces or eliminates the generation of waste at the source and refers to any practice that reduces the use of hazardous materials in production processes

WASTE MINIMIZATION

It is important that every member of the University community be aware of the environmental and financial impacts related to the disposal of hazardous wastes and materials and to help minimize the volumes that are generated. Areas on campus that generate hazardous wastes and materials include laboratories, maintenance, garages, machine shops, art studios, and many more. It is important that proper waste management be an integral part of all operating procedures.

This Plan has been designed to assist waste generators in operating their areas with waste minimization in mind. General examples of waste minimization activities are presented below, and further information can be obtained by contacting Environmental Health & Safety (EHS) at ehs@fit.edu. Using this plan, supervisors or lab managers can adopt specific minimization procedures that are applicable to their particular situations. There are three general methods of waste minimalization:

- Source reduction
- Recycling
- Treatment

Source Reduction

Changing practices and processes to reduce or eliminate the generation of hazardous wastes and materials are referred to as source reduction. Some source reduction methods include process modification, chemical substitution, and improved operating procedures. Here are some examples of reducing chemical waste generation at the source.

- Implement waste minimization procedures and train all personnel in those procedures.
- Do not mix hazardous and non-hazardous waste.
- Maintain sound chemical hygiene practices to reduce waste.
    - Carefully weigh and transfer chemicals to minimize spills.
    - Seal and contain processes to prevent the escape of fumes or leaks to the environment.
- Use heat guns to remove paint rather than chemical solvents.
- Consider the use of micro scale laboratory experiments.
- Consider pre-weighed or pre-measured reagent packets where waste generation is high.
- Minimize your inventory (buy less, store less, use less).
    - Purchase chemicals in quantities that will be used in a timely manner.
    - A significant amount of campus hazardous waste is a result of poor purchasing practices. (i.e. buying too much and having it go bad before it's used.)
- Date all chemical product containers when received so that older products will be used first.
- Keep all chemical product containers labeled to prevent accumulation of unknown products.

- Centralize purchasing of chemicals and products within the department or laboratory to prevent order duplications.
- Substitute computer simulations/modeling, videos or demonstrations for wet laboratory experiments, when possible.
- Evaluate procedures to see if a less hazardous or a non-hazardous reagent can be substituted, some examples include:

Hazardous Chemical	Safer Substitute	Used For
Acetamide	Stearic Acid	Freezing point depression
Benzene	Xylene or hexane	Many solvent uses
Benzoyl Peroxide	Lauryl Peroxide	Some polymer catalysis
Carbon Tetrachloride	Cyclohexane	Qualitative test for halides
Formaldehyde (Formalin)	Ethanol	Specimen storage
Halogenated Solvents	Non-halogenated solvents	Some extractions and other solvent uses
Sodium Dichromate	Sodium Hypochlorite	Some oxidation reactions
Sulfide ion	Hydroxide ion	Qualitative test for heavy metals
Toluene-based Scintillation Cocktail	Non-ignitable Scintillation Cocktail	Studies using radioactive materials
Chromic acid solution	Ultrasonic baths, Alconox or similar detergents, Pierce RBS-35 or similar detergents	Cleaning laboratory glassware
Mercury thermometers	Alcohol (red liquid), digital or thermocouple thermometers	Temperature
Solvents	Detergent and hot water	Parts cleaning
Oil-based paint	Latex paint	Painting operations

Recycling

Another method of waste minimization is recycling. Recycled materials are used for another purpose, treated and reused for the same purpose, or reclaimed for another use, rather than being discarded as waste. Some examples include:

- Re-distilling used-solvents (stringent standard operating procedures should be developed for recovering solvents since solvents can be extremely flammable or explosive; recovering some solvents, such as ethers, should be avoided).
- Collecting and reusing acetone or ethanol, used for drying glassware, several times before disposal.
- Purchasing or renting gas cylinders (including lecture bottles) from manufacturers who will accept the return of the empty or partially used cylinders.
- Returning excess pesticides to the distributor or donating them to another organization. (Contact EHS before returning or donating pesticides.)
- Recovering silver from photographic waste with silver recovery units.
- Contacting EHS for collection of used oil, hazardous batteries, solvent soaked rags, fluorescent lamps and ballasts, which are all sent to outside vendors for recycling. (If at all possible, do not contaminate used oil with heavy metals or solvents.)
- Reclaiming metallic mercury.
- Returning unused pharmaceuticals to a reverse distribution company.
- Returning used or defective toner cartridges for reclamation or reuse.
- Re-circulating unused, excess chemicals within your department. EHS also maintains a surplus chemical inventory which is available free of charge to the university community. Call EHS or view chemicals available for redistribution on the EHS website.

Treatment

The last technique for waste minimization is treatment of waste. Wastes that are neutralized or detoxified and managed at the source can reduce environmental risks that might occur during transportation and handling. EHS encourages in-lab chemical management, such as neutralization of acids or bases and chemical treatment of toxic chemicals **as the final step** of the experiment. These steps either decrease or eliminate toxicity or help to reduce the volume of waste. ***It should be noted that if treatment is not a part of the end step and is done separately from the experiment, it is considered hazardous waste treatment, which cannot be done without a treatment permit from the State***. Before initiating treatment procedures contact EHS. The following are some examples:

- Neutralize acids and bases.
- Inject gels directly with ethidium bromide to eliminate large volumes of liquid waste.
- Precipitate metals out of solution to reduce volume of waste.

- Polymerize acrylamide solutions
- Oxidize cyanide salts and ethidium bromide solutions with bleach.
- Convert osmium tetroxide into a less hazardous form.

Numerous reference resources are available that describe a wide variety of other, helpful in-lab chemical treatment procedures, some of the best of which include:

- *Hazardous Laboratory Chemicals Disposal Guide* by Margaret A. Armour, CRC Press, 2003
- *Destruction of Hazardous Chemicals in the Laboratory* by George Lunn an Eric B. Sansone, Wiley-Interscience, 1994
- *Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards, Updated Version*, National Academies Press, 2011.

MANAGING WASTE EFFICIENTLY

In many cases, waste can be minimized, but it cannot always be eliminated. Waste is a natural product of research, teaching, testing and many other operations. It is prudent to manage all wastes as efficiently as possible. The management of chemical waste is most efficient when waste types are properly segregated, which also helps to reduce disposal costs.

The importance of proper separation of chemical wastes into various groupings cannot be over emphasized. Florida Institute of Technology disposes of large quantities of the waste streams shown below. In most circumstances, the volumes and types of wastes, rather the concentrations of wastes, determines the costs of disposal. As a result, EHS requests that areas generating waste make an effort not to dilute their wastes any more than necessary. **Do not mix hazardous chemical waste with non-hazardous waste, and never mix hazardous chemical waste with radioactive waste.** EHS supplies appropriate labels and containers for the proper collection of hazardous wastes and materials. For more information on specific waste disposal procedures contact EHS or refer to the Hazardous Materials Manual, Appendix D, of the Florida Tech Chemical Hygiene Plan

The following sections are meant to give waste generators some information on how to minimize waste volumes and disposal costs of some of the more common waste streams generated at Florida Tech. In some situations, these suggestions may be difficult or impractical to implement. In such cases, consult with EHS to determine the best method for collection and disposal.

Flammable Liquids

Examples: acetone, methanol, ethanol, toluene, xylene, hexane, acetonitrile

Flammable liquid wastes are typically burned as fuel in waste disposal incinerators, and as a result, disposal is relatively easy and inexpensive. For this reason, the lower the water content in the waste- the less expensive the costs of disposal. Solvents contaminated with materials not permitted for incineration will require alternative, costly treatment methods.

Some suggestions for waste minimization include:

- Minimize water content of waste by minimizing any unnecessary dilutions.
- If possible, keep separate from wastes that contain heavy metals, pesticides, cyanides, or acute hazardous "P-listed" wastes. (Refer to EHS *Chemical Hygiene Plan,* Appendix D *Hazardous Materials Manual.*) These wastes tend to drive up the costs of disposal due to the need for more complex waste treatment.
- Recycle or redistill solvents.
- Investigate the use of nonflammable or biodegradable alternative solvents.

- Replace solvent based inks in printing operations with soy-based inks.
- Use cleaning solutions multiple times before disposing of them.

Flammable/Corrosive Mixtures

Examples: trifluoroacetic acid & acetonitrile, phenol & chloroform, potassium hydroxide & methanol, methanol & hydrochloric acid

Flammable acids and alkaline mixtures are difficult to dispose of due to their corrosive nature. This waste can cost at least four times more to dispose of than other flammable liquids.

Some suggestions for waste minimization include:

- Minimize unnecessary dilution of wastes.
- Do not mix unnecessarily with other solvents.
- Keep acidic and alkaline wastes separate to minimize the risk of reactions.
- Minimize the volume of these wastes by keeping separate from other waste streams.
- If possible, keep separate from wastes that contain heavy metals, pesticides, cyanides, or acute hazardous "P-listed" wastes. (Refer to EHS *Chemical Hygiene Plan,* Appendix D *Hazardous Materials Manual.*) These wastes tend to drive up the costs of disposal due to the need for more complex waste treatment.

Acids and Bases

Examples: hydrochloric acid, sulfuric acid, phosphoric acid, potassium hydroxide, and sodium hydroxide.

If not contaminated with other hazardous wastes (i.e. heavy metals, listed hazardous wastes, etc.) most acids and bases can be neutralized and then drain disposed. Neutralization of acids and bases reduces disposal costs. Some acids and bases, such as chromic acid or barium hydroxide, cannot be made non-hazardous by neutralization due to their heavy metal content. Diluting acids or bases with water is not neutralization and is not allowed. Neutralization must be accomplished by carefully mixing an acid with a base or vice versa. The resulting solution must be as close to pH 7 as possible before pouring down the drain. Some acids, such as hydrofluoric and perchloric acid, are quite dangerous. EHS (ehs@fit.edu) should be contacted for disposal of these acids.

Some suggestions for waste minimization include:

- Minimize unnecessary dilution of wastes.
- Neutralize waste if possible as a final step of the procedure (contact EHS if you're unsure if neutralizing is appropriate, or if you do not have the right neutralizing agent).

- Do not mix unnecessarily with other waste streams.

Halogenated Solvents

Examples: methylene chloride, chloroform, trichloroethane, perchloroethylene, carbon tetrachloride

Not only are many halogenated solvents (solvents containing CL^-, F^-, Br^-) carcinogenic, but they are also difficult to dispose of, and can cost three times more to dispose of as compared to non-halogenated solvents. An effort to keep halogenated and non-halogenated waste in separate containers will help to reduce disposal costs.

Some suggestions for waste minimization include:

- Minimize unnecessary dilution of wastes.
- Keep separate form acidic or alkaline waste streams.
- Keep halogenated wastes separate from non-halogenated wastes.
- Substitute non-halogenated solvents in place of halogenated solvents
- If possible, keep separate from wastes that contain heavy metals, pesticides, cyanides, or acute hazardous "P-listed" wastes. (Refer to EHS *Chemical Hygiene Plan,* Appendix D *Hazardous Materials Manual.*) These wastes tend to drive up the costs of disposal due to the need for more complex waste treatment.
- Recycle or redistill solvents.
- Investigated the use of alternative non-halogenated solvents.

Chromerge & Chromium-Bearing Waste

Florida Institute of Technology discourages the use of Chromerge® (potassium dichromate and sulfuric acid) for the cleaning of laboratory glassware because chromium ions are highly toxic to the environment and potential human carcinogens. Alternative solutions are available, such as Alconox®, Pierce RBS 35® and PCC-54 Detergent Concentrates®, and NoChromix®, that are safer to use and more eco-friendly. Researchers, who use chromium as part of a procedure in their laboratory, should investigate the viability of alternative procedures or chemicals.

Some suggestions for waste minimization (if chromium-bearing materials must be used) include:

- Minimize the volume of waste generated by unnecessary dilution.
- If possible, keep separate from wastes that contain heavy metals, pesticides, cyanides, or acute hazardous "P-listed" wastes. (Refer to EHS *Chemical Hygiene Plan,* Appendix D *Hazardous Materials Manual.*) These wastes tend to drive up the costs of disposal due to the need for more complex waste treatment.

Formalin & Formaldehyde Solutions

Formaldehyde is a suspected human carcinogen, which is toxic; very irritating to the eyes, throat and breathing passages; and can cause dermatitis. Formaldehyde is also a sensitizer, so the more a person is exposed to it, the smaller a dose it takes to have an effect on that person.

Some suggestions for reducing disposal costs

- Minimize the volume of waste generated by eliminating any unnecessary dilution.
- Do not mix with any other waste streams.
- Substitute ethanol, or a commercial fixative like Carosafe® or Formalternate® in place of formaldehyde for storage of biological specimens

Aqueous Metals

Treatment and disposal of metal solutions such as barium, cadmium, lead, copper, selenium, silver, cobalt, mercury, etc. varies, depending on the type and concentration of the metal present in the waste. EHS recommends the substitution of less hazardous metals for those procedures that involve heavy metals

Some suggestions for waste minimization include:

- Keep heavy metal solutions separate from other wastes.
- Keep mercury free from all other waste streams including other metal waste.
- Minimize the volume of waste by eliminating any unnecessary dilution.
- Consider using micro-scale techniques.
- Substitute less hazardous metals.
- Eliminate metal catalysts in chemical procedures and allow more time for the completion of reactions.
- Consider precipitating out metals from solution.
    - Treatment of waste must be incorporated into the experiment to avoid regulatory problems.
    - Before initiating any treatment process contact EHS for assistance.
- Silver recovery units can be used to reclaim silver from photo waste solutions.

Oil-based Paints & Solvents

Unusable oil-based paints and solvents are hazardous wastes due to their flammable and/or toxic natures. These types of waste paint materials must be disposed of in accordance with EHS hazardous waste disposal procedures as outlined in the Florida Tech Hazardous Materials Manual, Appendix D of the Florida Tech Chemical Hygiene Plan. Paints that are still useable and in their original containers can be recycled.

Some suggestions for waste minimization include:

- Do not contaminate usable paint and always reseal the containers (allows for recycling).
- Use latex paint.
- Minimize the volume by reducing any unnecessary dilution.
- Clean out stockpiles of old paints and call EHS (hazwaste@fit.edu) for disposal or recycling.
- Minimize inventories of paints. Order only enough to satisfy short-term needs.

Latex Paints

Latex paints are not considered hazardous wastes; however, unusable latex paint cannot be disposed of in the normal trash unless completely solidified. Liquid latex paints must be collected and disposed of properly by EHS. Good useable latex paints can be recycled.

Some suggestions for waste minimization include:

- Do not contaminate useable paint, and always reseal the container (allows for recycling).
- Do not mix latex with non-latex paints or any other hazardous materials.
- Minimize the volume by reducing any unnecessary dilutions.
- Clean out stockpiles of old paints and contact EHS for disposal or recycling.

Used Oil

Used oil is not considered a hazardous waste; however, it must be collected in a container that can be closed and labeled "Used Oil." Used oil must be recycled. Recycling is simple as long water contamination is minimal and the oil is not contaminated with PCBs or any other hazardous substances. Contact EHS at hazwaste@fit.edu for pickup of used oil for recycling.

Some suggestions for waste minimization include:

- Minimize the volume of waste by reducing any unnecessary dilution or addition of water.
- Avoid contamination with hazardous materials. If the oil has been contaminated or exposed to heavy metals, solvents, antifreeze and/or chemicals, it is potentially hazardous, and must be disposed of in accordance with EHS hazardous waste disposal procedures as outlined in the Florida Tech Hazardous Materials Manual, Appendix D of the Florida Tech Chemical Hygiene Plan
- Contact EHS for disposal at hazwaste@fit.edu or recycling of used oil.

Unknown Chemicals

The generation of unlabeled and unidentified chemicals results in an expensive waste disposal challenge. The number of unknown chemicals can be significantly reduced by simply making a concerted effort to **label all containers.** Unknown chemicals require sample testing and can cost up to ten times more to dispose of than properly labeled chemicals. Original chemical and product labels should be retained on containers until the chemicals/products are completely used and the containers no longer have any hazards related to its contents. When transferred to secondary containers chemicals/products should be labeled at a minimum with the chemical/product name and the primary hazard (i.e. flammable, poison, etc.).

Some suggestions for waste minimization include:

- Prevent generation of unknown chemicals/products by keeping all containers labeled.
- Do not let old chemicals and products accumulate, clean out stockpiles of old chemicals and products before they become "unknowns." Contact EHS at hazwaste@fit.edu for disposal.
- Before a laboratory researcher or graduate student leaves Florida Tech, all samples and chemical formulations generated by that person, must be clearly labeled as to their content and chemicals must be transferred to another individual or properly disposed of prior to the individual's departure. Contact EHS for additional information regarding proper laboratory close out procedures.

Unused or Excess Chemicals

The American Chemical Society (ACS) estimates that 40% of the chemical waste generated by labs consists of unused chemicals. As a result, EHS encourages departments/laboratories to purchase chemicals only in amounts that will be used within the budget year. Bulk purchases may be cheaper (price per unit) for laboratories; however, if these chemicals are unused, disposal costs will far outweigh any savings.

Some suggestions for waste minimization include:

- Redistribute usable/unwanted chemicals within your department or the University by utilizing the EHS Surplus Chemical List located on the EHS web site.
- Do not stockpile large quantities of chemicals, clean out old chemicals periodically, saving only those that are needed. Contact EHS at hazwaste@fit.edu for disposal or redistribution.
- Do not accept chemicals from outside organizations or companies without prior approval from EHS.

Mercury Compounds & Mercury Containing Devices

Mercury is corrosive, toxic and extremely difficult to clean up in entirety, especially when spills occur on porous surfaces. Mercury vapor from only trace amounts of residual mercury is continuously emitted and may be inhaled for an extended period by those who are unaware of its presence (the vapor is invisible to the naked eye and can only be detected through the use of a mercury vapor analyzer or ultraviolet light). Mercury-containing wastes also require special treatment, making disposal very expensive.

Some suggestions for reducing disposal costs

- Do not mix mercury-containing wastes with any other waste streams
- Mercury thermometers and manometers should be replaced with non-mercury-containing instruments.
- Containerize metallic mercury, so it can be recycled by EHS.
- If mercury is spilled contact EHS for cleanup (refer to guidelines on mercury spill procedures in the Florida Tech Chemical Hygiene Plan, Appendix I).
- Due to the high toxicity and disposal costs of certain mercury compounds use alternative procedures whenever possible.
- Use mercury free catalysts or simply let reactions run longer.
- Fluorescent lamps also contain mercury and must be recycled. Florida Tech has several departments that collect and recycle lamps. For more information, contact EHS.

Compressed Gas Cylinders

Compressed gas cylinders pose both physical and health hazards. Physical hazards include flammability (depending on the gas) and hazards associated with high pressures and cylinder ageing. Health hazards include inhalation of toxic or corrosive gases, chemical asphyxiation, or asphyxiation associated with oxygen displacement.

Some suggestions for reducing disposal costs

- Use a supplier that recycles empty gas cylinders. This can be accomplished by renting not purchasing the cylinders.
- Limit the purchase of specialized gas cylinders (lecture bottles) since these are hard to recycle. If lecture bottles must be purchased use a supplier that will recycle the empty or partially filled bottles.
- Before purchasing gas cylinders, check with your department or check the EHS Chemical Surplus List for existing cylinders that may be available for use.
- Contact EHS at ehs@fit.edu if you have any questions about cylinder handling or disposal.

Batteries

Many batteries contain one or more hazardous chemical components, and therefore must be recycled. To request a pick-up contact EHS or fill out the online form on EHS website under regulated wastes. The following battery types are considered hazardous and must be recycled by EHS.

1. Lead Acid
2. Mercury
3. Silver
4. Lithium
5. Nickel Cadmium (NiCd)
6. Nickel Metal-Hydride (NiMH)

Nickel-Zinc (NiZn) batteries are now becoming commercially available. These batteries are being marketed as "non-toxic", eco-friendly alternatives to NiCd batteries. Although comparatively less toxic, they should also be recycled.

Common alkaline batteries (Duracell or Energizer batteries), which are not rechargeable are exempt, and may be disposed of in the regular trash. Direct any questions concerning the type or nature of batteries found in the work area to EHS.

Fluorescent Light Bulbs

The Florida Tech Facilities Department collects and recycles used fluorescent light bulbs. Laboratory personnel may also change or replace fluorescent light bulbs; in which case, EHS should be contacted for a pickup. Note: Many retailers are now offering "green" fluorescent bulbs they claim will not be hazardous waste when disposed, many of which still contain low levels of mercury. Although more eco-friendly and preferable, "green" fluorescent bulbs must also be collected and recycled.

Ballasts

Ballasts control the starting and operating voltages and regulate the current passing through fluorescent lights. Some ballasts contain polychlorinated biphenyls (PCBs) that must be removed and disposed of as hazardous waste; others may contain DEHP (di (2-ethylhexyl) phthalate) which is classified by EPA as a hazardous substance. Ballasts must not be disposed in the trash. The Florida Tech Facilities Department is generally responsible for the collection and recycling of all ballasts.

Ink and Toner Cartridges

Ink or toner cartridges, including 3D printer cartridges, used under normal circumstances until empty, can shipped to the vendor or manufacturer for reclamation or reuse. Whenever possible, unused or defective cartridges should be returned to the supplier for replacement or credit. This practice minimizes the amount of unused cartridges needing disposal. Contact EHS for assistance if you are uncertain of how to properly dispose of any ink or toner cartridges.

Shop Towels and Rags

Shop towels and rags can be sent to an approved laundering service for cleaning and reuse, rather of disposing them as waste. The service will reuse the towels until their useful life is reached or until they are contaminated beyond the vendor's ability to clean them, in which case they are typically incinerated. By using a shop towel service, the number of contaminated towels that need to be shipped as waste can be greatly reduced. Contact EHS for further information.

Electronic Devices

Electronic devices (computers, monitors, TVs, etc.) may contain hazardous materials and must be recycled. These types of equipment may also contain a Florida Tech property tag. Contact the Property Department at property@fit.edu for pickup and recycling.

Pharmaceuticals

Pharmaceutical waste includes expired, recalled, damaged, overstocked, unwanted, or contaminated drugs, vaccines, supplements, vitamins, and sera. Expired, recalled, damaged, or overstocked pharmaceutical products can be collected by a reverse distribution service for credit, rather than disposing them as waste. The reverse distribution service returns pharmaceuticals that have residual value directly to the manufacturer.

CONCLUSION

All members of the University community should make waste minimization an active and ongoing component of their operations. On campus, that means taking responsibility for the byproducts of your operations and the waste that is generated. Because the actual generators are most familiar with their work and the materials they use, they are the best source for new ideas to prevent pollution and to minimize waste; therefore, the success of the Florida Tech Waste Minimization Program is dependent on the willing and active participation of the entire University Community.

Any questions, comments or suggestions concerning waste minimization can be directed to EHS by email at ehs@fit.edu .

REFERENCES

EPA.gov
FAU.edu