



University of South Alabama Waste Minimization Plan

Hazardous waste minimization is a national policy specifically mandated by the U.S. Congress in a 1984 amendment to the National Hazardous Waste law, the Resource Conservation and Recovery Act (RCRA) [“H.R. 3129 – 98th Congress: Hazardous Waste Reduction Act of 1983]. The University of South Alabama, as a generator of hazardous waste, must do its best to integrate pollution prevention into experimental design and laboratory management. Consistent with national, state and local regulations, the University of South Alabama Safety & Environmental Compliance Department policy states that chemical waste will be minimized through efficient and appropriate use of all resources. Waste minimization procedures include source reduction and environmentally sound recycling. Reducing hazardous wastes at the source or recycling materials will benefit the University by reducing both the disposal costs and the liability associated with hazardous waste management.

Waste minimization activities are grouped into four broad categories:

- Redistribution of useable chemicals
- Substitution of less hazardous materials
- Procedural changes to minimize generation of hazardous wastes
- Improved laboratory management practices

Redistribution of Useable Chemicals

The USA Safety & Environmental Compliance Department, when possible, re-distributes unwanted, useable chemicals from one laboratory to another instead of disposing of the materials as hazardous waste. Inter- and Intra-departmental chemical exchanges are encouraged to help control waste disposal costs and saves important departmental and grant funds.

Substitution of Less Hazardous Materials

Minimization of hazardous waste can be achieved by the substitution of less hazardous materials in laboratory experiments, Maintenance, Central Plant and Construction operations whenever possible. This also has the collateral advantage of improving worker safety in these areas. For example, laboratories at USA have substituted bio-degradable Scintillation Cocktails for Xylene/Toluene based products and have replaced Chromium/Sulfuric Acid based cleaning solutions with non-Chromium (enzymes-based) glass cleaning products. Other substitution procedures include:

- Use bio-degradable detergents (Alconox) in place of Ethanol baths.
- Using non-mercury and non-Azide based preservative products.
- Using alcohol or digital thermometers in place of mercury thermometers.
- Substitute Ethanol for Formaldehyde in biological specimen preservations procedures.
- Use Latex paints instead of oil-based paints
- Eliminated the use of heavy metal based pigmented inks and dyes in art and publications procedures.
- Substitute non-chlorinated solvents for chlorinated solvents.

Procedural Changes

Waste can be minimized by implementing procedural changes such as:

- Use of micro-scale procedures or simply scale down the magnitude of laboratory and classroom experiments (Chemistry Department)
- Distill solvents for re-use (Re-distillation unit at USA University Hospital Histology Department)
- Source segregation of halogenated, chlorinated solvents from organic, non-chlorinated solvents
- Source segregation of highly toxic materials (cyanides, heavy metals, etc.) from less toxic materials
- Do not mix hazardous waste with non-hazardous waste materials.
- Purchase gas lecture cylinders from companies that will recycle them when empty.

Laboratory Management Practices

Good laboratory management can go a long way toward avoiding unnecessary waste generation. Order only the quantity of materials which you anticipate using. Many chemicals have a limited shelf life; especially true for peroxide-forming and reactive chemicals. One person should be the ordering for a laboratory to avoid duplicate ordering of materials. A chemical inventory that is kept updated (required by the Safety Department on a yearly basis) can help eliminate the ordering of unneeded chemicals. The sharing of excess chemicals with other members of your department and other departments will allow available funds to stretch much further. All containers should be clearly identified and labeled with the proper chemical name so they do not become "Unknowns". Unknown wastes can require expensive analysis to identify the material and often have excessive costs associated with their disposal.

Finally, waste minimization should begin before an experiment begins. When planning or pursuing an experiment or a course of study, investigators or instructors must consider the hazardous nature of all materials involved. Once a list of materials have been defined, an investigator/instructor must consider the hazardous nature of all materials involved and determine whether substitution is practical and will reduce the generation of hazardous waste materials.