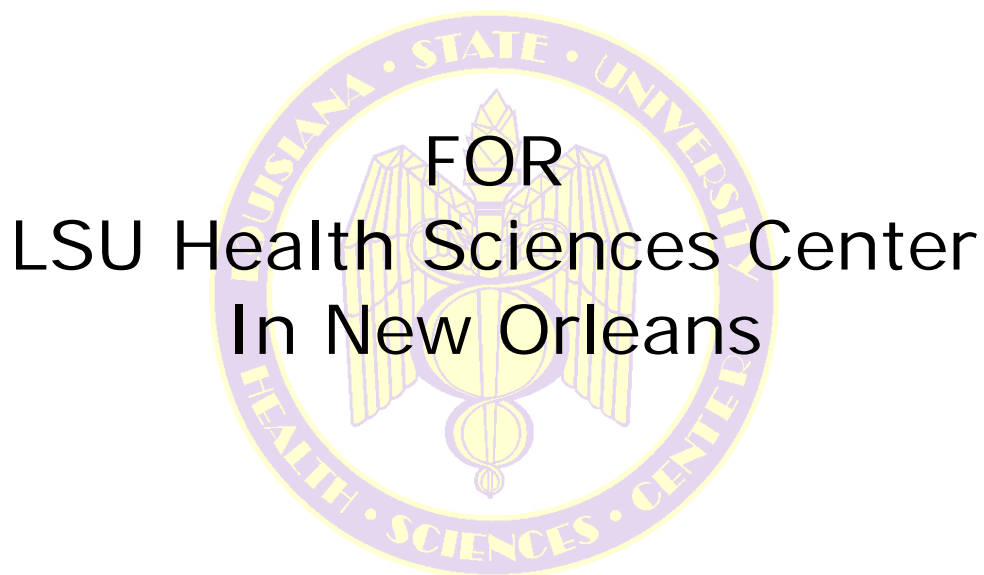


WASTE MINIMIZATION PROGRAM



FOR
LSU Health Sciences Center
In New Orleans

Office of Environmental
Health and Safety

February 2005

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INTRODUCTION

Louisiana State University Health Sciences Center is classified as a large quantity generator of hazardous waste by the Louisiana Department of Environmental Quality and the U. S. Environmental Protection Agency. These agencies enforce the Resource Conservation and Recovery Act, (RCRA), of 1984, which requires a large quantity generator to have a waste minimization plan. The purpose of the plan is to help reduce the volume and toxicity of waste generated. Waste minimization is necessary in order to help minimize present and future threats to human health and the environment.

WHAT IS WASTE MINIMIZATION?

Waste minimization is a waste management approach that focuses on reducing the amount and toxicity of hazardous waste that is generated. In addition to hazardous waste regulated under RCRA, the EPA encourages waste minimization techniques that focus on preventing waste from ever being created, (source reduction) and recycling. There are three general methods of waste minimization: source reduction, recycling, and treatment.

SOURCE REDUCTION

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

1. Not mixing hazardous and non-hazardous waste streams, this helps to reduce the amount of hazardous waste to be disposed of.
2. Good housekeeping practices:
 - a. Seal and contain processes to prevent the escape of fumes or leaks to the environment.
 - b. Taking care when weighing and transferring chemicals to minimize spills.
3. Consider the use of micro scale laboratory experiments; this uses smaller amounts of chemicals.
4. Minimize your inventory and buy chemicals in quantities that will be used in the near future. A lot of hazardous chemical waste is generated when too much of a chemical is bought and having it go bad before it is used.

LSUHSC Waste Minimization Program

5. Date all chemical containers when received. Use a first-in, first-out inventory system; this will help to prevent chemicals expiring before they are used.
6. Maintain labels on all chemicals and if chemicals are transferred to secondary containers, the new container should be labeled with the chemical name; this helps to prevent the generation of unknown wastes. Unknown chemical wastes are harder and much more expensive to dispose of.
7. Chemical Substitution is when a non-hazardous chemical or a chemical of a lesser toxicity can be used in place of another. Evaluate procedures to see if less hazardous chemicals can be substituted for ones that are used. A less toxic chemical may reduce cost of disposal as well as a reduced exposure to workers.

Some Examples of Chemical Substitution

Procedure	Chemical	Safer Substitute
Cleaning Laboratory Glassware	Chromic-sulfuric Acid	Ultrasonic baths Alconox or similar detergents, NoChrom Mix
Temperature	Mercury Thermometers	Alcohol (red liquid) Digital or thermocouple thermometers
Specimen Storage	Formaldehyde, Formalin	Ethanol, Glycerin, Commercial Fixatives, Carosafe, or Formalternate
Extractions and Other Solvent Uses	Halogenated Solvents	Non-Halogenated Solvents
Radioactive Studies	Toluene Based Scintillation Cocktails	Non-ignitable Scintillation Cocktails
Organic Synthesis	Ethyl Ether	Methyl t-butyl Ether
Some Oxidation Reactions	Sodium Dichromate	Sodium Hypochlorite
Parts Cleaning	Solvents	Detergents and hot water
Painting Operations	Oil Based Paints	Latex paints

RECYCLING

Another method of waste minimization is recycling. Recycling is when a waste material is used for another purpose, treated and reused in the same process, or reclaimed for another process. Some examples include:

1. Purchasing gas cylinders, including lecture bottles from manufacturers who will accept the return of the partially used or empty cylinders.
2. Photographic wastes can be treated with silver recovery units to recover the silver.
3. Collecting ballasts, equipment, and lead acid, mercury, lithium, and nickel-cadmium batteries for commercial recycling.
4. Reclaiming metallic mercury if the mercury is not mixed with any other waste streams.
5. Redistilling used solvents.
6. Recirculate unused or surplus chemicals within your department.

TREATMENT

The last technique for waste minimization is treatment of waste; some wastes can be treated to render them non-hazardous or less hazardous. Some examples of treatment:

1. Neutralize acids and bases
2. Oxidize cyanide salts and ethidium bromide with bleach solutions
3. Polymerize acrylamide solutions
4. Inject gels directly with ethidium bromide to eliminate large volumes of liquid waste.

If treatment is not a part of the end step of an experiment and is done separately from the experiment, it is considered hazardous waste treatment, which cannot be done without a treatment permit from the Louisiana Department of Environmental Quality. At LSU Health Science Center all treatment is done by an outside licensed hazardous waste contractor.

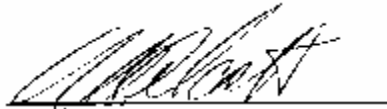
Some treatment of waste can be done on site like neutralizing or detoxifying a chemical as the final step of an experiment. These steps could decrease or eliminate toxicity or help to reduce the volume of waste. Please contact the Environmental Health and Safety Office before initializing any treatment procedures of hazardous waste.

WHY IS WASTE MINIMIZATION IMPORTANT?

Waste minimization is important because it helps to protect the environment and it makes good business sense. Waste minimization saves money through avoided disposal costs, creates safer working conditions for employees, and protects human health and the environment.

CONCLUSION

All departments that generate waste at LSU Health Sciences Center should make waste minimization an active and on going component of their operations. This means that individual laboratories need to take responsibility for their by products of 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 on how to minimize waste. For waste minimization to be effective, all generators of hazardous waste need to have an active role. Waste minimization is a feasible and obtainable goal if carefully planned and implemented.



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Date February 21, 2005