24.01.01.W1.09AR WTAMU Source Reduction and Waste Minimization Plan

Approved: August 15, 2010
Revised: October 4, 2023
Next Scheduled Review: October 4, 2028

Procedure Summary

Environmental Health and Safety at WTAMU is composed of two distinct but integrated environmental safety departments that report to the Vice President of Research and Compliance. Academic and Research Environmental Health and Safety (AR-EHS) is responsible for research and academic related compliance, which includes laboratory and academic research and the associated compliance committees. Fire and Life Safety (FLS- EHS) is responsible for fire related compliance and conducts fire and life safety inspections of campus buildings and assists with the testing of all fire detection and suppression systems.

Supplements TAMUS Regulation 24.01.01

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1. Purpose

West Texas A&M University (WTAMU) is committed to make reasonable efforts to minimize waste generated as a result of WTAMU activities and to achieve the goals set out in the Governor's Executive Order AWR-92-2, Texas Waste Reduction Policy Act (1991) and other applicable requirements.

Early federal regulations on disposal of hazardous waste (HW) were aimed at controlling pollution of the environment. Today, the focus is shifting from controlling pollution to preventing pollution. The Pollution Prevention Act of 1990 (Federal Regulation) made the prevention of pollution and reduction of waste generation a national priority. Texas Waste Reduction Policy Act (Senate Bill 1099 of 1991) requires industries, businesses, and institutions that generate hazardous waste or release toxins into the environment to prepare a Source Reduction and Waste Minimization Plan. This plan influences the activities of WTAMU. To this end, WTAMU Environmental Health and Safety shall coordinate the development and implementation of appropriate procedures.

The cost of commercial waste disposal continues to rise and the amount of waste generated continues to increase. Although we cannot control disposal costs, the amount of waste generated can be reduced. Emphasis is placed on "front-end waste minimization"(reducing the amount and toxicity of hazardous materials used) as the primary means for reducing hazardous waste. At WTAMU, research and teaching laboratories and other working groups (Physical Plant, Power Plant, etc.) should examine their purchasing practices and systems, their chemical usage, and workplace activities to identify potential points of their operations where source reduction and waste minimization can be implemented.

Reduction of the volume and hazard of chemical waste benefits the public and the environment, and reduces disposal costs. The volume and type of hazardous waste disposed determine these costs. Volume of waste can be reduced through source reduction and by recycling.

2. Scope

This procedure applies to all departments and organizations on the WTAMU campus. This procedure meets TCEQ requirements for a waste minimization plan for hazardous waste generators.

3. Responsibilities

3.1 Environmental Health and Safety shall:

- Assist Departments on developing waste minimization programs; and
- When operating as a Small Quantity Generator (SQG) or a Large Quantity Generator (LQG) of Hazardous Waste (HW), EHS will file the written waste minimization plan with the TCEQ.

3.2 Departments shall:

- Explore, evaluate, and recommend means for reducing the generation of HW at WTAMU.
- Recommend ways to implement a comprehensive HW reduction program. Recommendations should address broad programs as well as specific steps to reach their goals. Specific goals and additional responsibilities should include:
  - Review of the WTAMU Hazardous Waste Program and recommend ways to reduce HW generation and cost;
  - Establish additional pollution prevention goals;

- Recommend inventory controls;
- Establish recycling activities;
- Monitor implementation progress;
- Review lab procedures and waste profiles for possible chemical substitutions;
- Develop a chemical exchange program;
- Investigate the possibility of centralized chemical purchasing;
- Seek to identify problem areas and areas for potential improvement; and
- Develop procedures for decommissioning of laboratories.

4. Source Reduction Goals

4.1 Waste Source Reduction Goals

- Encourage and assist individual generators in modifying their patterns of purchase and use of hazardous chemicals;
- Increase utilization of computerized systems to manage purchase and inventory of hazardous chemicals;
- Educate individual and departmental generators in techniques for reducing the quantity and cost of hazardous chemical waste disposal;
- Encourage use of project safety analyses on proposed research projects to determine possible waste generation and disposal costs of generated wastes;
- Use smaller quantities;
- Substitutions for less hazardous chemicals;
- Proper labeling;
- Improved inventory control; and
- Spill prevention.

4.1.1 Waste Source Reduction Techniques

- Chemical/Equipment Purchases and Inventory Control:
  - Utilize computerized tracking systems as chemical management tools for chemical purchase and inventory control;
  - Maintain current inventories of chemical stocks to prevent the ordering of chemicals that may already be in stock and to monitor the shelf lives of remaining chemicals;
  - Develop a campus-wide chemical exchange network between labs and within labs, departments, colleges, etc. to reduce "warehousing," promote sharing of chemicals, and avoid redundant purchases;
  - Purchase reagent chemicals in quantities that are appropriate to the scale of the experiment being used;
  - Limit acquisition of chemicals to quantities required for immediate use. Do not order quantities to obtain special unit cost savings. These savings will normally be lost due to eventual disposal costs if the chemical is not entirely used;

- Obtain compressed gases when possible from vendors who will accept return of their empty or partially full cylinders;
- Include waste generation as a criteria in equipment selection; and
- Rotate chemical stocks in order to use chemicals before their shelf lives expire.

➢ Chemical Usage

- Enhance chemical exchange program by using lab procedures that assure the integrity of chemical quality;
- Reduce spills and wastes generated by pre-weighing chemicals for undergraduate use;
- Require proper labeling of all secondary containers, and replace all deteriorating labels on primary and secondary containers;
- Substitute less hazardous chemicals whenever possible. Example: biodegradable scintillation cocktails used instead of xylene or toluene based cocktails;
- Minimize the use of heavy metals (silver, chrome, mercury, barium, cadmium, and lead) chemicals;
- Substitute alcohol or electronic thermal monitors for mercury thermometers;
- Use No-Chromix, detergents, or enzymatic cleaners instead of sulfuric/chromic acid cleaning solutions for cleaning laboratory glassware; and
- Minimize solvent waste by recycling or substituting.

4.2 Waste Minimization Goals

- ➢ Incorporate HW minimization procedures into research and teaching protocols;
- ➢ Develop systems in laboratory classes that utilize products of one experiment as components for subsequent experiments;
- ➢ Purify used solvents for reuse;
- ➢ Use on-site neutralization of inorganic acids and bases for sewer disposal; and
- ➢ Use laboratory waste solvent in non-laboratory workplaces.

4.3 Waste Minimization Techniques

- ➢ Keep waste streams segregated.
- ➢ Do not put non-hazardous waste, such as a mixture of water, sodium bicarbonate, and acetic acid, into a waste container of HW.
- ➢ Do not put inorganic heavy metal waste in with solvents.
- ➢ Segregate halogenated waste solvents from non-halogenated waste solvents.
- ➢ Label waste containers with the full name(s) of the waste material(s) stored in them.
- ➢ Keep waste containers stored separately from reagent containers being used to avoid the accidental contamination of reagent chemicals.
- ➢ Decontaminate empty containers to prevent them from being handled as HW.
- ➢ Neutralize dilute acids and bases making them non-hazardous and suitable for drain disposal.

- When possible, redesign experimental protocols so that harmful byproducts are detoxified or reduced in volume as a final step.
- Recycle chemicals via in-house purification processes or off-site vendors.
- Make lab personnel accountable for the waste generated by experiments or orphan chemicals when labs are decommissioned.

5. WTAMU Waste Minimization Procedure Goals

The source reduction and waste minimization goals of this plan are:

- Comply with all government regulations regarding management of HW;
- Manage HW using the most responsible and environmentally sound methods;
- Increase the awareness of all employees of their responsibility for reducing HW and pollution prevention;
- Improve the effectiveness and efficiency of the waste management program and reduce the costs of waste handling and disposal;
- Reduce the risk to human health and environment by proper waste management;
- Increase the recycling of solvents, oil, and others materials;
- Reduce hazardous waste generation;
- Reduce HW from unused laboratory chemicals and other hazardous materials; and
- Increase substitution of non-hazardous chemicals for hazardous chemicals in experiments.

6. Employee Awareness and Training Program

Source reduction/waste minimization training is a fundamental responsibility of all WTAMU students, faculty, and staff. Appropriate training will be available to all employees and students in labs, shops, kitchens, offices, or other workplaces where HW is generated. The training and information should be provided to employees at the time of their initial assignment to a work area, and to students within a reasonable period after enrollment in a course or lab involving HW generation. WTAMU Environmental Health and Safety will follow the Texas A&M University System Policy 33.05.02 Required Employee Training.

Staff and faculty whose required training is delinquent more than 60 days will have their internet access terminated until all trainings are completed. Only Blackboard and Single Sign-on will be accessible. Internet access will be restored once training has been completed. Student workers whose required training is delinquent more than 30 days will need to have their employment terminated by their manager.

The WTAMU Environmental Health and Safety provides guidance and technical support for development of environmental training for employees and students.

Training is intended to keep personnel informed of issues and technologies related to pollution prevention and waste minimization. Information and training is provided in the following categories:

- Regulations and laws effecting pollution prevention and hazardous waste generation.
- Personal protective equipment.
- Hazardous materials and HW:
  - Proper storage;

- Safe and proper handling;
- Disposal/recycling; and
- Transportation.

- Inventory tracking.
- Acquisition of hazardous materials and equipment.
- Substitution/elimination of hazardous materials.
- Economic/environmental ramifications of HW generation and disposal.

7. Record Retention

No official state records may be destroyed without permission from the Texas State Library as outlined in Texas Government Code, Section 441.187 and 13 Texas Administrative Code, Title 13, Part 1, Chapter 6, Subchapter A, Rule 6.7. The Texas State Library certifies Agency retention schedules as a means of granting permission to destroy official state records.

West Texas A&M University Records Retention Schedule is certified by the Texas State Library and Archives Commission. WTAMU Environmental Health and Safety will follow Texas A&M University Records Retention Schedule as stated in the Standard Operating Procedure 61.99.01.W0.01 Records Management. All official state records (paper, microform, electronic, or any other media) must be retained for the minimum period designated.

8. Governing Documents

- Governor's Executive Order AWR-92-2, Texas Waste Reduction Policy Act (1991)
- Pollution Prevention Act of 1990 (Federal Regulation)
- Texas Waste Reduction Policy Act (Senate Bill 1099 of 1991)

9. Definitions

TCEQ: Texas Commission on Environmental Quality.

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