

Document Name: Pollution Prevention Plan

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Review Date: 12/16/13

FMC Division: Risk Management

Approved By: AVP, FMC

POLLUTION PREVENTION (P2) PLAN

FOR

Texas Woman's University – Denton Campus



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1.0 INTRODUCTION

This Pollution Prevention (P2) Plan was prepared for Texas Woman's University – Denton Campus (TWU) in order to comply with the Waste Reduction Policy Act of 1991. This statute requires generators of hazardous wastes (large and small quantity) to prepare a P2 plan. This plan includes the components required by the Texas Commission of Environmental Quality in 30 TAC 335 Subchapter Q – Pollution Prevention: Source Reduction and Waste Minimization.

1.1 FACILITY DESCRIPTION

Texas Woman's University was founded by the 27th Legislature in 1901 as the Girls Industrial College. The school's name was changed to Texas Woman's University in 1957. From its inception the school has had a dual mission: to provide a liberal education and to prepare young women "for the practical industries of the age" with a specialized education. Men have been admitted to TWU since 1972.

TWU currently offers a comprehensive catalog of academic studies, including baccalaureate, masters and doctoral degrees. TWU is the largest university primarily for women in the United States, with its main campus in Denton and Institutes of Health Science in Dallas and Houston Texas.

The main campus is located in the City of Denton, Denton County, Texas; a town of about 100,000 people located about 42 miles north of Dallas and Fort Worth. The main campus has 57 buildings on approximately 236.46 acres. TWU student enrollment is at least 10,000 annually. TWU employs approximately 1030 staff, faculty and administrative employees.

The main campus is self-supporting, and is typical of many traditional campuses in that it provides for faculty administration and staff offices, educational spaces (i.e. classrooms, laboratories), student housing and a dining facility, athletics and sporting venues, research spaces and campus security. TWU is accessible from Interstate 35E, US 377/US 380 and surrounding city streets.

From various maintenance activities as well as routine laboratory and studio practices, the University generates hazardous and non-hazardous waste. The Denton campus is registered with the Environmental Protection Agency (EPA) and the Texas Commission on Environmental Quality (TCEQ) as a small quantity municipal generator. The Texas solid waste registration number is 88846 and the EPA I.D. number is TXR000079816.

1.2 SOURCES OF HAZARDOUS WASTE GENERATION

Hazardous wastes are generated as a result of teaching, research and operational activities at the University. The Office of Risk Management is responsible for proper handling and ultimate disposal of these wastes. RCRA hazardous wastes are primarily generated in the following departments:

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- 1 Facilities Management Service Center Shops (Paint and Automotive)
- 2 Visual Arts Department
- 3 Chemistry & Biochemistry
- 4 Biology Department
- 5 Nutrition & Food Science Department
- 6 Dental Hygiene Department
- 7 Central Plant (Heating & Cooling)
- 8 Student Health Services
- 9 Theater Department

The various departments may generate general types of wastes such as solvent waste or acid waste, or specific wastes such as mercury or silver-laden waste. Each of these wastes is assigned a unique waste code in accordance with the TCEQ Guidance ([Guidelines for the Classification and Coding of Industrial and Hazardous Wastes](#), RG-22). The waste codes are included on the TCEQ Notice of Registration (NOR) for the Denton campus.

1.3 WASTE IDENTIFICATION/WASTE VOLUME

Table 1 lists the hazardous wastes at the University. The hazardous waste is managed by a permitted treatment, storage and disposal facility (TSDF) that is allowed to bulk waste and send it with wastes from multiple generators to appropriate disposal facilities.

Table 2 summarizes the volume of hazardous waste disposed of offsite by the University over the past four years. The waste streams shown in bold are those targeted for reduction. These hazardous waste streams will be targeted for reduction by the University and addressed by this plan. Because the University's SIC code is 8221, emissions reports under SARA Section 313 Toxic Release Inventory (TRI) are not required. This plan addresses hazardous waste reduction only.

1.4 COMMITMENT TO THE ENVIRONMENT

Texas Woman's University will continue to maintain environmental responsibility and compliance to regulatory requirements as a top priority. The University's Occupational/Environmental Safety & Health policy (Policy No. 6.02) specifically states that the University shall endeavor to comply with the intent of appropriate federal, state and local regulations. This policy is signed by the University Chancellor and President.

1.5 EMPLOYEE AWARENESS AND TRAINING

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Employees who conduct tasks that result in hazardous waste generation will be trained to increase awareness of the environmental policy of pollution prevention and reduction. This training will be included in TWU's Hazardous/Regulated Waste Management training conducted in both classroom sessions and via TWU's "Blackboard" online course system.

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2.0 SOURCE REDUCTION/WASTE MINIMIZATION GOALS

The University will strive to reduce the risk to human health and the environment and reduce the cost of offsite disposal through our pollution prevention program. The projects identified as potentially beneficial to meet these goals are described in more detail below.

2.1 PROPOSED SOURCE REDUCTION PROJECTS

The University has identified several key projects to pursue over the next five years (calendar year 2012-2016). These projects are designed to reduce the bolded waste streams identified in **Table 2**. These proposed projects are described in more detail below and listed in **Table 3**.

Product Substitution

Substitution of less toxic or hazardous materials will result in smaller volumes of hazardous waste requiring disposal. Risk Management will work with various departments on campus to make them aware of this effort and to assist with the identification of appropriate substitutions. Several departments, including Facilities Management & Construction, Chemistry & Biochemistry and the Visual Arts department have already begun independent efforts toward this goal.

The Chemistry & Biochemistry department has embraced a “green chemistry” approach in an effort to reduce their environmental impact and reduce health and safety risk to their students and employees.

Facilities Management & Construction is always looking for ways to reduce the environmental impact of its operations; for example much of its solvent waste has been eliminated by switching to latex-based paints wherever possible which do not require solvents for cleanup.

The ceramics faculty within Visual Arts department have made significant efforts to eliminate hazardous ingredients from the materials they work with for student and employee health and safety reasons. However, the liquid/semi-solid waste stream in this area is still characteristically hazardous due to several metals. One of the first planned tasks in this project would be to try and eliminate the remaining products used that contribute those metals to the liquid/semi-solid waste stream.

Examples of substitutions that have been effective at other universities in laboratory settings include:

- For quantitative tests for halide ions, substitute cyclohexane instead of carbon tetrachloride.
- For phase change and freezing point depression, substitute acetamide for stearic acid.
- For glassware cleaning, substitute potassium hydroxide, sonic baths, alconox, Pierce RBS35 or enzymatic cleaners for chromic/sulfuric acid baths or alcoholic potassium hydroxide baths. The latter solutions are not only hazardous, but have high disposal costs due to the

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corrosivity of the products.

- Substitute non-mercury thermometers (red liquid, digital, or thermocouple) for mercury thermometers.
- Substitute high flashpoint scintillation fluids (e.g. Ecoscint).
- Substitute ethanol for formaldehyde for specimen preservation.

Implement Chem Swap Program

This program has been implemented successfully at several Universities as a method to reduce the amount of commercial chemical product disposed of. These products typically are generated from laboratory cleanouts, stockroom cleanouts, or research laboratory decommissioning. According to the definition of U and P listed wastes, the product is only a waste when it is discarded. Use of these chemicals rather than disposal keeps them from being classified as hazardous waste. The Chem Swap program will allow laboratory professors and personnel to obtain free of charge unused chemicals donated by other departments. The basic components of this program are:

- Risk Management maintains the inventory in clean, well labeled storage cabinets or chemicals storage rooms.
- Risk Management posts a listing of the products available on the Risk Management website.
- Only TWU professors or laboratory technicians can request the chemical (unqualified employees, students or other non-employees may not).
- Labels must be in good condition and the shelf life of the material must be good.
- If a department wants a chemical, they post the request to Risk Management and trained staff will deliver the product to the department. The same procedure follows for a department that wants to donate an unused chemical to the Chem Swap program.
- The service is free to the chemical provider and free to the chemical receiver.

2.2 SCHEDULE OF IMPLEMENTATION AND MEASURABLE GOALS

The proposed schedule of implementation for these projects is listed in **Table 4**. The schedule covers the period of time from 2012 to 2016. The University is dedicated to reduce the volume of hazardous waste by 25% over the next five years. The baseline for this assessment is the year 2013 and the annual waste reduction reports will compare to this baseline to determine if the reduction goals are being met.

2.3 CERTIFICATE OF COMPLETION

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This document certifies that the Pollution Prevention Plan has been completed and meets the specific requirements of the Waste Reduction Policy Act of 1991, the Solid Waste Disposal Act, and 30 TAC 335 Subchapter Q – Pollution Prevention: Source Reduction and Waste Minimization, and that the information provided herein is true, correct and complete.

This document also certifies that the person whose signature appears below has the authority to commit the resources necessary to implement the plan.

Name: Mr. Harold Johnson

Title: Associate Vice President, Facilities Management & Construction/Risk Manager

Signature: _____

Date: _____

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Pollution Prevention Plan

Tables

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TABLE 1

**Hazardous Wastes Generated
Texas Woman's University
Denton, Texas**

| TCEQ Waste Code | Waste Description | EPA Waste Codes |
|--------------------------|---|--|
| 0001001H | Lab packs of various waste and unused chemicals and materials from teaching and research laboratories. | D001 D002 D003 D005 D007 D008 D010 D011 D014 D015 D019 D022 D028 D036 D038 F001 F003 F005 P030 P042 P067 P087 P093 P098 P105 P106 P123 U001 U007 U012 U020 U044 U056 U061 U089 U103 U122 U123 U142 U147 U188 U190 U210 U211 U247 U404 |
| 0002105H | Waste acids from teaching and research laboratories. | D002 |
| 0003203H | Waste solvents primarily from teaching and research laboratories. | D001 D022 F003 F005 U044 U117 |
| 0004211H | Petroleum distillates/solvents from various campus activities including facilities maintenance and educational/research activities. | D011 F003 F005 |
| 0005319H | Lead containing aprons, foil, shields, and bite wigs from the teaching dental clinic on campus. | D008 |
| 0011119H | Silver bearing fixer waste generated from photographic development processes onsite. | D011 |
| 0017119H | Waste Liquid RCRA Pesticides(Fertilizer/Herbicide/Pesticide) | D001 D004 D010 D012 D016 D018 F003 P001 P012 P024 P037 P071 P089 P108 |
| 0019113H | Liquid and semi-solid waste from the educational ceramics department. | D005 D006 D007 D008 D010 D011 |
| 0020801H | Organic gasses from laboratories on campus. | D001 |

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| 0021701H | Non-flammable gasses from laboratories on campus. | D002 |
|--------------------------|---|------|

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Table 2
Summary of Hazardous Waste Generation
Texas Woman's University
Denton, Texas

| TCEQ Waste Code | Waste Description | 2009 (lbs) | 2010 (lbs) | 2011 (lbs) | 2012 (lbs) |
|---------------------------------|---|--------------|--------------|--------------|--------------|
| <u>0001001H</u> | Lab packs of various waste and unused chemicals and materials from teaching and research laboratories. | 1,232 | 1,576 | 1,146 | 3,905 |
| <u>0002105H</u> | Waste acids from teaching and research laboratories. | 0 | 0 | 0 | 28 |
| <u>0003203H</u> | Waste solvents primarily from teaching and research laboratories. | 0 | 0 | 0 | 302 |
| <u>0004211H</u> | Petroleum distillates/solvents from various campus activities including facilities maintenance and educational/research activities. | 0 | 0 | 0 | 0 |
| <u>0005319H</u> | Lead containing aprons, foil, shields, and bite wigs from the teaching dental clinic on campus. | 0 | 0 | 0 | 0 |
| <u>0011119H</u> | Silver bearing fixer waste generated from photographic development processes onsite. | 0 | 0 | 0 | 0 |
| <u>0017119H</u> | Waste Liquid RCRA Pesticides(Fertilizer/Herbicide/Pesticide) | 0 | 0 | 0 | 0 |
| <u>0019113H</u> | Liquid and semi-solid waste from the educational ceramics department. | 0 | 28 | 301 | 329 |
| <u>0020801H</u> | Organic gasses from laboratories on campus. | 0 | 0 | 0 | 0 |
| <u>0021701H</u> | Non-flammable gasses from laboratories on campus. | 0 | 0 | 0 | 0 |
| Total (lbs) | | 1,232 | 1,604 | 1,447 | 4,564 |
| Total (tons) | | 0.616 | 0.802 | 0.7235 | 2.282 |

Note: **Bold** entries are those wastes targeted for reduction by this plan.

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Table 3. Proposed Source Reduction/Waste Minimization Projects

| Source Reduction Activity | Resulting Waste Eliminated or Reduced |
|--|--|
| 1. Product Substitution | <ul style="list-style-type: none"> • Lab packs of various waste and unused chemicals and materials from teaching and research laboratories (0001001H) • Liquid and semi-solid waste from the educational ceramics department within Visual Arts (0019113H) |
| 2. Implement Chem Swap Program | <ul style="list-style-type: none"> • Lab packs of various waste and unused chemicals and materials from teaching and research laboratories (0001001H) |
| 3. Implement Environmental Management System (EMS) | <ul style="list-style-type: none"> • Implementation of a formal EMS will contribute further to the reduction of hazardous waste generated by identifying future reduction goals and associated pollution prevention projects with upper management participation. |

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Table 4. Schedule of Implementation and Measurable Goals

| Source Reduction Activity | Schedule of Implementation |
|--|--|
| 1. Product Substitution | Product substitution efforts are ongoing, and will continue throughout the 2012-2016 term of this plan. Risk Management will identify significant contributors to the Lab Pack waste stream and work with other departments to find substitute materials. The hazardous waste training required for employees generating such waste will include discussion of this plan and the requirement under this project to substitute less hazardous products whenever possible. The revised training will be available in the Fall of 2012. |
| 2. Implement Chem Swap program | Develop the Chem Swap program and put on the web site. Also determine the best way to update interested professors of products available. Have program implemented by Spring 2013. |
| 3. Implement Environmental Management System (EMS) | Development of written EMS procedures and policies has recently begun. Full implementation of program to be completed in 2016. |