

**POLLUTION PREVENTION (P2)
PLAN**

FOR

TEXAS  **STATE**

UNIVERSITY®

The rising STAR of Texas

**601 UNIVERSITY DRIVE
SAN MARCOS, TEXAS 78666**

DECEMBER 2019

1.0 INTRODUCTION

This Pollution Prevention (P2) Plan was prepared for Texas State University (the University) to comply with Senate Bill 1099. This bill 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 TAC335 Subchapter Q.

1.1 FACILITY DESCRIPTION

Texas State University is a four-year accredited university located at 601 University Drive in San Marcos, Texas. The University is classified as an Emerging Research University by the Texas Higher Education Coordinating Board and is designated by the Carnegie Foundation for Advancement of Teaching as a Doctoral University: Higher Research Activity. The University has an enrollment of approximately 38,000 students on a campus of 507 acres. Undergraduate and graduate programs are offered in the following areas of study: Agriculture and Food Sciences, Business Administration, Communication, Education, Health Professions and Human Services, Humanities and Social Sciences, Science, Technology, Engineering, and Math, and Visual and Performing Arts.

The University generates hazardous and non-hazardous waste from various maintenance activities and routine laboratory practices. The University is registered with the Environmental Protection Agency (EPA) and the Texas Commission on Environmental Quality (TCEQ) as a large quantity generator. The Texas solid waste registration number is 66137 and the EPA I.D. number is TXD980812168.

1.2 SOURCES OF HAZARDOUS WASTE GENERATION

Hazardous wastes are generated as a result of academic, research and operational activities at the University. The Environmental Health Safety and Risk Management Office (EHSRM) is responsible for proper handling and ultimate disposal of these wastes.

Laboratory waste from academic and research labs accounts for approximately 85% of all the hazardous waste generated on campus. Laboratories typically have several small scale processes operating simultaneously. Due to the small amount of waste generally produced by individual laboratory processes and the impracticality of listing each process, the University's waste minimization and source reduction program looks at the similarities in laboratory management and treats lab-generated waste as a single process in most cases.

The University's support operations also generate hazardous waste from a variety of processes and activities, including utility operations (power, water, stormwater, and heating and cooling), facility maintenance, fleet maintenance, custodial operations, and grounds maintenance.

1.3 WASTE IDENTIFICATION/WASTE VOLUME

[Table 1](#) lists the hazardous wastes generated at the University. Hazardous waste is managed by an offsite 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 for the base year, 2018. The top waste streams are shown in bold based on volume and toxicity. 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, Texas State is not required to report emissions through SARA Section 313 Toxic Release Inventory Reports. This plan addresses hazardous waste reduction only.

1.4 COMMITMENT TO THE ENVIRONMENT

Texas State University's mission and shared values statement includes the commitment to responsible stewardship of our resources and the environment. This commitment is demonstrated in the Environmental Health and Safety Policy signed by the president, Dr. Denise Trauth.

<h2>2.0 SOURCE REDUCTION/WASTE MINIMIZATION GOALS</h2>

The University strives to reduce the risk to human health and the environment, and to reduce the cost of offsite disposal of hazardous waste through our pollution prevention program. The program is implemented through the use of policy, continual training and awareness, and through projects targeting source reduction and waste minimization.

The proposed projects for this five year cycle of the P2 Plan (calendar year 2020 -2024) will target reduction of the top six waste streams identified in bold in [Table 2](#). These proposed projects and affected waste streams are listed in [Table 3](#).

2.1 POLICY

The Hazardous Materials and Hazardous Waste Management Policy establishes the hazardous materials and hazardous waste management program and ensures compliance with applicable federal and state regulations. The policy establishes an initiative to reduce the quantity of hazardous waste generated on campus. All waste minimization and source reduction programs are rooted in this policy. The Environmental Health, Safety & Risk Management (EHSRM) Office has the primary responsibility for managing these programs.

2.2 TRAINING AND AWARENESS

In a university environment, there is an ever-changing population of faculty, staff, and students. Generally speaking, numerous waste streams are generated in small volumes. Changes in research, class focuses, and university growth present challenges to minimizing specific waste streams. EHSRM focuses on bringing awareness of the University's waste minimization and source reduction goals in all communications with generators on campus.

Currently, the University provides Hazardous Waste training and Hazard Communication training for all employees working with chemicals and hazardous waste. Waste minimization and source reduction principles are included in this training. In addition, specific, in-person training is provided to new labs when a lab check-in form is submitted.

In addition to formal training, EHSRM uses other methods to communicate waste minimization and source reduction goals to generators, including face-to-face communication during lab inspections, use of the EHSRM website, and highlights of waste minimization techniques in quarterly newsletters.

2.4 PRIORITIZED LIST OF POLLUTION PREVENTION PROJECTS

The University has identified the following projects to pursue during the current P2 Plan cycle (calendar year 2020 - 2024). These projects are designed to reduce the bolded waste streams identified in Table 2.

2.4.1 Source Reduction Projects

- **Continue improving methods and patterns of hazardous material purchases throughout campus.** EHSRM encourages departments and laboratories to purchase chemicals only in amounts that will be used within the budget year. The current purchasing protocol and tracking system will be reviewed for effectiveness in reducing excess chemical purchases. Currently, it is estimated that approximately 30% of chemical purchases are bypassing EHSRM review and approval process.
- **Improve laboratory chemical inventories.** EHSRM recently implemented use of an on-line lab management software which is used for maintaining chemical inventory. The system is compatible with bar-coding. EHSRM will investigate the feasibility of bar-coding all existing inventories as well as a process to bar-code all new chemical purchases. Improved inventory will help prevent unnecessary chemical purchases and retention of outdated chemicals.
- **Encourage more environmentally sound lab practices.** Develop resources to promote sustainable lab practices using flyers, posters, and the EHSRM website. The resources will focus on reduction of scale, the American Chemical Society's "Less is Better" guidance, and product substitution.

2.4.2 Waste Minimization Projects

- **Expand elementary neutralization processes.** The University has successfully operated an elementary neutralization process using an EHSRM-approved protocol for non-metal bearing corrosive wastes from academic labs in the Chemistry and Biochemistry department for several years. The University will investigate expansion of this process to other departments and research laboratories where possible.
- **Increase reuse and recycling.** The University will investigate the feasibility of expanding the recycling programs already in place by improving pick-up locations and investigating additional materials eligible for recycling. Currently, the University manages a recycling program on campus for the collection of batteries, cell phones, and ink jet cartridges.

The University will also continue efforts to expand and improve the effectiveness of the campus Chem-Swap Program.

- **Decrease the amount of non-hazardous waste being disposed of as hazardous waste.** A large volume of wastes collected during lab cleanouts such as unused chemical products, chemical samples, contaminated glassware, and unlabeled materials, are likely over-classified as hazardous waste at the point of generation due to the lack of knowledge of the person conducting the cleanout. A stronger laboratory closure process can reduce the amount of non-hazardous wastes classified as hazardous waste.

The University will also explore the possibility of managing laboratory waste under 40 CFR 262, Subpart K to further reduce over-classification of non-hazardous waste as hazardous waste at the point of generation.

- **Increase segregation of trash from hazardous wastes.** Hazardous waste collection containers for contaminated lab debris often receive non-hazardous wastes which become hazardous wastes when mixed in the container. EHSRM will increase explore new methods to decrease non-hazardous trash placed in hazardous waste containers.

2.2 SCHEDULE OF IMPLEMENTATION AND MEASURABLE GOALS

The proposed schedule of implementation covers the period of time from 2020 to 2024. The University's continual growth, increase in laboratory spaces, and expanded focus on research will most likely result in an increase in overall volume of hazardous waste generated on campus; therefore, the effectiveness of this plan must be measured by metrics that take this into consideration.

The following metrics will be used to determine the effectiveness of this plan:

- 1) Benchmark elementary neutralization in 2020 (departments other than chemistry) followed by a 5% reduction in aqueous corrosive waste disposal annually through 2024.
- 2) A 5% increase in non-hazardous waste removed from hazardous waste disposal annually through 2024.
- 3) A 5% increase in recycling annually 2024.

Tables

Pollution Prevention Plan

TABLE 1**Hazardous Wastes Generated
Texas State University
San Marcos, Texas**

TCEQ Waste Code	Waste Description	EPA Waste Code	Most Common Method of Disposal
<i>Hazardous</i>			
0001204H	Mixed halogenated/non-halogenated solvents from labs throughout campus and solvents consolidated at the storage facility.	D001, F001, F002, F003, F005	Incineration or fuel blending
0002103H	Acids with metals from campus labs	D002, D005, D006, D007, D008, D009, D011	Wastewater treatment
0003003H	Mixed lab packs containing hazardous chemicals from campus labs.	D001, D002, F001, F002, F003, F005, U057, U196, U239	Incineration
0004198H	Photographic waste may contain silver, may be reactive	D002, D003, D011	Silver recovery and wastewater treatment
0007119H	Laboratory waste – inorganic, may contain oxidizers.	D001, D002, D005, D006, D007, D008, D009, D011	Wastewater treatment
0010117H	Mercury waste or aqueous mercuric salt solutions	D009, D002	Mercury recovery and wastewater treatment
0016219H	Caustic liquids from consolidating lab wastes, flammable caustics	D001, D002, F002, F003	Incineration

TABLE 1 (continued)

Hazardous and Class 1 Non-hazardous Wastes Generated
Texas State University
San Marcos, Texas

TCEQ Waste Code	<i>Waste Description</i>	EPA Waste Code	Most Common Method of Disposal
0017219H	Lab waste consolidation, flammable acids	D001, D002, F002, F003	Incineration
0020310H	Activated carbon filters, spent or out of date	D001	Regenerate
0021202H	Spent halogenated solvents and aqueous mixtures	D001, F001, F002	Incineration or Fuel blending
0022203H	Spent non-halogenated solvents and aqueous mixtures	D001, F003, F005	Incineration or Fuel blending
0025207H	Organic solutions with aquatic organisms. May be formaldehyde, ethanol or formalin.	D001	Incineration or Fuel blending
0029310H	Waste Rags containing F003 and/or F005 solvents.	D001, F003, F005, D035	Incineration or Fuel Blending
0030310H	Waste Sorbents, may contain gasoline and oil	D018	Incineration or Fuel Blending
0034119H	Aqueous waste containing sodium azide from a laboratory analysis	P105	Incineration
0035110H	Caustic Aqueous Waste from Labs and Shops	D002	Wastewater treatment or hazardous waste landfill
0036319H	Old sodium hydroxide pellets in drums	D002	Hazardous waste landfill
0037310H	Solids that fail one or more TCLP metal	D004-D011	Hazardous waste landfill

TCEQ Waste Code	<i>Waste Description</i>	EPA Waste Code	Most Common Method of Disposal
0038219H	Old glycolic acid in drums	D002	Neutralization/Incineration
0040403H	Acid bed water softener resin	D002	Neutralization/Incineration
0041110H	Old chemical in drums, caustic/aqueous	D002	Hazardous waste landfill
0049103H	Aqueous waste from labs that contain RCRA and Non RCRA metals.	D005, D006, D007, D008, D011	Wastewater Treatment
0053119H	Aqueous inorganic waste with metals and nitrates	D001, D002, D005, D006, D007, D008	Wastewater Treatment

TABLE 2**Base Year Hazardous Waste Generation**

TCEQ Waste Code	Waste Description	Base Year 2018 (lbs)
0001204H	Water w/spent solvents	650
0002103H	Acid waste with or without metals	9316
0003003H	Non-acute hazardous waste lab packs	6699
0004198H	Bulk fixer waste, may contain silver or be reactive	1354
0007119H	Inorganic laboratory waste with oxidizing characteristic.	3671
0010117H	Aqueous waste with mercury	226
0016219H	Caustic (basic) liquids, flammable bases	365
0017219H	Flammable acids	3321
0022203H	Spent non halogenated solvents	1480
0025207H	Organic solutions mixed with specimens	2560

TCEQ Waste Code	Waste Description	Base Year 2018 (lbs)
0029310H	Waste Rags with Solvents	1382
0030310H	Waste Sorbents with gasoline and oil	1127
0035110H	Caustic Aqueous Waste with or without metals	1471
0036319H	Old sodium hydroxide pellets in drums	108
0049103H	Aqueous Waste from labs that contain RCRA and Non RCRA metals.	1418
0053119H	Aqueous inorganic waste with metals and nitrates	0
Total (lbs)	(not including Universal Waste)	
Total (tons)		20

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

**Table 3.
Proposed Source Reduction/Waste Minimization Projects**

Waste Min/Source Reduction Activity	Resulting Waste Eliminated or Reduced
Continue improving methods and patterns of hazardous material purchases throughout campus.	<ul style="list-style-type: none"> • Non-acute hazardous lab pack wastes (0003003H)
Improve laboratory chemical inventories.	<ul style="list-style-type: none"> • Non-acute hazardous lab pack wastes (0003003H)
Encourage more environmentally sound lab practices.	<ul style="list-style-type: none"> • Non-acute hazardous lab pack wastes (0003003H) • Organic solutions mixed with specimens (0025207H) • Acid wastes with or without metals (0002103H) • Caustic wastes with or without metals (0035110H) • Flammable acids (0017219H) • Inorganic laboratory waste with oxidizing characteristic (0007119H)
Expand elementary neutralization processes.	<ul style="list-style-type: none"> • Acid wastes with or without metals (0002103H) • Caustic wastes with or without metals (0035110H)
Increase reuse and recycling.	<ul style="list-style-type: none"> • Hazardous Waste Lab Packs (0003003H)
Decrease the amount of non-hazardous waste being disposed of as hazardous waste.	<ul style="list-style-type: none"> • Non-acute hazardous lab pack wastes (0003003H) • All other waste streams
Increase segregation of trash from hazardous wastes.	<ul style="list-style-type: none"> • Non-acute hazardous lab pack wastes (0003003H)