Toxics Use and Hazardous Waste Reduction Reporting
Implementation Summary Examples

State of Oregon Department of Environmental Quality

Example 1. Fab XYZ, Incorporated – The business manufactures varying sizes of steel building components, is one of many subsidiaries owned by a large, out-of-state corporation, and employs about 350 people. The business reports under the federal Toxics Release Inventory (TRI) program, and is large quantity generator (LQG) of hazardous waste. A dedicated environmental staff manages the numerous permits, and recently helped implement a company-wide environmental management system (EMS).

TUHWR Contacts
Forms Contact
Person Name: Give A. Hand
Title: Environmental Health & Safety Specialist
Phone: 800-123-4567
E-mail: ghand@fabxyz.com
Yes share my contact information
Certification Contact
Person Name: Top N. Decisionmaker
Title: Local Vice-President
Phone: 800-123-8900
E-mail: tdecisionmaker@fabxyz.com

Fab XYZ, Inc., Process 1 of 3

TUHWR Process
Process: Metal Prep Area
Process Type: Surface Cleaning and Preparation – Solvent
Successes In the Metal Preparation area, the business switched from 1,1,1-trichloroethane to an aqueous-based, non-volatile organic emulsion cleaner. This change led to a cost savings of $9,500 that factors in reduced air emissions, eliminated the need for special, expensive-to-maintain ventilation, increased productivity, and improved insurance premium. The monetary benefit does not include intangibles, such as happier employees and now one of the more desired work stations to get assigned. The cost of the new spray system, installation, and training cost about $28,000 with a conservation payback of 3.5 to 4 years. Since the installation of the new powder coating system, the company is now using a new $8,000 powder coating pretreatment system for the specialty jobs. This further reduced the amount of waste from this preparation process.
Challenges Two challenges we overcame was resistance from some employees to change, and convincing management to provide the $10,000 up-front cost of re-tooling the area and training the employees on the new process.
Opportunities From this work, the company started a waste reduction team that includes management and employees representing all areas. One goal of this team is to find other ways to reduce waste from the surface preparation area, including how clean surface needs to be before sending the metal to surface coating.
TUHWR Toxic Material
Toxic Material Description: Super Strength Surface Prep
Was this toxic material reduced?: Yes
Was this a one-time reduction?: No
Chemical Name: 1,1,1-trichloroethane : 71-55-6
Pounds Reduced: 2500
Money Saved: 9500

Fab XYZ, Inc., Process 2 of 3

TUHWR Process

Process Information

Process: Metal cutting & processing

Process Type: Manufacturing & Processing - Fabricating

Successes

We did not have toxics use reduction for this process due to our challenges. However, we do recycle all our scrap metal. Since the company recycles about 1,000,000 pounds per year, we do receive a monetary benefit. The amount we receive depends on the demand for metals.

Challenges

Lead is integral to the metal. Manufacturers that supply the raw sheet metal tell us they are technically unable to eliminate the lead from this process. If we are to reduce lead in our process, we must reduce our production output. When using the metal, processes release lead. We must report those lead releases under the Toxics Release Inventory requirement, which is why we are including this in this Summary.

Opportunities

We have and will continue to search for quality sheet metal with less lead content, but all the suppliers provide lead-containing products. We will continue to find ways to reduce lead releases to the environment.

TUHWR Toxic Material

Toxic Material Description: Raw sheet metal

Was this toxic material reduced?: No

Was this a one-time reduction?: No

Chemical Name:

Lead : 7439-92-1

Pounds Reduced: 0

Money Saved: 0

Fab XYZ, Inc., Process 3 of 3

TUHWR Process

Process: Paint Specialty Line

Process Type: Surface Coating & Finishing - Painting

Successes

In 2004, the company, through its environmental management system (EMS), identified several toxics use and hazardous waste reduction opportunities in the painting area. The EMS team, with support from upper management and reduction ideas from DEQ, concluded the best opportunity for the company, employees, and the environment was to phase in a powder coating system and eliminate the Paint Specialty Line. In 2005, the company eliminated Specialty Line and is using the new powder coating system exclusively for special orders. The company spent $25,000 for the new system, $30,000 for new material, and $25,000 for redesigning, retooling and retraining. The estimated annual payback is about $53,000. Even though the new material will be an on-going expense, the conservative payback is three to four years. The payback time may be less, but we did not calculate in the increased efficiencies, increased quality of finish, and labor redistribution. When we add the amounts reduced of volatile organic compounds (VOCs) in the conventional paints and solvents used to clean painting equipment, reduced reporting requirements, and the improved working environment with happier employees, the change was certainly a success.

Challenges

Management took about a year to decide to switch to a company-wide EMS, and another two years for a team to identify the important aspects in the EMS. Besides getting upper management support, assigning staff time and providing consultant funds to develop the EMS; the other major challenge was to convince some employees changing a process was a beneficial move for the business. Even though the work was slow and arduous, the challenges focused the EMS team effort on the value of including everyone in the planning process from the beginning. Also, there were concerns raised while evaluating the powder coating alternative, particularly related to product quality and possible labor reductions.

Opportunities
The EMS team is carefully examining aspects and opportunities with the other painting operations. Two of the goals are to improve the working conditions for the employees while reducing company expenses on inefficient processes. Since the main painting line uses the highest quantity of toxics, emits the highest amount of VOCs, and generates the highest amount of hazardous waste, the EMS team is reviewing numerous alternatives, particularly water-based paints. If successful, the non- or low-VOC paints would address several goals simultaneously.

TUHWR Toxic Material

Toxic Material Description: Finish coat thinner

Was this toxic material reduced?: Yes

Was this a one-time reduction?: No

Chemical Name:
Methyl ethyl ketone 78933

Pounds Reduced: 3200

Money Saved: 8600

Toxic Material Description: Primer

Was this toxic material reduced?: Yes

Was this a one-time reduction?: No

Chemical Name:
Epoxy resin : 25036-25-3
Methyl isobutyl ketone : 108-10-1
Barium sulfate : 7727-43-7
Butyl acetate, n- : 123-86-4
Butyl alcohol, n- : 71-36-3
Zinc phosphate : 7779-90-0

Pounds Reduced: 6660

Money Saved: 11700

Toxic Material Description: Finish coat

Was this toxic material reduced?: Yes

Was this a one-time reduction?: No

Chemical Name:
Stoddard solvent : 8052-41-3
Chlorobenzotrifluoride, p- : 98-56-6

Pounds Reduced: 9800

Money Saved: 17000

TUHWR Hazardous Waste

Hazardous Waste Description: Spent paint cleaning solvent

Was this toxic material reduced?: Yes

Was this a one-time reduction?: No

Hazardous Waste Type?: Solvent - cleaner

Hazardous Waste Codes:
D001 – Non-listed Ignitable
D035 – Methyl ethyl ketone
F005 – Flammable toxic organic solvents and still bottoms

Chemical Name:
Methyl ethyl ketone : 78-93-3

Pounds Reduced: 2280

Money Saved: 7400

Hazardous Waste Description: Still bottoms
Was this toxic material reduced?: Yes
Was this a one-time reduction?: No
Hazardous Waste Type?: Still bottoms
Hazardous Waste Codes: D005 – Barium D035 – Methyl ethyl ketone F005 – Flammable toxic organic solvents and still bottoms
Chemical Name: Barium : 7440-39-3 Methyl ethyl ketone : 78-93-3
Pounds Reduced: 3000
Money Saved: 7000

Hazardous Waste Description: Paint filters
Was this toxic material reduced?: Yes
Was this a one-time reduction?: No
Hazardous Waste Type?: Filter
Hazardous Waste Codes: D005 – Barium D035 – Methyl ethyl ketone
Chemical Name: Barium : 7440-39-3 Methyl ethyl ketone : 78-93-3
Pounds Reduced: 250
Money Saved: 1650

See Next Page for Second Example

Example 2. Specialty Repairs, LLC – This Oregon business repairs specialized equipment, employs about 35 people. Besides his managerial and quality assurance duties, the shop supervisor is responsible for managing the company's small quantity generator (SQG) amounts of hazardous waste and its 7-page Toxics Use and Hazardous Waste Reduction Plan.

TUHWR Contacts
Forms Contact
Person Name: Ian T. Bizee
Title: Shop Supervisor
Phone: 541-123-4567
E-mail: ian@specrepairs.com
Yes share my contact information
Certification Contact
Person Name: Buck St. Opswithme
Title: Owner
Phone: 541-123-4568
E-mail: buck@specrepairs.com

Specialty Repairs, LLC – Process Example 1 of 1

TUHWR Process
Process: Plant equipment maintenance
Process Type: Repair & Maintenance - equipment
Successes The company purchased a small aqueous-based spray cabinet for $5,000, installed by employees for about $150, retrained the employees, and will annually remove about $75 of hazardous waste sludge from the new washer. When adding up the costs for new solvent, time cleaning, exposure to the solvent and waste management, the business saved over $1,700 annually. The payback for the washers and related costs is roughly three years. Since chlorinated solvents in spray cans create potential health concerns and unwanted hazardous wastes, the company chose to eliminate all cleaning products containing chlorinated solvents. This led to eliminating other products containing harmful toxic chemicals. When the shop eliminated the chlorinated solvents, the used oil no longer failed the "sniff test" performed by the used oil hauler. We eliminated the need to ship our used oil as hazardous waste, and now recycle it as used oil. The cost savings was at least $1,500 from eliminating a hazardous waste.
Challenges There were several challenges, but the one that took the most time was convincing some repair staff that the new parts washer was more efficient and required less maintenance. Employees continuously repeated how long they had used solvent to clean parts for years, and that new equipment will only create more hassles. The company tried a model aqueous parts washer as a trail. Shortly after the trial started, most shop employees agreed that the new water-based units saved labor and cleaned parts as well as the solvent-based units.
Opportunities Our newly-revised TUHWR Plan challenges us to find lighting alternatives to eliminate mercury-containing lamps that use less energy, and to reduce the amount and expense of shop rags.
TUHWR Toxic Material
Toxic Material Description: Solvent – cleaning
Was this toxic material reduced?: Yes
Was this a one-time reduction?: No
Chemical Name: Petroleum distillates : 64742-47-8
Pounds Reduced: 1920
Money Saved: 1700

TUHWR Hazardous Waste
Hazardous Waste Description: Parts washer
Was this toxic material reduced?: Yes
Was this a one-time reduction?: No
Hazardous Waste Type?: Spent solvent – cleaning
Hazardous Waste Codes: • D001 Non-listed Ignitable • D005 Barium • D008 Lead • D040 Trichloroethylene
Chemical Name: • Petroleum distillates : 64742-47-8 • Barium : 7440-39-3 • Lead : 7439-92-1 • Trichloroethylene : 79-01-6
Pounds Reduced: 1250
Money Saved: 750

Hazardous Waste Description: Maintenance cabinet chemicals
Was this toxic material reduced?: Yes
Was this a one-time reduction?: Yes
Hazardous Waste Type?: Unwanted materials
Hazardous Waste Codes: • D001 Non-listed Ignitable • D003 Non-listed reactive • D040 Trichloroethylene • U239 Xylene
Chemical Name: • Trichloroethylene : 79-01-6 • Xylene : 1330-20-7
Pounds Reduced: 20
Money Saved: 0

Hazardous Waste Description: Shop used oil drum
Was this toxic material reduced?: Yes
Was this a one-time reduction?: No
Hazardous Waste Type?: Used oil
Hazardous Waste Codes: • D008 Lead • D018 Benzene • D040 Trichloroethylene
Chemical Name: • Lead 7439-92-1 • Benzene 71-43-2 • Trichloroethylene : 79-01-6
Pounds Reduced: 1980
Money Saved: 1500