POLLUTION PREVENTION
WASTE MANAGEMENT WORKSHOP
Save money – Reduce risk – Eliminate waste

Pollution Prevention Waste Management Workshop

September 20, 2023

Creating and Implementing a Pollution Prevention Plan

Shelby Williams
P2 Coordinator
TCEQ

Creating and Implementing a Pollution Prevention Plan

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P2 Planning Process

- ✓ **Identify your Pollutants**
- ✓ **Identify the activities**
- ✓ **Prioritize Pollutants**
- ✓ Prioritize P2 Projects
  - Technical
  - Economic
  - Risks
  - Reductions
  - Schedule
- ✓ Measurable Goals
- ✓ Employee Awareness and Training
- ✓ Media Transfer
- ✓ Document your plan
- ✓ Measure your results

Identify your Pollutants and Activities

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Requirement
30 TAC §335.474(1)(A)

- An initial survey of the facility's activities which will identify those activities that cause hazardous waste, and/or will identify activities that result in the release of TRI Reportable Chemicals.

Requirement
30 TAC §335.474(1)(J)(ii) & (iii)

(ii) A list of all hazardous wastes generated and the volume of each;

(iii) A list of all reportable TRI releases and transfers and the volume of each;

-- List other wastes (optional)

- Examples: air, solid waste, energy use

Assessment Team

- **Good way to:**
  - Win broad support
  - Generate ideas
  - Create broad skill base
  - Help with implementation

Give Team Members Ownership

- **Create a team name**
- **Include members outside of management**
  - Radial not just top down
- **Listen to ideas and suggestions**
  - Plant the seeds of ideas, but…
  - Let them identify the significant projects
  - Listen - they know what will motivate themselves/others

Valspar Inc, Paint

Beaumont, Texas

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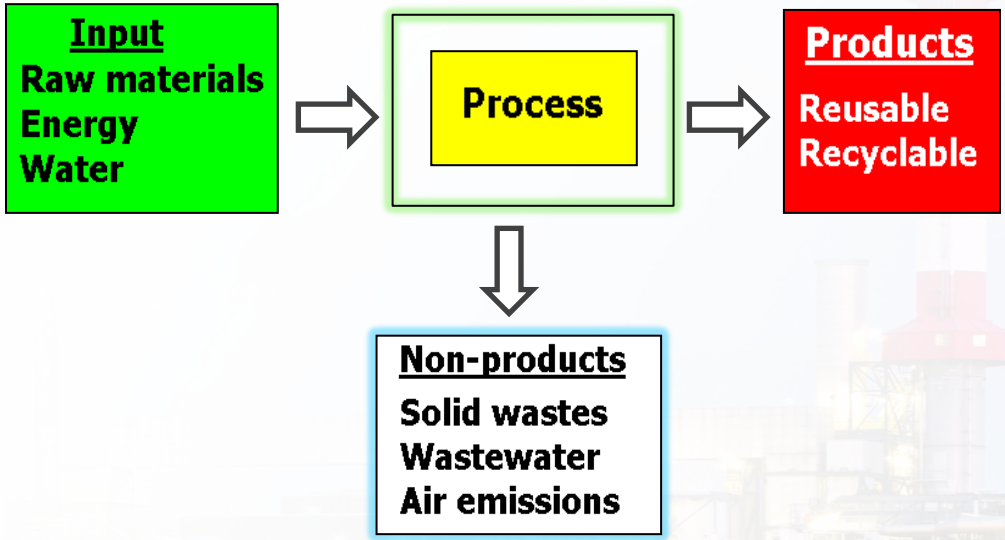
Saved $100,000/year
✓ Line employees received 2% of savings
✓ Saved 75,000 gallons of paint and solvent/year

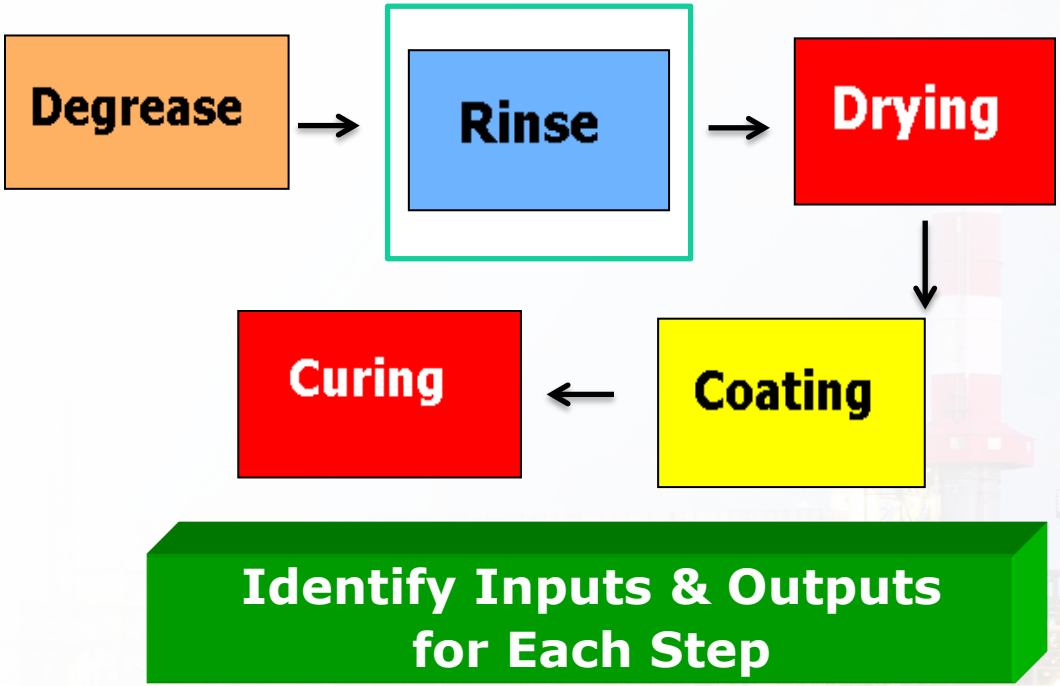
Identify Process Wastes

- Draw “line” around area/process
- List everything that goes in and out*
  - Consider the inputs and outputs that may not be so obvious

Input/Output



Multi-Step Process



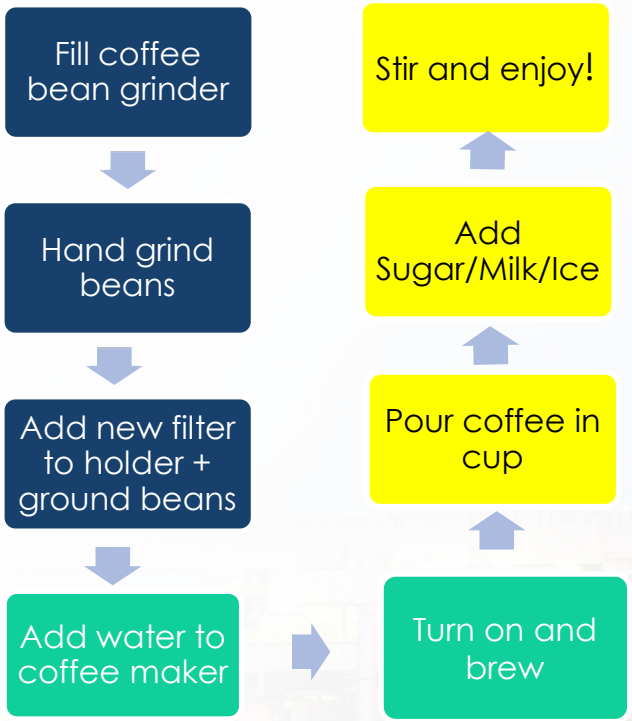
Making Coffee

Making Coffee

Inputs

- Coffee beans
- Grinder
- Coffee maker
- Coffee pot
- Coffee filter holder/lid
- Water
- Energy/time

Process



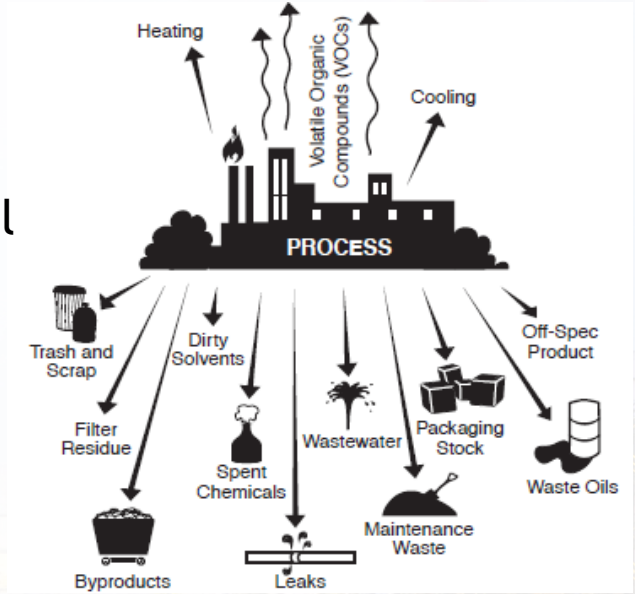
Outputs

- Coffee!
- Used coffee grounds & filter
- Leftover coffee
- Residual ground beans in grinder
- Dirty cup
- Used sugar packet/stir stick/ spoon
- Water to clean items

One Facility = Many Processes

Beyond Production…

- General Maintenance/Janitorial
- Fleet Maintenance
- Office Procedures
- Shipping/Receiving



Hazardous Wastes Materials

- What hazardous waste(s) are list on your Annual Waste Summary?
- Define the process that leads to generation
- Are there opportunities for reduction?
- Do processes mix hazardous and non-hazardous materials?

Chemicals and Materials

- What types of chemicals are used?
  - How much?
- How can chemical use be reduced?
- Are there less harmful alternatives?
- Can you eliminate a chemical?
  - Can another do double duty?
    - Is the process that uses that chemical really necessary?

Water Use

- How much water is used in the process?
- Can you reuse water in the process?
- Can you reduce contaminants in wastewater?
- What is your water load?
- Can you reduce water usage in drought conditions?

Energy Use

- How much energy is used in the process?
- How is the energy used?
- How can overall energy use be reduced?
- Is lighting efficient?
  - Natural lighting? Energy efficient lighting?
- Can you consolidate operations/storage space?
- Is lighting, heating, or air conditioning needed? How much?
- Is renewable energy an alternative?

Solid Waste

- What types of solid waste are generated?
- How much solid waste is generated?
- Are there opportunities for reduction, reuse, or composting?

All Materials

- ✓ Can materials be reused?
- ✓ Are there markets for the materials?
  - Other parts of the factory
  - RENEW
  - Recycling market
- ✓ Is it possible to segregate in process?

How much $$$ can you save?

- What can be done with unused materials?
- How can unused materials be minimized?
- How much product is made? Cost?
- How much is sold? Cost?
- How much sits in storage or must be disposed of due to shelf life? Cost?

Better Alternatives?

Schick Razor Blades

- Facility manufactures steel blades and tools for everything from razors to medical blades
- Used TCE (Trichloroethylene) to clean the blades before shipping
- Using approximately 1700 tons of TCE per year
- Examined the process to look for alternatives

Better Alternatives?

Schick Razor Blades

- Replaced TCE baths with alcohol-based cleaners:
  - Eliminated the use of TCE in the process
  - Removed all TCE from the property
    - **Yearly cost reductions of $250,000**
      - **Reduce energy (no more distillation)**
      - **Reduced material costs**
      - **Reduced hazardous waste disposal costs**
      - **Reduced the regulatory risk!**

Columbia Paint
(Sherwin Williams)

- Reduce and reuse latex wash water
- Better batch scheduling reduces clean out waste
- Inventory organization reduces bad batches and waste
- Improved workflow by eliminating bottlenecks

Columbia Paint –Savings

✓ Waste Disposal:	$6,000
✓ Wastewater reductions:	$17,000
✓ Reduced raw material input:	$26,000
✓ Labor savings:	$90,000
✓ **Total Savings:**	**~$139,000/year**

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P2 Planning Process

- ✓ Identify your Pollutants
- ✓ Identify the activities
- ✓ Prioritize Pollutants
- ✓ **Prioritize P2 Projects**
  - **Technical**
  - **Economic**
  - **Risks**
  - **Reductions**
  - **Schedule**
- ✓ **Measurable Goals**
- ✓ Employee Awareness and Training
- ✓ Media Transfer
- ✓ Document your plan
- ✓ Measure your results

Setting Goals and Schedules

Implementation Schedule

- 30 TAC §335.474(1)(D)
  - An estimate of the type and amount of reduction anticipated

- 30 TAC §335.474(1)(E)
  - A schedule for the implementation of each source reduction and waste minimization project

Set Facility Goals

- 30 TAC §335.474 (1)(F)
  - **Measurable** source reduction and waste minimization goals for the entire facility, including incremental goals to aid in evaluating progress

Set Facility Goals

- ACME Corporation will continue to research and implement technically and economically feasible P2 options.

Measureable?

Set Facility Goals

Examples of **measurable** goals:

- With the implementation of the projects described in this plan, the amount of prioritized waste will be reduced by 10% by the goal year.

- Acme Corporation plans to reduce hazardous wastes by 40% & VOC emissions by 50% from painting operations by January 2019.

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Employee Awareness and Training

They can’t achieve goals without knowing the who, what, when, where, and how!

Employee Training

- 30 TAC §335.474(1)(G)
  - An explanation of employee awareness and training programs to aid in accomplishing source reduction and waste minimization goals

Note: This only applies to Large Quantity Generators and TRI Form R Reporters

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Media Transfers

Don’t go from one pollutant media to another!

Media Transfer

- 30 TAC §335.474(1)(H)
  - Identification of cases where the implementation of a source reduction or waste minimization activity designed to reduce risk to human health or the environment may result in the release of a different pollutant or contaminant or may shift the release to another medium

Note: This only applies to Large Quantity Generators and TRI Form R Reporters

What is a media transfer

- 30 TAC §335.471 (9)
  - Media and medium – Air, water, and land into which waste is emitted, released, discharged, or disposed

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- ✓ **Document your plan**
- ✓ Measure your results

Documenting the Plan

What you need to put together and submit!

Pollution Prevention Plans

- 30 TAC §335.474
  - All persons identified under §335.473 of this title (relating to applicability) shall prepare a five-year pollution prevention plan that shall be updated as necessary. Plans shall be maintained on-site and available to commission personnel for inspection. Prior to expiration of the initial plan and each succeeding five-year plan, a new five-year plan shall be prepared.

Document the Plan, Submit the Executive Summary

- Template – Worksheet 6
  - Guidance document
  - MS Word
  - Download at www.P2Plan.org
- P2 Planner creates plan
  - www.zerowastenetwork.org
  - Keep a copy on-site and submit a copy to the TCEQ
  - Keep proof of submission

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- ✓ **Measure your results**

Measuring Results

The Annual Progress Report & Other Measurements

Why?

- Establishes a baseline starting point
- Helps keep projects on track
- Re-evaluate & revise plan

Annual Progress Report

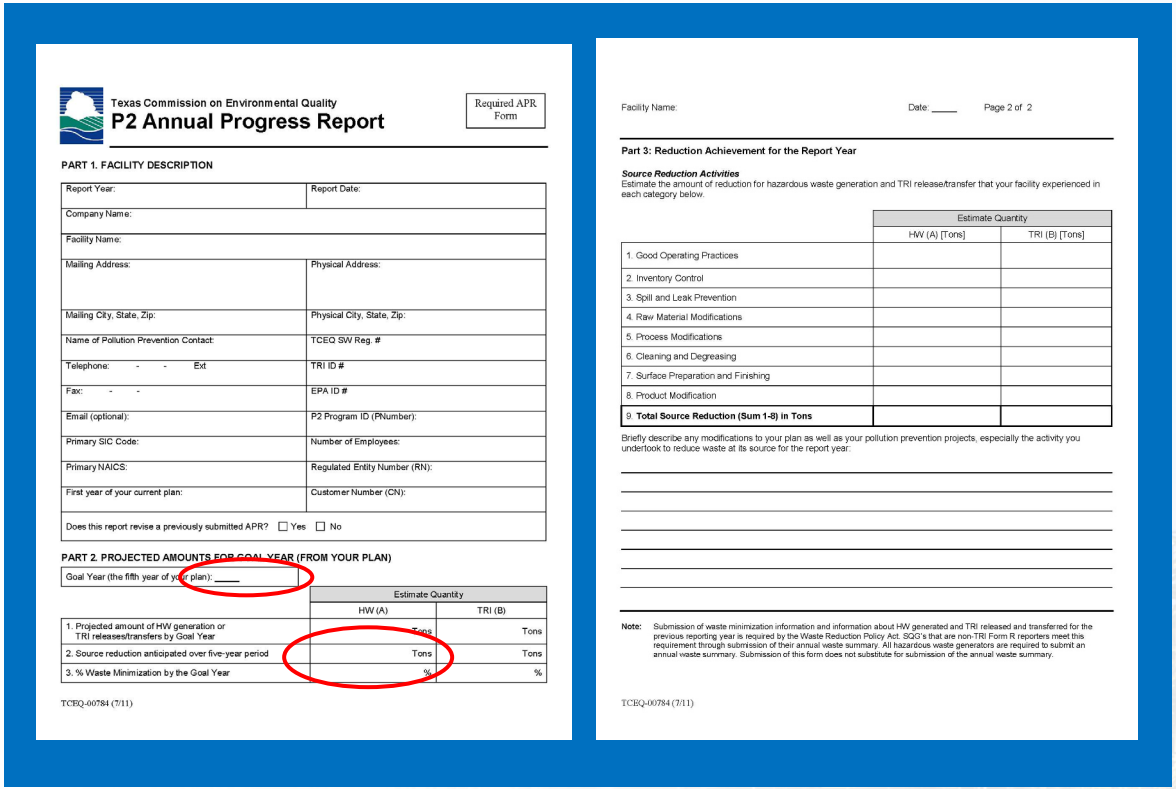
- Two-Page Report on required TCEQ Forms

- Required for...
  - Large Quantity Generators (LQG)
  - TRI Form R Reporters

Annual Progress Report

- Due July 1, after your plan has been in place for a full year
- Report year covers results from January 1 to December 31 of the previous calendar year (Report Year)
- Reports the amount that is source reduced

APR Form



Texas Commission on Environmental Quality

P2 Annual Progress Report

Required APR Form

PART 1. FACILITY DESCRIPTION

Report Year:	Report Date:
Company Name:	
Facility Name:	
Mailing Address:	Physical Address:
Mailing City, State, Zip:	Physical City, State, Zip:
Name of Pollution Prevention Contact:	TCEQ SW Reg. #
Telephone: - - Ext	TRI ID #
Fax: - -	EPA ID #
Email (optional):	P2 Program ID (PNumber):
Primary SIC Code:	Number of Employees:
Primary NAICS:	Regulated Entity Number (RN):
First year of your current plan:	Customer Number (CN):
Does this report revise a previously submitted APR? ☐ Yes ☐ No	

PART 2. PROJECTED AMOUNTS FOR GOAL YEAR (FROM YOUR PLAN)

Goal Year (the fifth year of your plan): ____

	Estimate Quantity	
	HW (A)	TRI (B)
1. Projected amount of HW generation or TRI releases/transfers by Goal Year	Tons	Tons
2. Source reduction anticipated over five-year period	Tons	Tons
3. % Waste Minimization by the Goal Year	%	%

TCEQ-00784 (7/11)

Facility Name: Date: ____ Page 2 of 2

Part 3: Reduction Achievement for the Report Year

Source Reduction Activities

Estimate the amount of reduction for hazardous waste generation and TRI release/transfer that your facility experienced in each category below.

	Estimate Quantity	
	HW (A) [Tons]	TRI (B) [Tons]
1. Good Operating Practices		
2. Inventory Control		
3. Spill and Leak Prevention		
4. Raw Material Modifications		
5. Process Modifications		
6. Cleaning and Degreasing		
7. Surface Preparation and Finishing		
8. Product Modification		
9. **Total Source Reduction (Sum 1-8) in Tons**		

Briefly describe any modifications to your plan as well as your pollution prevention projects, especially the activity you undertook to reduce waste at its source for the report year:

Note: Submission of waste minimization information and information about HW generated and TRI released and transferred for the previous reporting year is required by the Waste Reduction Policy Act. SQG's that are non-TRI Form R reporters meet this requirement through submission of their annual waste summary. All hazardous waste generators are required to submit an annual waste summary. Submission of this form does not substitute for submission of the annual waste summary.

TCEQ-00784 (7/11)

Information Sources for APR

- The report is based on your P2 plan
- Part 1 (facility information)
  - Executive Summary – has most information
- Part 2
  - From the goals set in your plan
- Part 3
  - Previous Annual Waste Summary and/or TRI Form R
  - Description of P2 Projects

Part 2- Projected Amounts

- **Goal Year** = 5th year of the current plan.
  - 5th year of plan that covers the Report Year
    - If the plan covers 2022-2026, then 2026 is the 5th year.

(1.) Projected amounts of HW generation and TRI releases/transfers by the Goal Year

- what you think you will generate/release in the 5th year of the plan
- Estimate only

Part 2- Projected Amounts

(2.) **Source reduction** anticipated over five-year period

- The total amount you think you will reduce through Source Reduction activities

(3.) % **Waste Minimization** by the Goal Year

- What % of the waste left over after Source Reduction activities will be reduced through Waste Minimization efforts
  - *Example: You produce 10,000 tons of hazardous waste before you implement the SR activities. You reduce 2,000 tons through SR activities. You still produce 8,000 tons. What % of the 8,000 tons do you think you will reduce through WM efforts such as recycling?*

Part 2- Projected Amounts

PART 2. PROJECTED AMOUNTS FOR GOAL YEAR (FROM YOUR PLAN)

Goal Year (the 5th year of your plan): _____

	Estimate Quantity	
	HW [Column A]	TRI [Column B]
1. Projected amount of HW generation or TRI releases/transfers by Goal Year	Tons	Tons
2. Source reduction anticipated over five-year period	Tons	Tons
3. % Waste minimization by the Goal Year	%	%

Part 3- Reduction Achievements

- ESTIMATE the amount of hazardous waste or TRI releases/transfers that *would have occurred* if you hadn't implemented a Source Reduction activity.
  - This is where your previous Annual Waste Summary or TRI Form R will come in handy!

- Notes, Notes, Notes!

Part 3- Reduction Achievements

Part 3: Reduction Achievement for the Report Year

Source Reduction Activities
Estimate the amount of reduction for hazardous waste generation and TRI release/transfer that your facility experienced in each category below.

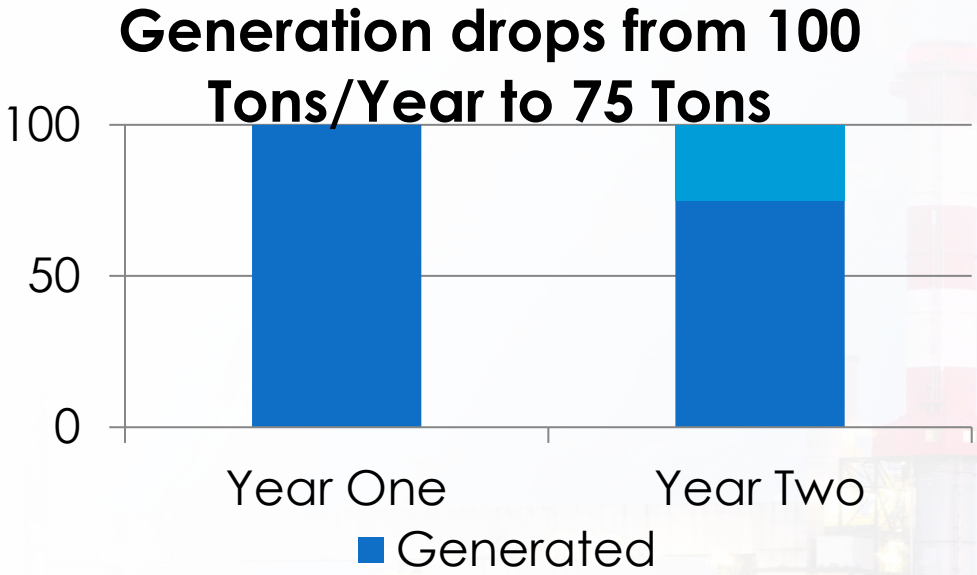
	Estimate Quantity	
	HW (Tons) [Column A]	TRI (Tons) [Column B]
1. Good Operating Practices		
2. Inventory Control		
3. Spill and Leak Prevention		
4. Raw-Material Modifications/Substitutions		
5. Process and Equipment Modifications		
6. Cleaning and Degreasing		
7. Surface Preparation and Finishing		
8. Product Modifications		
9. **Total Source Reduction (Sum 1 through 8) in Tons**		

How do you classify reductions?

- Modified the Methylene Chloride Extraction Procedure
- Reduced 5.5 tons/year waste
- Saved $15,000/year (Description section at bottom)

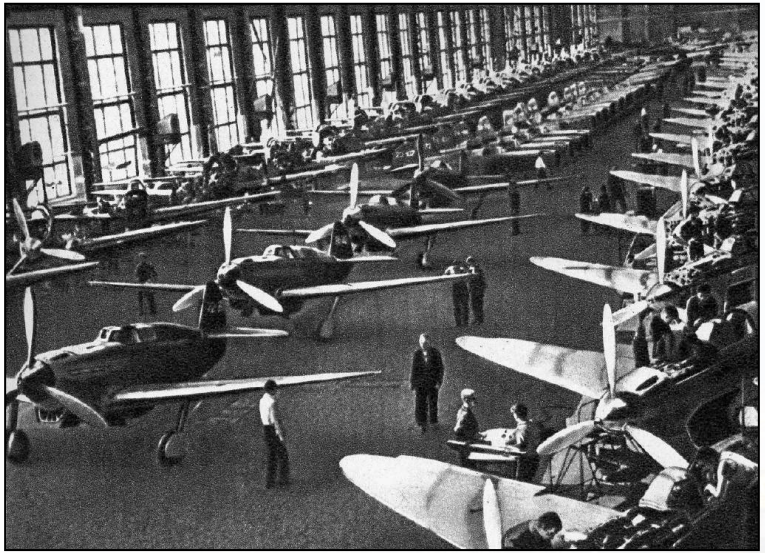
Process Modification

Simple Case



Amount source reduced is 25 tons

Complicated Case



What if production increases?

Production Change

Product Created	Waste Stream
2020 – 2,000 widgets	5 tons generated

PROCESS MODIFICATIONS

2021 – 3,000 widgets	7 tons generated

- Calculate Production Ratio (Report Year/Previous Year)

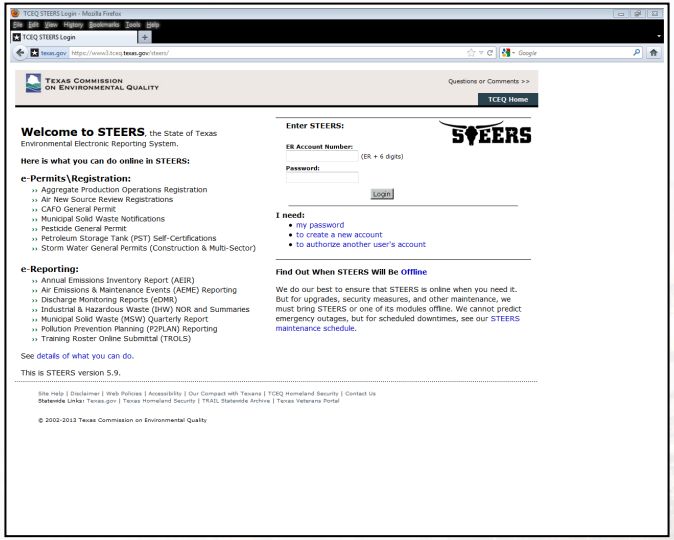
  3,000/2,000 = 1.5
- Expected waste generated in 2021 (Previous Year x Prod Ratio)

  5 tons x 1.5 = 7.5 estimated tons
- Subtract actual waste generated from estimate

  7.5 estimated – 7 actual = 0.5 tons source reduced!!!!

Online Reporting: STEERS

Submit your Annual Progress Report Online through STEERS!



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Online Reporting Advantages

- Quick and easy
- Data validation
- Preferred by TCEQ

Success Story in Nederland, TX

Unocal (Chevron) Beaumont Terminal

- Removal of lead contaminated paint, during tank maintenance operations, using steel shot instead of sand, to remove 80% of lead surface paint.
- The used sand blast that was created was determined to be non-hazardous and reclaimed as asphalt paving products
- Reduced multiple roll off boxes of hazardous blast sand with 11 drums of stabilized paint chips and dust.

Saved $500,000 in disposal costs!


TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY