Creating and Implementing a Pollution Prevention Plan

The Most Important Requirement &
Your Greatest Opportunity

Identify your Pollutants and Activities

You don’t know what you got until you look under the hood!

P2 Planning Process

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

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

- Not required
- Good way to:
  - Win broad support
  - Generate ideas
  - Create broad skill base
  - Help with implementation

Give the Team Members Ownership

- Come up with a 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 projects most significant to them
  - Listen! They know what will rally the troops

Valspar Inc, Paint

Beaumont, Texas

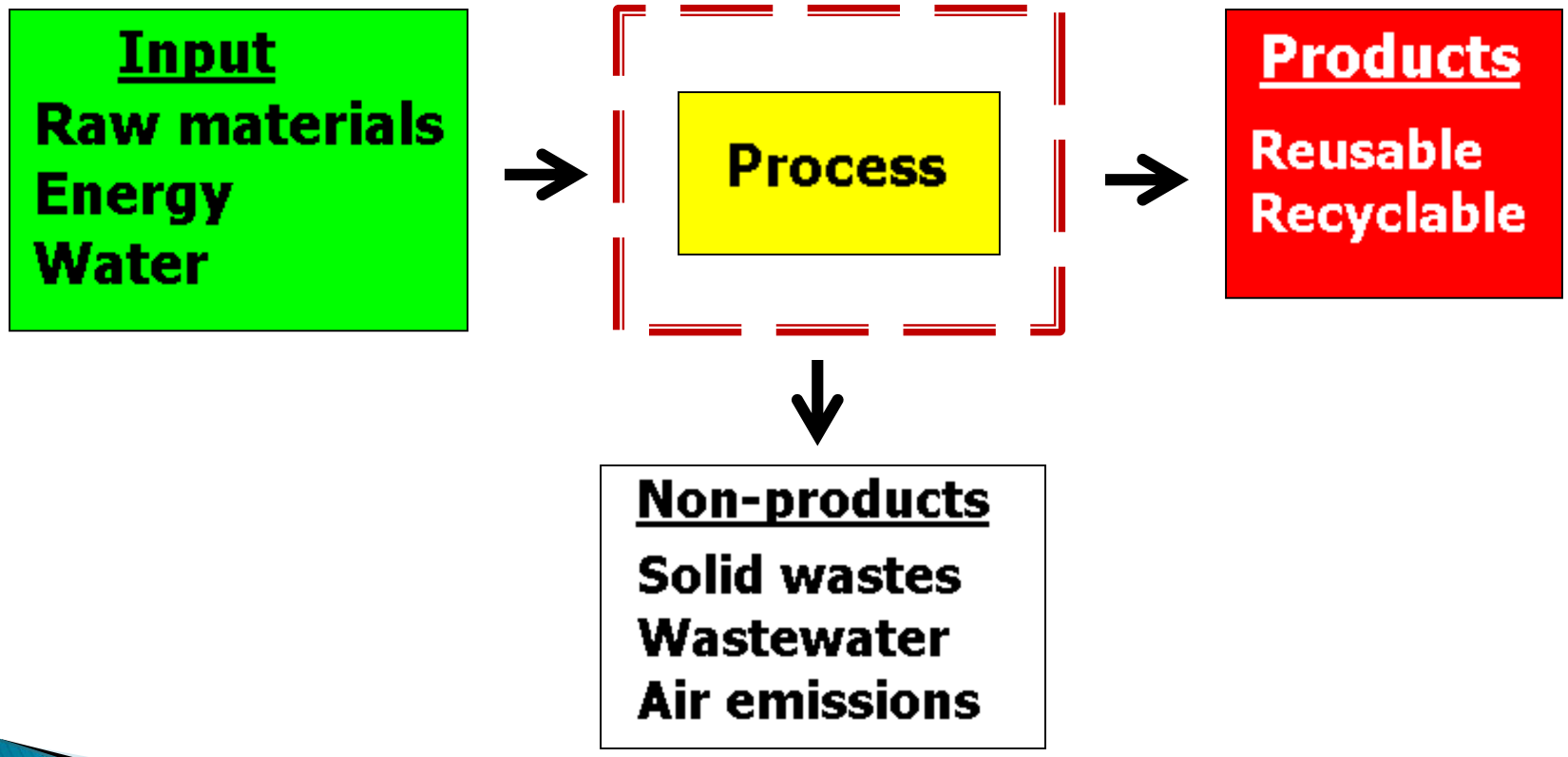
Saved $100,000/yr

- Line employees get 2% of savings
- Saved 75,000 gallons of paint and solvent per year

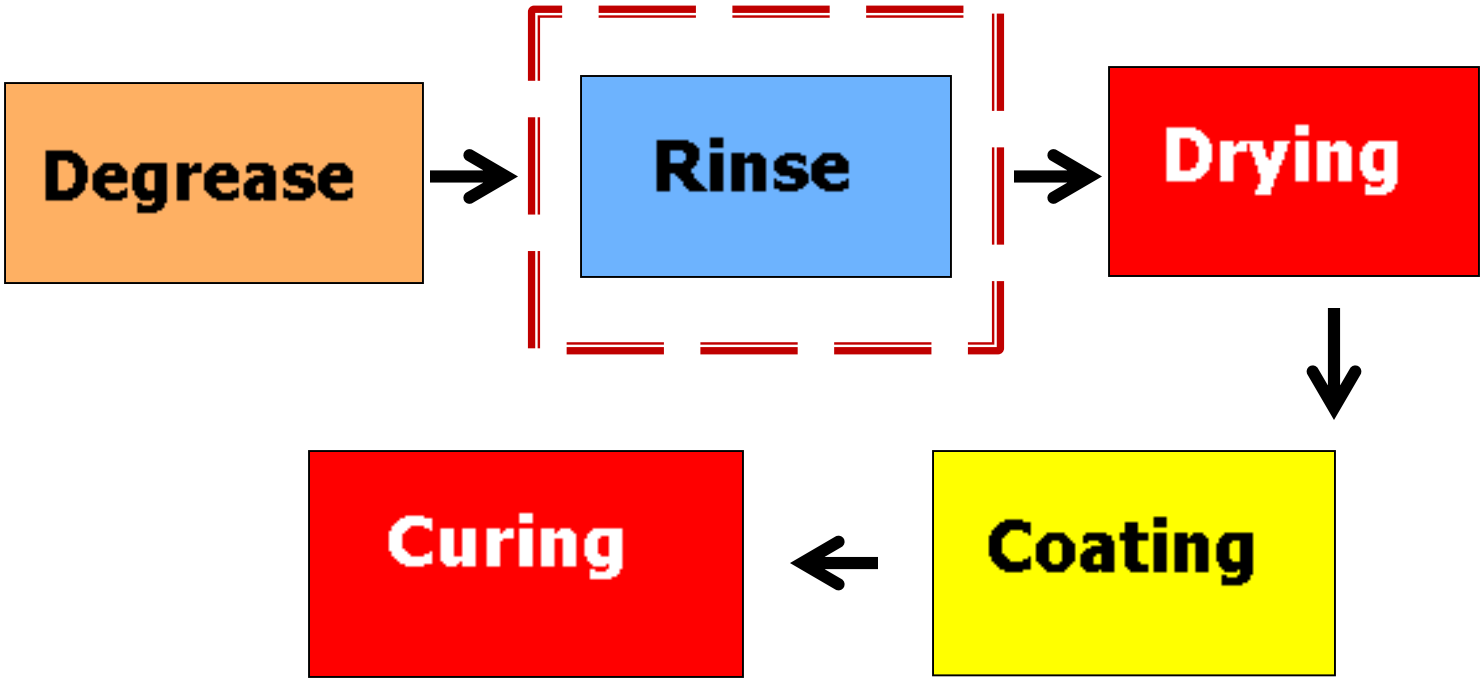
Identify Process Wastes

- Draw “line” around area/process
- List everything that goes in and out

Input/Output



Multi-Step Process



Identify Inputs & Outputs
for Each Step

Making Tea

Making Tea

Inputs

Tea/Teabag

Teapot

Water

Sugar

Lemons

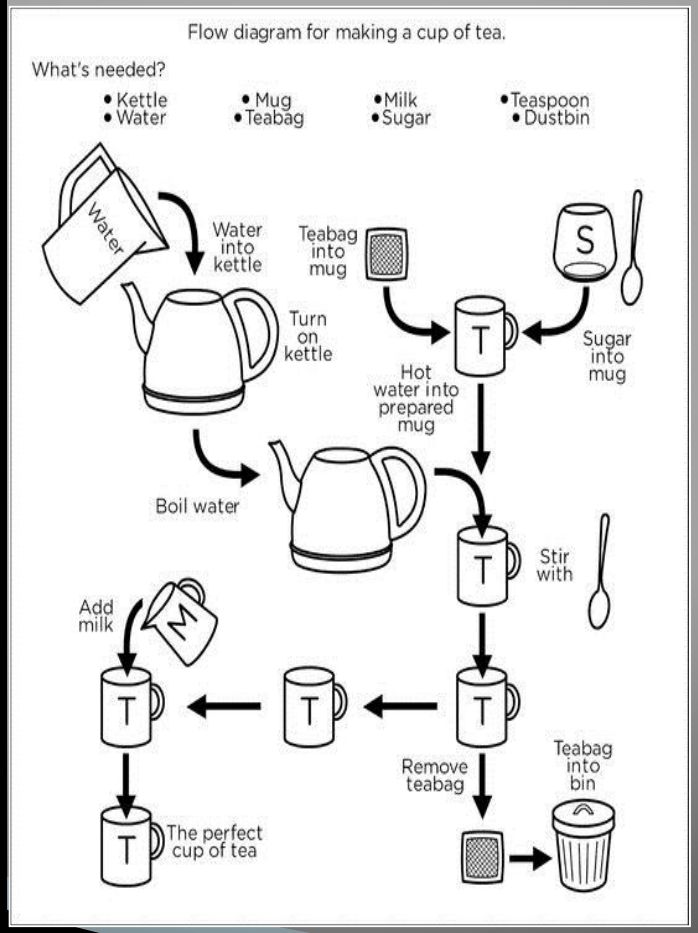
Cream

Spoons

Cups

Napkins

Process



Outputs

Cup of Tea

Used Tea/Teabag

Spilled loose tea

Unused hot water

Spilled sugar & cream

Unused sugar, lemon, & cream

Wash water for cups, pot, spoons, etc.

One Facility = Many Processes

Beyond Production. . .

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

Hazardous Waste Materials

- ✓ What types of hazardous waste are 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 and Wastewater

- How much water do we use?
- Is our water use as efficient as possible?
- How can you reuse water and/or reduce overall water usage?
- Can you reduce contaminants in wastewater and discharges?

Energy Use

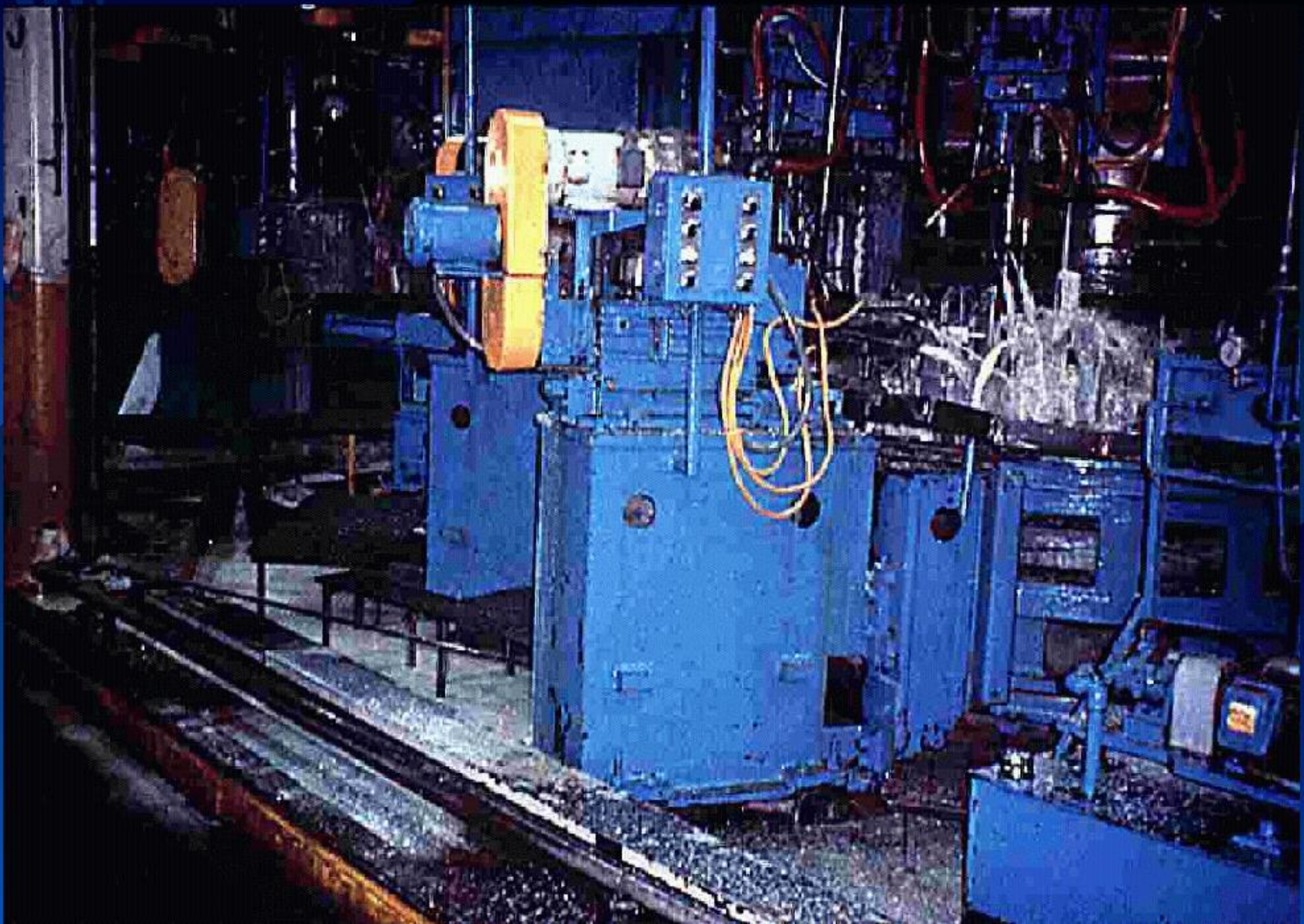
- How much energy is used in the process?
- How is the energy used?
- How can overall energy use be reduced?
- Is lighting efficient?
  - Natural lighting? Energy efficient lighting?
- Can you consolidate operations/storage space?
- Is lighting, heating, or air conditioning needed? How much?
- Is renewable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

Solid Waste

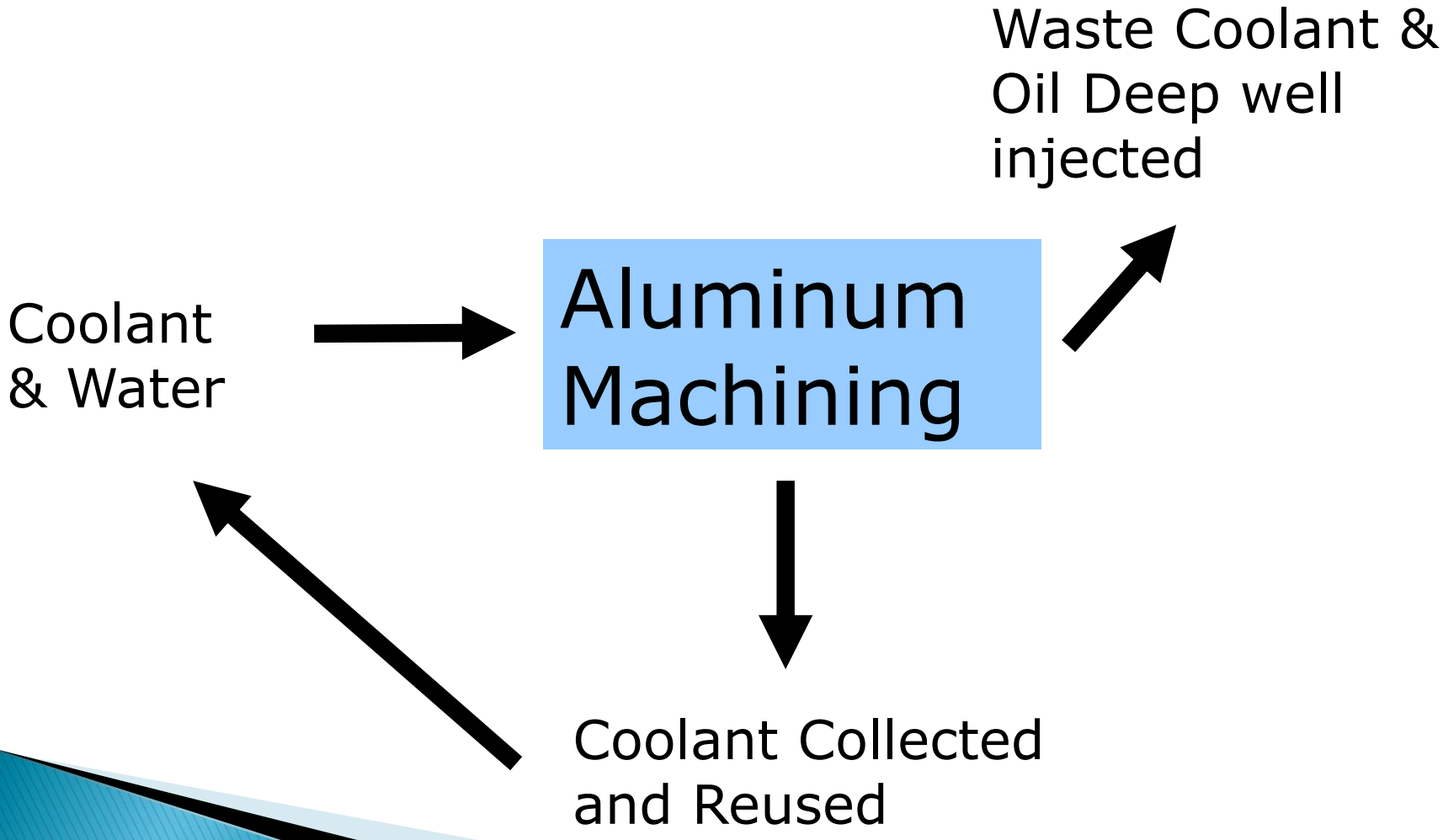
- What types of solid waste are generated?
- How much solid waste is generated?
- Are there opportunities for reduction, reuse, or composting?

All Materials

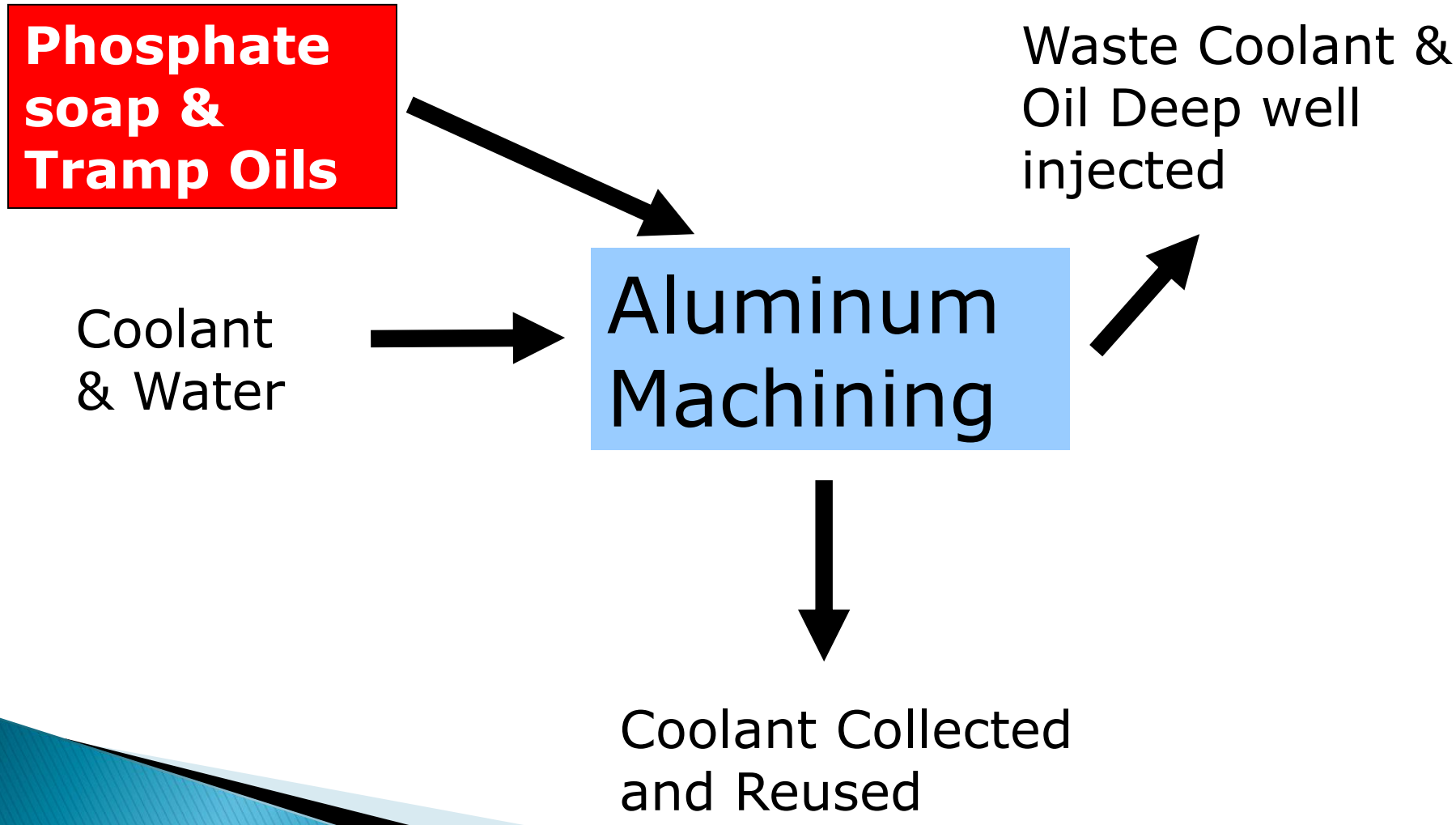
- ✓ Can materials be reused?
- ✓ Are there markets for the materials?
  - Other parts of the factory
  - RENEW
  - Recycling market
- ✓ Is it possible to segregate in process?



The Expected Process



The Unexpected Input



CMI Success

Machine Parts Manufacturing

- Coolant reuse
- Change floor cleaning soap
- Eliminated major coolant problems
- Reduced oily wastewater by 80,000 gallons/year
- Saves CMI $300,000/year

Columbia Paint Mfg. (Sherwin Williams)

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

Columbia Paint –Savings

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

Setting Goals and Schedules

The who, what, when, where, and how!

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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 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

Setting Facility Goals

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

Measureable?

Setting Facility Goals

Example 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 3 tons & VOC emissions by 1 ton from painting operations by the end of the fifth year of this plan.

Employee Awareness and Training

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

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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

Media Transfers

Don’t substitute one problem with another.

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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

Documenting the Plan

What you need to put together and submit!

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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

Measuring Results

Classifying project types and the Annual Progress Report

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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

Note: Beginning in 2018, companies submitting APRs for 10 or more facilities, will be required to submit through STEERS!!

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. No.
Telephone: - - Ext.	TRI ID No.
Fax: - -	EPA ID No.
Email (optional):	P2 Program ID No. (PNumber):
Primary SIC Code:	Number of Employees:
Primary NAICS:	Regulated Entity No. (RN):
First year of your current plan:	Customer No. (CN):
Does this report revise a previously submitted APR? ☐ Yes ☐ No	

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	%	%

TCEQ-00784 (5/17)

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 (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**		

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. SQGs 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 (5/17)

Information Sources

- The report is based on your plan
- Part 1
  - 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 2017-2021, then 2021 is the 5th year when reporting in July 2018. You will report 2012 as the first year in the July 2017 APR.
- 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
    - *Exception: If you are in the situation above you can use what you previously estimated or actual numbers*

Part 2- Projected Amounts

- Source reduction anticipated over five-year period
  - The total amount you think you will reduce through Source Reduction activities

- % 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 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!

How do you classify reductions?

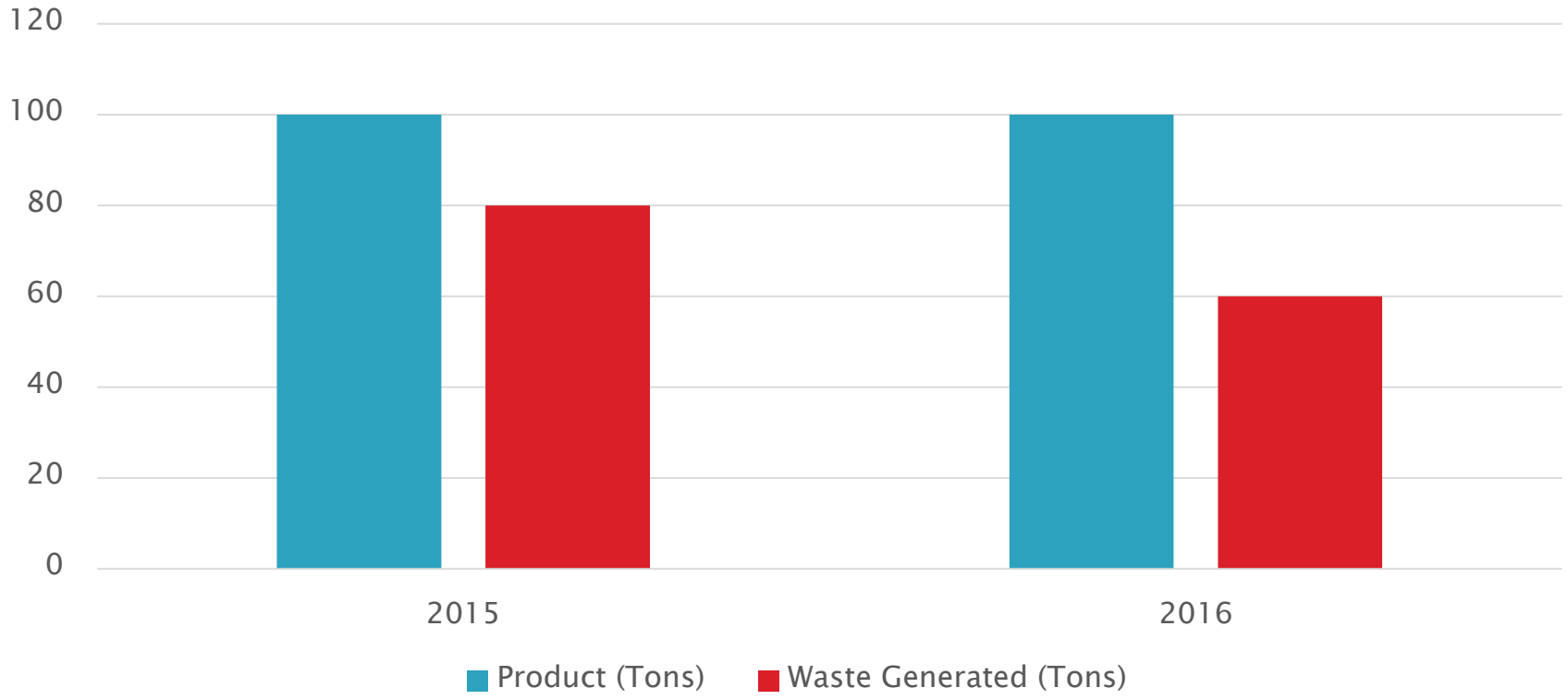
- Ask yourself questions like these:
  - Did we create a regular inspection and maintenance plan?
    - **Good Operating Practice**
  - Did we create a method of tracking and moving inventory more efficiently?
    - **Inventory Control**
  - Did we install automatic shutoff valves or catch basins?
    - **Spill and Leak Prevention**
  - Did we substitute a non-hazardous raw material/chemical?
    - **Raw-Material Modification/Substitution**
  - Did we switch to less hazardous or non-hazardous solvents?
    - **Cleaning and Degreasing**

How do you classify reductions?

- Ask yourself questions like these:
  - Did reschedule our batches to be more efficient? Did we install/update/refurbish equipment?
    - **Process and Equipment Modification**
  - Did we switch to less hazardous or non-hazardous solvents?
    - **Cleaning and Degreasing**
  - Did we modify our process for applying surface coatings?
    - **Surface Preparation and Finishing**
  - Did we make changes to our product formula?
    - **Product Modifications**

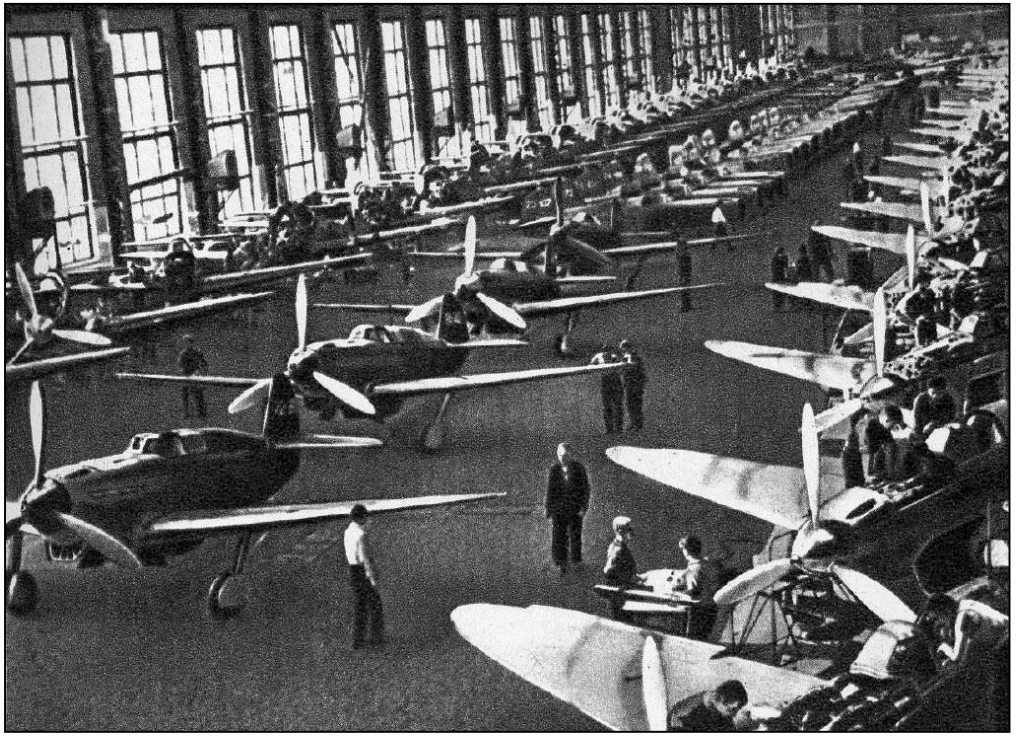
Simple Case

Production remains consistent…



Amount source reduced is 20 tons.

Complicated Case



What if production increases?

Production Change

Product Created	Waste Stream
2015 – 2,000 widgets	5 tons generated
PROCESS MODIFICATIONS	
2017 – 3,000 widgets	7 tons generated

- Calculate Production Ratio (Report Year/Previous Year)

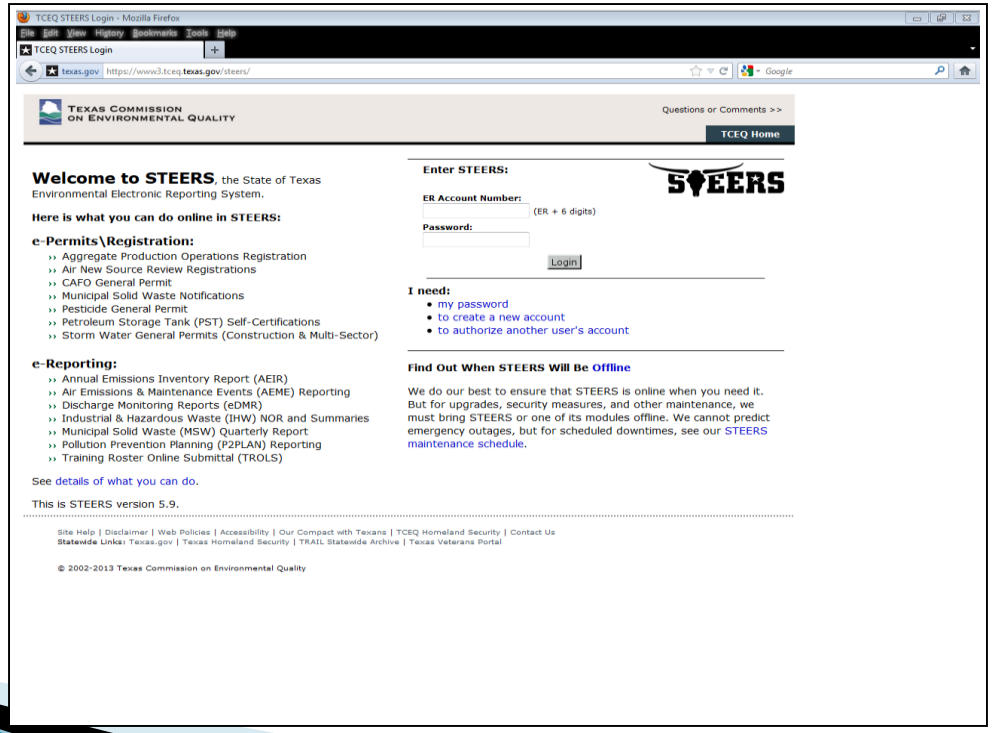
  3,000/2,000 = 1.5
- Expected waste generated in 2017 (Base Year x Prod Ratio)

  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!!!!

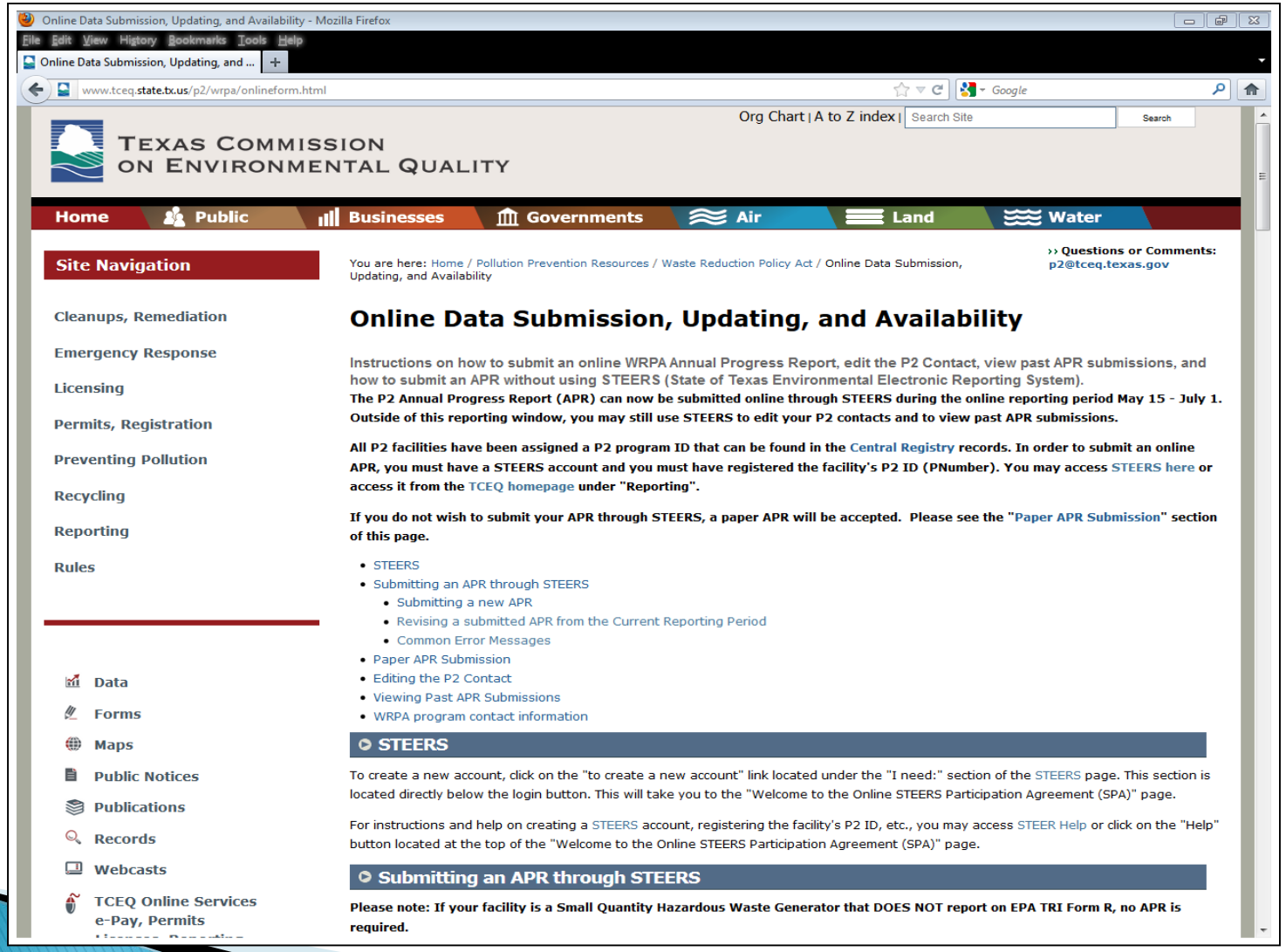
Online Reporting: STEERS

Submit your Annual Progress Report Online through STEERS!



P2Plan.org Portal

P2Plan.org Portal



Online Reporting Advantages

- Quick and easy
- Data validation
- Preferred by TCEQ


Wait! Wait! You haven't heard the best part!
ICANHASCHEEZBURGER.COM

Thought of the Day: An APR Lesson

- The Tale of the Missing Reductions:
  - Large chemical manufacture that had been subject to P2 Planning since the beginning.
  - Had been implementing P2 projects slowly over the past 20 years: updated equipment, modified processes
    - Reported small reductions
  - Continued disposing of waste as hazardous based on original process knowledge

Thought of the Day: An APR Lesson

- The Tale of the Missing Reductions:
  - New environmental personnel reviewed the site history
  - New projects were started
    - Found markets for waste streams to be sold as secondary products
    - Resolved some long standing issues with water treatment equipment
  - After all of the process modifications, no one thought to re-characterize the waste streams
    - Continued disposing of waste as hazardous based on original process knowledge

Thought of the Day: An APR Lesson

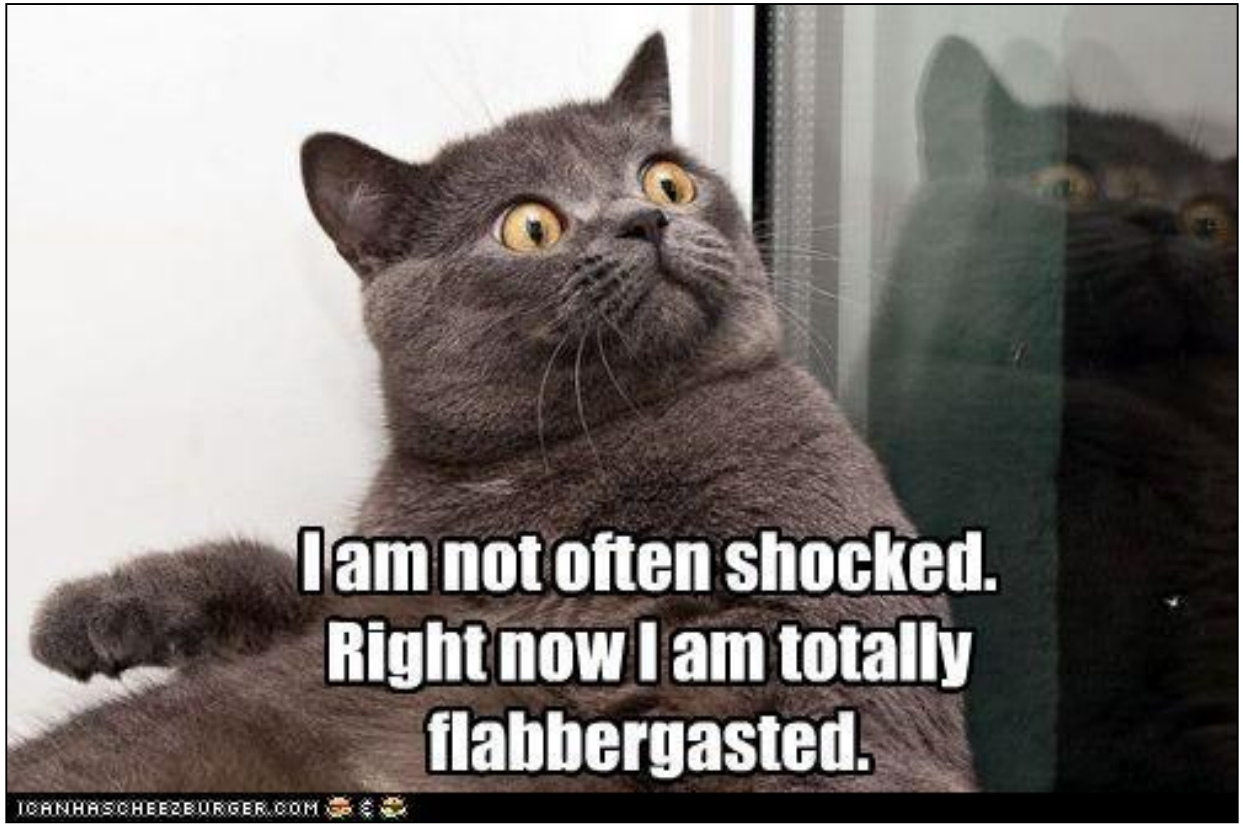
- Reported in 2016:
  - Reclassified a waste stream as a product with a buyer
  - Repaired existing equipment
  - Re-characterized the remaining waste streams

Reported a 4.5 MILLION TON REDUCTION IN ONE YEAR!!

Repeated the work at a sister facility

Reported a 49 THOUSAND TON REDUCTION IN ONE YEAR!!

QUESTIONS?


I am not often shocked.
Right now I am totally
flabbergasted.
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