

# **Arizona Department of Environmental Quality**

## **Pollution Prevention (P2) Program**



**March 6, 2015**

# **Presentation Outline**

## **Part 1**

- Arizona P2 Policy
- P2 program thresholds
- Review of P2 Plan sections
- P2 Plan maintenance

## **Break**

- Question and answer session

## **Part 2**

- P2 program facility successful goals examples
  - Hazardous waste reduction
  - Toxic substance use reduction
  - Solid waste diversion
  - Natural resources conservation

P2 promotion and benefits

Question and answer session



## Why P2?

- Since the early 1970's, environmental protection programs in the U.S. have been directed primarily at *controlling* not *preventing* pollution.
- Pollution control programs, in general have consisted of end-of-pipe approaches including treatment, discharge and disposal.
- Overall, these techniques have been effective, but environmental protection challenges still remain.



# What is P2?

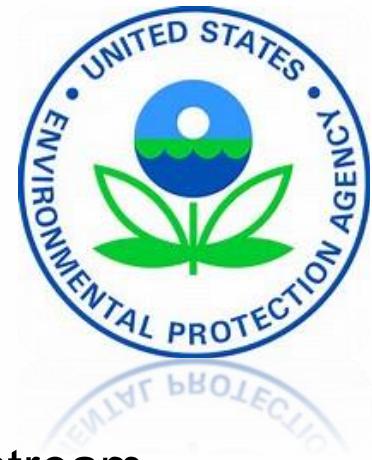
## 1990 Federal P2 Act

- Pollution should be prevented or reduced at the source whenever feasible

P2 is reducing or eliminating waste at the source by:

- modifying production process
- promoting the use of non-toxic or less toxic substances
- implementing conservation techniques
- Re-using materials instead of putting them in the waste stream

- EPA's definition



In 1991, Arizona initiated one of the broadest P2 programs in the nation and adopted a P2 policy:

**Arizona Revised Statutes (A.R.S.) §§ 49-961 to 49-969**

- Toxic substance use reduction
- Hazardous waste generation reduction



# What is P2 in Arizona?

## P2 in Arizona

Activities that avoid, eliminate or reduce the generation of hazardous waste, the use of toxic substances, or the release of a pollutant or contaminant at the source

Business  
Operational  
changes

Toxic substance  
use reduction

Reclamation

Conservation

Spill and Leak  
Prevention

Source  
Reduction

Reuse

Substitution

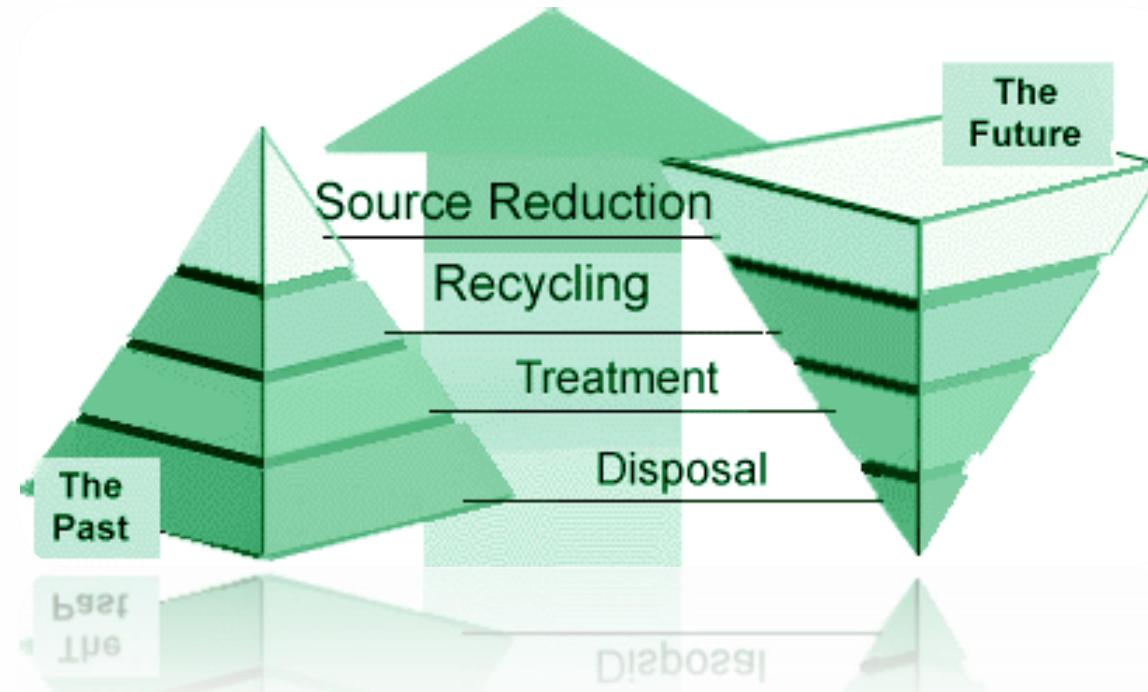
Inventory  
Control

Recycling

Waste Minimization

# Waste Management Hierarchy

- Preventing pollution offers important economic benefits
  - ✓ Pollution never created avoids the need for expensive investments in waste management or cleanup.
- EPA does not include recycling efforts in P2 but Arizona does
- Educating industry and the general public on P2 is necessary to change from a culture that tolerates pollution to a sustainable one which increasingly eliminates pollution at the source.



## **1. Filed a Toxic Release Inventory Form (form R or A)**

### **A.R.S. §49-962(A)(1)**

If the owner or operator of a facility was required to file an annual Toxic Release Inventory (TRI) form (Form A or Form R) to EPA during the preceding calendar year, the facility must prepare and implement a P2 Plan.

## **2. Hazardous Waste Generators**

### **A.R.S. §§49-962 (A)(2) and 49-963(C)**

A facility that generated or shipped off-site an average of 2,200 pounds (1,000 kg) per month of hazardous waste or an average 2.2 pounds (1 kg) per month of acute hazardous waste during the preceding calendar year, must prepare and implement a P2 Plan.

## **3. Toxic Substance Users**

### **A.R.S. §49-963(D)**

If the facility used in excess of 10,000 pounds of a TRI listed chemical during the previous calendar year, the facility must prepare and implement a P2 Plan.

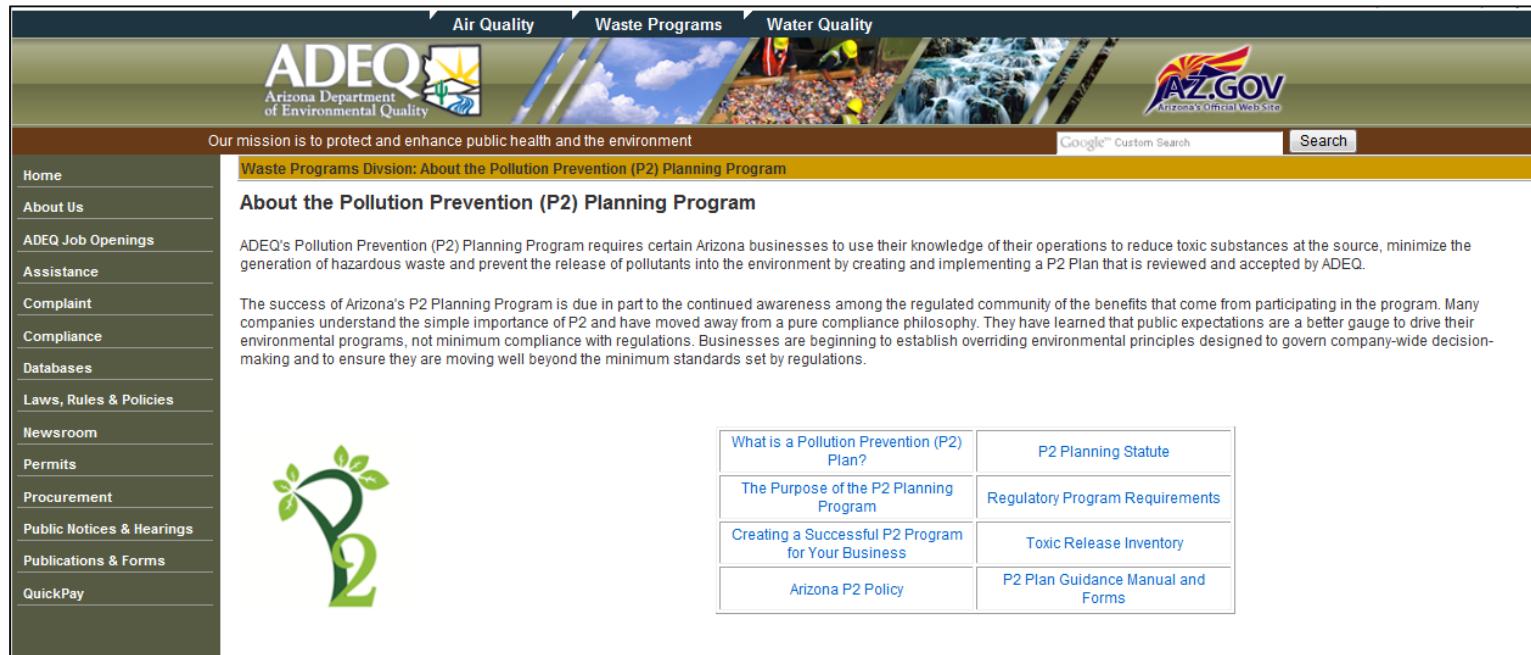
## What is a P2 Plan

- Stand alone management document that provides facility specific information
- Analyzes work practices, processes and operations
- Outlines potential for P2 opportunities and goals
- Required to maintain as long as facility meets P2 Plan filing thresholds
- Required minimum of two years



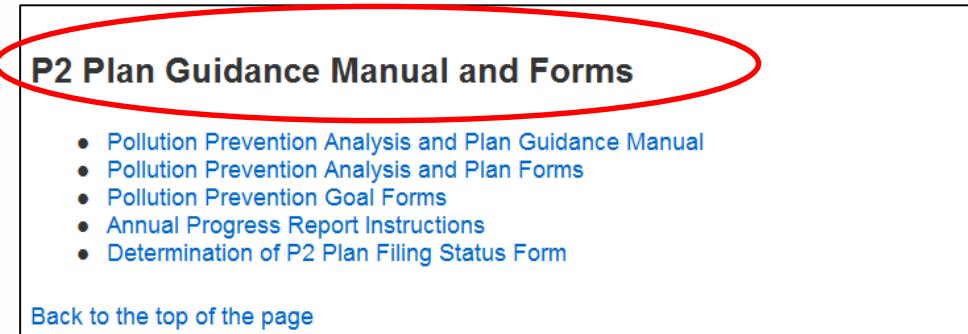
# Where to find plan forms and manual

<http://www.azdeq.gov/environ/waste/p2/programs.html>



The screenshot shows the ADEQ website for the P2 Planning Program. The top navigation bar includes links for Air Quality, Waste Programs, and Water Quality. The main content area is titled "About the Pollution Prevention (P2) Planning Program". It features a sub-navigation bar with links to "What is a Pollution Prevention (P2) Plan?", "The Purpose of the P2 Planning Program", "Creating a Successful P2 Program for Your Business", and "Arizona P2 Policy". A green graphic of a stylized 'P2' with leaves is on the left. A red box highlights the "P2 Plan Guidance Manual and Forms" link in the bottom right corner of the main content area.

Scroll to bottom of  
the page:



The screenshot shows the "P2 Plan Guidance Manual and Forms" page. A red oval highlights the title. A green curved arrow points to the bottom of the page, where a "Back to the top of the page" link is located. The page lists several documents:

- Pollution Prevention Analysis and Plan Guidance Manual
- Pollution Prevention Analysis and Plan Forms
- Pollution Prevention Goal Forms
- Annual Progress Report Instructions
- Determination of P2 Plan Filing Status Form

# Contents of the P2 Plan

ADEQ developed template based on A.R.S. §49-963(J) requirements consisting of:

1. Facility contact information and management certification
2. Facility general information
3. Pollution prevention policy
4. Management and corporate support
5. Scope and objectives
6. Analysis and opportunity development
7. Performance goals
8. Management practices and procedures
9. Employee awareness and training programs
10. Existing P2 activities

*Pollution Prevention Plan*

**Pollution Prevention (P2) Analysis and Plan for**

\_\_\_\_\_  
(Company Name)  
ADEQ P2 ID Number: \_\_\_\_\_

This document is an:  
 Original Plan  
 Amendment to the Original Plan

The Plan Time Frame (Section 5) is:  
From: \_\_\_\_\_ (beginning date)  
To: \_\_\_\_\_ (the last goal completion date)

**Mail completed P2 Plan to:**

Arizona Department of Environmental Quality  
Sustainability Programs Unit  
Pollution Prevention Program  
1110 W. Washington St.  
Phoenix, Arizona 85007

E-mail address: [sid.saric@abcinc.com](mailto:sid.saric@abcinc.com)

# New Plan/Amendment forms

- Facility Name
- P2 ID # not the same as EPA ID
- Assigned by P2 Staff
- If submitting original Plan, contact P2 staff for a P2 ID number
- First time filer, mark 'Original Plan'
- Any Plans following original Plans are amendments
- Plan time frame must:
  - Span a minimum of two years
  - Correspond to Section 5
- The Plan end date should be consistent with longest spanning goal in Section 7
- Ideally, Plan should be scanned and email

*Pollution Prevention Plan*

## Pollution Prevention (P2) Analysis and Plan for

**ABC Incorporated**

(Company Name)

ADEQ P2 ID Number: **200999**

This document is an:

**Original Plan**

**Amendment to the Original Plan**

The Plan Time Frame (Section 5) is:

From: **07/01/2015** (beginning date)

To: **07/01/2017** (the last goal completion date)

Mail completed P2 Plan to:

Arizona Department of Environmental Quality  
Sustainability Programs Unit  
Pollution Prevention Program  
1110 W. Washington St.  
Phoenix, Arizona 85007

# Plan forms – Section 1 & 2

## General Information & Certification

Include as much relevant information to help ADEQ staff understand the facility business and processes. Summary descriptions from facility websites may be useful.



An umbrella plan can cover more than one facility. Section 3 information should be completed for each facility.



The person signing the form should be a senior official with management responsibility and a signature should be included (no electronic signatures).



*Pollution Prevention Plan*

**Section 1. General Information A.R.S. §49-963.J.1 and J.2)**  
 Requirement: Provide the name and location of the principal business activities at the facility, and the name address and telephone number of the owner or operator of the facility and of the senior official with management responsibility at the facility.

Name of Company: ABC Incorporated  
 Owner or Operator Name and Telephone Number: Sid D. Senior  
 Mailing Address: P.O. Box 123 Phoenix, Arizona 88888  
 Description of what this business does (principal business activities): Manufacture cultured marble bathroom fixtures such as sinktops, bathtubs and showers. Our state of the art production facility in Phoenix is able to offer a wide selection of color and design options.  
 P2 Technical Contact Information:  
 Contact Person: John Doe  
 Telephone Number: 602-555-1122 Fax Number: 602-555-1135  
 E-mail Address: john.doe@abcinc.com  
 One P2 Plan may be submitted to cover more than one facility. Please ensure that Section 3 is completed for each facility covered by this Plan.

How many facilities will be covered by this Plan? 1

**Section 2. Certification (A.R.S. §49-963.J.2 and 3)**

I certify that I have personally read this Pollution Prevention Plan. I am familiar with its contents and attachments. Based on my inquiry of the persons immediately responsible for obtaining the information contained in the Plan, I believe, to the best of my knowledge, the information presented in the Plan is true, accurate and complete.

	President & CEO	06/05/2015
Certifying signature	Title	Date

*For the person signing and certifying the plan:* (This person must be a senior official with management responsibility at the facility.)

**Print Name** (Please print or type): Sid D. Senior  
**Print Title:** President & CEO  
**Telephone Number:** 602-555-1122 **Fax Number:** 602-555-1135  
**E-mail address:** sid.senior@abcinc.com

# Plan forms – Section 3

This is the 6 digit North American Industry Classification System (NAICS) number. Visit the Census Bureau for more information

<http://www.census.gov/eos/www/naics/>

Any environmental permits that apply to the facility

Include descriptions of:

- The specific wastes and waste codes if available (e.g. Chromium-D007)
- Toxic substances filed for TRI
- Toxic Substances used

*Pollution Prevention Plan*

## Section 3. Facility Information (A.R.S. §49-963-J.1; §49-963-I)

Facility Name: ABC Incorporated

Physical Address: 1234 Main Street Phoenix, Arizona 88888

Primary NAICS Code (6 digits): 326199 Other NAICS Codes (optional): None

### Permits

*(Please list below any permits at this facility. Write "NONE" for any permits that do not apply.)*

RCRA ID Number (also known as EPA ID Number): AZD111222333

*(For example AZD123456789)*

NPDES Permits: ADEQ permit AZR00A212

Air Quality Permits: Maricopa County Permit A9600202

Water Quality Permits: None

List any other environmental permits: None

### Plan Requirement Threshold(s) Met

*(Please check all P2 plan filing threshold(s) the facility met which requires the facility to file and maintain a P2 Plan.)*

- Generated or shipped offsite for purposes other than recycling an average of one thousand kilograms per month of hazardous waste in calendar year 2014. *The cumulative amount and streams of hazardous waste generated at the facility includes all of the following waste streams:*
- Generated or shipped offsite for purposes other than recycling an average of one kilogram per month of acutely hazardous waste in calendar year 2014. *The cumulative amount and streams of acutely hazardous waste generated at the facility includes all of the following waste streams:*
- Met the thresholds required to file a Toxic Release Inventory (TRI) form (form R or A) for the calendar year 2014. The TRI identification number assigned to this facility is 85993CBLSC7211N. The TRI chemicals that met the thresholds are: Styrene
- Used in excess of 10,000 pounds of a toxic substance in calendar year 2014. The toxic substances used above the 10,000-pound threshold are: Styrene
- Facility wants to file a voluntary P2 plan although it does not meet the P2 plan filing thresholds.

# Plan forms – Section 4

## Management and Corporate Support

### Check applicable box

- Box 1 – used ADEQ P2 Policy
  - Or -
- Box 2 – used facility P2 Environmental Policy

### Check applicable box

- Box 3 – Display of policy
- Box 4 – Other languages policy will be available in

#### Section 4. Management and Corporate Support (A.R.S. §49-963.J.5 and J.9)

Requirement: Provide a written policy setting forth management and corporate support for the pollution prevention plan and a commitment to implement the Plan to achieve the plan goals. The Plan shall include employee awareness and training programs to involve employees in pollution prevention planning and implementation to the maximum extent feasible.

P2 POLICY

**Check box 1 or 2 below.**

1.  The senior official with management responsibility at the facility has signed, and we have posted in our facility, a copy of the P2 Policy contained in the ADEQ P2 guidance manual. A copy of the signed policy is provided on the next page of this Plan.

OR

2.  The senior official with management responsibility at the facility, has signed, and we have posted in our facility, a copy of our own P2 Policy setting forth management and corporate support for the P2 Plan and a commitment to implement the Plan to achieve the Plan goals. A copy of the signed policy is provided on the next page of this Plan.

**Check each box that applies and complete information below that applies.**

3.  The policy will be displayed in view of all employees and introduced to new employees

The policy is posted at the following location(s): Employee Break Area

4.  The policy will be available in languages other than English, as appropriate, and to the public and customers (as appropriate). Spanish

# Plan forms – Section 4

## Pollution Prevention (P2) Policy

ADEQ P2  
Policy  
template



*Pollution Prevention Plan*

### Pollution Prevention (P2) Policy

Name: ABC Incorporated

Our company is committed to protecting the health and safety of the public, our employees and protecting the environment.

To the best of our ability we will:

- Develop a P2 Plan and implement the Plan to achieve the Plan goals.
- Provide employee awareness and training programs to involve employees in P2 planning and implementation to the maximum extent feasible.
- Incorporate the P2 Plan into management practices and procedures.
- Use P2 to reduce or eliminate the toxicity and the amount of toxic substances and hazardous wastes and minimize their undesirable effects on air, water and land resources, and to conserve resources, including energy and water.
- Comply with the relevant laws and regulations and implement programs and procedures to assure environmental compliance.

Our management and employees are committed to continual improvement and will continuously seek opportunities to improve the effectiveness of our environmental program.



President & CEO

06/05/2015

Ensure  
this is  
signed (no  
electronic  
signatures)



Signature

Title

Date

# Plan forms – Section 5

## Scope and Objectives

The Plan timeframe date should match the date specified in the cover page. The Plan end date should be concurrent with the *scheduled completion date* of the longest running goal in Section 7.

List all the processing areas that will be analyzed in the Plan. These should match each area analyzed in Section 6.

Check all the environmental objectives that apply.

## *Pollution Prevention Plan*

**Section 5. Scope and Objectives** (A.R.S. §49-963.K; A.R.S. §49-963.J.6)

Requirement: The time frame of the original Plan must span at least 2 years at a minimum. Provide a statement of the plan's scope and objectives.

Plan Time Frame: The current time frame of this Plan or Amendment will be:

*\*Note: Plan time frame must be the same as the date defined on the cover page.*

## PLAN SCOPE

The Plan scope should contain, at a minimum, a list of all process areas to be analyzed in the Section 6 process review, and include toxic substances and hazardous wastes for which the facility must file this Plan. This scope should be as specific as possible, as an example, you may use a facility wide process area such as "Spill and Leak Prevention" or a process area such as a "Spray Booth Operations." Note each process area listed here must have a corresponding "Analysis and Opportunity Development" completed for Section 6.

Staff will look at the following process areas for this Plan

1. Spray Booth Operations/Gel Coating
2. Material Receiving Area
3. Spill and Leak Prevention
4. Finishing
- 5.

## ENVIRONMENTAL OBJECTIVES

The general objectives for this scope were developed and include the following.  
*(Check all that apply)*

- Improved operating practices to improve housekeeping, or spill and leak prevention.
- Improved management practices, such as purchase and inventory control.
- Process or equipment modifications to minimize the use of toxic substances.
- Process or equipment modifications to minimize the generation of hazardous waste.
- Process or equipment modifications to minimize the generation of HAP or VOC or other particulate emission reductions.
- Raw material modifications or substitutions to minimize the "use" of toxic substances.
- Resource conservation (water, energy, etc).
- Reuse or recycling of materials or wastes.
- Reduction in use or emissions of greenhouse gases or ozone producing chemicals
- Other:

# Plan forms – Section 6

## Analysis and Opportunity Development

Process areas should match Process areas in Section 5.

- Describe process steps
- Discuss inputs - toxic substances used
- Discuss outputs - waste and emissions
- Discuss root cause of each waste generation, emission or toxic substance
- Discuss why each generation, emission or toxic substance occurs



**Section 6. Analysis and Opportunity Development (A.R.S. §49-963.J.7)**  
Requirement: Provide an analysis identifying pollution prevention opportunities to reduce or eliminate toxic substance releases and hazardous waste generation.

### 1. Process Area (#1): Spray Booth Operations/Gel Coating Process

#### 2. Process Information

a.  Describe the process steps:

1) Completed cultured marble pieces (sinks, tubs and shower stalls) are moved on rolling tables to a filtered open front spray booth.  
 2) Gel coat is mixed inside the spray gun with 2% methyl ethyl ketone peroxide (MEKP) and gel coat resin containing about 49% (weight percent) styrene monomer resin.  
 3) Styrene gel coat resin and MEKP is applied in the spray booth with a high volume low pressure (HVL) spray gun so that a layer of gel coat is applied onto the cultured marble piece.  
 4) The cultured marble piece is then placed into one of the two natural gas heated curing tunnels to dry. The curing tunnels have a series of thick plastic strips on one side so employees can reach in and move the sprayed pieces in and out of the tunnel. Exhaust from the tunnels is vented to the outside.

b.  Discuss the toxic substances (inputs) used in the process and why they are used

Methyl ethyl ketone peroxide (MEKP) and gel coat resin containing styrene monomer resin is used to provide a protective coating on the pieces. This MEKP catalyst assists in curing the resin coating.

c.  Discuss the wastes and emissions (output) generated by the process. Include wastes and emissions due to spills, cleaning, maintenance, unused or expired raw materials, etc, and include waste codes.

#### Waste

Waste includes used spray booth and personal respirator filters, used rags, chemical bottles, drums and totes.

Rags are used for general shop cleanup, which is necessary due to gel coat over spray. Used spray booth and respirator filters as well as used rags are placed in the trash as solid waste, which is hauled to the local landfill. Empty 55-gallon drums that were emptied of gel coat and acetone are returned to the supplier for reuse.

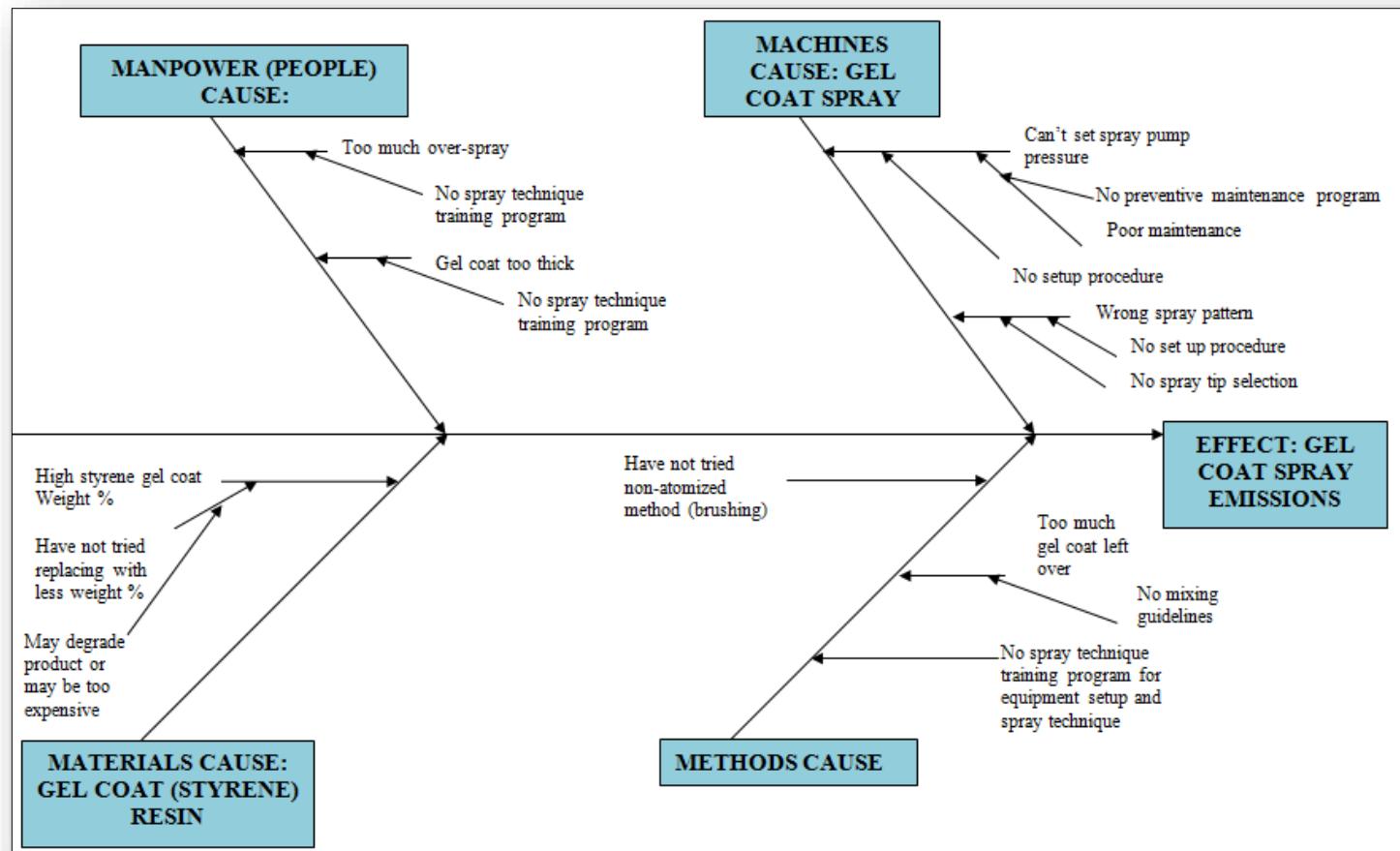
Gel coat over spray falls on the floor and polymerizes. The floor has a felt covering. This polymerized material and the floor felt covering, which is periodically removed, is sent to the landfill as solid waste.

Any leftover gel coat resin not used is polymerized on-site then sent to the landfill as solid waste.

for the gel coat resin, however, there are some gel coat resins containing different styrene amounts, and different spray gun types.

The acetone emissions result from choosing acetone as a cleaning solvent and spraying acetone through the spray gun to clean it.

## Section 6 – Cause and Effect/Fishbone example



Process maps, flow diagrams, cause and effect diagrams, root cause analysis and the five why's can be included in order to complete the analysis.

# Plan forms – Section 6 continued

## Analysis and Opportunity

### Development

Based on the process steps identify if P2 opportunities can be developed.

Check all the boxes that apply.

Identify the opportunity and future goal. The identified goal number should match the goal number in Section 7.

**Goals are numbered consecutively.**

#### Section 6 (Continued)

From the P2 opportunities developed by the P2 team's pollution prevention analysis, continue to answer the following questions in the Section 6 Plan forms. The opportunities listed below are based on Table 1 for the example "Gel Coat Spraying Process."

##### Opportunities

###### **3. Are there pollution prevention opportunities?**

Can the process "inputs" or method, etc. be eliminated or modified to reduce waste, emission(s) or toxic substance use?

Yes       No

Can any of the toxic or non-toxic substances be:

<input type="checkbox"/> Eliminated?	<input type="checkbox"/> Replaced with a less toxic substitute?
<input checked="" type="checkbox"/> Used less?	<input type="checkbox"/> Recycled or reused?
<input type="checkbox"/> Reformulated to reduce toxicity?	<input type="checkbox"/> None of these
	<input type="checkbox"/> Other _____

###### **4. Based on the results from item 3 above: Describe the pollution prevention opportunities to eliminate at the source, reduce at the source, reduce toxicity, reduce the volume, reuse or recycle each waste emission or use of a toxic substance.**

Opportunity (A): Train operators in the best available spraying techniques and spray equipment set up techniques to reduce overspray and styrene emissions.

Will this opportunity be developed into a goal?

YES, fill out a goal sheet in Section 7, **Goal number 1**.

NO, give the reason here

Opportunity (B): Replace current gel coat with a low styrene gel coat. This will reduce styrene emissions.

Will this opportunity be developed into a goal?

YES, fill out a goal sheet in Section 7, **Goal number \_\_\_\_\_**.

NO, give the reason here.

Explanation: Opportunity (B) will not be implemented at this time because low styrene gel coat is too expensive. We will continue to search for a more affordable product.

Write each feasible opportunity onto a goal sheet found in Section 7. Use one goal sheet for each feasible opportunity.

# Plan Forms – Section 7

## Performance Goal

### Section 7. P2 Performance Goal (A.R.S. §49-963.J.4.)

Facility Name: ABC Incorporated

P2 ID #: 200999

#### Complete one sheet for each goal

<p><b>1. Goal Statement:</b> Enter a specific performance goal or individual production process goal that includes a statement of the expected result. The goal statement should address what can be accomplished by implementing one of the opportunities from Section 6. Goal statements should be in the form (Action Verb) + (Target chemical, emission, or waste stream) used for/in (Process X). Use action verbs such as Reduce or Eliminate. For example: Reduce methylene chloride used for parts degreasing by 80%. If a goal cannot be measured or will take a long period of time to complete, then include an action plan that outlines measurable milestones. See page 48 of the guidance manual for an example of an action plan. Submit these goal sheets with your new plan or amendment and the annual progress report.</p> <p>Goal (# 1): Process Area(s) (# 3) Goal Statement: Reduce styrene emissions from gel coat spraying by 35%.</p>	<p>2. Scheduled Completion Date (Month/Day/Year)</p> <p>07/01/2017</p>	<p>3. Completion Status: OS=On Schedule DR= Dropped D = Delayed C=Completed</p> <p><input type="checkbox"/> C <input checked="" type="checkbox"/> OS <input type="checkbox"/> D <input type="checkbox"/> DR</p>	<p>4. Name of Toxic Substance and Waste stream Include CAS #; and RCRA Waste Code #</p> <p>Styrene CAS# 100-42-5</p>	<p>5. State Volatile Organic Chemical "VOC", Ozone Depleting Chemical "ODC", "Both" or "NA"</p> <p><input checked="" type="checkbox"/> VOC <input type="checkbox"/> ODC <input type="checkbox"/> ODC &amp; VOC <input type="checkbox"/> NA</p>
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6. If this goal has been delayed or dropped (box 3), provide an explanation and include a new estimated completion date:

<p><b>7. Actions Needed to Implement the Goal:</b></p> <p>Actions we will take to implement this goal are: Train operators in the best available spraying techniques and spray equipment set up technologies to reduce overspray and styrene emissions.</p>	<p>8. Baseline Quantity (Starting amount)</p> <p>Quantity: 2500 (Check units) <input checked="" type="checkbox"/> Pounds <input type="checkbox"/> Gallons <input type="checkbox"/> KWH <input type="checkbox"/> Therms <input type="checkbox"/> No measure</p>	<p>9. Baseline Year</p> <p>2014</p>	<p>10. How much was reduced or eliminated?</p> <p>Quantity: <input type="checkbox"/> (Check units) <input type="checkbox"/> Pounds <input type="checkbox"/> Gallons <input type="checkbox"/> KWH <input type="checkbox"/> Therms <input type="checkbox"/> No measure</p>	<p>11. Month &amp; Year Box #10 Was Measured</p> <p><input type="checkbox"/></p>	<p>12. How much money (US \$) was saved by this goal?</p> <p><input type="checkbox"/></p>	<p>13. Reduction Quantity is Adjusted for Production?</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>14. Production Ratio (Optional Unless Box #13 is Marked Yes)</p> <p><input type="checkbox"/></p>
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# Plan Forms – Section 7- Goal form (top section)

- Facility name and P2 ID#
- Goal Statement in correct form
- Provide a scheduled completion date (should not be in the past)
- Goal status:  
OS (On schedule)  
DR (Dropped)  
D(Delayed)  
C (Completed)
- Name of toxic substance
- VOC, ODC or NA

Section 7. P2 Performance Goal (A.R.S. §49-963.J.4.)

Facility Name: ABC Incorporated	P2 ID #: 200999			
Complete one sheet for each goal				
<p><b>1. Goal Statement:</b> Enter a specific performance goal or individual production process goal that includes a statement of the expected result. The goal statement should address what can be accomplished by implementing one of the opportunities from Section 6. Goal statements should be in the form (Action Verb) + (Target chemical, emission, or waste stream) used for/in (Process X). Use action verbs such as Reduce or Eliminate. For example: Reduce methylene chloride used for parts degreasing by 80%. If a goal cannot be measured or will take a long period of time to complete, then include an action plan that outlines measurable milestones. See page 48 of the guidance manual for an example of an action plan. Submit these goal sheets with your new plan or amendment and the annual progress report.</p> <p>Goal (# 1): Process Area(s) (# 3) Goal Statement: Reduce styrene emissions from gel coat spraying by 35%.</p>	<p>2. Scheduled Completion Date (Month/Day/Year)</p> <p>07/01/2017</p>	<p>3. Completion Status: OS=On Schedule DR= Dropped D = Delayed C=Completed</p> <p><input type="checkbox"/> C <input checked="" type="checkbox"/> OS <input type="checkbox"/> D <input type="checkbox"/> DR</p>	<p>4. Name of Toxic Substance and Waste stream Include CAS #; and RCRA Waste Code #</p> <p>Styrene CAS# 100-42-5</p>	<p>5. State Volatile Organic Chemical "VOC", Ozone Depleting Chemical "ODC", "Both" or "NA"</p> <p><input checked="" type="checkbox"/> VOC <input type="checkbox"/> ODC <input type="checkbox"/> ODC &amp; VOC <input type="checkbox"/> NA</p>
<p>6. If this goal has been delayed or dropped (box 3), provide an explanation and include a new estimated completion date:</p>				

• Goal statements should be in this form:  
(Action Verb) + (Target Chemical, emission or waste stream) used for/in (Process X) by X%.

• An explanation for delayed goals should be described in Section 6 and include a new estimated completion date

# Plan Forms – Section 7- Goal form (top section)

7. Actions Needed to Implement the Goal:	8. Baseline Quantity (Starting amount)	9. Baseline Year	10. How much was reduced or eliminated?	11. Month & Year Box #10 Was Measured	12. How much money (US \$) was saved by this goal?	13. Reduction Quantity is Adjusted for Production?	14. Production Ratio (Optional Unless Box #13 is Marked Yes)
<p>Actions we will take to implement this goal are:</p> <p>Train operators in the best available spraying techniques and spray equipment set up technologies to reduce overspray and styrene emissions.</p>	<p>Quantity: <u>2500</u> (Check units) <input checked="" type="checkbox"/> Pounds <input type="checkbox"/> Gallons <input type="checkbox"/> KWH <input type="checkbox"/> Therms <input type="checkbox"/> No measure</p>	2014	<p>Quantity:</p> <p><input type="checkbox"/> (Check units) <input type="checkbox"/> Pounds <input type="checkbox"/> Gallons <input type="checkbox"/> KWH <input type="checkbox"/> Therms <input type="checkbox"/> No measure</p>			<input type="checkbox"/> Yes <input type="checkbox"/> No	

- Baseline quantity = Starting amount
- Baseline year = Year prior to measuring any reductions
- Ideally reductions reported annually
  - If results cannot be reported in pounds, gallons, KWH or Therms, select the “*No measure*” box
- Cost savings tracked for measuring purposes
- Production increase adjustments

# Plan Forms – Section 8

## Management Practices and Procedures

Check all that apply

### Examples

- If facility posted P2 policy
- If facility revised programs, procedures and/or policies to include Plan goals
- If facilities made procedural changes that include P2 goals and informed employees
- If P2 is included in employee and manager evaluations
- If employees are recognized or rewarded for suggesting successful P2 opportunities



*Pollution Prevention Plan*

### **Section 8. Management Practices and Procedures (A.R.S. §49-963.J.10)**

Requirement: Describe provisions to incorporate pollution prevention into management practices and procedures in order to ensure its institutionalization.

Management has developed the following provisions to incorporate pollution prevention into established programs, policies and procedures in order to ensure its institutionalization:

**(Check all that apply)**

- The Management P2 Policy (Section 4) has been posted.
- Programs, procedures or policies were revised to incorporate Plan goals.

Management informs employees of procedural changes resulting from the Pollution Prevention Plan Goals through various methods including:

- At mandatory monthly operation and safety meetings.
- Internal memos, directives and information circulars
- Amendments to the operations manual.
- Impromptu meetings held to discuss any immediate procedural, operational or equipment changes having to do with pollution prevention.
- Other: \_\_\_\_\_
- All production managers will be responsible for assuring Plan activities are incorporated in procedures (where applicable).
- Pollution prevention is included in employee and manager performance evaluations.
- Employees are recognized or rewarded for suggesting successful pollution prevention opportunities.
- Accounting practices allocate the costs of waste management and regulatory compliance practices to the operations that use toxic chemicals or produce wastes or emissions.
- Pollution prevention considerations are included in procurement and inventory procedures to minimize the unnecessary purchase and accumulation of toxic substances.
- Other: \_\_\_\_\_

# Plan forms – Section 9

## Employee Awareness Training and Programs

Check applicable box

- Box 1 – facility has completed and enclosed training documents including a sign-in sheet
  - Or -
- Box 2 – Facility has not completed training
  - And -
- Box 3 – If you want a copy of the P2 training documents



Check all that apply for

- Purpose
- Objectives
- Scope
- Methods
- Training topics



*Pollution Prevention Plan*

**Section 9: Employee Awareness and Training Programs (A.R.S. §49-963.J.9)**  
 Requirement: The Plan shall include employee awareness training programs to involve employees in P2 planning and implementation to the maximum extent feasible.

*Check either box 1 or 2. If you check box 2, you can check box 3 if a sample is needed.*

**Training is completed and training documents are enclosed:**

- Our facility's P2 training documents are enclosed. We have also included evidence (such as sign in sheet) of how many employees were trained.

**Training is not yet completed but a goal is established:**

- We will fill out the training goal sheet found on the following page, place it in the Plan, and implement that goal to develop P2 training. We will send our P2 training documents to ADEQ after conducting training or in the next annual Toxic Data Report. We will also include evidence (such as sign in sheet) of how many employees were trained.
- ADEQ please send a copy of the example P2 training documents to assist in developing my training program.

*(Check all that apply)*

**PURPOSE** (check at least the first box)

- The purpose of the P2 employee training and awareness program is to teach employees about P2 so that they can participate in identifying opportunities and also assist in achieving the Plan goals.
- Additional Purpose: \_\_\_\_\_

**OBJECTIVES** (check at least the first box)

- The objectives of this program are to:
  - Raise employee awareness of environmental related activities within the facility.
  - Train employees in their P2 responsibilities.
  - Recognize employees for their P2 efforts.
  - Encourage employee participation.
- Additional Objectives: \_\_\_\_\_

**SCOPE** (complete all questions)

How frequently will training be held? Annually  
 What types of employees will attend? All employees  
 How will attendance be documented? Sign-in sheet

**METHODS** (check at least one)

The training methods will include:

<input checked="" type="checkbox"/> Classroom training session(s)	<input type="checkbox"/> Video presentations
<input type="checkbox"/> Newsletters	<input type="checkbox"/> Posters
<input type="checkbox"/> Other: _____	

**TOPICS** (check at least the first box)

- The P2 training topics include the following subjects:
  - Definitions related to P2
  - Benefits of P2
  - Waste management hierarchy – Refer to the introduction of the guidance manual
  - Company P2 Plan
  - How to submit P2 ideas
- Additional Topics: \_\_\_\_\_

## Plan forms – Section 9

P2 training documents must include at a minimum:

- ✓ A definition of pollution prevention
- ✓ A description of the waste management hierarchy
- ✓ The benefits of pollution prevention and
- ✓ Information on how the employees can become involved in pollution prevention planning and implementation

Sample P2 training available on our website for download in Spanish and English at <http://www.azdeq.gov/environ/waste/p2/tools.html>

If you need a PowerPoint version feel free to email the P2 program. You can find contact information at: <http://www.azdeq.gov/function/about/waste.html>

- ADEQ's boilerplate P2 training goal available in the plan forms
- ADEQ's boilerplate "Continue P2 Training Goal" available after initial training is completed

# Plan forms – Section 9

## Employee Awareness Training Goal

### P2 Training Goal

- Initial goal
- Pre-filled goal statement
- Boxes 4 & 5 and 8-14 do not apply
- Box #7 - Enter the number of people trained in P2

Pollution Prevention Training Goal (A.R.S. 49-963 J.9.)															
Facility Name:	ABC Incorporated							P2 ID #:	200999						
<b>Complete this form and include in Section 7 if no training documents are being sent to ADEQ-P2 at the current time.</b>															
<b>1. Goal Statement:</b> (For the training goal, fill in dates and goal number in Box 1. Submit this goal sheet with your plan, or amendment or your annual progress report (until goal is closed). Also, submit the training documents to ADEQ-P2 when completed with your annual progress report.				<b>2. Scheduled Completion Date</b> (Month/Day/Year)		<b>3. Completion Status:</b> OS=On Schedule DR= Dropped D = Delayed C=Completed		<b>4. Name of Toxic Substance and Waste stream</b> Include CAS #; and RCRA Waste Code #		<b>5. State Volatile Organic Chemical "VOC", Ozone Depleting Chemical "ODC", "Both" or "NA"</b>					
<b>Goal (# 2): Process Area(s) (# N/A)</b> Develop a pollution prevention specific employee training program by <b>10/03/2015</b> (date). Send training documents that include evidence (such as sign in sheet) of how many employees were trained to ADEQ-P2 by <b>11/03/2015</b> (date).				<b>11/03/2015</b>		<input type="checkbox"/> C <input checked="" type="checkbox"/> OS <input type="checkbox"/> D <input type="checkbox"/> DR		N/A		<input type="checkbox"/> VOC <input type="checkbox"/> ODC <input type="checkbox"/> ODC & VOC <input checked="" type="checkbox"/> NA					
<b>6. If this goal has been delayed or dropped (box 3), provide an explanation and include a new estimated completion date:</b> <span style="background-color: #cccccc; border: 1px solid black; padding: 2px 10px;"> </span>															
<b>7. Actions Needed to Implement the Goal:</b>			<b>8. Baseline Quantity (Starting amount)</b>	<b>9. Baseline Year</b>	<b>10. How much was reduced or eliminated?</b>	<b>11. Month &amp; Year Box #10 Was Measured</b>	<b>12. How much money (US \$) was saved by this goal?</b>	<b>13. Reduction Quantity is Adjusted for Production?</b>	<b>14. Production Ratio (Optional Unless Box #13 is Marked Yes)</b>						
The reduction method is to: Training Program as discussed in Section 9 to include employee awareness and training programs to involve employees in pollution prevention planning and implementation to the maximum extent feasible.			N/A	N/A	N/A	N/A	N/A	N/A	N/A						
The number of people trained this year was: <span style="background-color: #cccccc; border: 1px solid black; padding: 2px 10px;"> </span>															

# Plan forms – Section 10

## Existing P2 Activities

Describe or list any P2 activities that have taken place in the past including amounts reduced.

P2 activities can include:

- Hazardous waste reduction
- Toxic substance use reduction
- Solid waste reduction
- Water conservation
- Energy conservation
- Natural resource conservation
- Improving processes
- Incorporating P2 techniques



### Section 10. Existing Pollution Prevention Activities (A.R.S. §49-963.J.8)

Requirement: Provide an analysis of pollution prevention activities that are already in place that are consistent with the Pollution Prevention Plan requirements.

Check ONE of the boxes below.

We have not documented any previous P2 activities at our company.

OR

We have documented P2 activities at our company and have described them below or attached addition pages with information about these projects with this Plan. (Include as much specific information as possible and any available quantitative data without disclosing any confidential business information.)

Describe or list the P2 activities that are already in place including amounts reduced (if available):

- 1). In 2012 this facility conducted a Green Lights electricity usage review. At that time all fluorescent light ballasts were replaced with electronic ballasts and more efficient light bulbs (Model T-8) have been used since. This has saved the facility about 15% on its electric bill.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# Plan Checklist

Ensure all the sections are completed in the Plan and check the boxes.

Submit checklist with the Plan forms.

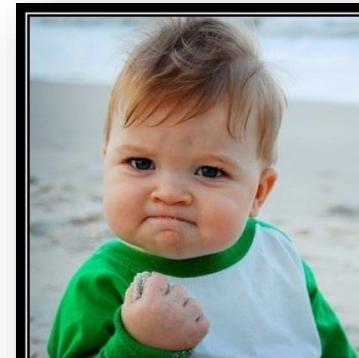
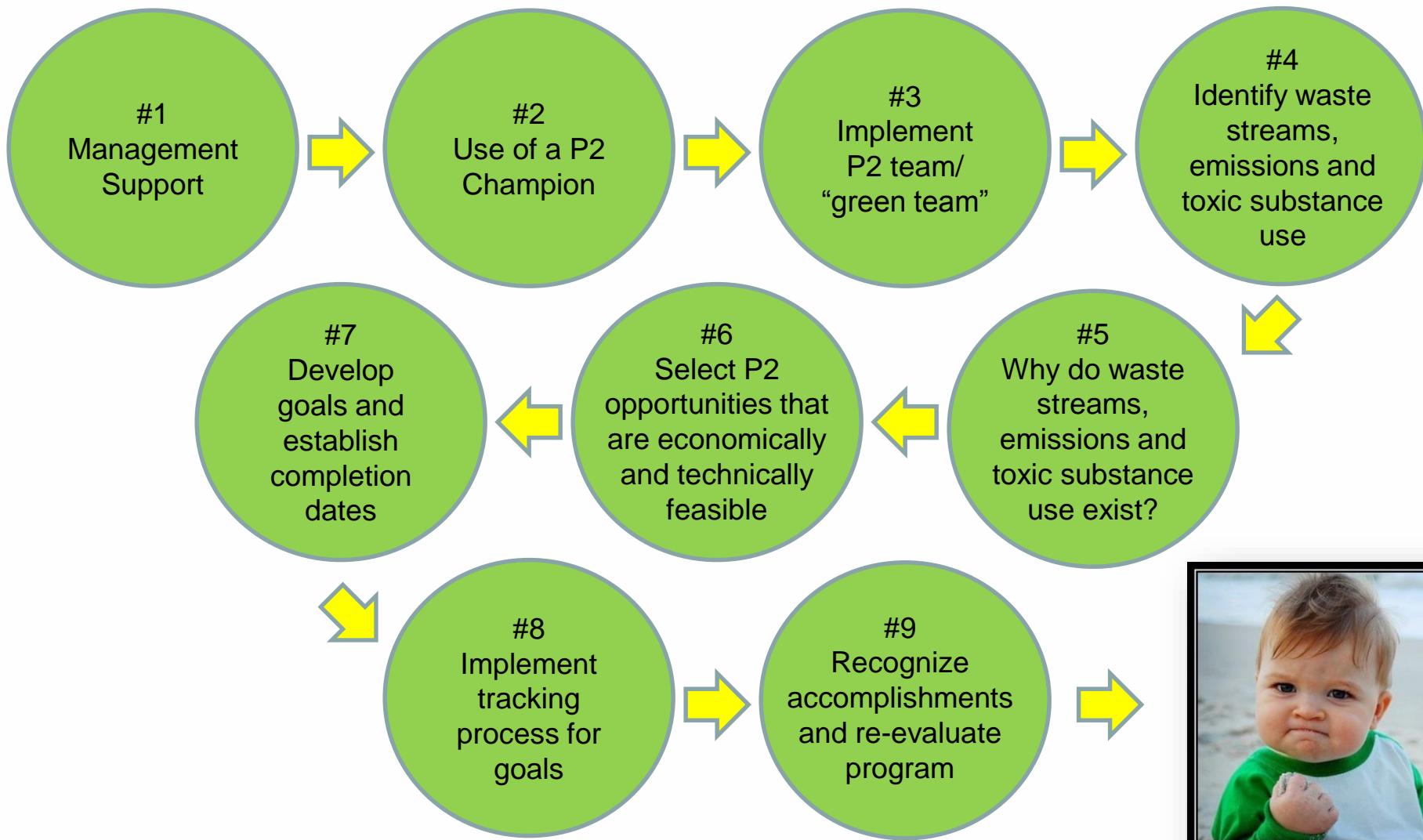


## Example Plan Checklist

**Instructions:** Please include the completed checklist below with the Plan forms.

- Completed and submitted Section 1 for the primary facility.
- Completed and submitted Section 2 with official signature.
- Completed and submitted Section 3 for each facility included in this Plan.
- Completed and submitted Section 4, Pollution Prevention (P2) Policy, provided in the guidance manual, or developed your own policy with the required items: management and corporate support for the P2 Plan, and a commitment to implement the Plan to achieve the Plan goals.
- Completed and submitted Section 5 identifying the scope and objectives, with a Plan time frame of at least two years.
- Completed and submitted a Section 6 analysis for all process areas, each Toxic Release Inventory (TRI) toxic chemical that met the Plan filing thresholds and all hazardous or acutely hazardous wastes generated if the facility met the cumulative hazardous waste thresholds.
- Reviewed all process areas and waste streams described in Section 6 for possible pollution prevention opportunities.
- Completed and submitted Section 7 (Plan goals) for each feasible opportunity identified in Section 6.
- Completed and submitted Section 8 (Management Practices) describing how management will incorporate pollution prevention into activities and ensure it is institutionalization.
- Completed and submitted Section 9 (Employee Training) outlining the pollution prevention program to occur at your facility, and either completed a training goal or submitted a copy of the facility's pollution prevention training program documents. *Note: Pollution prevention training documents must, as a minimum, include a definition of pollution prevention, a description of the waste management hierarchy, the benefits of pollution prevention and information on how the employees can become involved in pollution prevention planning and implementation. Please also include evidence (such as sign in sheet) of how many employees were trained in P2.*
- Completed and submitted Section 10 (Existing Pollution Prevention Activities) documenting past pollution prevention activities (Not required for an amendment).

# The path to a successful P2 Plan



**SUCCESS**

**I've completed the P2 Plan.  
Now what?**



# Maintaining the P2 plan

Annual Toxic Data Reports (TDR's) due by July 1<sup>st</sup> of each year

(Reminders sent out in April/May months by a P2 case manager)

- **Progress report instructions**
- **Progress report cover sheet**
- **Goal forms**
  - ✓ Goal status (*on-schedule, completed, delayed, dropped*)
  - ✓ Reductions achieved including cost savings
- **Amendment (if necessary)**
  - ✓ Changes to existing Plan
  - ✓ Extend the timeframe of an existing Plan
  - ✓ Add new goals or amend existing goals
- **TRI submittal**
  - ✓ Electronic submittal through TRI-ME Web
  - ✓ Trade secret TRI's hard copy submitted to State

***Note:***

- Progress Report instructions and blank goal forms can be downloaded from ADEQ's website at:  
<http://www.azdeq.gov/environ/waste/p2/programs.html>



# Progress Report Cover Sheet Example

- Mailed with goal sheets in April/May
- Reporting year
- Check for any deficiencies
- Make any changes to the information and submit with progress report
- Must be signed!

Annual Pollution Prevention  
Reporting Goal Completion / Progress Accomplished In  
**2013**

Contact Information: Attn: John Doe - P2 ID #: 200999  
ABC INCORPORATED  
1234 Main Street, Phoenix, AZ 88888

Facility Name or Mailing Address: \_\_\_\_\_

Technical Contact: \_\_\_\_\_

Telephone #: 602-555-1122 E-Mail: john.doe@abcinc.com

Fax #: 602-555-1135

My facility has implemented a P2 team:  Yes  No

I certify that I have personally examined this Annual Progress Report, and that I am familiar with its content and attachments.

Name: Sid Senior

Signature: \_\_\_\_\_ Title: President

Date: 06/23/2013 E-mail: sid.senior@abcinc.com

# Progress Report Goal Sheet Example

- Report status of goal
- Report reduction in box #10
- Report year of reduction
- Report economic savings in relation to goal implementation
- State if reduction quantity was adjusted for production

Section 7. P2 Performance Goal (A.R.S. §49-963.J.4.)

Complete one sheet for each goal							
1. Goal Statement: Enter a specific performance goal or individual production process goal that includes a statement of the expected result. The goal statement should address what can be accomplished by implementing one of the opportunities from Section 6. Goal statements should be in the form (Action Verb) + (Target chemical, emission, or waste stream) used for/in (Process X). Use action verbs such as Reduce or Eliminate. For example: Reduce methylene chloride used for parts degreasing by 80%. If a goal cannot be measured or will take a long period of time to complete, then include an action plan that outlines measurable milestones. See page 48 of the guidance manual for an example of an action plan. Submit these goal sheets with your new plan or amendment and the annual progress report.	2. Scheduled Completion Date (Month/Day/Year)	3. Completion Status: OS=On Schedule DR= Dropped D = Delayed C=Completed	4. Name of Toxic Substance and Waste stream Include CAS #; and RCRA Waste Code #	5. State Volatile Organic Chemical "VOC", Ozone Depleting Chemical "ODC", "Both" or "NA"			
Goal (# 1): Process Area(s) (# 3) Goal Statement: Reduce styrene emissions from gel coat spraying by 35%.	07/01/2017	<input type="checkbox"/> C <input checked="" type="checkbox"/> OS <input type="checkbox"/> D <input type="checkbox"/> DR	Styrene CAS # 100-42-5	<input checked="" type="checkbox"/> VOC <input type="checkbox"/> ODC <input type="checkbox"/> ODC & VOC <input type="checkbox"/> NA			
6. If this goal has been delayed or dropped (box 3), provide an explanation and include a new estimated completion date: <span style="background-color: #cccccc;">  </span>							
7. Actions Needed to Implement the Goal:	8. Baseline Quantity (Starting amount)	9. Baseline Year	10. How much was reduced or eliminated?	11. Month & Year Box #10 Was Measured	12. How much money (US \$) was saved by this goal?	13. Reduction Quantity is Adjusted for Production?	14. Production Ratio (Optional Unless Box #13 is Marked Yes)
Actions we will take to implement this goal are: Train operators in the best available spraying techniques and spray equipment set up technologies to reduce overspray and styrene emissions.	Quantity: <u>2500</u> (Check units) <input checked="" type="checkbox"/> Pounds <input type="checkbox"/> Gallons <input type="checkbox"/> KWH <input type="checkbox"/> Therms <input type="checkbox"/> No measure	2014	Quantity: <u>500</u> (Check units) <input checked="" type="checkbox"/> Pounds <input type="checkbox"/> Gallons <input type="checkbox"/> KWH <input type="checkbox"/> Therms <input type="checkbox"/> No measure	12/2014	\$2,000	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<span style="background-color: #cccccc;">  </span>

# P2 Training Continuous Goal Sheet Example

Pollution Prevention Training Goal (A.R.S. 49-963.J.9.)

**Facility Name:** ABC Incorporated

P2 ID #: 200999

Complete this form and include in Section 7 if no training documents are being sent to ADEQ-P2 at the current time.

Complete this form and include in Section 7 if no training documents are being sent to ADEQ-P2 at the current time.				
<b>1. Goal Statement:</b> (For the training goal, fill in dates and goal number in Box 1. Submit this goal sheet with your plan, or amendment or your annual progress report (until goal is closed). Also, submit the training documents to ADEQ-P2 when completed with your annual progress report.	<b>2. Scheduled Completion Date</b> (Month/Day/Year)	<b>3. Completion Status:</b> OS=On Schedule DR= Dropped D = Delayed C=Completed	<b>4. Name of Toxic Substance and Waste stream</b> Include CAS #; and RCRA Waste Code #	<b>5. State Volatile Organic Chemicals</b> "VOC", Ozone Depleting Chemical "ODC", "Both" or "NA"
Goal (# 3): Process Area(s) (# N/A) Continue to train employees in pollution prevention awareness (ARS 49-963.J.9)	07/01/2016	<input type="checkbox"/> C <input checked="" type="checkbox"/> OS <input type="checkbox"/> D <input type="checkbox"/> DR	N/A	<input type="checkbox"/> VOC <input type="checkbox"/> ODC <input type="checkbox"/> ODC & VOC <input checked="" type="checkbox"/> NA

6. If this goal has been delayed or dropped (box 3), provide an explanation and include a new estimated completion date:

7. Actions Needed to Implement the Goal:	8. Baseline Quantity (Starting amount)	9. Baseline Year	10. How much was reduced or eliminated?	11. Month & Year Box #10 Was Measured	12. How much money (US \$) was saved by this goal?	13. Reduction Quantity is Adjusted for Production?	14. Production Ratio (Optional Unless Box #13 is Marked Yes)
<p>The reduction method is to: By July 1 each year (in the annual progress report), document training for current and new employees, by providing a statement of when the training occurred and how many employees were trained. P2 training includes employee awareness and training programs to involve employees in P2 planning and implementation to the maximum extent feasible.</p> <p>The number of people trained this year was:</p>	N/A	N/A	N/A	N/A	N/A	N/A	N/A

# **Break**

# **Questions?**



## **Pollution Prevention Examples**



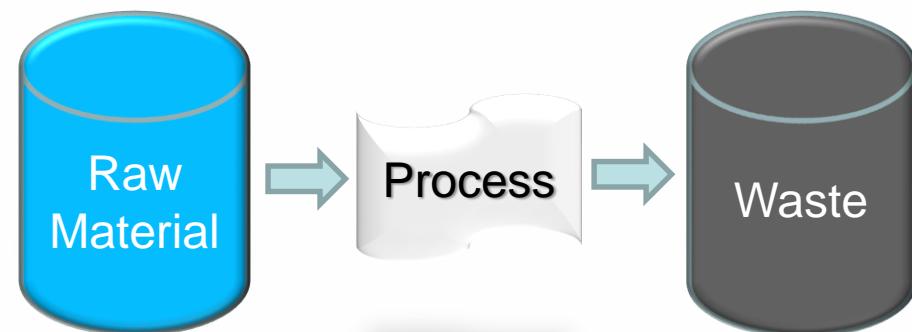
# P2 for Hazardous Waste Generation

How can facilities incorporate P2 goals in the area of hazardous waste generation?

## ***Determine root cause of hazardous waste generation***

### **Research**

- Process changes
- Recover materials – *reclamation*
- Reuse
- Recycling
- Spill and leak control
- Inventory control to prevent expired materials
- Identify if waste is characteristic for a hazardous waste



***What goes in and what comes out?***

7,802,527 pounds of hazardous waste were avoided in 2013 as a result of successful goals by facilities in the P2 program

## Successful hazardous waste reduction examples by facilities in the P2 Program

A semi-conductor facility eliminated **2,251,351** pounds of hazardous waste by acquiring a wastewater treatment system to reduce the volume of metals-contaminated wastewater and reclaiming metal sludges.

This resulted in a cost savings was **\$445,411** in 2013

A facility that supplies chemicals for the various industries was able to reduce the amount of hazardous waste generated by installing a secondary containment under their acid plant, capturing spills and recovering them for reuse.

In 2012 this resulted in a reduction of **4,333** pounds.

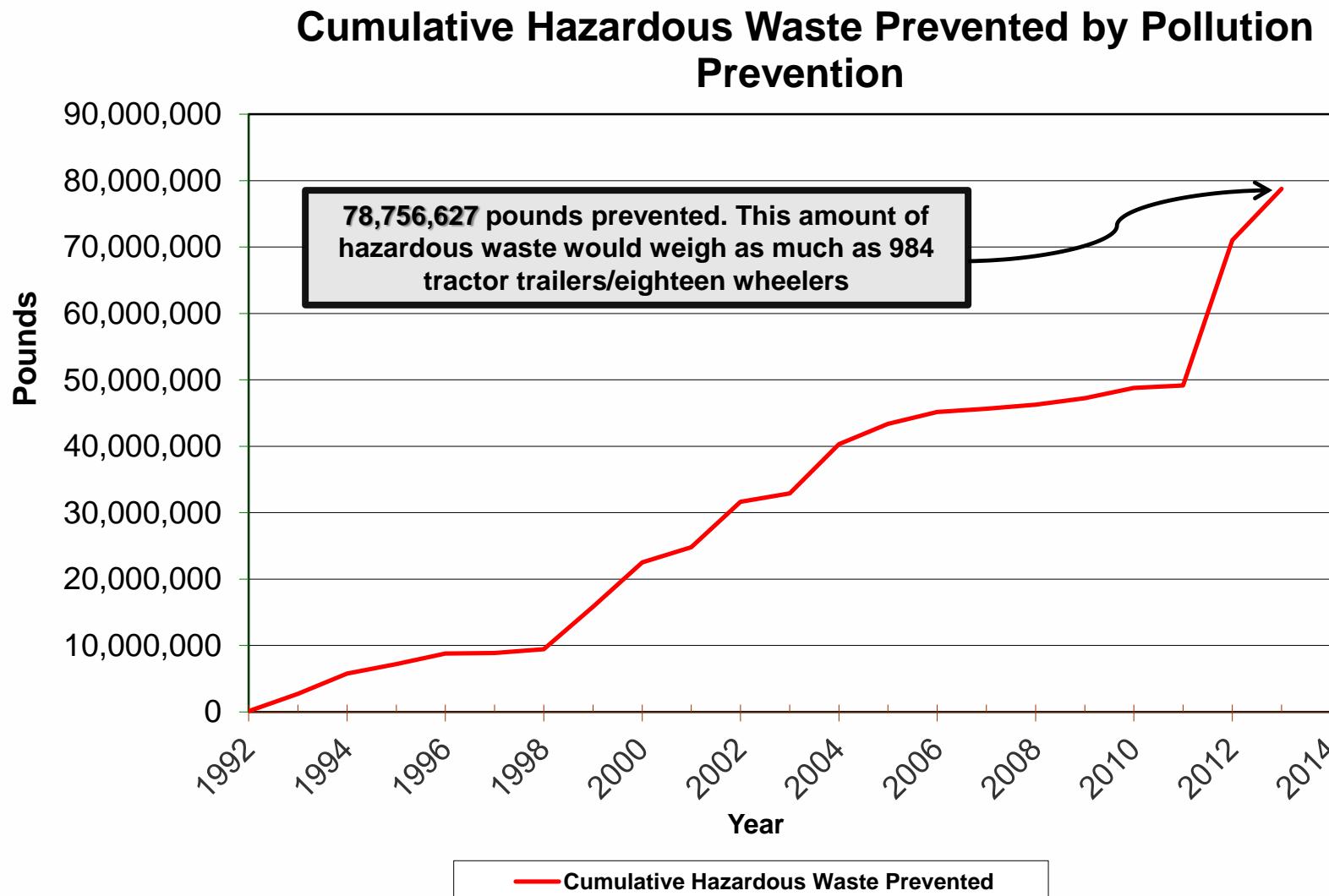
Another facility specializing in the production of laminate materials for use in the electronics industry reduced hazardous waste by reusing flushed solvents.

This resulted in **1,500** pounds of hazardous waste recycled in 2013 and a cost savings of **\$65,000**.



*Rethink the way you  
do business and  
change the company  
culture*

# Cumulative Hazardous Waste Prevented 1992-2013



## **P2 for Toxic Substance Use**

Determine TRI chemicals and if there is an opportunity for:

- Source reduction
- Reformulations to include non-toxic substances
- Toxic substance substitution/green chemicals
- Toxic substance use below thresholds
- Quality control / Quality assurance

903,762 pounds of toxic substance use was prevented in 2013 as a result of successful goals by facilities in the P2 program



## Successful toxic substance use reduction examples

A cable manufacturing facility successfully substituted leaded aluminum bar stock (used for machine cable TV connector components) with ones that contained either a reduced lead or are lead free by 80%. In 2013, **309,730** pounds of lead were reduced.

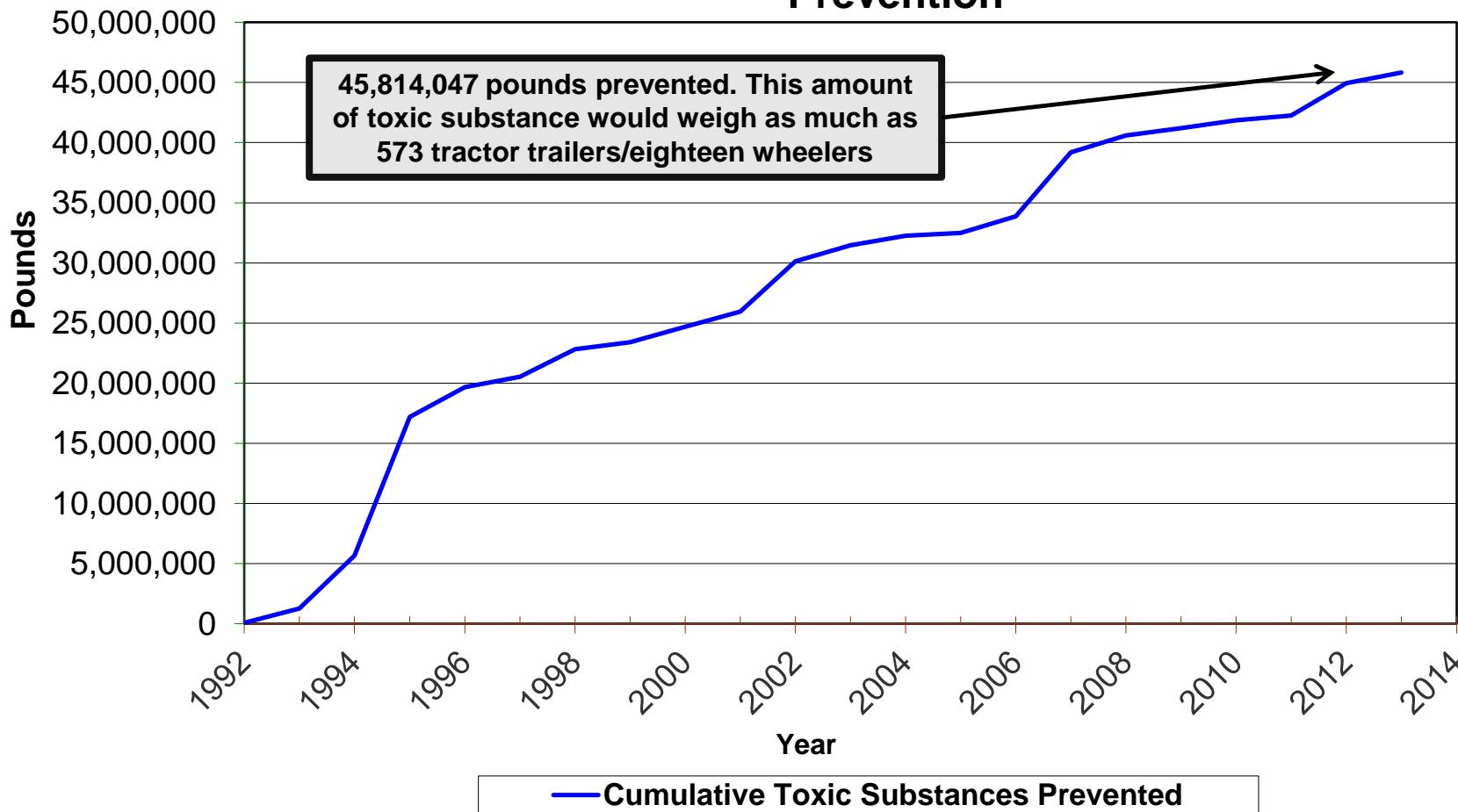
Another facility was able to replace solvents used in cleaning locomotive and railcar parts with non toxic cleaners. This resulted in **35,400** pounds of toxic substance use reduced in 2009.

*Reducing the use of toxic substances saves money, energy and improves company image*



# Cumulative Toxic Substance Use Prevented 1992-2013

## Cumulative Toxic Substance Use Prevented by Pollution Prevention



# P2 and Solid Waste Reduction

Any facility can incorporate solid waste reduction goals including:

- Source reduction**
  - Inventory control
  - Effective procurement practices – avoid excess supplies
- Recycling/Reuse**
  - Paper – company double-sided copying/printing policy
  - Metal
  - Plastics
  - Pallets/wood
  - Drums/storage containers
- Reduce Packaging**
  - Order bulk merchandise
  - Minimize packaging for company products
  - Recycle/return cardboard boxes and foam peanuts for reuse
- Food waste reduction**
  - Food donation
  - Food composting
- Company wide recycling program**
  - Aluminum cans/plastics/bags/cardboard
  - Educate employees
- Conduct a waste assessment**
  - Understand purpose
  - Determine the approach
  - Plan
  - Review records
  - Review waste streams
  - Document waste assessment
  - Take action



41,244,743 pounds were diverted from the landfill in 2013 as a result of successful goals developed by facilities in the P2 program

## **Successful solid waste reduction examples by facilities in the P2 program**

A spa manufacturing facility was able to recycle 90% of the High Density Polyethylene (HDPE) plastic waste from their panel cutting operation. This resulted in **6,637** pounds reduced in 2013 and a cost savings of **\$1,659**.

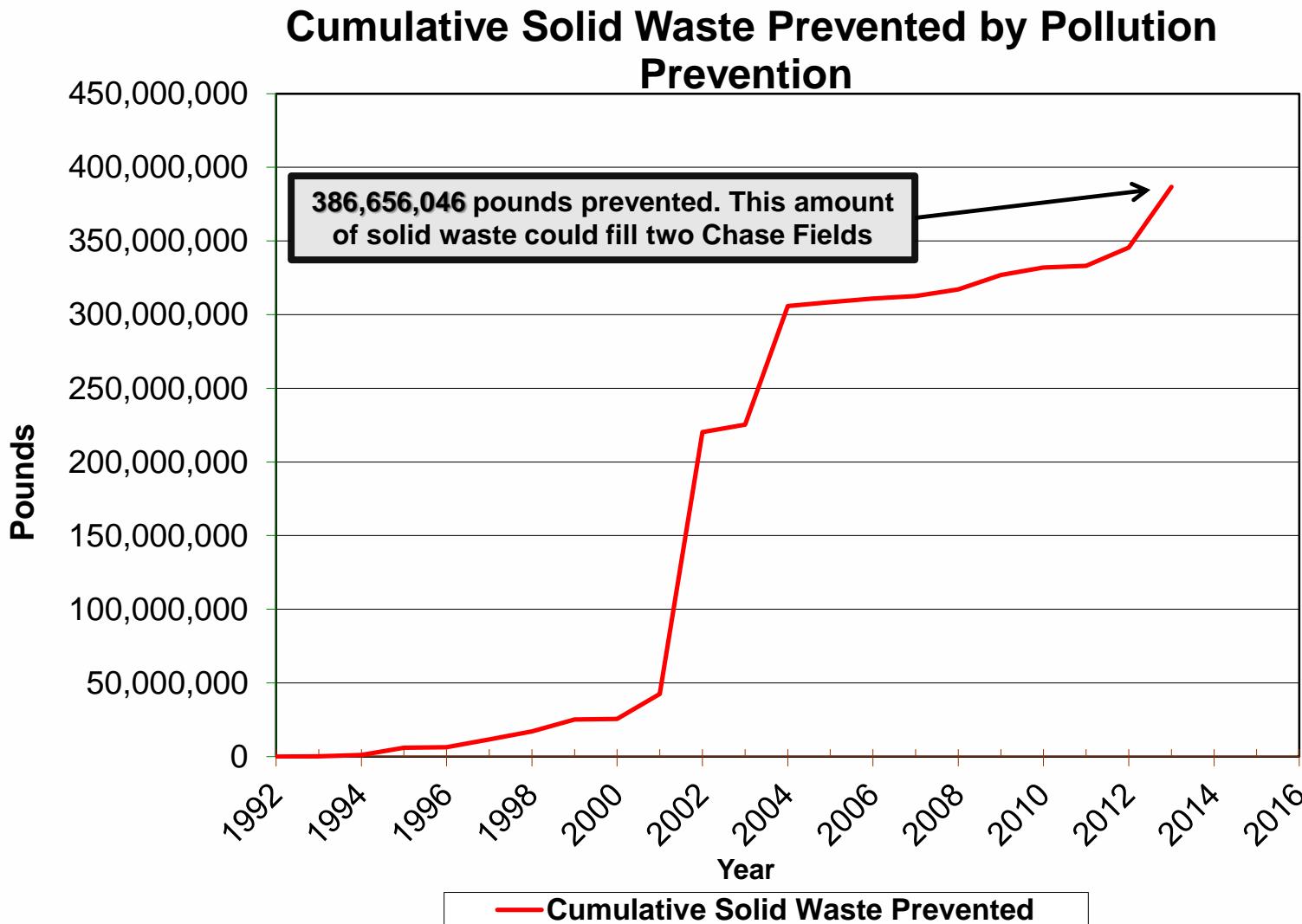
A machinery manufacturing facility was able to collect and recycle their used oil filters resulting in a reduction of **5,000** pounds of solid waste and a cost savings of **\$130**.

A transportation facility was able to reduce 100% of the pallets sent for incineration. The facility established a mandatory take back program with the vendor and all pallets are recovered. In 2013 the facility returned **43,200** pounds of pallets to the vendor.

*Solid waste reduction is an accessible goal for reducing waste at any facility*



# Cumulative Solid Waste diverted from the landfill 1992-2013



## P2 for Natural Resource Conservation

Natural resource conservation can lead to significant reduction in use in the areas of:

- Energy
- Natural gas
- Water
- Natural resources



# Natural Gas and Energy Conservation

## Why energy conservation?

Most energy derives from non-renewable sources such as fossil fuels. Energy conservation reduces green house gas emissions, conserves resources and saves money.

## Ways to conserve energy at facilities:

- Technology improvements
  - ✓ Replacing old machines with efficient ones
- Improved lighting e.g. fluorescent to LED
- Work schedule changes
- Solar and wind energy
- Maintain high energy-driven items
- Energy efficient electronics with energy star label



## Ways to conserve natural gas:

- Check blower efficiency
- Make sure condensers are working correctly
- Recover energy from waste exhaust gases

90,491,274.25 KWh and 4,382,039 therms of energy were conserved in 2013 as a result of successful goals developed by facilities in the P2 program

## Successful natural gas/electricity reduction examples by facilities in the P2 program

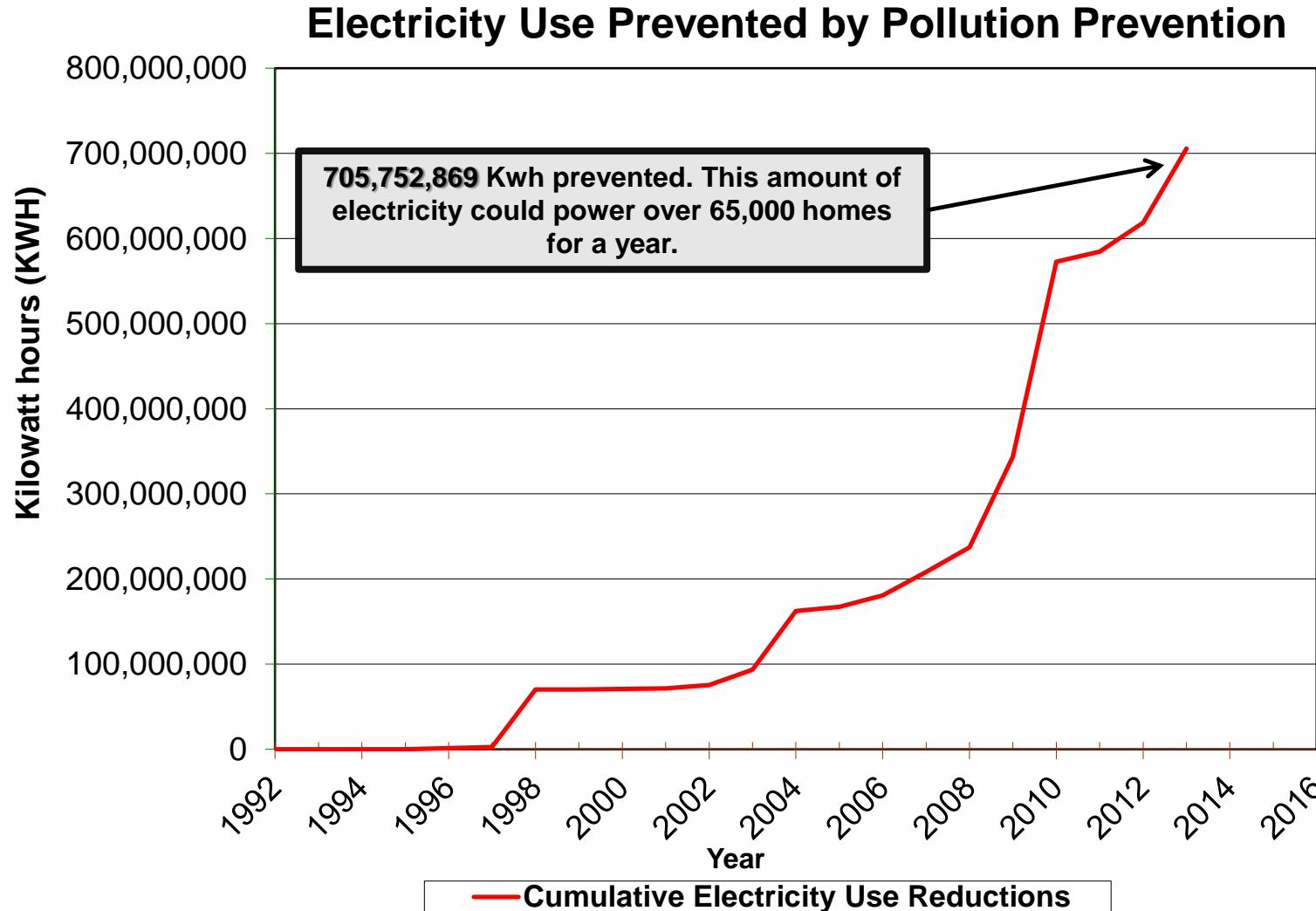
A food manufacturing facility repaired their condensate pump to increase the condensate return to boiler water feed for more uniform boiler temperature. In 2010, **824,813** therms of energy were reduced. They also installed an air flask system so the compressors ran fully loaded (36 minutes per hour versus 51 minutes per hour) resulting in an annual savings of **\$9,000**.

A weapon manufacturing facility was able to reduce their electrical energy use by replacing older machinery with more energy efficient machinery. They also installed motion sensor lights for specific areas of the factory floor. This resulted in a reduction of **173,844** Kwh in 2013 and a cost savings of **\$13,907**

*Increase the reliance of renewable and clean energy*



# Electricity use prevented 1992-2013



# Water Conservation

- Analyze water usage
- Identify drips, leaks and unnecessary flows
- Operational changes
- Technology upgrades
- Invest in efficient wastewater treatment units
- Reduce use of fresh water by reusing wastewater when possible
  - Closed-loop systems
  - Condensate from equipment
  - Cooling equipment blowdown
- Incorporate use of nozzles and aerators
- Xeriscape landscaping
- Increase employee awareness
- EPA's WaterSense for commercial businesses



53,850,234.50 gallons of freshwater AND 17,862,866 gallons of wastewater were conserved in 2013 as a result of success goals developed by facilities in the P2 program.

# Successful water reduction examples by facilities in the P2 program

A fabricated metal product manufacturing facility was able to reduce their water usage by adjusting the timer on the sprinkler system to reduce lawn watering time by 5 minutes per sprinkler head and implemented a system to monitor and repair any leaks noted. In 2013 **506,000** gallons saved.

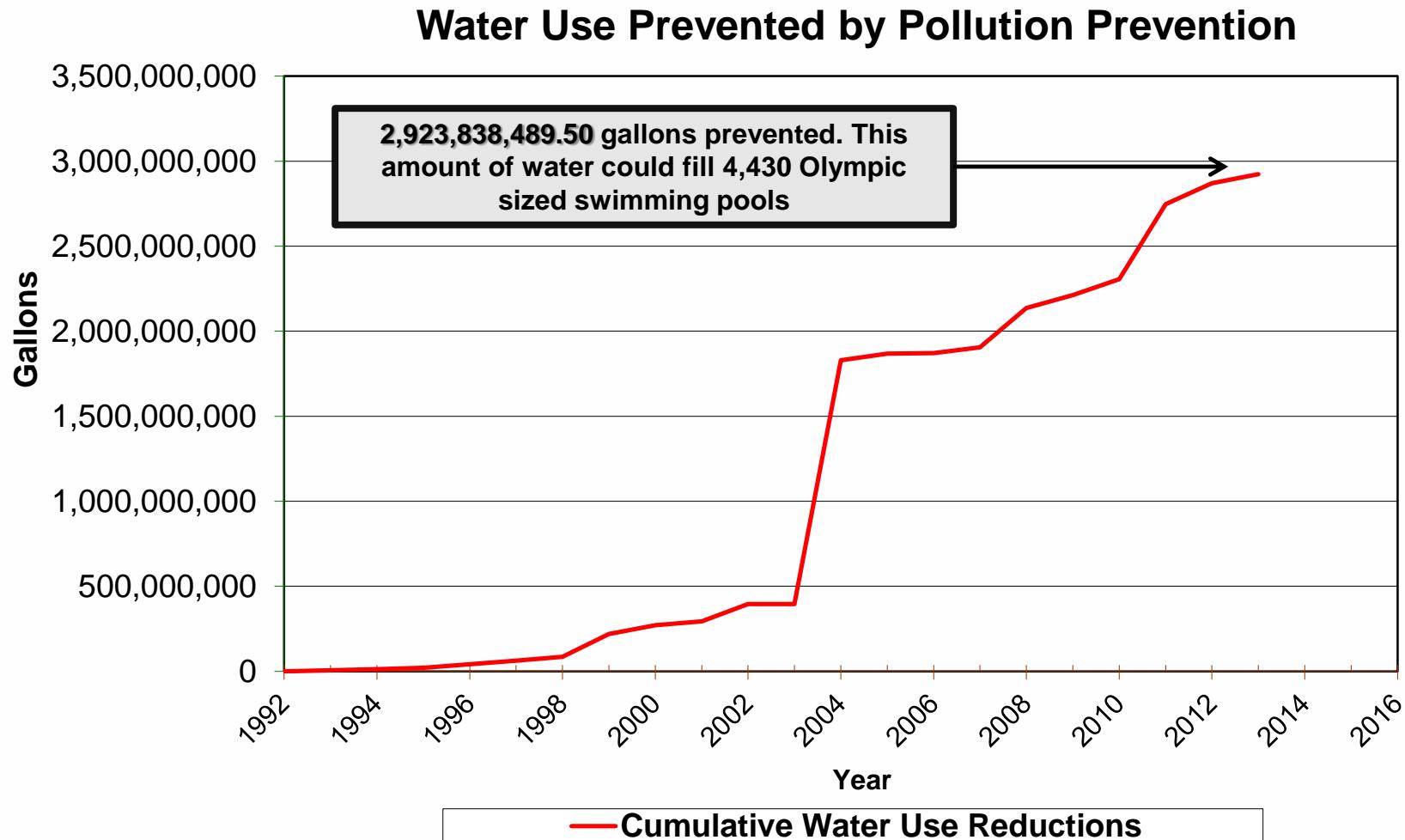
Another transportation equipment manufacturing facility was able to reduce their water usage by using water limiting fixtures and using single flush bioremediation urinals. This resulted in **389,000** gallons saved in 2013 and a cost savings of **\$3,700**.



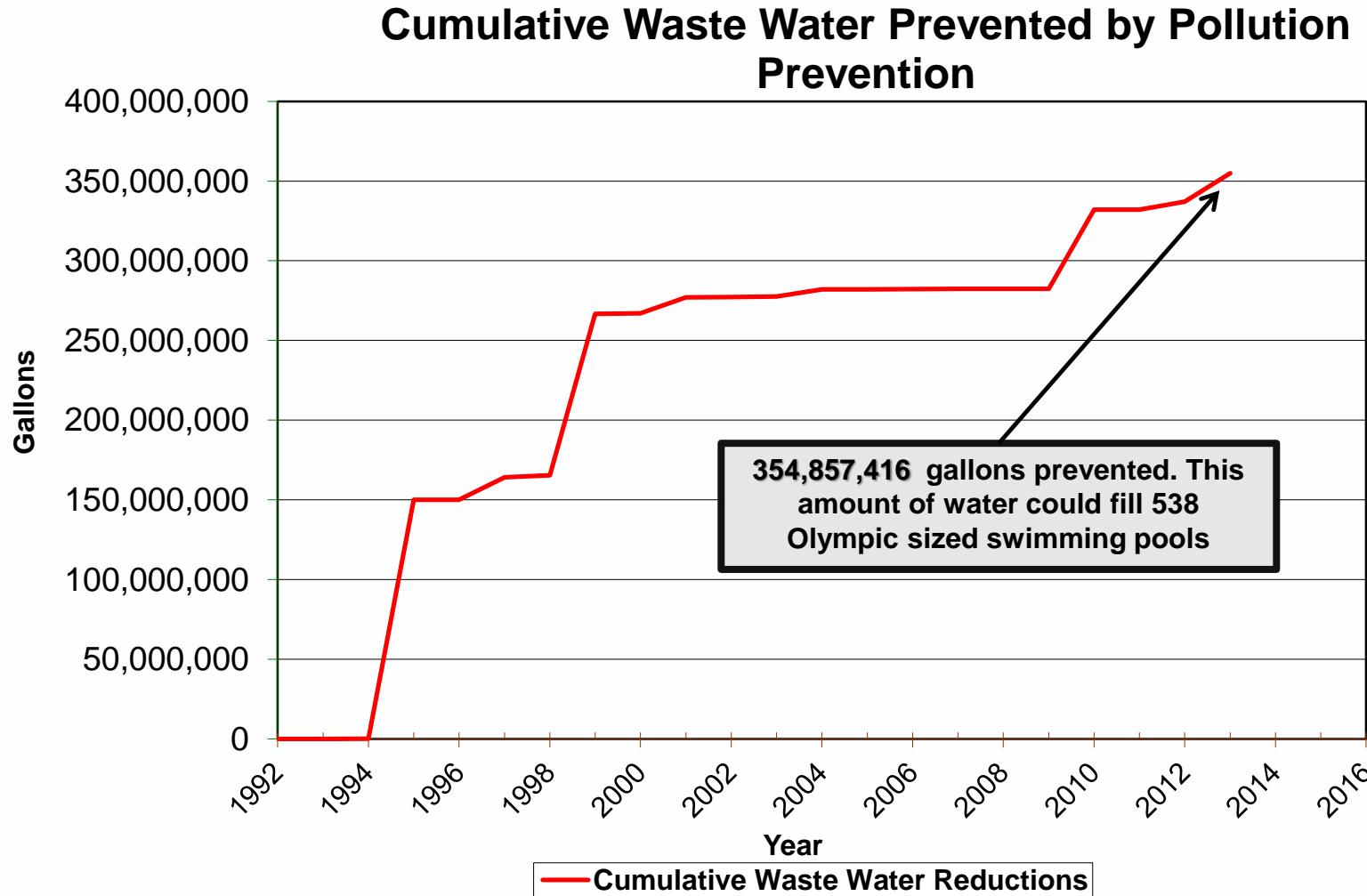
*Use water wisely and  
become a sustainable  
company*

One computer and electronic manufacturing facility was able to design and implement a system to reuse process wastewater as a feed stock to cooling towers. This reduced water usage by **1,000,000** gallons during 2013.

# Cumulative fresh water use conserved 1992-2013



# Cumulative wastewater prevented 1992-2013



# How can P2 benefit your company?

- Economic incentives
  - Reduction in disposal and treatment costs
- Liability Incentives
  - Worker safety
- Public Benefits
  - Environmentally sound company
- Human Health and Environmental Benefits



## Promoting P2

- Management support
- Make sustainability a habit
- Involve workers – excellence recognition
- Minimal consumption of natural resources
- Reliance on clean, renewable energy
- Continuous improvement
- Learn about your industry and current technology
- Believe sustainability is a necessity
- Change the culture of the company



## Questions?

Contact us! We are here to help!

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[ji1@azdeq.gov](mailto:ji1@azdeq.gov)

Linneth A. Lopez - (602) 771-4739  
[lal@azdeq.gov](mailto:lal@azdeq.gov)



