

IDENTIFYING POLLUTION PREVENTION OPPORTUNITIES AT YOUR FACILITY

Ryan Hamel

K-State Pollution Prevention Institute

Oct 12/13, 2011

Webinar logistics

- All attendees are muted.
- Listen through computer or telephone.
- Questions? Use the access panel on the right side of the screen to type it in.
- The presentation will be archived. Access instructions will be sent by e-mail.

Today's webinar

- It's all about P2
 - Advantages/obstacles
 - Getting started
 - Tracking/measurement
 - Examples
- Greening Southeast Kansas Initiative
 - Overview
 - How to get involved



Definition of P2

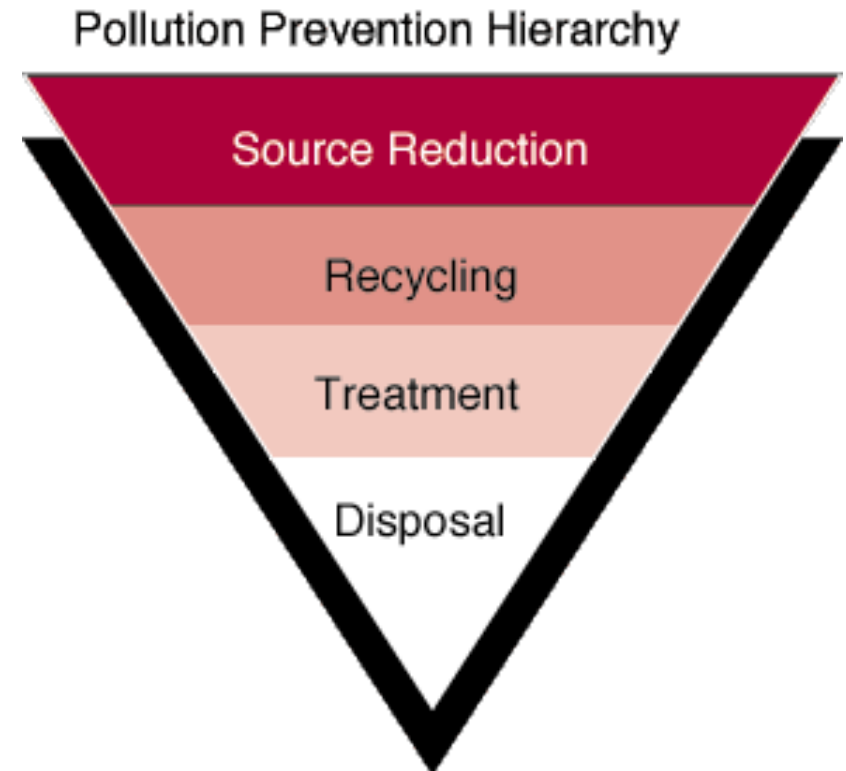
According to the EPA:

Pollution prevention is reducing or eliminating waste **at the source** by modifying production **processes**, promoting the use of **non-toxic or less-toxic substances**, implementing conservation **techniques**, and re-using materials rather than putting them into the waste stream.

Definition of P2

In summary:

- Change the process
- Change the material
- Change the technology

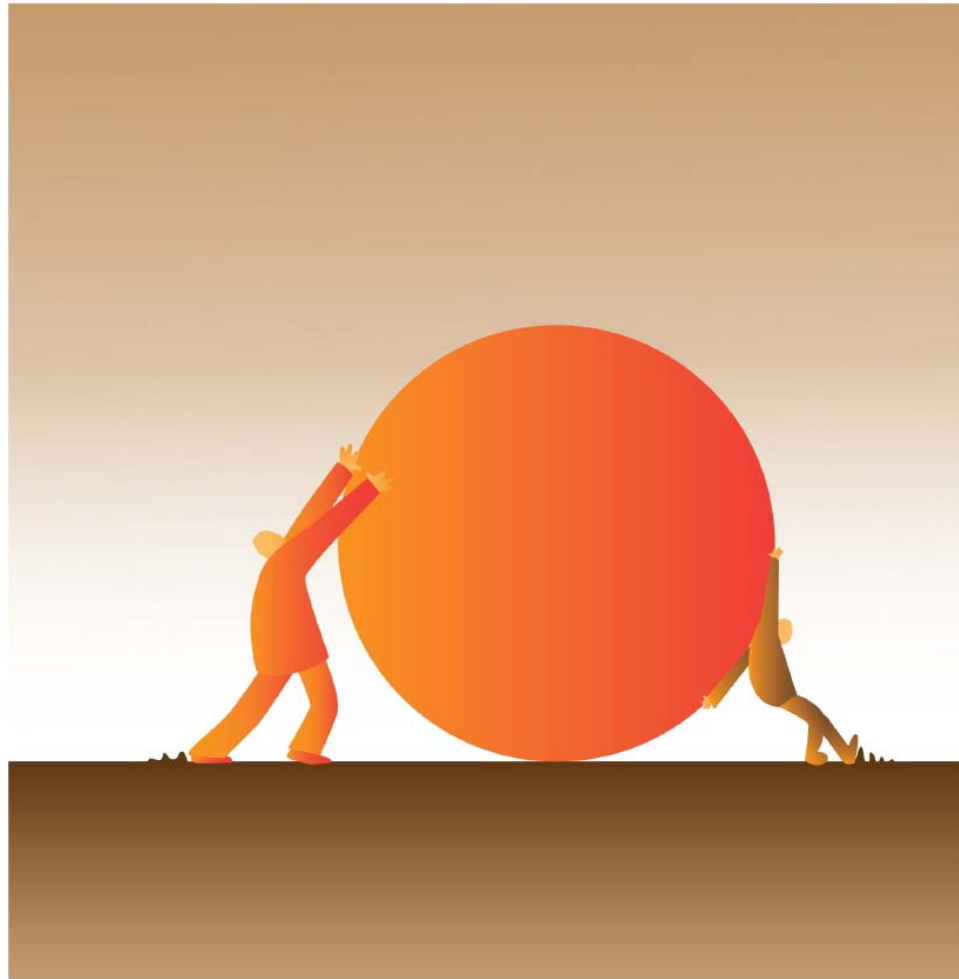


Advantages to P2

- Cost savings
- Reduces waste generation/resource use
- Decrease in regulatory requirements
- Can improve worker health and safety
- Improves company image



Obstacles to P2



Obstacles to P2

- Money



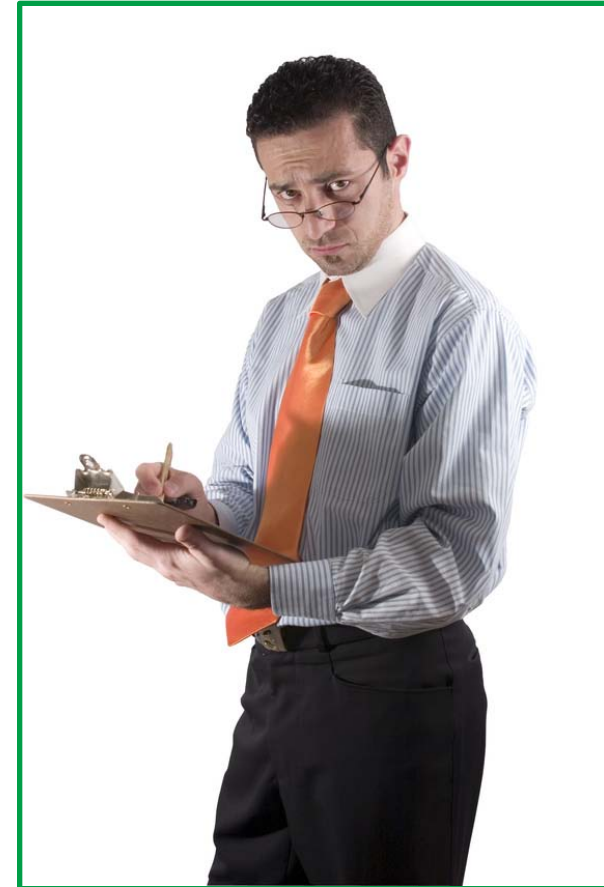
Obstacles to P2

- Money
- Time



Obstacles to P2

- Money
- Time
- Specifications and quality issues



Obstacles to P2

- Money
- Time
- Specifications and quality issues
- Regulations



Obstacles to P2

- Money
- Time
- Specifications and quality issues
- Regulations
- Inertia/momentum



GETTING STARTED

P2: Getting started at your facility

Step 1: Management commitment

- Support from upper management is essential
- A formal written policy –
 - establishes commitment
 - guides the program
 - outlines goals
 - directs implementation
 - communicates the importance of reducing waste
 - encourages participation

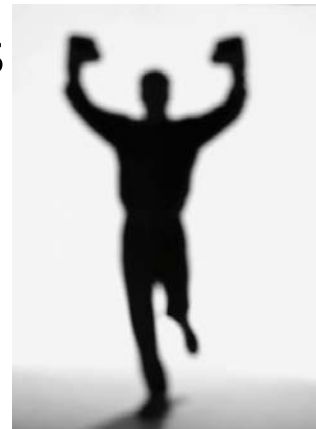


P2: Getting started at your facility

Step 2: Sustainability champion

An individual or team that -

- has the passion/authority to plan, design, and implement activities that support the policy
- works with employees to overcome any resistance that occurs when changes are made
- Continually monitors and communicates results



P2: Getting started at your facility

Step 3: Employee involvement

Employee involvement should be –

- sought
- encouraged
- considered
- valued

**Your most innovative and cost-saving suggestions may come from discussions with your employees.
They *know* the facility!**



P2: Getting started at your facility



Step 4: Measurable goals

Measurable goals need to be -

- accepted by employees
- flexible to changes
- Practical and achievable

**If it can be measured, it can be managed (and improved).
Don't forget to track P2 and cost savings/spendings!**

PERFORMING YOUR OWN ENVIRONMENTAL ASSESSMENT

Environmental assessment - overview

Step 1: Assign Responsibility

- For small companies, this may be the owner or manager
- For large companies, it may be necessary to form a “green” team

Step 2: Gather data

- Utility bills from previous 12-months or more
- Production records (to tie resource use with production)
- Is sub-metering present within your facility?

Environmental assessment - overview

Step 3: Walk around facility; analyze findings/data

- Speak with employees and ask questions
- Write down any thoughts or ideas
- Review manuals/drawings of building equipment and systems to determine, size, age, type, etc.



Tools and instruments

- Calculator
- Bucket and stopwatch (to estimate water flow)
- Scale
- Submeters (water/energy)
- Infrared thermometer/camera
- Ultrasonic leak detector
- Light meter and discriminator
- Datalogger

TRACKING AND MEASUREMENT

Tracking P2 savings

- Step 1: Develop baseline
 - Use utility bills and production reports
 - Determine a unit of measure
 - Resources used/unit of product is a good measure for a manufacturing facility (Example: lbs of waste/product)
 - Resource used/month (there are variables like weather)
- Step 2: If baseline can't be developed, install submeters or conduct waste audit, so one can.

Tracking P2 savings

- Step 3: Determine who, when, and how future tracking will be conducted.
- Step 4: Share information with management, employees, and community. Be recognized for improvements made.

POLLUTION PREVENTION EXAMPLES

Example – Reuse leads to source reduction

Cobalt Boats (Neodesha, KS)

- Began acetone recycling in 1998.
- Upon re-examination of the project in 2004, annual savings were found to be:
 - 30,000 gallons acetone recycled
 - 137 tons of hazardous waste disposal avoided
 - \$41,000 in avoided disposal costs
 - \$72,000 in raw material purchases

Waste reduction

Gates Corporation (Iola, KS)

- Previously land-filling many reusable, wood pallets
- Created instructions for employees to distinguish reusable from broken
- Broken wood pallets now refurbished and plastic pallets returned to parts supplier
- Annual savings: \$38,000 and 214 tons wooden pallets

Example - Use materials more efficiently

Hallmark Cards (Kansas City)

Operational change to ensure that each carton shipped to retail outlets is full:

- Decreased packing materials (650 tons cardboard/year)
- Decreased fuel use (68,095 gallons diesel/year)





Example - Water reduction/reuse

Collins Bus Corp, South Hutchinson KS

- Old process of quality testing (to simulate rainfall event) required draining water in reservoir daily in order to empty filters
- An environmental impact study resulted in shortening filters, allowing them to be cleaned without draining water reservoir
- Annual water savings of 421,856 gallons (84% reduction)
- Annual savings greater than \$1,000 (water and labor)

Example – Water reduction

Southeast Kansas Business

➤ Overflow Rinse Tank

- Water ran in at 5 gpm, 10hrs/day, 247 days/year
 - Water ran in at top of tank, that is where the overflow is located
 - Used 741,000 gallons a year, \$4,100 a year
- Now
 - Water routed to bottom of tank
 - Runs 2 gpm
 - Saving 444,000 gallons a year, \$2,500 a year
 - No cost to fix, had all necessary parts





Example – Water reduction

Gates Corporation (Iola, KS)

Aerators

- Estimated savings of 947,800 gallons of water and \$4,700 annually
- Cost of the aerators is approximately \$42

Example - Water reduction/reuse

Schwan's Global Supply

- 56 sinks, 15 troughs
- Bleed off at every sink and trough
- Created closed-loop system to recirculate bleed-off water
- Installed flow restrictors
- Savings: 34,953,000 gallons water and \$466,000/yr





Lighting example - Energy Efficiency

Via Christi Hospital (Wichita, Kansas)

- Light levels measured throughout buildings
- Installed timers in hallways with adequate daylight
- Project cost \$5,500 and resulted in:
 - Cost savings of \$25,600/year
 - 355,800 kWh/year
- Tracking savings using Energy Star Portfolio Manager

355,800 kWh = annual electricity use of 390 Kansas homes

Compressed Air example - Energy Efficiency

Kansas food manufacturer

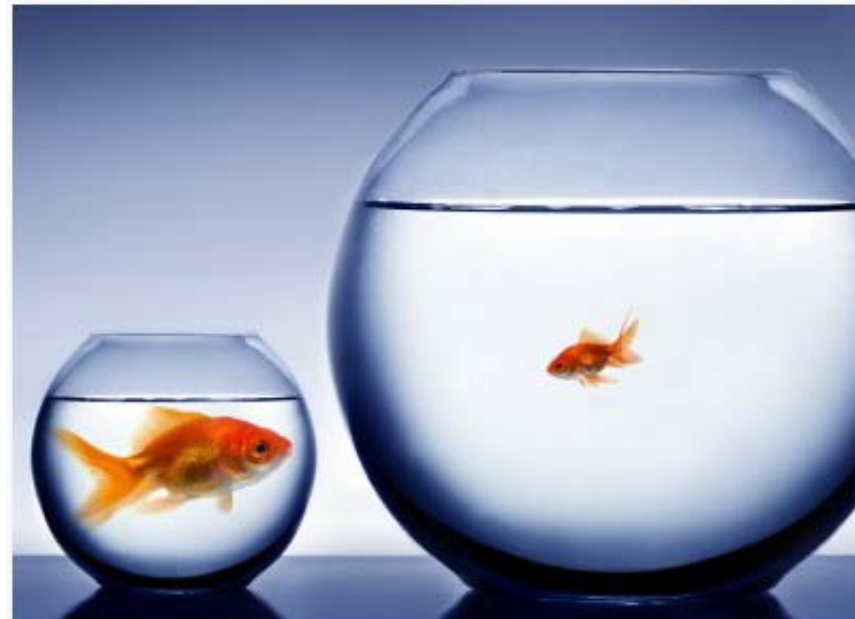
- Used an ultrasonic leak detector to identify, tag, and measure 46 air leaks
- Recommendation: Leak inspection every 6 months as part of maintenance schedule
- Cost savings = \$23,060/year
- Energy savings = 458,000 kWh/year

458,000 kWh = annual electricity use of 505 Kansas homes

Right-sizing example

Manufacturing facility (Kansas)

- Facility conducted a boiler energy assessment
- Current boiler (natural gas) was highly oversized
- By switching to correctly sized electric boiler, company saved:
 - \$166,000 operating costs
 - 29.7 million SCF (standard cubic feet) natural gas



Water assessments

- Best management practices (checklist)
www.savetexaswater.org/bmp/
- A Water Conservation Guide for Commercial, Institutional, and Industrial Users
www.ose.state.nm.us/water-info/conservation/pdf-manuals/cii-users-guide.pdf

Waste assessments

- How to Conduct a Waste Audit

www.solidwastedistrict.com/projects/waste_audit.htm

- Solid Waste Management Plan (SWMP) Checklist

www.heartwoodresources.org/SWPCheckList.pdf

Energy assessments

- Facility/office energy checklists

www1.eere.energy.gov/femp/services/energy_aware_oec.html

- Industrial Audit Guidebook

www.bpa.gov/energy/n/industrial/pdf/audit_guide.pdf

Other resources

- **K-State PPI** (www.sbeap.org)
- **Kansas Green Teams** (www.kansasgreenteams.org)
- **KDHE** (www.kdheks.gov/environment/index.html)

Funding

- **Database of State Incentives for Renewables and Efficiency** (www.dsireusa.org)
- **USDA Rural Development**
(www.rurdev.usda.gov/energy.html)

GREENING SOUTHEAST KANSAS INITIATIVE

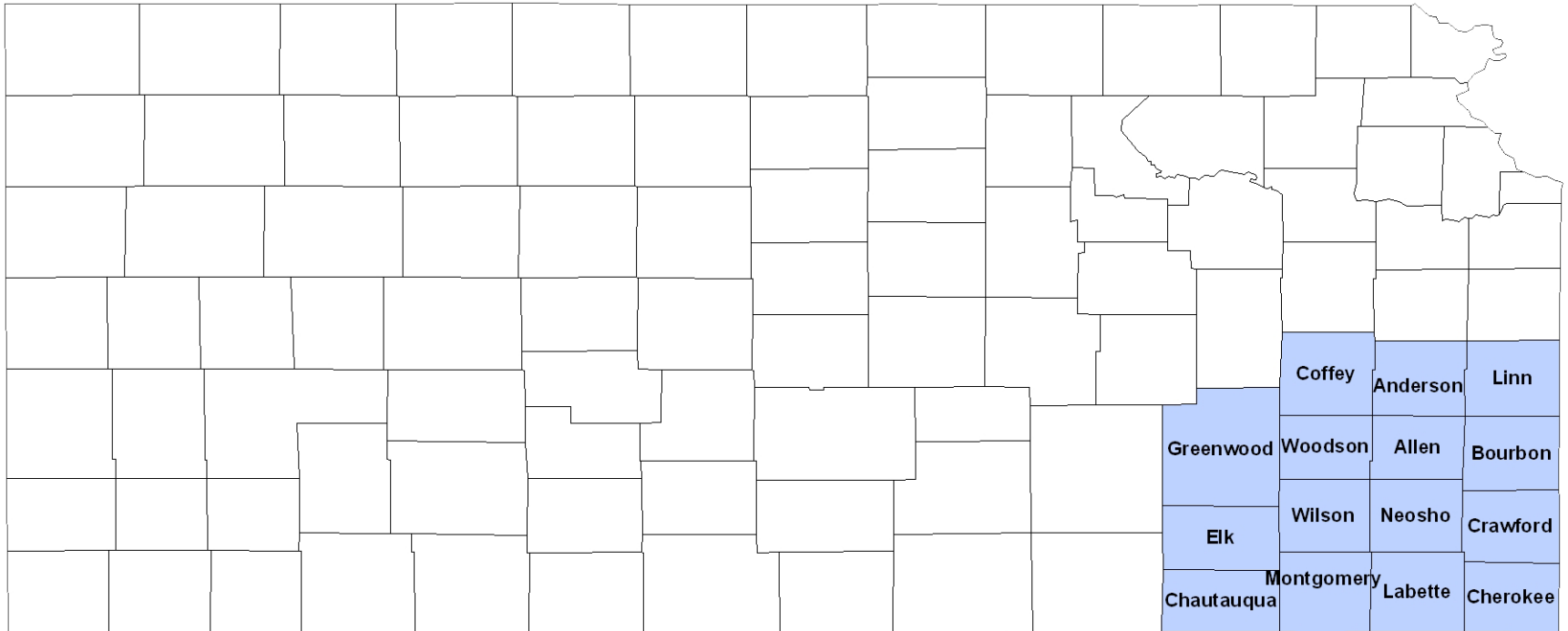
Greening SE KS - overview

- Funded through USDA Solid Waste Management grant.
- Assists rural SE Kansas facilities in identifying and researching opportunities to reduce waste, water, and material/disposal costs.
- Program goals include:
 - On-site visits
 - Waste and water-reduction related assistance
 - Form an ongoing P2-focused network/partnership
 - Partner with existing programs in the area

Greening SE KS - participation

Facilities located in one of the 15 counties in SE Kansas are eligible.
(City population must be less than 10,000)

Learn more and sign-up at www.sbeap.org/greeningseks.



Questions?

Ryan Hamel

913-715-7018 or 800-578-8898

rhamel@ksu.edu

www.sbeap.org