Ecology's Current Pollution Prevention Program

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P2 Planning Chemical Regulatory Lists

- Toxics Release Inventory list (approx. 600)
- Montreal Protocol list (approx. 75 green-house gases)
- Hazardous Waste Lists
  - Some lists of specific chemicals…
  - …but mainly not specifically named. Instead: "ignitable," "corrosive," reactive," etc

TRI sample

CAS Number	Chemical Name	
115-28-6	Chlorendic acid	0.1
90982-32-4	Chlorimuron ethyl [Ethyl-2-[[[[(4-chloro-6-methoxyprimidin-2-yl)amino]carbonyl]amino]sulfonyl] benzoate]	1.0
7782-50-5	Chlorine	1.0
10049-04-4	Chlorine dioxide	1.0
79-11-8	Chloroacetic acid	1.0
532-27-4	2-Chloroacetophenone	1.0
4080-31-3	1-(3-Chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride	1.0
106-47-8	p-Chloroaniline	0.1
108-90-7	Chlorobenzene	1.0

A sample of the list of “hazardous substances” for the federal Toxics Release Inventory and the state pollution prevention planning law.

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Pollution Prevention Planning

- >2640 pounds of hazardous waste/year and/or TRI reporters required to plan
- ~ 600 current planning facilities
- Submittal of plan is mandatory, implementation is voluntary
- Annual Progress Reports and Five-Year Plan updates required

Source Reduction

Reuse

Recycle

Treatment/ Disposal

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Hazardous Waste Hierarchy

- Established in RCW 70.95C

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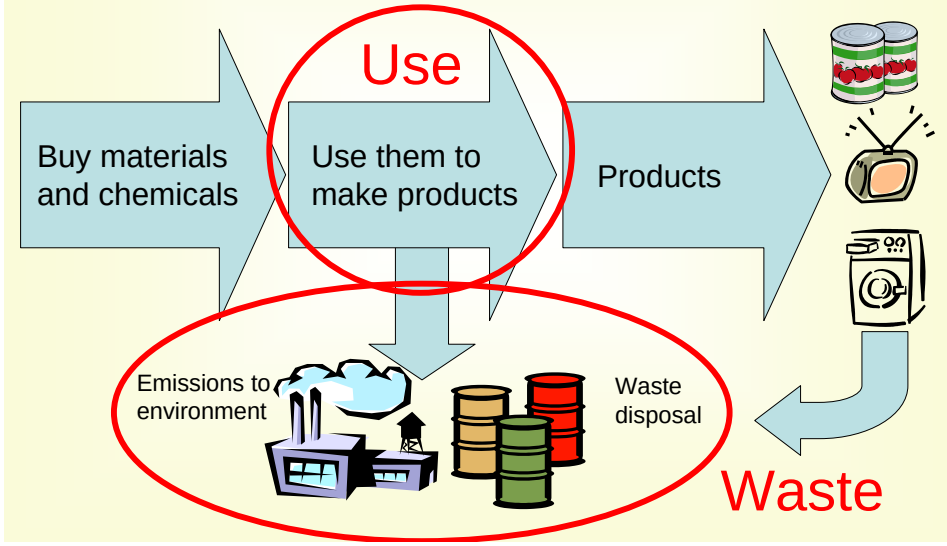
Toxics "Use" vs. "Waste"



- 1997—Environmental Management System Alternative to P2 Planning
  - –Based on feedback from industry
  - ~ 50 facilities participating
- Participants: Boeing, U.S. Navy, Hexcel, Canyon Creek Cabinets, City of Seattle Parks Dept, Seattle City Light, Frito-Lay, etc.

Goal 12	**Create a Facilities Services Hazardous Waste Manual.**
Task	Create a draft manual that covers issues such as proper ha management as well as BMPs for paint waste management water disposal (and stormwater protection), and other topics
Task	Finalize and publish this manual for use by Facilities Servic key FS representatives for "buy-in".
Goal 13	**Account for all spent photographic fixer and silver reco manage silver program to encourage owners of photop digital".**
Task	Use MyChem database and waste database, searching for fixer chemicals, to find all photographic systems.
Task	Encourage photo processor operators to "go digital", especi on the K wing group in the Health Sciences Building. This s priority but has been confounded by lack of ownership of th (they are mostly older machines and shared by a number o

Sample Environmental Management System report: tracking tasks and progress toward goals

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Cleaner Production Challenge

A Voluntary Resource Conservation Effort

Final Report

A project which chose its participants on the basis of high waste amounts instead of high toxicity substance use.

Technical assistance visits

People-on the phone and visiting—are rated the most helpful in surveys of our clients.

Lean & Green: The Dept of Ecology and Washington Manufacturing Services partnered to run three successful pilot tests of finding environmental wastes as well as the traditional lean manufacturing wastes.

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Successful Technical Assistance Tools

- TREE (Technical Resources for Engineering Efficiency) Team
  - Multi-media collaboration with local air agencies, Water Quality Program, local sewer and water
- Since 1998 TREE has made suggestions to help companies annually save…
  - $2.4 million
  - 206 million gallons of water
  - 229,000 pounds of hazardous waste

Pollution Prevention Plan

Facility Name: **Ace Galvanizing**
Industry Type: Hot Dip Galvanizing
NAIC Code: 332812
EPA ID# or CRK#: IRF409005654
Base Year: 2001

Description of Products and Services

Ace Galvanizing is a Hot-Dip galvanizing job shop, which means that all the material to be galvanized is fabricated by Ace's customers; Ace itself does not fabricate any items for resale. The company has two facilities, a 5-acre site in the South Park area, and a smaller facility in the Fremont area. The South Plant consists of one lay-down yard in the south end of the site where items to be galvanized are unloaded and stored, a second lay-down yard where material is stored after galvanizing, 2 warehouses, one production building with an enclosed tank farm on it's west side, and a "Pickle & Oil" deoxidation production line at the northwest corner of the site. The North Plant consists of two connected buildings, and one yard where both processed and unprocessed items are stored.

Based on site activities, Ace Galvanizing falls under the Standard Industrial Classification (SIC) of 3479 (Coating, Engraving, & allied services). Under the new North American Industry Classification System (NAICS), Ace is covered under the code 332812 (Metal coating, engraving & allied services). Typically, the facility operates 24 hours per day, 5 days per week, and maintains a staff of approximately 50 people.

Production Factor for APR (base year 1995) = 1.02

Production Level

Units	2001	2002	2003	2004	2005	2006
Tons of steel galvanized	14,269	15,997	13,088	16,469	14,828	0
Ratio	1.00	1.12	0.92	1.15	1.04	0.00

Previous Accomplishments

Sample Pollution Prevention Plan (start of first page only)

HAZARDOUS SUBSTANCES USED

Product Name	Ingredients (LBS)				2001	2002
UBZ7910	CAS #	%			324390	158211
	7440-39-3 BARIUM	20				
	N982 ZINC CMPNDS	15	-	+		
ALP101	CAS #	%			65644	71176
	N982 ZINC CMPNDS	35				
	N040 BARIUM CMPNDS	40	-	+		
UBZ7931	CAS #	%			60542	70963
	N982 ZINC CMPNDS	19				
	N040 BARIUM CMPNDS	16	-	+		
BC4746S	CAS #	%			46805	56624
	N078 CADMIUM CMPNDS	20				
	N040 BARIUM CMPNDS	15	-			
	N982 ZINC CMPNDS	5	-	+		

Sample P2 Plan: Keeping track of toxics ("hazardous substances" in the law)

Opportunity Rodine Acid Inhibitor TOP Help

Describe the opportunity: Acid inhibitors allow acid to dissolve oxidized iron while interferir the reaction with the base metal. By doing this, we should be able to pickle more pounds of each pound of sulfuric acid used. We have actually been using this for several years, increa amount of Rodine Acid Inhibitor each year.

Targeted Hazardous Products/Wastes: Sulfuric acid consumption

Observations:

Year	Observations
2002	The Rodine acid inhibitor, along with some improvements in rinsing technique ha to lower our sulfuric acid consumption from 14 pounds of acid per ton pickled in 2 11 pounds of acid per ton pickled in 2002.
2003	For 2003, sulfuric consumption increased to 15 pounds per ton pickled. This coul to inconsistent application of the Rodine inhibitor, change in type of steel we are or an increase in the amount of zinc stripping in the acid tanks. This matter is unc investigation at the present time.
2004	We switched to a different acid inhibitor late in 2004, but had to discontinue its us switch back to Rodine in July 2005. The product we tried, "Soprin Ironsave" was apparently rendered ineffective by the fluoride ion build up in our acid tanks. This buildup is a consequence of reusing the same acid for so many years. Probably as a result, Acid consumption was up to 16 pounds of acid per ton of st processed in 2004. The effects of our inhibitor experiment will probably carry ove
2005	Sulfuric acid consumption was down by a small amount in 2005, however norma consumption was up to 17 pounds of acid per ton of steel processed. We are bac using the Rodine inhibitor, and hope to see decreased consumption for 2006.

Sample P2 Plan: An “opportunity,” or idea for change

MENT, RECYCLING, RELEASES OR OTHER RESOURCE

Resource or Release (State Units)	2001	2002
Used: LPG - Propane (gallons)	20463	14566
Used: #2 Diesel Fuel (gallons)	430	2738
il - motor, hydraulic, transmission, clutch 7 lift trucks x 3,500 hrs. (lbs)	289	263
Used: All motor fuel (pounds)	90911	84603
Pounds Fuel / Production Factor	90911	75538
nds Fuel / Production Factor as % of base year	100	83
Fuel Expenses (dollars)	29411	18918

Sample P2 Plan: some facilities use the plan to keep track of resource use (optional)

Not all of table is shown, for screen legibility.

The Hazardous Waste and Toxics Reduction web site has materials and contacts for a broad range of groups.

Example of pollution prevention publications. These two publications are compilations of ideas for reducing waste and complying with dangerous waste laws.

Offering Mistints and Off-Spec Products to Non-Profit Organizations
Schools, low-income developments, community projects and organizations often seek out material donations such as paint from businesses in the community.

Giving or Selling Overages on Custom Products to the Customer
Rather than keeping small overages of custom products, or trying to find another customer or use for them, many manufacturers are making an effort to give or sell small overages to the customer who ordered the product.

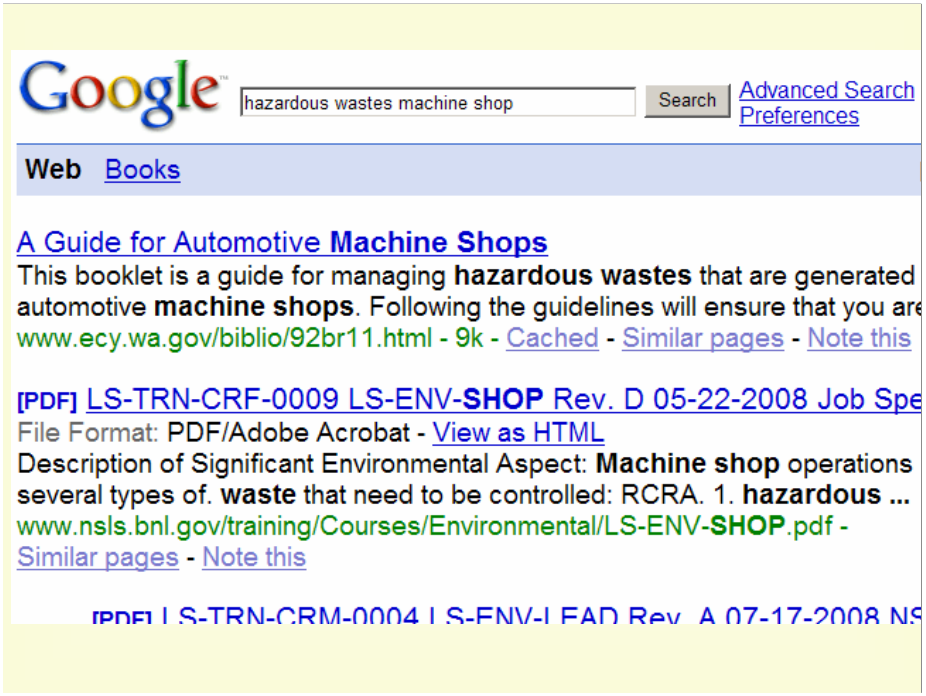
Using Re-Usable and Recyclable Containers
Some manufacturers actively pursue using recyclable containers for raw materials and finished product to reduce the generation of solid waste. (A common practice to some degree, it remains an area for future opportunity. See "Solid Waste" section, page 16).

Formulator Works With the Paint Maker
When manufacturing a new product for the first time, the formulator will work with the paint maker to limit the production of off-specification product.

Clearly Indicating/Highlighting Formula Changes
To prevent producing off-spec products due to human error, manufacturers are taking steps to call attention to formula changes through highlighting or other indicators.

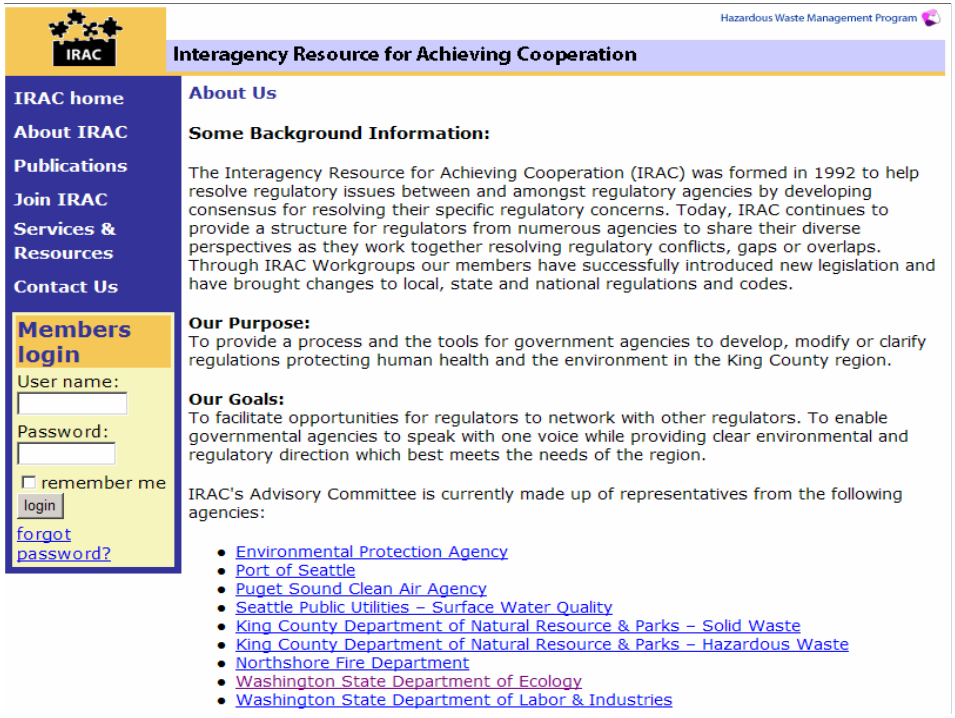
Using Re-Usable Bag, Metal, or Vortisieve Screens and Filters
A common practice for the reduction of solid waste from paint filtering is the use of re-usable rather than disposable filters.

Typical waste and toxics reduction opportunities list from an Ecology publication.



High Google results indicate a widely-popular and linked-to publication.

Ecology participates in many industry groups. A recent focus has been on the health care industry. Mercury reduction best practices, among many others, are shared in this group.



Intergovernmental work groups provide one coordinated response to issues.

Survey sent to planners	1995	1998	2002 N=40
How helpful was the planning process?	3.3	3.4	3.5
Hours to prepare plan	100	66	17
How helpful was Ecology staff?	4.2	4	4.5
How many P2 opportunities do you expect to implement?	Not asked	2.8	2.7
Do you expect to save money through implementation?	Not asked	Not asked	2.6

First three questions:

1 = Not at all, 3 = Somewhat, 5 = Very

Last two questions:

1 = None, 3 = Some, 5 = Lots

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State of Washington

Specialty Products, Inc

As a result of our technical assistance in developing and implementing their first Pollution Prevention Plan:

Eliminated m-xylene

'Non-cancer human health impact' factor = 0.42 kg-toluene equivalent/kg

Ecotoxicity factor = 1.92 kg 2,4-D/kg

Replaced it with dimethyl adipate (dibasic ester)

'Non-cancer human health impact' = zero

Ecotoxicity factor = zero.

Example of technical assistance by Ecology staff: reformulation of solvent using values from EPA's TRACI model.