



NETWORKING

Regional Roundtables
P2 Programs Directory
Regional Listservs
National Listservs
Topical Listservs
Conferences
Websites

MEASUREMENT

Regional Aggregation Tools
Desktop Tracking Software
Success Story Database

INFORMATION

Topic Hubs™
P2 News
Sector Resources
Document Libraries
P2 Experts

P2 SERVICES

Rapid Response
Document Search
Training

**View all P2
Topic Hub
subjects on
reverse.**

LEAN MANUFACTURING

A quick guide to essential pollution prevention (P2) information for lean manufacturing, with a compilation of the best available on-line resources.

Why P2 and Lean for Manufacturers?

Lean Manufacturing is a management philosophy focusing on the reduction of wastes. Wastes typically produced by manufacturing include: transportation, inventory, motion, waiting time, over-production, processing, and defective product.

Environmental wastes, though not explicitly listed, are deeply embedded in these wastes. By using P2 methods of identifying and reducing wastes, in combination with lean manufacturing tools, facilities can directly affect production flow, time, quality, and cost. In addition to increasing the value to the customer, lean manufacturing methods, when combined with P2 assessments can lower environmental liability and even reduce the regulatory burden on companies.

How Does Lean Manufacturing Prevent Pollution?

Environmental departments can take advantage of lean manufacturing's systematic focus on material use and disposition to improve environmental performance and demonstrate the value of a strong pollution prevention program. Lean Manufacturing and P2 both:

- seek a systematic approach to continual improvement;
- seek active employee participation in improvement activities;
- emphasize the importance of using metrics to inform decisions;
- focus on on-going efforts to identify and eliminate waste; and
- seek engagement with the supply chain to improve enterprise-wide performance.

Best P2 Resources at Your Fingertips

Topic Hubs are peer-reviewed on-line primers that include background and operational information plus specific opportunities for pollution prevention. They include an extensive list of links for the "best of the best" on-line resources: manuals, checklists, fact sheets, case studies, etc. This Topic Hub also describes lean practices that manufacturers can implemented to improve operations, reduce waste, and save money.

Topic Hubs are valuable resources for P2 programs, regulators, environmental managers, and industry. P2Rx centers have more than 55 Topic Hubs available on a wide range of issues covering many industrial sectors. Check them out at www.p2rx.org/hubs.

Did You Know?

■ In addition to pollution prevention, lean manufacturing focuses on reducing production cycle time, better utilizing space, and minimizing material wastes.

■ Kaizen is a three-phase approach to lean manufacturing that includes: standardization of operations, simplification of the overall process, and reduction of product variation. The Kaizen method is considered the foundation of other lean manufacturing tools and programs such as P2, Six Sigma, and ISO 9000, and ISO 14000.

**View the complete
Lean Manufacturing
Topic Hub at
p2rx.org/hubs**



The Lean Manufacturing Topic Hub was written by ZeroWaste Network.

© 2006. Pollution Prevention Resource Exchange (P2Rx), a network of eight regional centers: NEWMOA (Northeast), WRRRC (Southeast), GLRPPR (Great Lakes), ZeroWasteNet (Southwest), P2RIC (Plains), Peaks to Prairies (Mountain), WRPPN (Pacific Southwest), PPRC (Northwest).



How to Use the Topic Hub™ Web Resource

The screenshot shows the 'Publicly Owned Treatment Works Table of Contents' page. Annotations include:

- Access Any Topic Hub:** Points to the top navigation bar.
- Search Hub by Keyword:** Points to the search box.
- Navigate to all Subsections:** Points to the left-hand navigation menu.
- Read an overview of the issues:** Points to the 'Background and Overview' section.
- Key References:** Points to the 'Essential Links' section.

Current Topic Hubs

- | | | |
|-------------------------------------|--|---|
| Aerospace | Food Service | Metal Finishing |
| Agricultural Teaching Labs | Green Procurement | Oil and Gas |
| Auto Body | Hospitality | P2 and Environmental Security |
| Auto Repair | Household Hazardous Materials | Paint and Coating Manufacturing |
| Auto Salvage—Great Lakes Region | Integrated Pest Management (IPM) for Schools | Pollution Prevention (P2) |
| Clean Snowmobiles | Landscaping | Pollution Prevention for Arts Education |
| Community Growth | Lead | Pork Production |
| Construction Science Education | Lean Manufacturing | Printing-Flexography |
| Consumer P2 | Marinas and Small Boat Harbors | Printing-Lithography |
| Dioxin | Meat Processing | Public Lands |
| Dry Cleaning | Mercury | Publicly Owned Treatment Works |
| Economic Incentives | Mercury-Automotive | Regulatory Integration |
| Electric Utilities | Mercury-Dental | Residential Construction |
| Electronic Waste | Mercury-Health Care | Semiconductor Manufacturing |
| EMS | Mercury-Schools | Ship Building and Repair |
| EMS in Government | Mercury-Thermometers | Ski Areas |
| Environmental Management Accounting | Mercury-Thermostats | Technology Diffusion |
| Environmental Measurement | Metal Fabrication and Machining | Textiles |
| Environmental Mentoring | | Wood Furniture Manufacturing |
| Fiberglass Fabrication | | Youth Education |