NEW JERSEY SMALL BUSINESS ENVIRONMENTAL ASSISTANCE PROGRAM

Helping New Jersey's small businesses understand the complex world of environmental regulation

Practical Solutions for Pollution Prevention (P2)

JUNE 2023

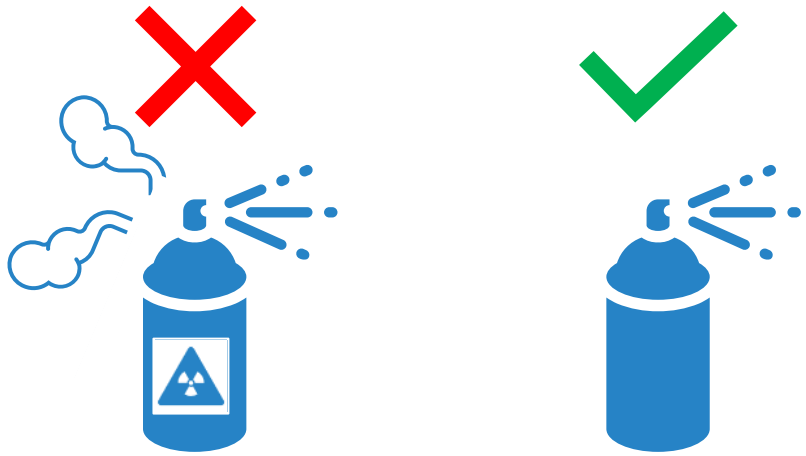
Pollution Prevention Categories

- Input substitution
- Product reformulation
- Production process modification
- Improved operation and maintenance
- In-process recycling

Input Substitution

- What is input substitution?
  - Replacing a toxic substance or raw material in the process by substituting it with different non-toxic, or less toxic substance that will generate less waste or that is more environmentally friendly and safe to process or use.

- Target the following materials at a facility for available alternatives:
  - Solvents that contain high VOC contents
  - Hazardous Air Pollutants (HAPS)
  - Heavy Metals such as:
    - Chromium
    - Mercury
    - Lead
    - Arsenic



- Example: An autobody shop switched to a low VOC paint option.

Product Reformulation

What is product reformulation?

- The process of altering the processing or composition of a product, to improve it or to reduce its content of ingredients or chemicals of concern.

- Example: a pigment company realized their paints containing diarylide pigments were associated with iPCB generation. They decided to change to a non-diarylide pigment to prevent the generation of hazardous iPCBs.

Production Process Modification

- What is a process modification?
  - A change in a process, method, or technique that is used to produce a product or a desired result, including the return of materials or their components for reuse within the existing processes or operations, to reduce, avoid, or eliminate the generation of pollutants.

- Target processes with discharges:
  - Air releases
  - Solid, liquid, or hazardous waste generation

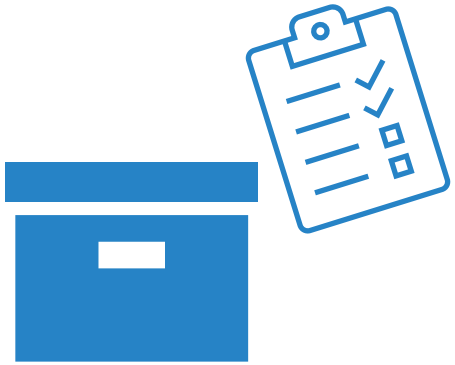
- Target cleanup processes:
  - Wet Cleaning
  - Degreasing

- Segregate metals and solvents in the waste stream to reduce hazardous waste disposal.
  - Use hydrometallurgical processes to extract metals from sludge
  - Convert sludge to smelter feed
  - Remove and recover metals with electrolysis
  - Solvent waste streams should be kept segregated and free from water contamination
  - Solvent recovery units can be used to recycle spent solvents

Improved Operation and Maintenance

What counts as improved operation and maintenance?

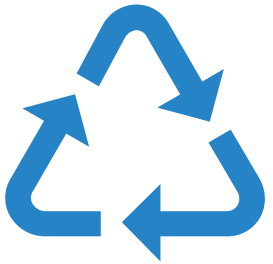
- Prioritizing operation and maintenance practices that reduce, avoid, or eliminate the generation of pollutants, including:
  - Cleaning And Degreasing
  - Spill And Leak Prevention
    - Use spigots, pumps, and funnels when dispensing or transferring liquids to and from storage containers
    - Keep chemicals in safety cans or covered containers between uses to reduce evaporation, spills and contamination
    - Maintain spill-kits and instruct all employees in the proper use and location of the spill-kits.
  - Inventory Control
    - Order and manage material to reduce expiring products
    - Reduce the possibility of expiration by using the “first in, first out” method.
    - Inspect material when received.
    - Inspect and Test expired material before disposal.
    - Use a computerized inventory system to track inventory
  - Smart Operating Practices
    - Prohibit the mixing of hazardous waste and non-hazardous waste
    - Do regular maintenance on equipment to ensure that all machinery and processes are working efficiently.



In-process Recycling

What is in-process Recycling?

- Returning Hazardous Substances to Production Process(es) through dedicated equipment that is physically integrated (directly connected) to the process and reduces nonproduct output or multi-media releases.



Finding P2 Options

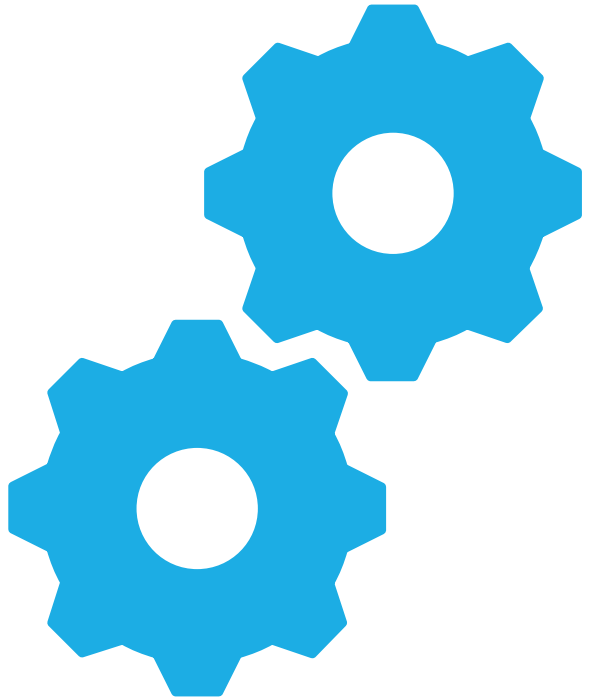
Available tools and resources for brainstorming P2 options:

- EPA Pollution Prevention Case Studies
  - Pollution Prevention Case Studies | US EPA
- Northeast Waste Management Officials Association (NEWMOA) P2 Projects
  - Pollution Prevention - NEWMOA - Northeast Waste Management Officials' Association
- Toxics Use Reduction Institute (TURI) Alternative Chemical Recommendations
  - Industry & Small Business / Our Work / TURI - TURI - Toxics Use Reduction Institute
- InfoHouse (Iowa Department of Natural Resources): an online collection of more than 50,000 pollution prevention (P2) related publications, fact sheets, case studies and technical reports.
  - Welcome to InfoHouse - A Comprehensive Collection Of Documents For Pollution | P2 InfoHouse

Technical Feasibility Analysis

Is the option Technically Feasible?

- How will it impact product?
- What equipment will be needed?
- Will it have an impact on Health & Safety Issues?
- Will permit modifications be needed?



Financial Feasibility Analysis

- First, perform a cost analysis on what is currently spent on environmental compliance
  - Storage & handling (includes safety and health compliance)
  - Monitoring, tracking and reporting
  - Treatment
  - Transportation and disposal
  - Manifesting and labeling
  - Permit fees
  - Liability insurance
  - Material costs

- Next, decide if P2 options are economically feasible:
  - Do we have the capital?
  - How long will it take to recover the investment?
  - Will this change have an impact on production?

P2 Implementation Resources

- Introduction to Environmental Accounting:
  - An Introduction to Environmental Accounting as a Business Management Tool: Key Concepts and Terms | US EPA

- Environmental Accounting Calculators: Measure environmental outcomes and economic performance related to pollution prevention activities
  - Pollution Prevention Tools and Calculators | US EPA

- Integrated Environmental Management Systems (IEMS):
  - Integrated Environmental Management Systems (IEMS) Implementation Guide | US EPA
    - IEMS development by example
    - Step-by-step instructions
    - Fill in blank tables and forms Identify IEMS components
    - Develop objectives, targets, and action plans
    - Document control
    - Alternatives evaluation
    - Purchasing review
    - Conducting assessments
    - Stakeholder communication
    - Management review

Practical P2 Implementation:

- Following feasibility analysis:
  - Work with management & employees
  - Do what is easy first!
    - Inventory Management
    - Good Housekeeping
  - Phase in alternative materials and processes
  - Incorporate the environment into the company's business model

- Remember P2 has many benefits, it:
  - Saves money
  - Makes your business more competitive: increases efficiency in the use of raw materials, energy, & water
  - Avoids regulatory requirements by eliminating or reducing waste otherwise requiring treatment/disposal and reduces paperwork/costs
  - Reduces exposure to workers & consumers
  - Benefits the environment

Questions? Contact Us!

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