Looking for opportunities to improve the efficiency of your production operations and decrease operating expenses?

This self-assessment can help you identify opportunities that will not only lead to increased profits, but also reduce environmental impacts.

Complete the steps in this assessment to help identify ways to:
- reduce regulatory requirements,
- use fewer raw materials,
- reduce energy consumption
- reduce wastes and emissions,
- reduce operating expenses, and
- project a positive company image in your community.

Opportunities

- Process Control ........................................ p.2
- Alternative Materials ................................. p.2
- Equipment Changes .................................... p.2
- Material Storage/Handling .......................... p.2
- Purchasing/Inventory .................................... p.2
- Shipping/Receiving ........................................ p.3
- Employee Training ...................................... p.3
- Leak Prevention/Spill Control ...................... p.4
- Equipment Calibration ................................ p.4
- Housekeeping/Maintenance ....................... p.4
- Recycling .................................................. p.5
- Energy Efficiency ....................................... p.5
- Environmental Management System ........... p.5
- Management Practices/Commitment ............. p.6

Fact Sheets for Your Industry

Fact Sheets on specific pollution prevention and clean manufacturing opportunities are available at [http://www.in.gov/idem/prevention/2344.htm](http://www.in.gov/idem/prevention/2344.htm) for the following industry sectors:

- Chemical Manufacturing
- Fabricated Metal Products
- Plastic Processing and Manufacturing
- Metal Degreasing
- Paint Manufacturing
- Foundry Core Production
- Paper and Pulp Processing
What environmental concerns are causing you the most problems?

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**Process Control**

List the production processes that would be enhanced by process controls, such as:

- Tracking scrap/reject rates;
- Implementing a statistical process control system;
- Tracking waste generation rates;
- Quantifying the costs associated with the wastes generated;
- Planning production schedules to reduce the generation of hazardous and nonhazardous waste;
- Preparing and posting written operation procedures.

Process 1.
Process 2.
Process 3.
Process 4.
Process 5.

**Alternative Materials/Production Equipment**

List the production processes that could use alternative materials or production equipment, such as:

- Materials with low to no volatile organic compound (VOC) content;
- Materials that contain no hazardous air pollutants (HAPs);
- Alternative production processes that would reduce air emissions;
- Alternative production processes that generate less solid wastes;
- Production equipment that reduces air emissions;
- Production equipment that generates less solid wastes.

Process 1.
Process 2.
Process 3.
Process 4.
Process 5.

**Material Storage and Handling**

List the production processes that would be improved by material storage and handling procedures, such as:

- Storing raw materials in a manner that protects them from damage;
- Tracking material usage in your production processes;
- Organizing production processes to minimize material handling;
• Monitoring raw material inventories to ensure that products do not exceed their expiration date.

**Purchasing and Inventory Management**

List the production processes that would be improved by purchasing and inventory management systems, such as:

- Establishing a centralized purchasing program;
- Utilizing a “just-in-time” purchasing program;
- Implementing a “first in – first out” policy for materials purchased;
- When feasible and practical, purchasing materials in bulk or larger containers;
- Maintaining an inventory of unused materials that could potentially be used in other departments or divisions of the company;
- Requesting suppliers to take back used shipping containers, totes, and pallets for reuse.

**Shipping and Receiving**

List the production processes that would be improved by implementing shipping and receiving practices, such as:

- Inspecting materials before accepting a shipment;
- Dating material containers when received;
- Improving the packaging of the final product to better protect it from damage during transport.

**Employee Training**

List the production processes that would be improved by implementing employee training programs, such as:

- Training employees in the proper handling of chemicals;
• Training employees in proper work practices to optimize production, reduce scrap rate, and minimize material usage;
• Periodically reviewing employee work practices to optimize production, reduce scrap rate, and minimize material usage.

Process 1.
Process 2.
Process 3.
Process 4.
Process 5.

**Leak Prevention/Spill Control**

List the production processes that could implement a system to prevent chemical leaks and control chemical spills, systems such as:

• A written schedule for inspecting production equipment and storage containers for leaks;
• A written chemical spill prevention plan and written procedures for containing a spill;
• A written procedure for managing raw and waste materials in a manner that minimizes the possibility of a release into the environment and worker exposure.

Process 1.
Process 2.
Process 3.
Process 4.
Process 5.

**Equipment Calibration**

List the production processes that could be enhanced by scheduled equipment calibration, such as:

• Scheduled calibration of pollution control devices and monitoring equipment in accordance with the manufacturer’s recommendations and permit requirements;
• Scheduled calibration of quality control monitoring and measurement equipment.

Process 1.
Process 2.
Process 3.
Process 4.
Process 5.

**Housekeeping and Maintenance Practices**

List the production processes that would be improved by housekeeping and maintenance practices, such as:

• A written schedule for the cleaning of production equipment;
• A written maintenance schedule for production equipment;
• A written procedure for cleaning of production areas and equipment.
Recycling

List the production processes that could implement a recycling program, including:

- Reusing all possible wastes and scrap;
- Segregating all recyclable wastes from non-recyclable wastes;
- Recycling all recyclable materials.

Energy Efficiency

List the production processes that could improve energy conservation, through methods such as:

- Conducting energy audits addressing heating/cooling systems, lighting, steam systems, and electric motors;
- Scheduling inspections of compressed air systems;
- Developing a written service schedule for all heating/cooling systems and industrial process heaters;
- Tracking utility costs and considering alternative energy sources.

Environmental Management System

List the production processes that could implement elements of an environmental management system, such as:

- Preparing a written environmental/pollution prevention policy;
- Establishing written pollution prevention goals;
- Creating a pollution prevention team.
**Management Practices and Commitment**

List the production processes that could be improved by management practices and commitment, such as:

- Management stressing the importance of pollution prevention to all employees;
- Management establishing facility-wide pollution prevention goals;
- Management requiring the facility to conduct periodic pollution prevention opportunity assessments;
- Management promoting employee suggestions concerning potential pollution prevention practices and measures.

Use the worksheets on pages 7 – 9 to prioritize the identified opportunities and associated processes.
Worksheet 1. Production Processes and Identified Opportunities

List each production process you identified in the previous section. Place an X in the corresponding column for each opportunity identified for that process. Then total the number of X’s for each process. Go to worksheet 2.

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Identified Opportunities
Worksheet 2. Clean Manufacturing and Pollution Prevention Opportunity Assessment Ranking

Identify the five production processes with the highest scores from worksheet 1 and list them in the table below along with the opportunity associated with each process. A process may have more than one opportunity, so a production process may be listed multiple times. To help you prioritize the processes and associated opportunities identified, assign a score to the column heading for each opportunity using a scale of 1 to 5 (5 indicating the most beneficial such as those with the highest potential for waste/emissions reductions, cost savings, regulatory burden relief, and reducing employee exposure. Total the scores for each process and associated opportunity. Go to worksheet 3.

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Worksheet 3. Priority Production Process Opportunities

Identify the top three scoring production process and associated opportunities from worksheet 2 and list them in the order of the total score assigned, with the process and associated opportunity having the highest score listed under Priority 1. Assign a goal (i.e. what you intend to achieve and the proposed completion date) and specify the employee within your facility responsible for overseeing the achievement of that goal.

<table>
<thead>
<tr>
<th>Priority</th>
<th>Production Process</th>
<th>Opportunity</th>
<th>Facility Goal</th>
<th>Responsible Employee</th>
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If you have questions or would like assistance in completing the worksheets, contact Robert Henry at (317) 232-8188.

Fact Sheets on specific pollution prevention and clean manufacturing opportunities are available at www.in.gov/idem/5302.htm for the following industry sectors:
- Chemical Manufacturing
- Fabricated Metal Products
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- Paint Manufacturing
- Foundry Core Production
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