



# Create and implement your pollution prevention plan

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# CREATE AND IMPLEMENT YOUR POLLUTION PREVENTION PLAN

**Pollution prevention (P2) planning** is about examining current operations and developing a plan to eliminate or reduce pollution at its source. By preparing a P2 plan, you can:

- discover ways to prevent or minimize pollution and waste that are the most cost-effective;
- target a specific pollutant, multiple pollutants, or a specific part or parts of your facility's processes;
- replace toxic materials for less or non-toxic materials;
- make improvements to the life cycle of products;
- increase productivity through more efficient use of energy and raw materials; and
- identify where and what kind of investment could lead to cost savings.

If you are subject to a Government of Canada pollution prevention planning notice, you are required to prepare and implement a pollution prevention plan. The guidance provided on this webpage will help you comply with that requirement. For more information on your legal requirements, consult [Pollution prevention planning notices and your legal obligations](#).

The information presented on this webpage represents generic advice on "best practices." While pollution prevention can provide significant benefits to organizations, the precise sequence, level of effort, scope of analysis and options reviewed may vary from facility to facility. You should adapt this advice to your own circumstances.

## START WITH A COMMITMENT

Develop a policy statement that summarizes your company's commitment to P2 and that sets the tone for your company's activities and practices. This statement should be endorsed by the owner and distributed to all employees.

Don't forget to assign an accountable senior staff member to lead your P2 program. Commit adequate resources by establishing a P2 team or work with an existing "green team". The team should include representatives from principal operating divisions such as research, design and development, product management, shipping and receiving, industrial engineering, production, marketing, maintenance and environmental, health and safety. Process operators offer excellent insights into P2 opportunities and options. Beyond the P2 team, employees from all parts of the organization should be informed about and directly engaged in the program.

Thumbs up to any facility with an environmental management system (EMS) in place! Because P2 plans can be fully integrated in to an EMS, you may choose not to produce a separate P2 plan. This level of integration can help to incorporate P2 principles and practices into standard business practice.

## ESTABLISH A BASELINE

A baseline review is a systematic approach that involves taking a close look at your facility processes, and documenting the input and outputs. P2 planning requires an in-depth knowledge of production and/or product life cycle processes. The review will help you identify P2 techniques and verify the effectiveness of the plan while it is being implemented.

### Define the system boundary

The first step in your baseline review should be to define your system boundary which in turn will define the scope of your P2 plan. Setting the system boundary is an important decision because it will strongly influence the identification of P2 opportunities and options. When you choose your system boundary, consider which

stages, in the life cycle of a product, process or service cause the greatest environmental impacts (e.g. extraction or processing of raw materials and inputs, product manufacturing, product use, or end of life).

### Assess the existing situation

Establish a process and material flow profile of relevant operations and processes. This includes identifying associated:

- inputs (i.e. all materials, energy, services and labour entering the system),
- products (i.e. finished products or services that represent the desired output of a system), and
- non-product outputs or losses (i.e. output from a manufacturing process in the form of by-products, solid waste, liquid wastes, gaseous emissions and wastewater effluents that leave the process prior to treatment).

Quantify your flows, and use materials accounting<sup>1</sup> or a materials mass balance<sup>2</sup> to check that all losses have been identified.

Identify and understand the root causes of major non-product output (waste) and sources of pollution. This could include facility walk-through, discussions with plant employees and P2 practitioners in the industry, and more detailed life cycle analysis of pollution from product use and disposal.

If you are subject to a P2 planning notice, make sure to collect information that is required in the reports you must submit to the government. Such information could include:

- amount of a substance imported, manufactured, used, disposed of, sent off-site for treatment or released as a waste may be requested;
- type of activities carried out at your facility;
- level of treatment for on-site wastewater;
- on-site pollution control equipment in use; and
- operation guidelines or best management practices (BMPs) being followed.

The [P2 Planning Handbook](#) provides more detailed guidance on conducting a baseline review. It describes techniques for creating flow diagrams, compiling input/output inventories, doing materials accounting and calculating mass balances.

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<sup>1</sup> The keeping and verifying of records or statements of materials used in a process to provide a means of finding a general balance between the inputs and outputs of each separate substance.

<sup>2</sup> A comparison of the inputs to and outputs from a process, usually written in equation form as "Mass/volume of inputs = Mass/volume of (outputs + non-product outputs)."

## CREATE A PLAN

The creation of your P2 plan should follow a clear sequence and use the baseline information you previously collected.

### Identify pollution prevention actions

Ask yourself what P2 actions can address the root causes of the pollution problem.

You could:

- change the design of the product to result in environmental and economic improvement;
- change equipment or processes to eliminate waste or reduce energy use;
- eliminate or replace toxic substances or material;
- determine where you could reuse or recycle within your facility's processes; or
- improve purchasing and inventory techniques.

For more ideas, check out the seven main P2 techniques explained in more detail on this webpage: [How your business can prevent pollution](#). Also, you can search for other tips and best practices in the [Pollution prevention resource finder](#).

### Set objectives, targets and performance indicators

Since the creation of a P2 plan is an iterative process, you could establish tentative objectives and targets, and refine them as you evaluate specific P2 actions. Objectives, targets and options should be identified to prevent pollution caused by the organization itself and pollution associated with services provided or pollutants contained in products that are distributed or sold off-site.

Your P2 objectives and targets should be specific, measurable, realistic and time-based, and should reflect the identified P2 actions. To establish realistic objectives and targets, it is also important to evaluate the feasibility, the applicability and potential impacts of a broad range of P2 practices.

The [P2 Planning Handbook](#) provides examples of possible objectives and P2 actions.

### Evaluate P2 techniques

Each potential P2 action or groups of actions should be evaluated on the basis of:

- **Technical feasibility:** evaluate the availability and proven performance of a technology, impacts on product quality, risk of non-performance, ease of implementation
- **Environmental effectiveness:** estimate both the potential *environmental benefits* of each action as well as possible *adverse impacts*; does a reduction in generation of air emissions result in an increase in hazardous waste or effluent production?
- **Cost effectiveness:** analyze the differences between the costs of the current process and the projected costs of proposed actions; total cost accounting (TCA) can be helpful to estimate all relevant costs, savings and other benefits
- **Other business considerations:** such as legal considerations, regulatory and market trends likely to influence future operations, social and cultural issues, corporate image, and opportunities for partnerships, shared learning and synergies)

### Select P2 actions and finalize your plan

Based on the evaluation considerations listed above, rank and select the different P2 actions to include in your P2 plan, finalize targets and schedule actions for implementation. Note that not all feasible actions will be

selected. Actions may need to be sequenced or phased in. In some cases, cost savings from one set of initiatives can help to finance a next generation of initiatives.

**Model plan:** A model plan is available for your convenience. It provides a template that can be used for preparing and documenting a P2 plan. Section 5, "Pollution Prevention Options and Anticipated Actions", provides sample tables and ranking grids that can be used to help with the process of selecting the optimal P2 alternatives for your situation. [Contact us](#) to receive a copy.

## **IMPLEMENT YOUR PLAN**

Implementing your P2 plan requires effort by management and by all employees. Make sure adequate human resources (including technical expertise) and a sufficient budget are available.

One person can oversee the implementation while other employees can be responsible for different P2 actions which may require changes or updates to operating procedures, purchasing methods or inventory control. Ensure success by developing training and incentive programs to help employees learn about new P2 procedures and equipment.

The achievement of certain objectives and targets may require the collaboration of external parties, such as suppliers or customers. If this is the case, it is important to engage these parties throughout the development and implementation of the pollution prevention plan.

## **MONITOR AND REPORT**

Don't stop now! It is important to track performance, costs, savings and progress.

To do so, you can develop a monitoring plan. Listed below are some guidelines to help ensure the information you collect for your plan is complete and accurate:

- Monitor your progress on a regular basis; this ensures that deviations from original objectives and targets are detected and corrected at an early stage;
- Use the same measurement method to calculate reductions that was used to calculate the baseline data;
- Document the methods used and the frequency of measurement, and ensure responsible employees are trained in these techniques;
- Keep monitoring and measurement records on file to provide a historical record; and
- Create a corrective action program to identify the need for changes based on the monitoring results and to ensure appropriate action is taken to address the root cause of any noted deficiencies.

Establish a means of sharing this information with all employees through internal reports or newsletters. Success can also be publicized in you company's annual report, websites or even the local media.

## **REVIEW, EVALUATE AND IMPROVE YOUR PLAN**

Just like a business plan, your P2 plan should be continuously improved to provide ongoing economic, human health and environmental benefits.

Senior management should review the P2 program's achievements on a regular basis, evaluate whether objectives and targets are still appropriate, determine if the plan is meeting these objectives, and decide whether corrective action or improvements are necessary. For organizations with a formal EMS in place, the P2 program can be reviewed within the scope of the EMS management review.

Think of the P2 process as a continuous cycle to guide your company towards developing and sustaining a successful P2 program.

## RELATED INFORMATION

- [Pollution Prevention Planning Handbook](#)
- [List of pollution prevention planning notices and their performance](#)