POLLUTION PREVENTION FACT SHEET

Pollution Prevention Program - Federal Programs Division

Fact Sheet #1: Pollution Prevention: A Better Way of Doing Business

This Pollution Prevention Fact Sheet is one in a continuing series prepared under the Pollution Prevention Program of the Federal Programs Division, Environmental Protection Branch - Ontario Region, of Environment Canada. This Program is intended to help federal departments in Ontario become model environmental citizens by managing beyond compliance. This Fact Sheet presents the following:

- A description of the Pollution Prevention Program at the Federal Programs Division;
- The definition of pollution prevention and why it should be adopted;
- What federal facilities can do;
- Success stories; and
- Further sources of information.

The Ontario Region's Federal Programs Division is part of the Environmental Protection Branch of Environment Canada. This office deals with a myriad of environmental issues affecting federal properties in Ontario. Federal Programs Division actively promotes adherence to the Federal Code of Environmental Stewardship and the recent federal strategy on pollution prevention. The Code of Environmental Stewardship is a statement of principles to facilitate the "greening of government operations". The federal strategy on pollution prevention links the concept of pollution prevention with sustainable development and is outlined in the document entitled Pollution Prevention: A Federal Strategy for Action.

One of the principles of the Code of Environmental Stewardship is that the government shall seek cost-effective ways of reducing the input of raw materials, toxic substances, energy, water and other resources. The code also states that the government shall seek to reduce the generation of waste and noise associated with day-to-day operations.

It is in the context of the Code of Environmental Stewardship that the Federal Programs Division has developed a Pollution Prevention Program, to help federal departments in Ontario become model environmental citizens.

WHAT IS POLLUTION PREVENTION?

Pollution prevention is defined by the federal government as "...the use of processes, practices, material, products or energy that avoid or minimize the **creation** of pollutants and waste and **reduce** overall risk to human health or the environment." (Pollution Prevention: A Strategy for Action, June 1995)

Pollution Prevention is achieved, for example, by process redesign or modification, in-process recycling; raw materials substitution, improved maintenance and operations, or administrative changes.

Pollution prevention **does** not include, for example, substitution of one toxic substance for another; treatment of wastes already produced; and out-of-process recycling or incineration.

Currently, the federal strategy on pollution prevention has strengthened the government's commitment to the principles of pollution prevention and has drawn a closer connection between pollution prevention and the concept of sustainable development. The Strategy emphasizes five main goals, two of which are pertinent to federal facilities; institutionalizing pollution prevention across all federal government activities and fostering a national pollution prevention effort.

Program Objectives

The Pollution Prevention Program for Federal Facilities in Ontario has three objectives:

1. Promoting pollution prevention as a concept and way of life;
2. Educating and disseminating information to federal departments; and
3. Sharing success stories among program participants.

Program Priorities

The Pollution Prevention Program for Federal Facilities in Ontario has identified four priority areas:

1. Hazardous Wastes
2. Ozone-Depleting Substances (ODS)
3. Persistent Toxic Substances (PTS)
4. Spill Prevention

Program Deliverables

Implementation of the Pollution Prevention Program began in 1993/94 and offers the following program deliverables:

1. **Training of other government departments (OGDs) in pollution prevention planning**: Federal departments in Ontario are offered training seminars on how to develop a facility-wide pollution prevention program.

2. **Fact Sheets**: Pollution Prevention Fact Sheets such as this one, are distributed to all federal departments in Ontario. These Fact Sheets cover specific technical subject areas of concern and provide information and helpful tips to program participants or others.

3. **Workshops**: Pollution prevention sessions are offered to federal facilities as required. They can be delivered in conjunction with various other workshops and are organized through the Federal Programs Division, Pollution Prevention Program.

4. **Demonstration Sites**: The Federal Programs Division is implementing various Demonstration Site projects across Ontario. These demonstration site projects are implemented to encourage the use of environmentally safer processes products and services at federal facilities.

5. **Success Stories**: Some federal departments may wish to undertake or have already initiated innovative pollution prevention projects or feasibility studies. The Federal Programs Division will identify and publicize those initiatives and assist the departments to further their efforts. Some success stories are described within this series of Pollution Prevention Fact Sheets, while others are illustrated in another series entitled Environmental Products for the Workplace.

6. **Ongoing activities**: Federal Programs Division staff will provide advice and information to OGDs, conduct site visits, identify applicable pollution prevention technologies/procedures for federal facilities and develop a list of sources of documentation on pollution prevention for the use of OGDs.

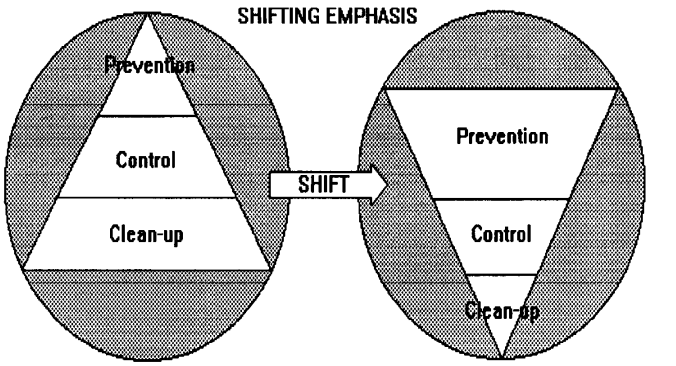
Contact the Pollution Prevention Advisor identified on Page 6, for additional information

Why Pollution Prevention?

A variety of approaches exist to protect the environment. Traditional approaches include **pollution control**, which attempts to control or limit the release of pollutants/wastes already created, and **pollution remediation**, which refers to cleaning up pollution previously released to the environment.

In contrast, **pollution prevention** encompasses activities that minimize or eliminate the creation of pollutants and wastes **at the source**. Pollution prevention propagates the concept of environmental protection and pre-empts the need for control or remediation.

Pollution prevention is the preferred option because it results in the greatest improvements in environmental quality and resource efficiency over the long term. As illustrated in Figure 1, Government and industry's environmental thinking has shifted from a "react and cure" or "end-of-pipe" mode to an "**anticipate and prevent**" mode.



Source: Pollution Prevention: A Federal Strategy for Action, 1995.

Figure 1: The Shift to Pollution Prevention

The federal government's environmental protection strategies are now driven by a vision of environmentally sustainable economic development. This vision requires a clean, healthy environment and a strong, healthy economy. Preventing the creation of pollutants and waste can protect the environment from harm and increase production efficiency. Increasing the efficiency of production, avoiding accidental and operational releases, and reducing the non-productive costs of treatment and disposal, can make Canada's economy more efficient and competitive.

Some of the benefits to be realized by federal government departments undertaking pollution prevention initiatives include:

- Reduced operating costs
- Better protection of the environment and public health
- Enhanced corporate image
- Increased employee safety
- Improved employee morale
- Reduced risk of criminal and civil liability

Pollution should be prevented or reduced at the source wherever feasible. Alternatively, the pollutants or wastes should be recycled in an environmentally safe manner.

☑ What Federal Facilities Can Do

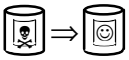
There are a number of things that federal facilities can do to adopt pollution prevention. Initiatives can be short-term, low-cost solutions or long-term solutions that require a capital investment. Below are a few examples of what can be done to prevent pollution.

Process Efficiency Improvements

Assess your facility's existing or proposed operations and identify pollutants produced. Examine where they are produced and why. Develop a process flow diagram to illustrate your findings. Analyze product or process design alternatives and make choices in favour of those that prevent pollution by more efficiently using natural resources and raw materials. Address the changes to be made to reduce the volume and toxicity of wastes, air emissions, waste-water discharges, etc.

☑ Transport Canada has built a new paint shop in the large aircraft hangar at Macdonald-Cartier International Airport in Ottawa. Engineering features such as improved filter technology and paint techniques were built into the design to reduce overspray. This process controls pollution at the source, thereby reducing Volatile Organic Compounds (VOCs) emissions and improving worker health.

☑ The Municipal Sewage Treatment Plant (STP) Optimization Program was established to address the problem of pollution from sewage in the Great Lakes. This program is supported by the Cleanup Fund in a federal-provincial-municipal partnership. The goal of the Cleanup Funds' STP Optimization Program is to assist municipalities in upgrading their facilities at the least cost. They hope to upgrade and optimize the use of existing facilities rather than conventionally expand STPs in Ontario. These upgrades are expected to save 67% of capital costs. For more information link to *http://www.cciw.ca/green-lane/environmen-week/success-stories/griff.html*



Material Substitution

Replace hazardous chemicals with non-hazardous or less hazardous chemicals of equal performance in applications such as cleaning, painting or degreasing. Use aqueous-based solvents rather than chlorinated solvents. Use high performance, longer-lasting oils. Use a non-toxic detergent to clean glassware instead of chromic acid. The possibilities are endless.

- ☑ The House of Commons implemented organic gardening practices in the gardens on Parliament Hill. The property is now known as a "Pesticide Free Ground," due to the Grounds Maintenance Program eliminating the use of pesticides and herbicides.

- ☑ A training course which assists with implementing environmental procurement policies is offered to staff at federal facilities. The course shows procurement officers and personnel from all federal departments how to identify, stock and purchase products with reduced environmental impact. For more information about this course, refer to the Green Procurement Institute listed at the end of this Fact Sheet. A computer based version of this course is also available.

- ☑ The Canadian Parks Service, within the Department of Canadian Heritage, undertook a demonstration project at Point Pelee National Park that replaced certain sections of pressure-treated wood boardwalks with several different varieties of durable, non-toxic recycled plastic lumber products.

Improved Housekeeping

Maintain, clean and organize your facility. Good housekeeping is the easiest and often the cheapest way to reduce wastes. Segregate hazardous wastes from non-hazardous wastes to reduce disposal costs and keep non-hazardous materials from becoming contaminated. Install splash guards and drip trays around equipment such as solvent sinks, hot tanks and jet spray washers, to collect and return drainage and contain leaks and spills. Place hoods on all parts of cleaning processes to control solvent evaporation. Store products in locations that will preserve their shelf life. Use rags and absorbents to their limit.

Preventive Maintenance

Preventive maintenance activities can usually be conducted rapidly, with minimal costs. Conduct routine inspections and repairs of equipment to prevent spills and leaks. Ensure that equipment operates at maximum efficiency. Establish an inventory of fuel storage tanks at your facility. Conduct on-site tests to determine whether leaks exist or may occur. Develop a sound tank management program. Develop a contingency plan to respond to accidental spills. Provide training to employees.

- ☑ At the Millhaven Correctional Services facility, leak detection made it possible to reduce average water consumption from a high of 1,545,000 litres per day down to between 400,000 and 600,000 litres per day. Millhaven saved $28,000 in annual disbursements to the municipality and avoided spending $500,000 to expand its filtration and sewage treatment plants.

- ☑ A Mississippi company reduced hydraulic oil and solvent wastes. The company reduced its disposal costs by having their maintenance and production personnel work together to report and repair equipment leaks as soon as detected, rather than continuing to run the equipment with leaks.

Best Management Practices

Establish a single point of contact for ordering and distributing supplies. Buy only the needed amount of raw materials. Practice "just-in-time" inventory control to prevent product shelf life expiration and avoid disposal costs. Train management and employees to recognize pollution prevention opportunities.

- ☑ Agriculture Canada rationalized the purchase of chemicals and pesticides. The use of computerized chemical inventories

reduced the duplication of purchases and minimized the production of surplus hazardous wastes.

☑ The United States Air Force has established an innovative Hazardous Materials Pharmacy at the Point Mugu Naval Station and the Hill Air Force Base. The pharmacy is the sole supply source of hazardous materials for all base organizations and receives and processes all requests. The Pharmacy maintains a ready-to-deliver inventory, perpetuates a record of material usage, and forecasts future usage. The benefits of this pharmacy are tremendous. At Point Mugu for example, hazardous material purchases were reduced from $132K to $55K during the first year of operation alone. This Pharmacy program is expected to be extended to other military bases across the United States. For more information on U.S. Military Environmental initiatives at the Hill Air Force Base contact Major Norman LeClair at (801) 777-6655 or visit the web site at *http://falcon-41.hill.af.mil/.*

Reduce, Reuse and Recycle

Use wastes as raw materials in other processes that do not need a totally pure composition. An example is to reuse used solvent to rinse out parts or other equipment initially and then only use a small amount of fresh solvent to clean out any residue. Recycle wastes back into the process; close the loop. Recover used solvents, antifreeze, metals, inks, paints, etc.. Think of wastes as product. Your facility's waste might be another's raw material. Contact the Ontario Waste Exchange at (416) 822-4211 ext. 656 to locate the nearest waste exchange facility in your area.

☑ The Quaker Oats Company of Canada Ltd. in Peterborough, Ontario introduced a Waste Reduction Program that has reduced its industrial waste going to landfill by 90%. The success of this program initiated the development of an Environmental Policy Manual and an Environmental Management System. It also enhanced staff awareness of environmental issues.

☑ The Salvation Army Grace Hospital in Ottawa was presented with the Waste Minimization Award by the Recycling Council of Ontario. Blue boxes and recycling bins have been placed throughout the hospital and an extensive campaign has been initiated. The Grace is partnering with other hospitals in a master contract for waste haulage. The Grace was also one of the first hospitals in the Ottawa area to begin a polystyrene (PS) recycling program. Food service PS collected from the cafeteria, and PS packaging from the pharmacy, the lab and the receiving area, are all recycled.

☑ Public Works Canada and Government Services, under the Federal Buildings Initiative, is replacing fluorescent lamps in federal facilities in Ottawa as part of an energy efficiency retrofit program. An estimated 80,000 lamps in 1996/97 and 100,000 in 1997/98 will be replaced. These lamps are shipped to provincially certified recycling companies. This helps divert waste from landfill sites and allows for the recovery of hazardous substances contained within the lamps. Contact Ian McColgan at (819) 775-4310 for more information.

☑ The south portion of copper roofing at Parliament Hill was resheathed as part of the ongoing restoration of the Canadian Parliament Buildings. The scrap copper will be reused to create green copper heritage souvenirs which will be produced and sold by two organizations working with persons with special needs. For more information contact (819) 775-4725 or visit the web site at *http://www.pwgsc.gc.ca/text/ marleaue. html.*

Pollution prevention is an attitudinal change and success requires both management and employee commitment. We encourage you to identify and pursue pollution prevention opportunities. Be part of this cultural change

Success Stories

Does your department have a pollution prevention success story to share? Other government departments in Ontario would like to hear about your experience in dealing with a particular problem. Please provide relevant information to the Federal Programs Division, Pollution Prevention Coordinator, and we will ensure that all interested parties receive this information.

Further Sources of Information

Pollution Prevention - General:

Great Lakes Pollution Prevention Centre:
(519) 337-3423 or (800) 952 8995.
Email: *info@c2p2online.com*
Internet: *http://www.c2p2online.com*

Ministry of the Environment and Energy (MOEE)
PollutionPrevention Office:(416) 314-3913.
Email: *cscatr@gov.on.ca*.
Internet: *http://www.ene.gov.on.ca/*

Pollution Prevention Handbook by Thomas Higgins. 1995. Lewis Publishers: Boca Raton.

Pollution Prevention: A Federal Strategy for Action.
Minister of the Environment. June 1995.
(819) 997-2800 or (800) 668-6767.
Email:*enviroinfo@cpgsv1.am.doe.ca*
Internet:*http://www.doe.ca/pollution/strategy/plt_pl_e.htm*

U.S. Environmental Protection Agency: Pollution Prevention Information Clearing house (PPIC 202) 260-1023. Email: *ppic@epamail.epa.gov*
General Internet:
http:///www.epa.gov/ncepihom/index.html

U.S. Air Force Center for Environmental Excellence - PRO-ACT (an information clearing-house and hot line): (210) 536-4214.
Internet: *http://www.afcee.brooks.af.mil.pro_act*

Green Office and Procurement Practices:

Environment Canada, Office of Environmental Stewardship: (819) 953-6456.

Green Procurement Institute: (800) 945-6555 ext. 288 Fax (613) 237-9900.

Computerized Hazardous Material Training course:
(613) 997-8346
General Internet: *http://www.nrcan.gc.ca*

Energy Conservation:

Department of National Resources. Federal Buildings Initiative: (613) 995-6000.

Water Issues:

Environment Canada, Water Issues Branch: Manual for Conducting Water Audits and Developing Water Efficiency Programs at Federal Facilities and its accompanying Document, A Water Conservation Plan for Federal Government Facilities.
(819) 953-1521.
Internet:*http://www.doe.ca/water/links/manage/link_mwe.htm#epg*

For further information about the Pollution Prevention Program for federal facilities in Ontario, please contact:

Environment Canada
Ontario Region - Environmental Protection Branch
Federal Programs Division
49 Camelot Drive
Nepean, Ontario, K1A 0H3
phone: (613) 952-8675
fax: (613) 952-8995
e-mail: fpd@ec.gc.ca

All Fact Sheets can be found on the Internet at:
www.on.ec.gc.ca/epb/fpd
(aussi disponible en français)