

at the source



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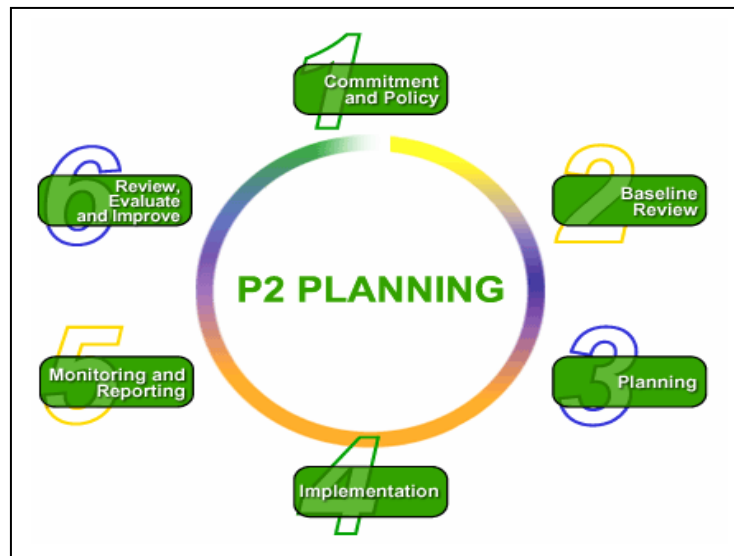
**Pollution
Prevention
Planning
Edition**



Pollution Prevention (P2) Planning has become a focus of environmental protection through its prominence in regulatory initiatives such as the *Canadian Environmental Protection Act, 1999* and the *Toronto Sewer Use By-law*. This issue of *at the source* will focus on how an effective P2 plan can help any organization reduce operating costs, increase efficiency, reduce liability and enhance its public image by going beyond compliance. Don't shortchange your organization by writing a pollution prevention plan that only meets the letter of the law.

The Pollution Prevention Plan

P2 Planning is a process that starts with a comprehensive and systematic analysis of current operations. This leads to the development of a plan with objectives and targets to improve efficiency, reduce or eliminate harmful pollutants at the source, and avoid the need for costly disposal and treatment practices. P2 planning can be used for a specific substance, or can be applied to all aspects of a production process or facility. It can involve just a few people or large teams and can range from weeks to months to complete.



This diagram displays the 6 steps of the P2 planning process.

Source Pollution Prevention Planning Tutorial:
<http://www.ec.gc.ca/nopp/p2tut/>

An effective P2 Plan should include the following elements:

- Endorsement by senior management;
- Identification of the senior official responsible for the plan;
- The objectives of the plan and schedule for completion;
- A review of substance control activities (including acquiring, processing, generating, storing, handling, disposing);
- A review of substance control and pollution prevention options, the implementation plan and schedule;
- A plan for tracking the performance of the options, implementing corrective actions and reporting; and, A program for continual improvement.



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Are you Aware of Federal P2 Planning Requirements Under CEPA 1999?

Pollution prevention has evolved over the last ten years to become a focal point of regulatory initiatives in Canada. The *Canadian Environmental Protection Act, 1999* (CEPA 1999) recognizes the importance of pollution prevention (P2) planning. Part 4 provisions of CEPA 1999 allow the federal government to require the preparation and implementation of P2 plans for substances declared toxic under CEPA 1999, to:

- generate early action that will contribute to the effective and efficient risk management of toxic substances (Schedule 1 of CEPA, the List of Toxic Substances) and reduce overall risk to the environment and human health;
- provide an early opportunity to develop and implement situation-specific solutions; and
- encourage pollution prevention

Preparation and implementation of P2 plans under part 4 of CEPA can be required for any substance on the List of Toxic Substances. The P2 plan may be used alone or in tandem with existing systems within a facility to manage a substance, or it may be used in addition to existing measures that do not adequately manage the risk posed by the substance.

To invoke these P2 planning requirements, the Minister uses the authority of section 56 to publish Notices (see next page for information on published Notices) in Part 1 of the *Canada Gazette* (i). These Notices may specify:

- who will be required to prepare and implement a P2 plan;
- what factors are to be considered in preparing the P2 plan, e.g. risk management objectives, environmental and human health risks, and currently available technology and practices;
- the time limits for preparing and implementing plans; and,
- any administrative matter, e.g. the type and format of the reporting form to be submitted to the Minister necessary for the purposes of Part 4 of CEPA.

Where do we Start?

Regardless of whether your organization is in the preliminary stages of P2 Planning, or looking to improve an existing plan, the Canadian Centre for Pollution Prevention's (C2P2) collection of resources and tools can help, visit www.c2p2online.com/p2plan.

For P2 plans required by CEPA 1999, check the National Office of Pollution Prevention website www.ec.gc.ca/NOPP for support tools such as: a P2 handbook, an online tutorial, and fact sheets.

For more information on CEPA pollution prevention provisions, and printed copies of documents contact: CEPA Implementation and Innovation Division, Tel. 819-994-0186; E-mail CEPAP2Plans@ec.gc.ca or visit the CEPA Registry website at: www.ec.gc.ca/CEPAREgistry/default.cfm

Interested parties are given opportunities for consultation and comment in the process of managing specific toxic substances through P2 Planning.

Under section 58, persons affected by a Notice to prepare and implement a P2 Plan will be required to submit written declarations to the Minister. First, a declaration that the plan has been prepared and is being implemented, in some cases one or more Interim Progress Reports will be required and finally, a declaration that the implementation of the plan has been completed.

There are significant penalties for not complying with the provisions of the CEPA 1999 or for providing false or misleading information. Penalties are described in sections 272 and 273 and include fines of up to \$1,000,000 and imprisonment of up to three years, or both.

(i) The *Canada Gazette* is the official newspaper of the Government of Canada, published under the authority of the Statutory Instruments Act. Subscription information and non-official alternate formats are available electronically at: http://canada.gc.ca/gazette/gazette_e.html

Pollution Prevention Planning: Myths and Lessons Learned

Brigitte Roth an EMS Specialist and Senior Environmental Auditor at Water & Earth Science Associates Ltd. exposes 3 myths of P2 Planning. Look for the Myths and Lessons Learned throughout this newsletter.



Myth 1: You've done your part by putting together a pollution prevention plan.

Lesson 1: Simply having a pollution prevention plan does not enable you to prevent pollution until you are committed to the plan's implementation. This can mean that your organization will implement a procedural change or a design change to prevent pollution. Procedural changes generally have minimal associated implementation costs, whereas design changes can often involve installing new technology that is more expensive (but consider the new technology's paybacks - you may be pleasantly surprised!).

Industry Profiles

Industries all over the country are embracing P2 planning and reaping the benefits. Here are just some of the activities industries are doing to reduce or eliminate regulated toxic substances such as: dichloromethane (DCM) and nonylphenol and its ethoxylates (NP/NPE).

DCM at Air Canada

In the aeronautics industry, DCM is used specifically to strip aircraft fuselages and delicate mechanical parts as it does not alter or corrode the surface of the material to be repainted. Air Canada has completely replaced the use of DCM for fuselage stripping, at all bases, with an alternative process involving the use of low risk benzyl alcohol and hydrogen peroxide based strippers. In fact, Air Canada has achieved a 98% reduction, from its baseline, of DCM usage.

NP/NPE at CS Brooks and Zep Manufacturing Company of Canada

CS Brooks, a dyeing, printing and finishing textile plant in Quebec, conducted a thorough review of the chemicals they purchase. In 2004 they reduced NPE use by over 99%. In the process they made other important product substitutions and changes that resulted in savings of about \$75 000 per year. Examples of how they achieved these savings include purchasing more concentrated chemicals and purchasing only one product whereas before many were purchased for similar operations.

Zep Canada is a leader in the manufacture and supply of industrial and institutional maintenance and sanitation products. Prior to the Environment Canada Notice requiring a reduction in NPE and NP by 95%, Zep Canada had implemented strategies to reduce or eliminate NP and NPEs in their products. In 2003 Zep Canada met the requirements of the P2 Planning Notice and surpassed the Risk Management Objectives for their facility in Edmonton by reducing NP and NPEs from soap and cleaning products manufactured and imported by 97.1%.

The Final Notices Are:

Since 2003 there have been 5 final notices published requiring the preparation and implementation of a P2 plan. The notices address the substances:

- 1) Acrylonitrile,
- 2) Dichloromethane,
- 3) Inorganic Chloramines and Chlorinated Wastewater Effluents,
- 4) Effluents from Textile Mills that Use Wet Processing, and
- 5) Nonylphenol and its Ethoxylates Contained in Products.

One proposed notice was published in September 2004 for public comment addressing Specified Toxic Substances Released from Base Metal Smelters and Refineries and Zinc Plants.

City of Toronto Sewer Use By-law

In the summer of 2000 the City of Toronto passed a new Sewer Use By-Law that included mandatory Pollution Prevention (P2) Planning. Since then the City has been pursuing the implementation of P2 initiatives across the commercial and industrial sectors within the City.

Table 1

Sector	Percentage Received
Metal Finishing	97%
Dental	90%
Photo Finishing	90%
Printing and Graphics	70%
Industrial Laundries	90%
Textile	70%-80%
Health Care	95%
Manufacturing	60%

Overall the P2 program has seen substantial forward progress but not without some challenges. One obstacle has been the unwillingness of some sectors to fully participate in the program. The City continues to work with these sectors to resolve the issues. Table 1 indicates the progress by sector for P2 Summaries received by the City to date. The City expects these numbers to change on a daily basis as new P2 Summaries are received.

The City is now looking into adding Dry Cleaning Services to its list of sectors for which P2 planning is required. Ongoing is the revision, update and simplification of the P2 forms. The inspection and monitoring portion of the P2 Plans is increasing and there is a continuous effort to enlist new facilities requiring P2 Planning.

Effective Pollution Prevention in Healthcare Environments

By Matthew Allen M.Eng, P.Eng. Chemical Engineer, Partner & Business Unit Leader, MacViro Consultants Inc.

The following case study demonstrates how effective P2 planning principles were implemented by MacViro Consultants Inc. to assist the Centre for Addiction and Mental Health (CAMH) in complying with P2 planning requirements under the 2000 City of Toronto Sewer Use By-Law. CAMH, pictured below, is a leading care and research facility with multiple sites across the City of Toronto and an inpatient capacity of more than 600 beds and extensive hospital and community-based outpatient services.

MacViro and CAMH's P2 teams responded quickly and decisively to the newly introduced By-Law requirements by conducting a full round of sampling and characterization of the wastewater discharged from its various facilities. Identified subject pollutants included: Nonylphenols, Nonylphenol Ethoxylates (NP, NPE), Chloroform, Toluene and Bis(2-ethylhexyl)Phthalate (BEHP). All available product inventory was screened against MSDS and usage data to identify which products contained the detected subject pollutants. MacViro then initiated a thorough review of all CAMH products and processes to identify potential sources of discharge to the City Sewers of the subject pollutants.

CAMH actively engaged its major suppliers of the identified products and materials in the task of identifying environmentally safer and less toxic alternatives for immediate product substitution. [cont]



Myth 2: You could adopt another organization's pollution prevention plan as your own since these plans generally provide a one-size-fits-all formula.

Lesson 2: You need to assess your organization's individual use of raw materials and generate a material balance to identify the areas of highest waste generation. The main idea for your organization's pollution prevention plan is to identify ways to minimize these wastes that are adapted to your organization. It is unlikely that another organization's areas of highest waste generation are identical to yours.

In order to streamline the introduction of alternate products, the P2 team was expanded to include representatives from key departments throughout the various CAMH facilities and operations. A Laboratory Safety Manual was also developed by MacViro to address the purchasing, storage, use and disposal of hazardous materials associated with potential discharges of subject pollutants. The Manual encouraged staff to be proactive in finding safer and more environmentally friendly ways to manage chemical wastes and included a screening form to assist staff in the procurement of new products and materials.



photo: CAMH

Within the first two years of implementing the P2 Plan, measured levels of the targeted subject pollutants in CAMH's sanitary wastewater effluent were shown to have been reduced by over 90%, based on analytical testing of sanitary effluent. Targeted NP and NPE compounds were virtually eliminated (i.e. >98% reduction) from sanitary effluents following the implementation of NPE-free products. Similar decreases were measured for Toluene, chloroform and BEHP. This drastic and rapid reduction of toxics from their sanitary effluent has placed the CAMH more than four years ahead of schedule in achieving the P2 targets it set in 2001.

This highly effective application of P2 planning has been referenced by Environment Canada and the City of Toronto as a model within the P2 practice community. MacViro has successfully applied this integrated team approach at other major Toronto area hospitals and over 15 other industrial manufacturing and processing facilities, avoiding the need for costly end-of-pipe filtration or treatment technologies.

P2 Planners and Practitioners from around the country SAY....

Nina Novak of Datacomp in Calgary Alberta holds a P2 Planning Certificate and is one of two persons 'grandmothered' under this process. Nina says "I have seen P2 advances driven by legislated requirements and voluntary or efficiency driven initiatives. Most recently I have been able to pursue P2 source reduction from a Health and Safety perspective as a result of Alberta's new OH&S Code acknowledging elimination as the preferred method of hazard control. This 'paradigm shift' from personal protective equipment (PPE) to elimination of the hazards parallels the P2 shift from 'end-of-the-pipe' treatment to source elimination."

C2P2's P2 Planning Certificate

The need for trained P2 practitioners is increasing and businesses are looking for reassurance that the professional they hire can help their organization implement successful change. In an effort to address these issues, C2P2 has developed guidelines for P2 Planning Certificates. Upon the successful completion of a P2 course or equivalent P2 planning work experience, and the submission of a P2 Plan for an actual or fictitious company for review by committee a P2 Planning Certificate is issued by C2P2.

Interested in more information? Contact C2P2 at info@c2p2online.com or 1-800-667-9790

John Piggott is the principal of *EcoSafe* environmental health & safety management. John says, "Scaled up 'Green' purchasing practices on the part of governments and large businesses would encourage printers and other businesses to adopt pro-active environmental practices, develop greener processes, services and products. With a greater emphasis on 'Green Purchasing', especially by governments, we would see more companies become Eco-Logo and/or ISO 14001:2004 certified. Such companies would likely be ahead of regulatory requirements. "

Bruce Taylor, P. Eng., is president of Enviro-Stewards Inc., an international environmental consulting firm, says "It is important to approach small & medium sized enterprises (SME) from the perspective of their pressing problems. Industries can generally appreciate the intrinsic value of P2. However, most have concerns, such as environmental compliance, that they consider to be higher priority than P2. Therefore it is important to directly and rapidly address these problems, preferably with P2, in order to free up the client's resources to consider other P2 measures."



Photo: Bruce picking coffee in El Salvador

Anthony Robinson, President of Fintex Mechanical and Process Inc. in Montreal Quebec, has seen first hand how useful a pollution prevention approach can be. "By helping textile mills improve their processes we can help these companies meet regulations, protect the environment, and save them money. Simple pollution prevention activities such as preventative maintenance programs and better inventory control can be fairly easily implemented to reduce the use of toxic chemicals. "



Myth 3: pollution prevention practices and technology are more expensive than traditional end-of-pipe pollution control.

Lesson 3: Some pollution prevention practices virtually cost nothing to implement and can save you a great amount in waste. When you consider the cost of end-of-pipe pollution control, don't forget to account for all of your internal fees (such as labour, utilities, the cost of the loss of product) as well as external fees (including waste hauling and tipping fees, sewer surcharges, fines)

The Pollution Prevention Planner: Using the Web to Encourage P2

By Thomas Vinson-Peng, University of Texas

at the source, is a newsletter produced by the Canadian Centre for Pollution Prevention, it highlights pollution prevention programs and provides up-to-date information on Canada wide activities.

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The Pollution Prevention (P2) Planner is an on-line tool used by people required by law in the State of Texas to prepare a pollution prevention plan. Although initially designed for facilities complying with legal requirements, many facilities are using it to identify money saving options to reduce waste. People outside the State of Texas may use a general version available at: www.zerowastenetwork.org/P2Options/index.cfm

Virtual Engineer - The P2 Planner is the first phase in a project to help facilities identify practical and useful Pollution Prevention options. At the heart of the Planner is a function that asks users what kinds of processes they have, then supplies the users with some options. Facilities have access to a "virtual engineer" who asks them questions and gives them suggestions.

Results - Some initial results for the P2 Planner show that it is working exactly as intended. In one year 534 Users accessed the P2 planner and 68 companies collectively reduced: 937 Tons of Toxic Release Inventory (TRI) releases and transfers and 16,000 Tons of Hazardous Waste Generation. Users suggested 253 options - User suggested options account for 2/3 of the options in the database. For more information contact the University of Texas Southwest Network for Zero Waste see: www.zerowastenetwork.org/ask/index.cfm

Pollution Prevention in Your Personal Life

This section features the personal stories of people who are working in pollution prevention. Do you have a story to share with your colleagues? We want to hear it! Please contact the C2P2 staff at info@c2p2online.com to discuss your ideas.



Photo: James Riordan

Pollution Prevention for the Whole Family

By James Riordan, Executive Director; National Office of Pollution Prevention, Environment Canada

My passion for pollution prevention has its foundation in a childhood when my parents raised five boys in a two bedroom apartment on a salesman's salary. Every decision was based on necessity. We didn't have a lot but life was good. Our environmental footprint was small and we were happy.

The 60's, brought a new prosperity which provided most people with access to home-ownership, modern appliances and the car. The trade-offs included suburban sprawl and a growing amount of pollution and waste.

In the 70's I decided to do something about it. At the University of Toronto, my Masters of Science thesis, *Alternative Energy Planning in Canada*, focussed on conservation and renewable energy. In 1978, two friends and I launched the first city-wide curb-side newspaper recycling program in Metropolitan Toronto. I joined the federal public service in the early 80's. Initially with Energy, Mines and Resources during the "oil crisis", I was part of a team which provided information and incentives to Canadians to conserve energy. Now at Environment Canada I contribute to the development and implementation of policies, programs and legislation including the pollution prevention planning provisions of the *Canadian Environmental Protection Act 1999*.

I believe I 'walk the talk' in my personal life. My wife, an educator, and I are sensitive to our impacts on the environment and the legacy we will be leaving our three children. For more than 30 years we have been actively committed to prevention, conservation, recycling and composting (my wife is an avid gardener). Living in rural Quebec in a modest, well insulated home, we heat with wood in a high-efficiency Canadian-made wood stove using cleaner burning practices, keep our electric thermostats low, use fluorescent light bulbs, and replace our fridge and stove with more efficient appliances every 10 years. We have never owned a clothes-dryer or a dish-washer, hanging laundry outside during most of the year (love the smell) and inside when the woodstove is on (humidifying). In our home, dishwashing is a time for conversation. Three of five in our family are vegetarians. We grow vegetables in summer, make maple syrup in the spring and buy our food at the local health food store. Pollution prevention is an objective we share. Avoiding the creation of pollution and waste is an integral part of our day to day lives.

I am keenly aware of the next generation's concern for the planet. Teaching a course on environmental ethics at a community college, I hear the uncertainties students have about the state of the environment and their future. My children have decided to take action. In the cities they call home (Halifax, Montreal and Brisbane) they cycle or use public transit, reuse (revelling in bargains from second-hand clothes stores) and recycle. They are proud of their parents' lifestyle and the work we do. Most importantly for me, they are the "next wave", understanding and accepting their responsibility to manage their impact on the environment.

**"You must be the change you wish to see in the world"
- Mahatma Gandhi -**



Across Canada

Pollution Prevention Activities and Events



The CEPA Review

The *Canadian Environmental Protection Act* (CEPA) 1999 is an important tool to protect the environment. The Parliamentary Committee Review of CEPA will provide the Government of Canada with an opportunity to assess the contribution of the Act's accomplishments in pollution prevention and sustainable development. Canadians also have the opportunity to provide feedback on how the Act is protecting the environment and human health.

Information about activities related to the Government of Canada's Parliamentary Review of CEPA 1999 can be seen at <http://www.ec.gc.ca/CEPARRegistry/review>. In the coming weeks, you'll be able to visit the site to read the recommendations that Canadians have made about revisions to CEPA 1999. Information on how to communicate your views about the Act to the Parliamentary Committee will be available once the Review commences.

Technical Resource Guide - Textile Mill P2 Planning

The *Technical Resource Guide* (130 pages) prepared by Environment Canada to assist Wet Processing Textile Mills required to prepare and implement pollution prevention plans was Published in January 2005. The guide is available in English and French on the C2P2 website at: www.c2p2online.com/P2Textiles and on the Environment Canada Website at: www.ec.gc.ca/toxics

Subsidy for Interns

The Canadian Council for Human Resources in the Environment Industry (CCHREI) are accepting applications until June, 2005 for a subsidy to cover one third of the salary of any junior or entry level position your environmental company creates this year. For the complete list of eligibility criteria and for more information, please visit their website at www.cchrei.ca (click on "hire an intern" on the Employer's section) or contact Joel Pagnucco, Project Coordinator at (403) 233-0748 ext. 228 or jpagnucco@cchrei.ca

Canadian Pollution Prevention Roundtable

CPPR now in its 9th year, brings together the strongest pool of Canadian pollution prevention expertise. C2P2 continues to organize and host the event. Please join us in Victoria, British Columbia on June 1 & 2, 2005. Visit the C2P2 website at: <http://www.c2p2online.com/CP2P> for speaker, program and registration information.

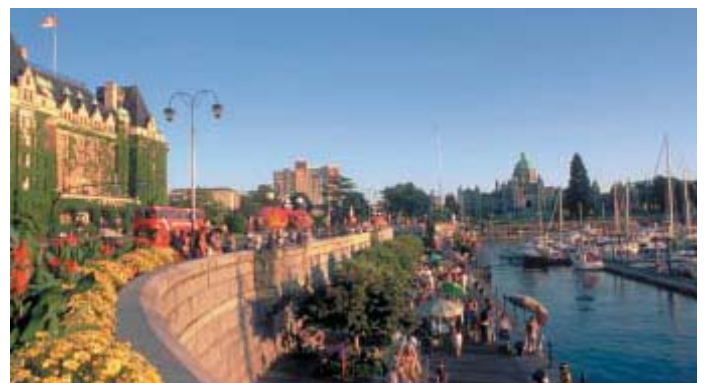


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