# The *Green* Book

## Protecting the Environment

*A Handbook for Managers*

January 1998

Fisheries and Oceans Canada
Pêches et Océans Canada

Canada

# Preface

The Federal Government has stated that sustainable development should be integrated into all of its operations. We are a department that must demonstrate our environmental leadership within the Federal Government, within Canada, and internationally.

This handbook will serve as a tool to help you better integrate sustainable development and environmental protection into your daily activities. It summarizes:

- what you need to know about responsibility and liability under Canadian environmental legislation; and,
- what you need to know to better protect the environment.

*The Green Book* is divided into two main sections. The first chapter tells you why you need to protect the environment and outlines the environmental legislation that you need to know. It explains the concept of due diligence, an essential component of compliance with environmental legislation

Chapters two to ten detail your environmental responsibilities on an issue-specific basis. We have included a glossary and a reference section for further reading. For specific information about the environment, see the contact list at the end of this guide.

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# Chapter 1

## Environmental Protection

### 1 WHY BE ENVIRONMENTALLY RESPONSIBLE?

Environmental responsibility is a legal and moral obligation. There are an increasing number of laws, regulations, and directives that you, as a federal manager must follow while carrying out the operations under your authority. In addition, mounting evidence suggests that the world's future depends on our ability to take care of our environmental concerns today.

There is also a good business case for protecting the environment. It is often cheaper, particularly on a life-cycle basis, to do something environmentally "right" the first time. It can also help create better relations with the clients we serve, with the communities where we work, and with the general public. Finally, it can lead to healthier working conditions for ourselves and our fellow employees.

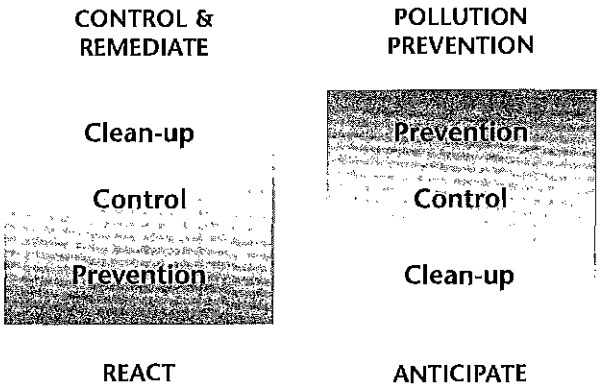
### 1.8 Shifting the Emphasis

*A Guide to Green Government*, released in June 1995, describes how federal departments can develop sustainable development strategies (SDS) to build economic, social and environmental sustainability into the way they do their business. A related document, *Directions for Greening Government Operations* provides guidelines for federal departments and agencies for the integration of environmental considerations into daily operations. It suggests that each department meet or exceed the requirements of federal environmental statutes and regulations; emulate best practices from the public and private sectors; and develop and implement environmental management systems (EMS), including environmental action plans.

Integrated with the existing management structure, a well-designed EMS constructs the framework on which an organization builds its environmental agenda and allows it to coherently document, evaluate, and communicate its environmental performance. Management responsibilities and activities required in an EMS include monitoring, reporting, and taking corrective action to ensure desired results and regulatory compliance.

*The Pollution Prevention Strategy* is another federal document which institutionalizes pollution prevention across all federal government activities. In the environmental protection hierarchy, pollution prevention is seen as the ultimate activity since it minimizes or avoids the creation of pollution in the first place, and can often be the most cost-effective option. This strategy is part of the government's effort to shift the emphasis and resources from controlling and remediating pollution to a more proactive prevention approach, as shown in the following graphic.

*Shifting the Emphasis*




*Reference: Environment Canada, 1995, Pollution Prevention Strategy*

## 1.2 What Must You Do?

As a manager with Fisheries and Oceans, it is your responsibility to conserve, protect, and obey applicable legislation while carrying out your job. You therefore need to learn about current environmental legislation and ensure compliance. You must also ensure that your staff do the same. Each manager must comply with federally applicable statutes and regulations. Environmental planning, which includes regulatory compliance, environmental restoration, pollution prevention, and documentation is essential for a sound environmental program.

There is an increasing amount of federal legislation relating to protection of the environment. There is also international, provincial and/or local legislation that could apply in certain situations. While it is not always clear whether or not we must comply with provincial legislation on federal lands, it is in our own interest to comply with the jurisdication having the most stringent standards. It is in our interest to follow the spirit of the law for the benefit of the environment. In fact, non-compliance may result in penalties including fines levied against the Department and its staff.

# 2 WHAT ARE THE KEY ENVIRONMENTAL INSTRUMENTS?

As a manager in DFO, you are responsible for proper environmental management and for ensuring that environmental protection procedures are properly followed. You are responsible for compliance, if you can say yes to any one of the following statements:

- I have financial authority for this operation;
- I have control over this operation; or,
- I conduct this operation.

The following is a list of most of the major legislation that might apply to you. This list is not exhaustive and, as in any cases where legal liability is a question, you are advised to consult with departmentalal legal services staff.

## 2.1 Fisheries Act

The *Fisheries Act* governs most aspects of the fishing industry in Canada, such as licensing, methods of fishing, and the powers of fisheries officers. The habitat protection and pollution prevention provisions of the *Fisheries Act* are intended to protect fish and fish habitat from physical and chemical disturbances. This Act is administered by the Department of Fisheries and Oceans except for the pollution prevention provisions which are shared with Environment Canada. The *Fisheries Act* gives DFO regulatory and enforcement responsibilities with respect to fisheries and habitat management. DFO also has responsibilities pursuant to the *Canadian Environmental Assessment Act (CEAA)* to conduct environmental assessments of projects requiring approval under prescribed sections of the *Fisheries Act* and to provide information and knowledge to other federal departments with respect to fish and fish habitat when requested.

The *Fisheries Act* applies to any harmful alteration of fish habitat and to operations when spills and ongoing discharges may occur. It prohibits the deposit of deleterious substances in water, or in a place that may result in deleterious substances entering water frequented by fish, unless authorized to do so under other federal legislation or regulations (S.36(3)). The term "deleterious substance" is defined very broadly in Section 34(1). However, substances not prescribed specifically by the regulations, such as diesel fuel, PCBs and sediments, have also been considered by the courts to be deleterious. The Fisheries Act has a range of penalties up to $1M and 3 years imprisonment.

## 2.2 Canadian Environmental Assessment Act (CEAA)

The *Canadian Environmental Assessment Act (CEAA)* requires a self-assessment process, to ensure that the environmental implications of federal undertakings are fully considered as early as possible in the project planning process, and before any irrevocable decisions are taken.

The *CEAA* applies where a federal authority: is the proponent of a project (as defined under *CEAA*); makes or authorizes any financial support or any other form of financial assistance; has the administration of the property involved in a project; or, prescribes or issues a permit, licence or approval which enables the project to be carried out, including physical works and activities.

The *CEAA* requires that managers dealing with federal projects:

- give careful consideration to potential environmental effects and impacts on human health before taking action or committing funds to carry out the project in whole or in part;
- promote sustainable development with a view to achieving and/or maintaining a healthy environment;
- ensure that all federal projects are evaluated for significant adverse effects on other jurisdictions;
- provide an opportunity for public participation in the environmental assessment process; and
- ensure that assessments are carried out in a co-ordinated manner and eliminates unnecessary duplication.

In addition to the CEAA there is a Cabinet Directive, *The Environmental Assessment Process for Policy and Program Proposals,* requiring environmental assessments be undertaken on federal policies and programs. Environmental assessments are also conducted as part of good management practices under the *Federal Code of Environmental Stewardship* (see Appendix A).

With respect to *CEAA,* DFO plays important roles, both as a proponent of its own projects, and/or as the responsible authority in providing expert information and knowledge to other federal departments on fish, fish habitat and navigation. DFO also fulfils an important role as a responsible authority for the conduct of environmental assessments for projects requiring approval under certain sections of the *Fisheries Act* (see 2.1, 2.3) and the *Navigable Waters Protection Act (NWPA).*

Not only does DFO ensure that the *CEAA* is applied when it is triggered under the *Fisheries Act* and the *NWPA,* but the Department is required to provide input to other federal department's *CEAA* screening processes. This may occur even though DFO is not a regulatory authority but when a proposed project could have some environmental effect on a DFO area of responsibility.

## 2.3 Navigable Waters Protection Act (NWPA)

The *Navigable Waters Protection Act (NWPA),* administered by DFO, is designed to protect the public right of navigation. In administering the *NWPA,* Fisheries and Oceans is responsible for:

- the approval of any works in, upon over, under, through or across any navigable waterway in Canada;
- the removal of obstructions to navigation, including unauthorized works or other obstructions such as sunken or wrecked vessels; and,
- regulating the provision and maintenance of lights, markers, etc. required for safe navigation during and/or on completion of construction of certain works.

Fisheries and Oceans is to ensure that prior to building or placing of a work which will substantially interfere with navigation, an environmental assessment is completed in accordance with *CEAA*. Also, an environmental assessment is required under *CEAA* prior to applying the removal order provisions of the *NWPA*.

## 2.4 Oceans Act

Part II of the *Oceans Act,* which is entitled the Oceans Management Strategy, provides for the development and implementation of a new approach to the management of all activities occurring in or affecting the oceans. This section of the *Act,* which is applicable to all marine waters within federal jurisdiction, also provides for the development of integrated management plans in estuaries, coastal and offshore waters. The *Act* specifies that DFO is to facilitate and, where appropriate, lead the development of these plans in collaboration with stakeholders.

DFO environmental managers have two levels of responsibilities. DFO manages, regulates and conducts activities which may have an impact on the marine ecosystems. The planning and management of these activities must be done in accordance with integrated management plans. DFO must therefore participate on an equal footing with other stakeholders when designing integrated management plans.

DFO has the additional responsibility to provide and to communicate the scientific and technical advice required by planners to make their planning decisions (guided by the precautionary approach and the principles of sustainable development and integrated management of the *Act).*

This *Act* also provides for the development of regulations with respect to the designation of Marine Protected Areas and the prescribing of certain activities within their boundaries. It also provides for the application of marine environmental quality guidelines, criteria and standards through regulations in support of integrated management plans and Marine Protected Areas. DFO must ensure that these regulations are adhered to by all.

## 2.5 Canadian Environmental Protection Act (CEPA)

The *Canadian Environmental Protection Act (CEPA)* empowers the federal government to protect human health and the environment from the risks associated with the use of chemicals and from exposure to toxic substances.

Part II of the *Act* deals with toxic substances, and sets out how substances are to become designated as toxic. Once designated, they may be subject to regulation. Schedule I of the Act lists the substances which are designated as toxic and details their regulatory restrictions.

Part IV of *CEPA* (Sections 52 to 60,) applies specifically to federal departments, agencies, crown corporations, and their activities and lands. The reason that Part IV was created is that the "federal house" is not normally regulated under provincial law. Under Section 52 of the *Act,* "federal works or undertakings" mean any activity within the legislative authority of Parliament, including a work, undertaking or business operated or carried on for, or in connection with navigation and shipping, whether inland or maritime, including the operation of ships and transportation by ship. In addition,

DFO managers are responsible for ensuring that work carried out under contract is executed in an environmentally safe manner.

Part IV also allows Environment Canada to make regulations to control pollution from federal activities which are not expressly covered by another statute. This could include regulations to control sewage disposal, fuel storage, or spill reporting and response, as well as waste management.

Section 57 requires any person whose property is affected by the release of a toxic substance to report the contamination to a *CEPA* inspector. Federal departments and federal employees must report all anticipated or actual releases of regulated toxic substances, and to take all reasonable measures to prevent the release or mitigate their effects. Several guidelines and regulations exist under *CEPA* which provide clear direction to the current federal environmental compliance program. These directions include initiatives governing fuel storage tank systems, PCBs and glycol.

Part VI of the Act controls the disposal of wastes at sea. A permit is required for disposal of any substance at sea other than normal discharges from a ship, platform, etc.

A series of changes to *CEPA* are expected soon. The revised *CEPA* will strengthen the pollution prevention components of the 1988 *CEPA*, and place new emphasis on the control of toxic substances. Additional regulations will be developed to increase the coverage of *CEPA* and to correct regulatory gaps and overlaps with other jurisdictions.

As a manager, it is your responsibility to be familiar with the laws and regulations pertaining to the environment and human health. You must also keep apprised of new regulations and the progress of the revisions to *CEPA*. CEPA has penalties up to $1M and 3 years imprisonment.

## 2.6 Transportation of Dangerous Goods Act (TDGA)

The purpose of the *Transportation of Dangerous Goods Act (TDGA)* is to promote public safety and health by defining safety standards for international and interprovincial transport of dangerous products by road, rail, sea or air. The *Act's* regulations apply to all handling and transportation of dangerous goods, from packaging at their point of origin, to delivery, to their final destination.

The *TDGA,* which is administered by Transport Canada, imposes comprehensive duties on persons dealing with goods and modes of transport to properly register, apply safety marks, package and to document dangerous goods. The *Act* also requires that organizations train staff, report dangerous occurrences, and take emergency measures in the event of dangerous occurrences.

## 2.7 Alternative Fuels Act

The *Alternative Fuels Act* requires that federal departments, agencies, and crown corporations operate their vehicles on one of the identified alternative fuels, where it is cost effective and operationally feasible to do so. The alternative fuels are ethanol, methanol, propane, natural gas, hydrogen and electricity. The *Act* also details specific requirements with respect to the purchase of new vehicles.

## 2.8 Canada Shipping Act and Arctic Waters Pollution Prevention Act

The *Canada Shipping Act (CSA)* is administered by the Marine Safety Directorate of Transport Canada. However, DFO retains responsibility for certain sections of the CSA (Parts XV and XIV), specifically vessel traffic systems, aids to navigation, "receiver of Wreck" and emergency response. The CSA is concerned with all aspects of ship safety, the protection of the marine environment

from ship-source pollution. The *Arctic Water Pollution Prevention Act,* which is jointly administered by the Department of Indian and Northern Affairs and Transport Canada, relates specifically to the protection of the marine environment from ship-source pollution in waters north of 60° and sets standards for hull designs for ships that navigate through ice in arctic waters. The objectives of these Acts are accomplished through the development, application and enforcement of regulations governing ship construction, inspection, operation, staffing and pollution control.

The regulations address specific issues such as sewage discharge, air emissions, garbage handling, and the discharge of oily waste. Parts of *CSA,* including small craft and fishing vessel inspection, are administered by DFO staff.

## 2.9 Fishing and Recreation Harbours Act

The *Fishing and Recreation Harbours Act* and its regulations contain specific references to environmental matters with respect to harbour administration, including the use of hazardous materials, disposal of garbage or wastes, disposal of sewage, and the transfer of fuel. The harbour manager must designate an area for regulated activities and/or provide specific authorization as appropriate.

## 2.10 Amendments to the Auditor General Act

In response to a report of the House of Commons *Standing Committee on the Environment and Sustainable Development,* the *Auditor General Act* was amended in December 1995, establishing a new Commissioner of the Environment and Sustainable Development and new structures for reporting to Parliament.

The Commissioner of the Environment and Sustainable Development will monitor and report annually to Parliament on the federal government's performance in meeting departmental and government-wide sustainable development goals. Ministers were required to table their respective sustainable development strategies (SDS) and action plans with Parliament in December of 1997. The strategies must then be updated every three years.

## 2.11 Workplace Hazardous Materials Information System

The Workplace Hazardous Materials Information System (WHMIS) came into effect on October 31, 1988 under joint federal and provincial legislative authority. The purpose of WHMIS is to provide Canadian workers with information about hazardous materials in their workplaces. The national WHMIS program is governed by three federal *Acts:* the *Hazardous Products Act,* the *Canada Labour Code,* and the *Hazardous Materials Information Review Act,* and by provincial *Occupational Health and Safety Acts.*

The three key elements of *WHMIS* are:

- labelling of hazardous materials in a prescribed manner;
- provision by suppliers of material safety data sheets (MSDS); and,
- employer education and training of workers.

WHMIS is one of the most useful tools for managers and workers in terms of human health protection. WHMIS is first and foremost a system of communication, and is designed to ensure that risks of injury and illness from toxins and contaminants are minimized. The key to reduced health risk is knowledge and prevention.

## 2.12 National Fire Code

The *National Fire Code (NFC)* comprises a model set of technical requirements designed to provide an acceptable level of fire prevention and fire protection within a community. The NFC includes standards for the conduct of activities that create fire hazards, maintenance of fire safety equipment and fire exits, standards for portable extinguishers, limitations on building contents, and the establishment of fire safety plans, including the organization of supervisory staff for emergency purposes.

## 2.13 Federal Halocarbon Regulations

Halocarbon regulations will apply to the operation and maintenance of refrigeration, air conditioning, fire extinguishing, and/or solvent cleaning systems. The regulations, when in force, will require regular maintenance by qualified personnel in order to prevent the release of ozone-depleting substances into the atmosphere.

## 2.14 Treasury Board Environmental Policy

**(Real Property Volume, Chapter 1-8)**

Treasury Board's environmental policy gives general instructions on the environmental management of federal sites. It refers in particular to the Canadian government's commitment to manage and dispose of its properties by respecting the principle of sustainable development.

*Section 5 states:*

5.1 "Departments must administer real property in a manner consistent with the principle of sustainable development. In doing so, departments are expected to maintain information as warranted by the risk to the environment associated with properties in their portfolio".

5.2 "Before acquiring a property, departments must ascertain the environmental condition of the property and determine whether it is or can be made environmentally compatible with its intended use".

5.3 "Before disposing of real property, departments must ascertain the environmental condition of the property. Departments must also determine whether remediation is necessary".

5.3.1 "In disposing of property that the department has decided needs remediation, it may be advantageous to have the party acquiring the property carry out remediation. In this case the department must take steps to ensure that the acquiring party, as part of the transaction, guarantees that the remediation will be completed within a reasonable length of time."

5.4 "In granting leases, licenses and easements on federal real property, departments must ensure that the agreement provides for only uses that are consistent with the environmental condition of the property".

## 2.15 Fire Protection Policy

**(document of Human Resources Development Canada)**

The Fire Prevention staff, as the federal government's technical authority on fire protection, are responsible for the administration and enforcement of the Treasury Board policy, standards and those codes and regulations that cover fire protection under the Canada Labour Code. The mandate of the Fire Prevention Unit is to ensure the protection, conservation and minimization of risks to life, property and the Government's financial position. The Fire Prevention activities are carried out under a number of authorities, namely:

- Board policy on Fire Protection, Investigating and Reporting;

- Submissions regarding fire protection engineering and inspection services for major public Band buildings with Treasury Board and Indian Affairs and Northern Development;
- Memoranda of Understanding for the provision of fire protection engineering services to Crown corporations;
- Canada Labour Code and its pursuant Canada Occupational Safety and Health Regulations

It is of interest to DFO because it requires that the Fire Protection Services group at Human Resources Development Canada be kept apprised of all matters which have fire protection concerns, i.e. fuel storage tanks.

### 2.16 Provincial Environmental Legislation – Does it apply?

In general most provincial statutes do not apply to federal individuals or agencies. There are exceptions to this however and DFO employees are advised to seek clarification from departmental legal services.

## 3 WHAT IS DUE DILIGENCE?

Due diligence is a recurrent theme in environmental protection. It means that whether you are acting as a private citizen or as a public employee, you must exercise reasonable care according to existing legislated requirements. Due diligence is the key issue when a manager or a department is charged for having damaged the environment. A critical aspect of several environmental acts, such as the *Fisheries Act* and the *Canadian Environmental Protection Act (CEPA),* is the emphasis on the concept of individual responsibility and liability. Individual managers with care of, or control over an activity or facility, must exercise due diligence to protect the environment.

Damage to the environment does not always result in human health impacts that are obvious to the untrained observer; however, Canadian and international legislation and court decisions consistently recognize that environmental liability means liability for human health. Acting with due diligence to protect the environment inevitably means due diligence to protect human health as well.

If an accident causing damage to the environment should occur as a result of your action (or lack of action) or the direction you gave (or failed to give) to people who report to you, you might have to prove in court that you did exercise due diligence and reasonable care to protect the environment. In such circumstances you, as an individual, may be charged under applicable legislation or might be sued for compensatory damages in criminal legal action. In order to fully understand these issues you should consult departmental legal services.

### 3.1 You are likely acting with due diligence if you:

- have taken all reasonable steps to ensure that the environment is protected and that legislation is complied with;
- have environmental policies which are applied consistently throughout your operations and updated regularly; (the mere existence of a policy does not constitute due diligence.)
- are adequately trained to perform you responsibilities
- invite government inspections or willingly submit to them; and
- ensure that staff take reasonable care to protect the environment.

Managers must remember that environmental inspectors apply the law to federal departments as they do to industries and corporations. Individuals and government departments can be found guilty of an environmental offence even if the "corporation" has not been prosecuted. In other words, **you as manager,** could be responsible for an environmental offence and be charged. Detailed clarification of these issues should be sought from departmental legal services.

# 4 HOW DO I DEAL WITH MY ENVIRONMENTAL RESPONSIBILITIES IN MY DAY-TO-DAY ACTIVITIES?

## 4.1 Everyone should...

- For every activity you undertake, first consider the environmental and health impacts of that activity.
- If you handle chemicals, cleaning solvents, paints, fuel products, acid-containing batteries, you must be concerned with hazardous material, waste prevention and management.
- If you work in an office you should be concerned with green office practices.
- If you plan projects or activities, or develop or write policy you should conduct an environmental assessment.
- You should contribute to energy efficiency and solid waste reduction through your daily practices and equipment use.
- You should ensure that all your personnel are properly trained and aware of relevant environmental concerns.
- When purchasing materials, look for the more environmentally-friendly choice, such as those products with the EcoLogo label.
- You should take the time to learn about the environmental impacts of your work, to practice what you have learned, and to tell others.
- You must know how to execute an emergency response in case of an environmental emergency in your work area.

## 4.2 If you are responsible for a building...

- Know what happens to the wastewater that leaves your facility.
- Conserve energy and water, and track their use.
- Keep an inventory of all hazardous materials and store them properly. If it is necessary to keep bulk quantities, they should be stored in a special facility.
- Register and monitor closely the condition of all fuel tanks.
- Manage properly all ozone-depleting substances such as those used in fire suppression systems, refrigerators and air conditioners.
- Ensure that your supply staff know how to select chemicals, solvents, and other products judiciously, choosing the most environmentally friendly products available.
- Ensure that all your personnel is properly trained and aware of environmental concerns associated with their specific jobs.

## 4.3 If you are responsible for a laboratory...

- Ensure that even small quantities of laboratory hazardous materials are labelled, inventoried, and managed properly.
- Manage your fish wastes and cultures as biological wastes.
- Ensure proper disposal of hazardous chemical wastes and do not pour untreated laboratory chemicals down the drain.
- Avoid using ozone-depleting substances as solvents or for cleaning.
- Carefully maintain those refrigerators and coolers which contain ozone-depleting substances.
- Keep environmental considerations in mind when selecting chemicals, solvents, and cleaning products.

- Investigate and use pollution prevention techniques and technologies.
- Provide proper training for all your personnel.
- Be ready for emergency response and/or clean-up in case a chemical is spilled.

## 4.4 If you are operating a field station...

- Be aware of unique regulatory requirements specific to your operating area.
- Be aware of significant and sensitive ecosystems in your operating area.
- Provide proper training to all your personnel and increase awareness of environmental concerns associated with specific jobs.
- Review methods of handling, storing and disposing of wastes regularly.
- Ensure that special precautions are taken and all amounts and types carried are inventoried when hazardous materials are in transit.
- Be prepared to execute an emergency response in case of a spill.

## 4.5 If you are operating a ship...

- Consult the Ships Environmental Manual DFO/5326 and Coast Guard Fleet Order 600.00 (Environmental Protection) for more detailed information in this subject area.
- Be aware of significant and sensitive ecosystems on your route and any special precautions that may be required.
- Know regulatory requirements for waters or harbours you may visit.
- Keep apprised of national and international marine legislation respecting the environment such as the *Oceans Act,* and MARPOL 73/78.
- Learn to improve fuel efficiency, reduce emissions, and make use of alternative fuels in upgrades and new purchases of ships.
- Provide proper training to all your personnel and increase awareness of environmental concerns associated with specific jobs.
- Maintain your equipment properly and regularly for maximum fuel efficiency and minimized air emissions.
- Manage hazardous materials such as fuel, solvents, and cleaning products with great care to avoid spills into marine environment.
- Separate different types of waste (including oily waste water) on your ship and manage them according to requirements.
- Be aware of all standards governing the management of black and grey waste water, and have waste water management systems tested to confirm that they are functioning properly.
- Train and exercise personnel regularly to assure their preparedness for an emergency response in case of a spill.
- Be aware that discharging waste or garbage in any waters is prohibited by law. This includes:
  - hazardous wastes from cleaning solvents, anti-freeze and lubricants;
  - biological wastes from the ship clinic or marine specimens from ship laboratories; and,
  - domestic solid waste such as metal, glass, paper and plastic, remembering that plastic waste is a special marine concern.

## 4.6 If you are operating a small craft harbour...

- Know that your tenants and other users are subject to the same environmental standards as you are.
- Take corrective action if past activities at the harbour have contaminated the site.
- Understand that all dredging activities or physical changes at the water line require an environmental assessment, and may require a permit from DFO and Environment Canada.

- Manage wastes and hazardous materials at or near the harbour.
- Remember that creosote is a hazardous material and precautions must be taken to prevent it from leaching from creosote-treated wood.
- Keep in mind that fuel storage and transfer operations are a special concern because of possible spills into the marine ecosystem.
- Train your staff and tenants to execute an emergency response in case of a spill, including spills from your own activities.

## 4.7 If you are planning new projects or building new facilities...

- Know that most new construction projects require a screening assessment as stipulated in the *CEAA*.
- Remember that submissions of policy for ministerial consideration may need to be screened.
- Know that an environmental assessment allows you to identify mitigation and monitoring measures for incorporation into your environmental management system.
- Specify environmentally-friendly products and initiate energy efficiency, water use reduction, recycling and reuse operations, etc. during the design stage of new construction.

## 4.8 If you are decommissioning your building or operation...

- Be aware that your environmental responsibilities, including monitoring, maintenance and security, continue until ownership is officially transferred.
- Be sure that the funding for proper decommissioning has been identified and allocated.
- Attempt to identify recycling and reuse options for equipment and facilities.
- Investigate and assess the overall environmental status of any property prior to transfer and determine the remediation measures that may be required.
- Be sure to remove all hazardous materials and all types of waste and arrange for their proper disposal.
- Empty any PCB waste storage sites in accordance with regulations.
- Have licensed personnel properly drain ozone-depleting substances from equipment prior to its disposal.
- Conduct an environmental assessment of the future operation (even if it is not a government operation) if it involves a project as defined under *CEAA* or decommissioning activities such as building demolition.

## 4.9 What if an Inspector Arrives?

The *Fisheries Act* and *CEPA* have strict provisions for compliance and enforcement. Inspectors are empowered by these Acts to conduct inspections and investigations. Inspections may also be conducted under other Acts such as *TDGA, NFC,* or the *Labour Code.*

While inspectors may call in advance of a planned visit, they may also arrive unexpectedly. In that case, what should you do? First, attempt to ascertain whether the official wishes to conduct an inspection or an investigation. There is a critical difference between the two in that the official does not have the same powers under the law when conducting a simple inspection rather than an investigation.

An inspection is performed by an inspector, and its purpose is to detect problems and ensure that an activity or facility is in compliance with the law. An investigation is performed by an enforcement officer or investigator when there are reasonable grounds to believe that an offence has taken place. This may occur when an inspector, in the course of a routine inspection, determines that there is a non-compliant

condition. At that time, the inspector may terminate the inspection, possibly depart the property and then return to the facility as an enforcement officer to conduct an investigation. Evidence gathered in the course of an investigation may be used to support the prosecution of an individual or entity.

### 4.10 What are the Powers of the Inspector?

The inspector conducting an environmental inspection has extensive and intrusive powers granted by *CEPA* and the *Fisheries Act*. In order to detect problems and ensure that an activity or facility is in compliance with the law, the inspector may enter any place without a warrant and examine any books or records for the purpose of inspection.

## 5 HOW DO I MEASURE ENVIRONMENTAL PERFORMANCE?

The environmental audit is the most effective tool available to provide assurance that operations are being conducted in compliance with environmental expectations. Audits also demonstrate that your organization is striving for continuous improvement in environmental performance.

Both internal inspections and more formal, external environmental audits are part of a good compliance program. They should be included in regular maintenance and operation costs, and provided for through normal budget processes. These audits should be performed every two to three years on ships and facilities.

There are two categories of audits – one you do yourself, both formally and informally, and another that you have done by someone else.

- **Internal Inspection:** A management walk around is the first level of casual inspection. It should be undertaken by managers, on an opportunistic basis, using a simple checklist as a prompt for questions and evidence to be examined. Being alert and inquisitive during any type of walk around is essential to assuring compliance. As an environment manager you should conduct and document actions and progress over a twelve-month period, employing a full environmental audit protocol.
- **Environmental Audits:** Formal audits should be undertaken on a scheduled, rotational basis, employing a team of qualified environmental auditors. To bring a broad level of awareness and skills to the audit team, its members should include personnel drawn from the subject facility as well as from other facilities, headquarters or outside consultants. The team should have some independence from the facility's authority in order to provide objectivity and credibility. It is recommended to use outside consultants when internal expertise is limited, when dealing with high risk facilities or when a clearer demonstration of due diligence is required.

**In all cases, a written report should be made and acted upon. Acting upon identified areas of non-compliance is a key component of due diligence.**

# Key Environmental Issues

IN EACH OF THE FOLLOWING ISSUES THERE ARE A NUMBER OF HIGHLY PERTINENT ACTIONS THAT A MANAGER MUST DO AND SHOULD DO.

**Must do...**

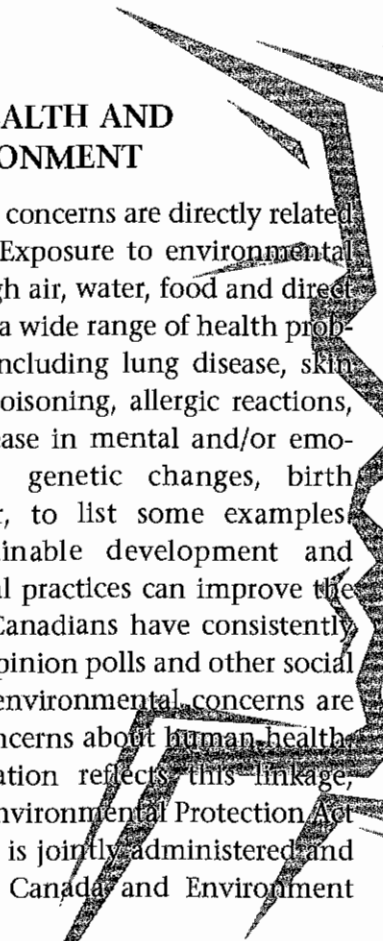
because you are personally responsible and liable and because the applicable environmental legislation is binding for all federal departments and their managers.

**Should do...**

because these actions are consistent with federal government best practices, and demonstrate due diligence and good environmental stewardship.

# Chapter 2

## Human Health



### 1 HUMAN HEALTH AND THE ENVIRONMENT

***Our health is affected by the environment in which we live. A healthy environment can help us maintain healthy lives. Pollution contaminates and degrades our environment, presenting hazards to our health.***

***Fortunately, Canadians are among the healthiest people in the world, and Canada's environment helps to sustain our healthy lives. But threats to our environment and consequently to our health are present and we must be vigilant.***

Environmental concerns are directly related to health concerns. Exposure to environmental contaminants through air, water, food and direct contact can result in a wide range of health problems and diseases, including lung disease, skin and eye problems, poisoning, allergic reactions, nerve damage, decrease in mental and/or emotional functioning, genetic changes, birth defects, and cancer, to list some examples. Alternatively, sustainable development and sound environmental practices can improve the quality of our life. Canadians have consistently indicated, through opinion polls and other social research, that their environmental concerns are directly linked to concerns about human health. Our national legislation reflects this linkage, since try Canadian Environmental Protection Act *(CEPA)* is an act that is jointly administered and enforced by Health Canada and Environment Canada.

By practicing environmental stewardship in your job, you will protect your own health, the health of those working under your supervision, and our collective health.

#### 1.1 What Must Be Done

- Maintain an understanding of, and be in compliance with *CEPA,* including being aware of the status of *CEPA* and its revisions.
- Ensure that the safety and health of every person employed at your workplace is protected in accordance with the requirements of the *Canada Labour Code* and other applicable legislation.
- Comply with the provisions of Canadian Environmental Assessment Act *(CEAA).* Like *CEPA, CEAA* is written to protect both human health and the environment.
- Follow and ensure compliance with all mandated activities identified in this handbook, recognizing that environmental protection is also protection of human health.

#### 1.2 What Should be Done

- Maintain and develop your knowledge and understanding of potential environmental contaminants within your facility. Be aware that those contaminants may result in a wide range of health problems and diseases.

- Develop an understanding of the relationships among health, environment, and risk. As federal government employees and managers, we are responsible for ensuring that risks to the environment and to human health are identified, managed and minimized.
- Workplace Hazardous Materials Information System (WHMIS) and its Material Safety Data Sheets (MSDS) are prevention oriented because they provide you with information about the ways in which materials can be dangerous to human health and safety and ways to protect yourself and your workers from associated hazards. In the event of an accident, MSDS identify specific emergency actions. Ensure that your employees recognize the importance of WHMIS and encourage them to participate in any training efforts related to worker protection. Make use of health and safety committees to spread the message.
- Be familiar with the potential of human health risks to the broader community associated with your facility. Be familiar with your organization's emergency response plan, and ensure that those for whom you are responsible are aware of actions to be taken to protect the general public's health and safety in the event of an accident.

# 2 NOISE AND ELECTROMAGNETIC IRRITANTS

Major environmental irritants include very loud noise levels and high-intensity radio frequency emissions. Noise pollution is an occupational health and safety hazard and causes disturbances to the public. Stringent limits are outlined in the *Canada Labour Code.*

Non-ionizing radiation comes from radio and radiofrequency transmissions, such as those used extensively by DFO. Strong odours, lighting, or some visual aesthetics are also considered as irritants. The *Canada Labour Code* governs the *Limits of Human Exposure to Radiofrequency Electromagnetic Fields,* and the CPC-2-0-03 *Environmental Assessment Process Associated with Spectrum Management* is published by Industry Canada.

Studies have shown that long-term exposure to high or moderate intensities of some irritants can be harmful.

## 2.1 What Must Be Done

***Noise And Non-Ionizing Radiation Disrupt Use And Enjoyment Of The Local Environment.***

***In DFO, ship operations are the cause of most noise complaints.***

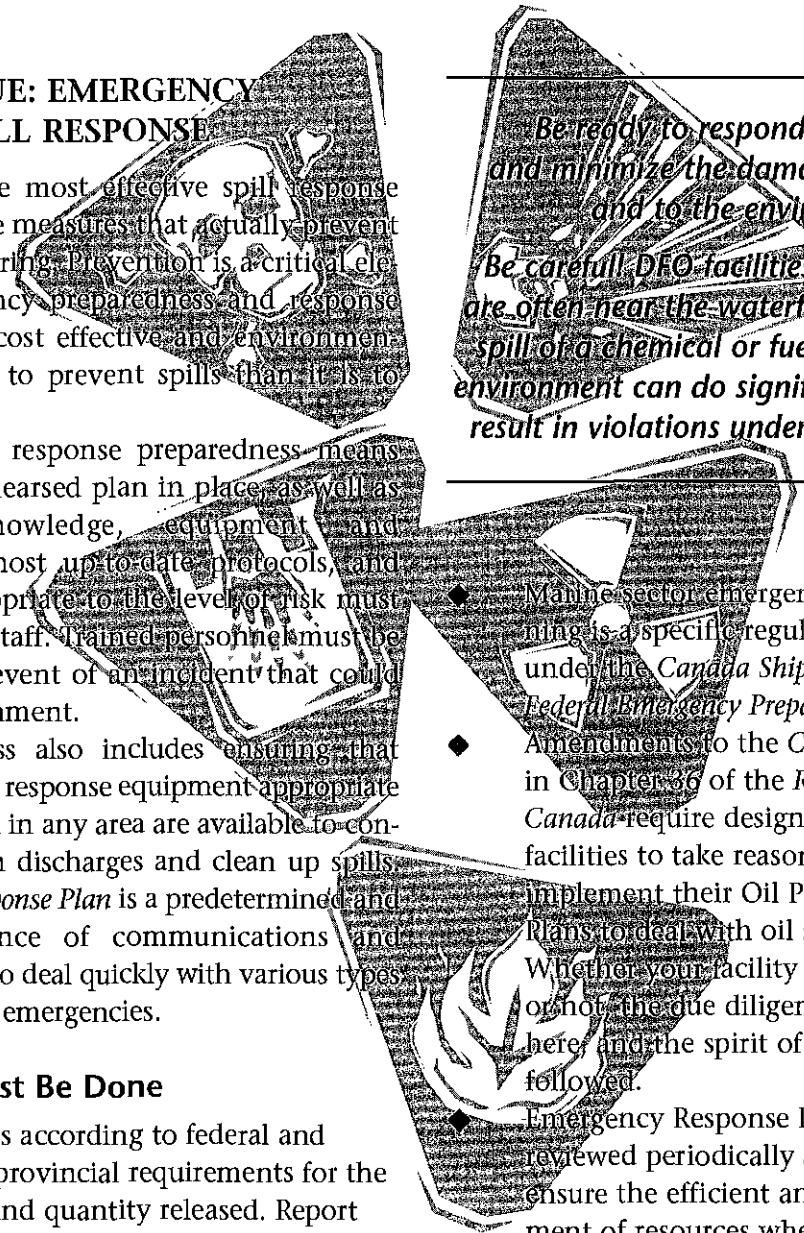
- Ensure that sound levels and worker exposure to them are controlled, and that sound intensities in the work place are within the limits set out in the *Canada Labour Code.*
- Post warning signs if sound levels exceed the limits set out in the *Code* and/or when hearing protection is required and/or when the identification of maximum exposure duration is required.
- Provide hearing protection to workers exposed to sounds that exceed the limits set out in the *Code.*

## 2.2 What Should Be Done

- Noise levels at your facility should be identified, particularly for sources of noise with high propagation characteristics.
- Sources or activities generating excessive noise should be examined to determine how the sound levels can be reduced to tolerable levels.
- Noise barriers or noise attenuation techniques should be implemented to control specific activities that generate excessive noise.

# Chapter 3

## *Hazardous Materials*



## 1 THE ISSUE: EMERGENCY AND SPILL RESPONSE

Perhaps the most effective spill response measure is to take measures that actually prevent a spill from occurring. Prevention is a critical element of emergency preparedness and response since it is more cost effective and environmentally appropriate to prevent spills than it is to clean them up.

Emergency response preparedness means having a well-rehearsed plan in place, as well as appropriate knowledge, equipment and resources. The most up-to-date protocols, and equipment appropriate to the level of risk must be used to train staff. Trained personnel must be available in the event of an incident that could harm the environment.

Preparedness also includes ensuring that quantities of basic response equipment appropriate to the level of risk in any area are available to control leaks, contain discharges and clean up spills. An *Emergency Response Plan* is a predetermined and rehearsed sequence of communications and actions designed to deal quickly with various types of environmental emergencies.

***Be ready to respond to accidents and minimize the damage to personnel and to the environment.***

***Be careful! DFO facilities and operations are often near the waterfront. Even a small spill of a chemical or fuel into the marine environment can do significant damage and result in violations under the Fisheries Act.***

### 1.1 What Must Be Done

- Report spills according to federal and applicable provincial requirements for the substance and quantity released. Report discharges to Pollution Prevention Officers for spills into the marine environment from a vessel or a land-based facility.
- Marine sector emergency response planning is a specific regulatory requirement under the *Canada Shipping Act* and the *Federal Emergency Preparedness Act.*
- Amendments to the *Canada Shipping Act* in Chapter 36 of the *Revised Statutes of Canada* require designated oil handling facilities to take reasonable measures to implement their Oil Pollution Emergency Plans to deal with oil spill emergencies. Whether your facility has been designated or not, the due diligence argument applies here and the spirit of the law should be followed.
- Emergency Response Plans should be reviewed periodically and analyzed to ensure the efficient and proper deployment of resources when spills do occur.

## 1.2 What Should Be Done

- Develop an Emergency Response Plan based on a risk assessment of your operations for your facility. It should cover responses to fires, chemical spills, fuel spills, severe storms and other threats. The Emergency Planning for Industry standard, developed by the Canadian Standards Association in collaboration with the Major Industrial Accidents Council of Canada, would be particularly useful to all managers of DFO facilities.
- Implement an Emergency Response Program. It should include the training of appropriate facility personnel and the maintenance of a list of appropriate equipment and trained responders. Provision should be made for training exercises.
- Record all spills of hazardous materials and hazardous waste. Details should include spill quantity, incident review, and resulting corrective action.
- Co-ordinate the Emergency Response Plan with local and regional response providers and with DFO's national emergency preparedness policy and planning. The facility might enter into mutual assistance agreements with external response providers.

# 2 THE ISSUE: CONTAMINATED SITE MANAGEMENT

A contaminated site management program is an important component of an environmental management system. A good contaminated site management program allows our Department to deal with historic contamination in an economically sustainable manner.

The cost of cleaning up a site is directly related to the choice of the remediation technology, which in turn is related to the degree of urgency to clean up subsurface conditions. If adequate time is available, less costly remediation options can be used. In many cases an effective site management program can preclude the need to physically clean up a contaminated site.

The legacy of contaminated sites dominates the federal environmental program, and requires significant portions of the available funding. The cost of cleaning up all of the government of Canada's fuel contaminated sites is estimated to exceed $5 billion.

## 2.1 What Must Be Done

***Some DFO sites have been contaminated by leaking fuel tanks, mercury spills at lighthouses, poor handling of hazardous material, and the use of contaminated fill.***

***One litre of oil can contaminate many thousands of litres of water.***

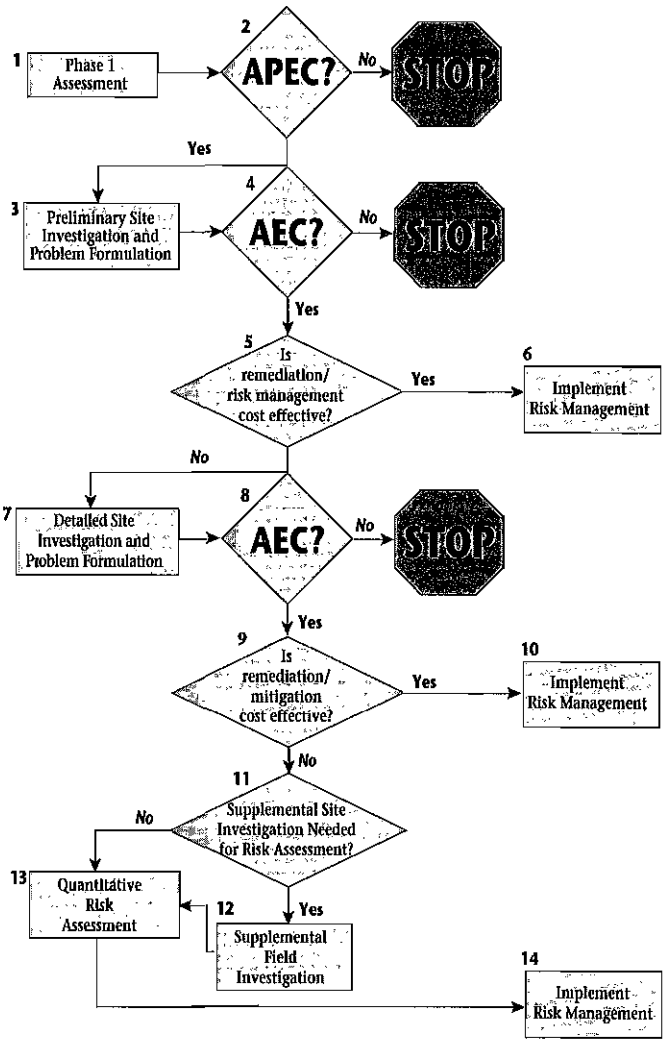
***Contamination from poor fuel and waste disposal practices continues to damage our environment and threaten our health.***

- Prevent off-site migration of contaminants. Conduct studies of property and facilities to determine the characteristics of contamination. Document these studies as part of the exercise of due diligence. Act on the results and mitigate the contamination. Communicate with federal and provincial regulators.
- Report to Environment Canada and provincial officials any such migration of contaminants since they are considered as a hazardous material spill, which must be reported.

## 2.2 What Should Be Done

- Conduct Phase I Environmental Site Assessments of all properties to determine the potential for contamination at the property or identify Area of Potential Environmental Concern (APEC).
- Conduct Phase II Contaminated Site Assessments of all areas suspected of being contaminated.
- If necessary, remediate contaminated soil and groundwater to levels consistent with the Canadian Council of Minlsters of the Environment (CCME) land use criteria.
- Aim for long-term site remediation and the protection of human health and the environment. Use detailed qualitative and quantitative risk assessments to determine the appropriate clean-up level needed to protect the environment and human health. Place emphasis on protecting human health and the environment, on regulatory compliance and mitigate potential environmental impacts during the remediation process. Through the use of controls such as a containment system, ensure that contaminants do not migrate off site.
- Conduct confirmation sampling and/or long-term monitoring of all contaminants left in place at known contaminated sites including, if appropriate, any surrounding lands or waterways.
- Ensure that site restoration and land reclamation techniques are consistent with best practices and are determined in consultation with local residents.
- Maintain records of all investigations, sampling, and monitoring for future reference.
- Apprise local officals and interest groups of any remediation plans and programs. In areas which may be affected by Land Claim Settlements with aboriginal groups, consult with aboriginal land use planning committees, wild life management boards, etc., regarding priorities, procedures and cultural considerations.

### Contaminated Site Remediation and Risk Management Process




Areas of Potential Environmental Concern (APEC) highlighted during the Phase 1 investigation are evaluated in the preliminary Problem Formulation of the risk assessment. Chemical concentrations are compared to background or guidelines. Areas where concentrations exceed guidelines are deemed Areas of Environmental Concern (AEC). The preliminary problem formulation is also used to develop a conceptual understanding of the site, highlight data gaps and focus the more detailed site investigation.

The assessment process also provides 'stop' points where the project team can re-evaluate whether further planned work is warranted based on the latest interpretation of the data. The process also includes a number of decision points that are used to evaluate options and identify the most cost-effective course to the desired outcome.

# 3 THE ISSUE: HAZARDOUS MATERIALS AND HAZARDOUS WASTE MANAGEMENT

The *Canada Hazardous Products Act (HPA)* defines three types of hazardous products: prohibited, restricted, and controlled. The *Workplace Hazardous Materials Information System (WHMIS)* under the *HPA* applies to controlled products in federal establishments, ships and aircraft. Controlled products include a wide range of products, substances, chemicals and biological materials found in the workplace. DFO uses all six classes of controlled products, namely:

1. Compressed Gas;
2. Flammable and Combustible Material;
3. Oxidizing Material;
4. Poisonous and Infectious Material;
5. Corrosive Material; and,
6. Dangerously Reactive Material.

The federal government's *Toxic Substances Management Policy* calls for virtual elimination from the environment of persistent and bioaccumulative toxic substances resulting from human activity. It also calls for full life-cycle (cradle-to-grave) management of all other substances released into the environment, with a focus on pollution prevention. These regulations apply to all materials on site, whether they belong to DFO, to a tenant or to a contractor working on DFO property.

When hazardous material is no longer required it becomes hazardous waste. Transportation, storage and disposal of hazardous waste are subject to similar regulations which must be followed with the same rigour.

***Improperly handled hazardous materials are more than a compliance issue they threaten both human health and the environment.***

***In DFO hazardous materials are part of daily activities. They can be found in laboratories, maintenance shops, cleaning cabinets and on ships. They are used to maintain our facilities and equipment and as fuel.***

## 3.1 What Must Be Done

- Keep an up-to-date inventory of all hazardous materials used at your facility.
- Handle all hazardous materials and waste in an appropriate manner. This means that the following are observed:
  - manufacturers' instructions;
  - material safety data sheets (MSDS);
  - federal and/or provincial regulations; and
  - workplace safety regulations (including WHMIS).
- Give WHMIS training to personnel who might be exposed to hazardous materials and waste in the workplace.
- Comply with the *Transportation of Dangerous Goods Act* when packaging hazardous materials for transportation and transporting or shipping them. Carry the regulated warning labels and placards when transporting hazardous material, including the manifest for wastes — a shipping document which must identify the consignor, consignee, initial carrier and destination. Hazardous wastes must be manifested. Personnel are not permitted to ship, handle, transport or fill out shipping documents unless they have received training specifically for these undertakings. The person trained must carry a certificate indicating what they have been trained for under the *TDGA*, and this certification must be renewed regularly.

- Hazardous waste must be segregated and disposed of in an approved manner. Any work contracted for the disposal of hazardous waste must be done by certified waste haulers and handlers.
- Identify all dangerous goods stored indoors with appropriate placards.
- Meet all requirements of the National Fire Code relating to the storage of flammable and combustible materials, explosives, compressed gas cylinders and reactive, corrosive and oxidizing materials.

### 3.2 What Should Be Done

- Keep your inventory of hazardous material up-to-date, and indicate the type, quantity, and location of all hazardous materials used and stored at your facility. The inventory should be kept on site as part of the facility's environmental emergency plan.
- Eliminate or reduce the use of toxic substances through a thorough review of why they are used. This will help to eliminate or reduce the generation of hazardous waste.
- Keep only small amounts of chemicals and waste to reduce the chance of accidents and to minimize storage requirements.
- Segregate waste oil and dispose of it through an approved recycler. The recommendation in the CCME *Code of Practice for Used Oil Management* should be observed.
- Maintain accurate records of quantities of hazardous waste received, stored, and/or shipped. Summarize these records annually.
- Implement a pollution prevention plan and assess opportunities for changing raw materials or modifying processes in order to produce less hazardous waste. A green procurement program, which evaluates the chemical properties of substances prior to their purchase should be implemented.

## 4 THE ISSUE: PCB MANAGEMENT

Polychlorinated biphenyls (PCBs) are synthetic chemical compounds consisting of chlorine, carbon, and hydrogen. PCBs are relatively fire-resistant, very stable, do not conduct electricity, and have low volatility at normal temperatures. These and other properties have made them desirable components in a wide range of industrial and consumer products such as electrical transformers, fluorescent light ballasts and paints.

PCBs may be found in contaminated sites and contaminated dredging material. Their extreme resistance to chemical and biological breakdown allows them to accumulate in living organisms and thus makes them an environmental concern.

Some of the reported health effects associated with sustained and high-level exposure to PCBs are a severe form of acne called chloracne, eye discharge, swelling of the upper eyelids, changes in skin colour, numbness of the arms and legs, weakness, muscle spasms, and chronic bronchitis.

PCB regulations outline specific minimum storage requirements for PCB waste, including controlled access to PCB storage sites, fire protection and emergency procedures, maintenance and inspection, labelling requirements, and records and reporting requirements.

***PCBs are regulated toxic substances.***

***DFO has few PCBs.***
***They are mainly contained in***
***old light ballasts or small capacitors***
***in electrical equipment.***

### 4.1 What Must Be Done

- Place capacitors, transformers, and other PCB-containing equipment removed from use and awaiting disposal in leak-proof containers, which meet the requirements of *TDGA* and *CEPA*. Containers are specified in the Storage of PCB Materials Regulations.
- Ensure that PCB waste storage sites meet the requirements of the *TDGA* and *CEPA*.
- Send PCB wastes only to licensed disposal facilities, and ship wastes in strict accordance with *TDGA* requirements.
- The removal or receipt of major items or quantities of PCB equipment and material must be reported to Environment Canada within 30 days. The removal or receipt of small capacitors containing less than 500 grams of PCBs should be reported semi-annually on the following January 1 or July 1.

### 4.2 What Should Be Done

- Using an up-to-date inventory, you should prepare a phase-out plan for all equipment containing PCBs, such as electrical ballasts in lights and transformer capacitors.
- PCB wastes should be sent to disposal facilities, rather than left in storage. The disposal of PCBs is regulated for federal agencies. Destruction of federal PCB wastes cannot be carried out unless there is compliance with *CEPA's* Federal Mobile PCB Treatment and Destruction Regulations.
- Records should be kept of all PCB data, prior to decommissioning PCB-containing equipment.
- When closing a PCB storage site, you should consult the guidelines which Public Works and Government Services Canada has prepared to assist federal departments.

## 5 THE ISSUE: PESTICIDE USE

A pest is any injurious or troublesome organism, such as insects or bacteria, which adversely affects the well-being of humans or animals, which may attack buildings, supplies, equipment, or vegetation, or is otherwise considered undesirable. A pesticide is a substance or mixture of substances, including biological agents, which are used to control, prevent, destroy, attract or repel pests directly. These include insecticides, anti-foulants, herbicides, fungicides, rodenticides, disinfectants, and plant growth regulators.

Pesticides are usually toxic chemicals that must be stored and handled with care. Depending on their properties and patterns of use, pesticides may leach through soils and contaminate ground-water, especially where the water table is close to the surface and/or soils are highly permeable.

Integrated pest management is a comprehensive approach to the prevention, elimination or control of pests. Proper pest management is based on full utilization of the knowledge of the habitat and natural history of a pest; an understanding of the inter-relationships between the pest population and the ecosystem; the availability of plantings, building materials or structural designs less prone to pest infestations or damage; and the use of the most appropriate biological, cultural and chemical techniques.

***Improperly handled or used pesticides can damage the environment and are a threat to human health.***

***In DFO, pesticides and herbicides are used in grounds maintenance, to clean equipment and buoys, to prevent pest damage to ships and facilities and as antifoulants.***

### 5.1 What Must Be Done

- Individuals applying pesticides must be certified and licensed by the appropriate regulatory agency. Confirm the validity of the documentation prior to the beginning of the application.
- Do not allow the use of a pesticide unless it is registered under Canada's *Pest Control Products Act*.
- All chemical areas must be secure and clearly marked in accordance with regulations.

### 5.2 What Should Be Done

- Evaluate non-chemical pest control methods first. If pesticides must be employed, their use should be kept to a minimum. Only the quantity required should be purchased to avoid storage of excess amounts.
- A facility policy should be implemented prohibiting the use of pesticides, except in cases where no other pest control method will work.

## 6 THE ISSUES: ASBESTOS AND LEAD

Asbestos refers to a group of naturally occurring minerals. It was widely used in buildings until the 1970s because of its resistance to heat, strength, flexibility, low thermal conductivity and chemical resistance. Concern about adverse health effects from exposure to asbestos fibres led to regulations regarding its handling, monitoring and exposure.

Wallboard and other construction products used in buildings built before 1979 may contain asbestos. Improper handling or deterioration of asbestos may cause its extremely small fibres to be carried in air currents. If inhaled for long periods of time, these fibres may cause a scarring of the lungs (asbestosis), lung cancer and cancer of the lining of the chest, abdomen, and/or the digestive tract.

***Asbestos may present a health hazard if inhaled by humans.***

***Asbestos can be found in some older DFO buildings and light stations.***

***Lead is often contained in older paints and plastic blinds. It can cause neurological damage to humans if ingested.***

Undisturbed, sealed or otherwise enclosed asbestos is not considered a health concern. It must none the less be monitored, and kept undisturbed to prevent its deterioration or exposure to air.

It is not unusual to find lead in paints manufactured in North America until the late 1970s. When lead paint flakes off walls or is removed from a building, careful handling is necessary to protect the health of the workers and prevent lead contamination in the surrounding area.

The long-term exposure to lead has been linked to neurological damage in children.

## 6.1 What Must Be Done

- If applicable, develop and implement an asbestos management plan for your facility. The plan must comply with applicable legislation and aim to minimize any health risks to employees.
- Remove or seal friable asbestos (crumbly, easily broken, with potential to become airborne) to reduce the potential for worker exposure.
- Follow all federal and provincial regulations and guidelines when handling asbestos. *(Canada Labour Code* – Occupational Safety and Health Regulations, *CEPA*, Guidelines for Removal and Treatment of Asbestos, and Ontario Ministry of Environment and Energy – Procedures Respecting Occupational Exposure to Asbestos.)
- Use health protection measures such as respirators when scraping or sanding surfaces containing lead paint.

## 6.2 What Should Be Done

- Facilities should have an asbestos survey conducted to determine whether asbestos-containing materials are present on site.
- In-place asbestos-containing materials, which have not deteriorated, should be handled by licensed contractors if removed during building maintenance or renovations.
- In-place asbestos should be labelled to alert employees of its location.
- Protect workers and properly dispose of chips and dust of lead paint when lead-contaminated painted surfaces are scraped or sanded.

# Chapter 4

## Air Issues

## 1 THE ISSUE: AIR EMISSIONS

Air emissions are discharges of contaminants into the surrounding air and the atmosphere. They are typically released from exhaust stacks and vents, but may also result from activities such as soil excavations and the handling and loading of materials. Among issues of concern relating to air emissions on the federal environmental agenda are greenhouse gases, smog, and toxic and ozone-depleting substances.

Fumes from certain toxic chemicals can be lethal in unventilated areas. Smog adversely affects human health and the local environment. Greenhouse gases, which trap heat in the earth's atmosphere, contribute to climate change and global warming. Carbon dioxide is the most significant man-made gas linked to climatic change. A major source is the burning of fossil fuels for transportation and heating.

***Research has shown a link between air pollution and death rates. A study of the Toronto area found that exposure to air pollution was associated with an extra death each day.***

***Fumehoods, incinerators and boilers are three sources of air emissions at DFO facilities.***

### 1.1 What Must Be Done

- Allow only licensed personnel to service equipment containing ozone-depleting substances, such as air conditioners, fire suppression equipment and refrigeration equipment, at your facility.

### 1.2 What Should Be Done

- Identify all sources of air emissions from your facility. Have the emissions quantified (using engineering methods), in order to determine if your facility meets the *Ambient Air Quality Objectives* set by Environment Canada, as well as provincial air quality guidelines appropriate to the location of the activity.
- Identify all sources of toxic air pollutant emissions, particularly those on Environment Canada's *Priority Substances List* and *Accelerated Reduction/Elimination of Toxic* (ARET) substances list. Try to eliminate the use or generation of these pollutants by changing raw materials. It is generally true that if you don't buy and use toxic substances, you won't pollute!
- Have all boilers and incinerators inspected and serviced annually in order to keep them operating efficiently. Eliminate those which do not meet strict performance guidelines.

- Identify all sources of volatile organic compound emissions from your facility and minimize them. Water-based paints, high solids paints, and efficient spray guns are options for reducing emissions from painting.
- Identify all uses of ozone-depleting substances at your facility. Make plans (including a budget) to convert equipment to alternative refrigerants at their time of scheduled servicing.
- Implement efficient and money-saving energy conservation measures to reduce carbon dioxide ($CO_2$) and other greenhouse gases.
- Implement a green purchasing program which screens all chemical purchases for undesirable toxic materials. Eliminate chlorinated organic substances, and where possible, replace organic solvent cleaners with water-based alternatives.

## 2 THE ISSUE: OZONE-DEPLETING SUBSTANCES

Ozone-depleting substances (ODSs) are compounds that release chlorine or bromine into the atmosphere. In turn, this results in the breakdown of the protective ozone layer in the earth's upper atmosphere which protects the earth and its inhabitants from much of the sun's harmful radiation.

Depletion of the ozone layer is resulting in higher levels of ultraviolet (UV) radiation reaching the earth. In 1996, skin cancer affected more than 65,000 Canadians, and numbers are rising. An estimated 95 percent of all skin cancer is caused by exposure to UV radiation from sunlight.

ODSs can be found in equipment and products such as fire extinguishers, air conditioners, drinking-fountain coolers, refrigerators, solvents, and cleaning agents. Approximately 10 percent of the Canadian ODS stock is held by the federal government.

***DFO was one of the three departments with the largest quantity of ODSs, in the Atlantic Region.***

***One molecule of CFC can destroy, 100,000 molecules of protective ozone layer.***

***Scientists estimate that for each one percent decrease in the ozone layer, skin cancer will increase 1.6 percent worldwide.***

### 2.1 What Must Be Done

- Recover ODSs that would otherwise be released.
- Allow only technicians with ODS certification to handle or service equipment containing ODSs at your facility or ship.
- ODSs are prescribed on a "list of toxic substances" contained in *CEPA*. Reporting on unintentional releases may require reporting under *CEPA* Section 36 (1), (3), (4). Also note that if substances on this list are released , the owner must take all reasonable steps to protect the public *(CEPA* (1b), (1c)).
- Health and safety directives require that an employer supply protective creams and glasses to staff working outdoors for long periods of time.

### 2.2 What Should Be Done

- Develop an inventory of all ozone-depleting substances at your facility. Using only licensed personnel, develop a maintenance schedule for all equipment still using these substances. Early detection of leaks can avert the loss of ODSs contained in equipment.

- Develop and implement an ODS management plan for your organization, incorporating at a minimum the following: ODS containment and preventive maintenance strategies; inventory of ODS and applications, mechanisms for tracking changes and reporting releases; revision of administrative, training and procurement practices to foster proper handling of ODS; review of requirements for the use of alternatives to ODS; and an action plan for the measurement, evaluation, review and improvement of the plan.
- Ensure that your phase-out plan for all equipment using ODS is in keeping with scheduled replacement of substances with non-ozone depleting alternatives. Current phase-out dates related to consumption (production, import and export) are as follows: Halons – 1994; carbon tetrachloride – 1995; CFCs – 1996; HBFCs – 1996; methyl chloroform – 1996; and HCFCs – 2020.
- Eliminate the use of ozone-depleting substances as cleaning solvents.
- Continue to monitor regulatory developments and research for alternatives to ODS-based shipboard fire suppression systems.
- Meet or exceed industry and private sector standards including applicable codes and guidelines such as the *Code of Practice for the Reduction of CFC Emissions from Refrigeration and Air Conditioning Systems* and *Code of Practice on Halons*.
- In the absence of federal regulations, meet or exceed provincial and territorial ODS requirements.
- For all employees, ensure that appropriate measures are taken to reduce excessive exposure to sunlight.

# Chapter 5

## *Ocean Disposal*

## 1 THE ISSUE: DREDGING AND OCEAN DISPOSAL

While dredging is often necessary to maintain navigable waters, the physical effects of dredging may affect local fish stocks, damage habitat and disrupt traditional fishing grounds. Fish, aquatic vegetation and other aquatic organisms can be smothered if they are buried in soil at disposal sites. Increased levels of suspended solids at dredging and disposal sites can also have adverse effects. Site contamination has also resulted from land-based storage of contaminated dredged materials.

The chemical effects of dredging include a decrease in the concentration of dissolved oxygen in the water, the eutrophication of water because of elevated levels of phosphorus and nitrogen, and the re-release of industrial contaminants (for example zinc, lead, mercury, PCBs, pesticides). These effects are minimized by restrictions on the concentration of metals and organics in dredged sediments proposed for disposal at sea.

Ocean disposal refers to the intentional deposition of materials in the ocean, including the deliberate sinking of ships. It includes the discharge of contaminated material, including bilge water, received from another ship or from a shore source. It does not include routine discharge of effluent incidental to the propulsion or operation of motor driven equipment on vessels.

***Dredging and disposal at sea can damage fish habitat.***

***DFO plays a regulatory and advisory role in dredging and as such, provides expert advice to DFO personnel on request.***

### 1.1 What Must Be Done

- Obtain permits before disposing at sea as required by the *Fisheries Act* and Part VI of *CEPA*. Permits may be obtained by contacting Environment Canada offices for an application, submitting it with a project proposal and $2,500 application fee. In the course of getting a *CEPA* permit, DFO is consulted by Environment Canada.
- Follow the environmental assessment process as required by CEAA.

### 1.2 What Should Be Done

- The removal of contaminated silt requires specialized dredging equipment and cannot be done effectively in normal dredging clams and barges. Environment Canada can provide advice on equipment available.
- Dredging operations should be minimized, and scheduled to minimize risk to fish and fish habitat.
- All interested stakeholders should be consulted.

# Chapter 6

## *Facilities Land Use Management*

## 1 THE ISSUE: ENVIRONMENTAL ASSESSMENT

An environmental assessment (EA) is simply good planning practice and should be conducted for all projects and activities regardless of legal requirements.

An environmental assessment is a study of a proposed project, and is carried out before irrevocable decisions are made. It includes an assessment of the need for the project; various alternatives to the project; potential social and environmental impacts; methods to reduce the potential for negative effects, methods to remediate problems when they occur; and the frequency and techniques for monitoring.

When conducting environmental assessments, federal departments must comply with *CEAA*, with the Cabinet Directive on *Environmental Assessment Process for Policy and Program*, and the *Federal Code of Environmental Stewardship*.

Compliance involves identification of projects requiring assessments, proper conduct of the assessment, reporting of the environmental assessment on the public registry, and conducting public consultations and follow up.

### 1.1 What Must Be Done

- Environmental assessments must be undertaken for projects specified in *CEAA*. The assessment must be filed on the public registry.
- Conduct an EA on major departmental policies and programs.

***An environmental assessment is a tool to help integrate environmental concerns into our planning and decision making.***

***In addition to being a proponent of its own projects, DFO has a regulatory role with respect to environmental assessments of projects referred for approval.***

### 1.2 What Should Be Done

- Perform an environmental assessment as a precaution if you are uncertain whether the project or activity requires one. In the time and effort it takes to determine if *CEAA* applies, a simple assessment or screening can be completed. It is good environmental practice to consider the impact of any activity prior to its undertaking.
- Gain a familiarity with the practice of environmental assessment in general and under *CEAA*.
- Gain a familiarity with *CEAA* through training, briefings, and reading.
- Incorporate environmental concerns into all policy analysis and policy proposals.
- Ensure that all funding applications and project approval documents contain a specific section detailing the environmental implications of the proposal.
- Ensure that anyone involved in managing infrastructure projects is familiar with *CEAA's* requirements.

- Conduct ongoing consultations with the public and stakeholders to review the environmental implications of your operations.
- Consult with other federal and provincial agencies who can provide expert or state of the art information on environmental effects and mitigation measures, particularly as we move to harmonized processes and administrative arrangements with provinces and other agencies.
- Where appropriate involve First Nations people in the environmental assessment process.
- Implement follow-up programs where necessary as part of the environmental process.

## 2 The Issue: Land Use

Land use management is a broad category involving the management of facilities and assets, as well as the conservation and management of natural resources through sensitivity mapping, landscape rehabilitation/reclamation, soil and water remediation, and correct use of land treatment substances (e.g. pesticides, herbicides, fertilizers). Natural resources include flora, fauna and surface water, groundwater, forests and minerals.

It is government policy to acquire, use and dispose of real property in a manner consistent with the principle of sustainable development *(Treasury Board Manual,* Chapter 8, Real Property Environment). Treasury Board requires that departments consider the risks to the environment when conducting property transactions. Each transaction could result in significant financial and environmental liabilities for a department, unless appropriate procedures are followed.

DFO has two mechanisms which assist in addressing real property environmental issues.

- Environmental Assessments are conducted to determine the environmental impact of future activities and/or projects.
- Environmental Site Investigations: Phase I Site Assessments should be completed for all property transactions to determine the possibility of contamination on a property prior to the transaction.

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***We should respect the land and environment.***

***Review the liability issues before transferring property.***

***DFO maintains land in sensitive ecosystems such as national parks and bird sanctuaries.***

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### 2.1 What Must Be Done

- Determine if a formal EA is required under the *CEAA* for any land transfer that you are undertaking. If it is required, then ensure that you review the environmental assessment, make the appropriate determination, and have the assessment placed on the public registry.

### 2.2 What Should Be Done

- Ensure that you have a detailed inventory of all land holdings for which you have responsibility.
- Review your holdings for ecologically significant lands or species.
- Document the potential impact on the ecologically significant fauna, contact local wildlife representatives for assistance in developing a management plan, inform the public about the plan, and implement and monitor your protection strategies.
- Conduct a full environmental investigation before acquiring or disposing of land.

# 3 THE ISSUE: FUEL STORAGE TANK MANAGEMENT

Bulk fuel storage tanks represent a major environmental and financial risk in government operations. Leaking underground storage tanks are one of the most common causes of soil contamination. Because of corrosion, improper installation, inferior design, abuse or overfilling, leaks can develop in storage tank systems and cause unsuspected off-site migration of contaminants, making the owner or operator liable for cleanup costs or penalties.

Even in very small quantities, petroleum can contaminate drinking water wells, taint fish, or kill vegetation. Studies have indicated that up to 20 percent of underground tanks are leaking. A leaking tank can cost over $100,000 to remediate, if surrounding groundwater is contaminated.

Bulk fuel storage necessitates control of the product in the tanks, training of the personnel conducting fuel transfers, preparation in case of a product spill, and tank registry. Contaminated sites are often the result of negligent and repeated spills of small quantities of fuel during fuel transfer operations.

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***Fuel tanks can leak petroleum products, which damage the environment and pollute water supplies.***

***In DFO, fuel is stored for heating systems, generators, vehicles, ships and aircraft. There are extensive fuel transfer operations in harbours, and waste oil is often stored in bulk tanks.***

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## 3.1 What Must Be Done

- Follow the new Registration of Storage Tank Systems for Petroleum and Allied Products on Federal Lands Regulations under *CEPA* Section 55. The new regulations require the upgrading or replacement of older tanks, as well as the registration of above ground storage tanks for petroleum products having a single or total capacity of more than 4,000 litres, and underground storage tanks for petroleum products or allied petroleum products.
- Develop a tank management and fuel handling plan. The plan must include procedures, timetables, and specifications for tightness testing, removing, replacing or upgrading tank systems, and adding acceptable leak-detection, spill-containment and overfill protection equipment.
- Follow the Technical Guidelines for underground storage tank systems containing petroleum and allied petroleum products.

## 3.2 What Should Be Done

- Include an ongoing monitoring and implementation schedule in your tank management plan.
- Undertake tank and piping integrity testing.
- Develop a phase-out plan for underground tanks.
- Replace all above ground tanks with more modern tanks that are a double walled vault design.
- Keep waste oil separate from waste solvents, antifreeze or other liquids. Contaminated oil cannot be easily recycled, and consequently disposal costs are higher.

- Store waste oil in a tank with secondary containment. Monitor its volume closely so that a licensed recycler can empty the tank as needed.
- Implement refuelling through reputable, commercial establishments.
- Conform to CCME Environmental Codes of Practice for Aboveground and Underground Storage Tank Systems.

# 4 THE ISSUE: SNOW REMOVAL OPERATIONS

Snow and ice control is an annual requirement in most locations in Canada. Activities normally involve snow removal and the application of chemicals and abrasives to reduce the potential hazards of snow and ice. Spillage or overuse of chemicals may result in soil or groundwater contamination, increased erosion or the contamination of surface run-off.

During the spring run-off, potential environmental impacts make the location of snow stockpiles critical. Snow and ice control may also include the use of glycol to de-ice aircraft, and urea on aircraft manoeuvring areas. These activities are not specifically regulated by federal, provincial or municipal legislation, although there are federal guidelines for the use of glycol.

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***Run-off of salt and ice-control chemicals can pollute our waters.***

***In DFO we clear our parking and aircraft manoeuvre areas.***

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## 4.1 What Must Be Done

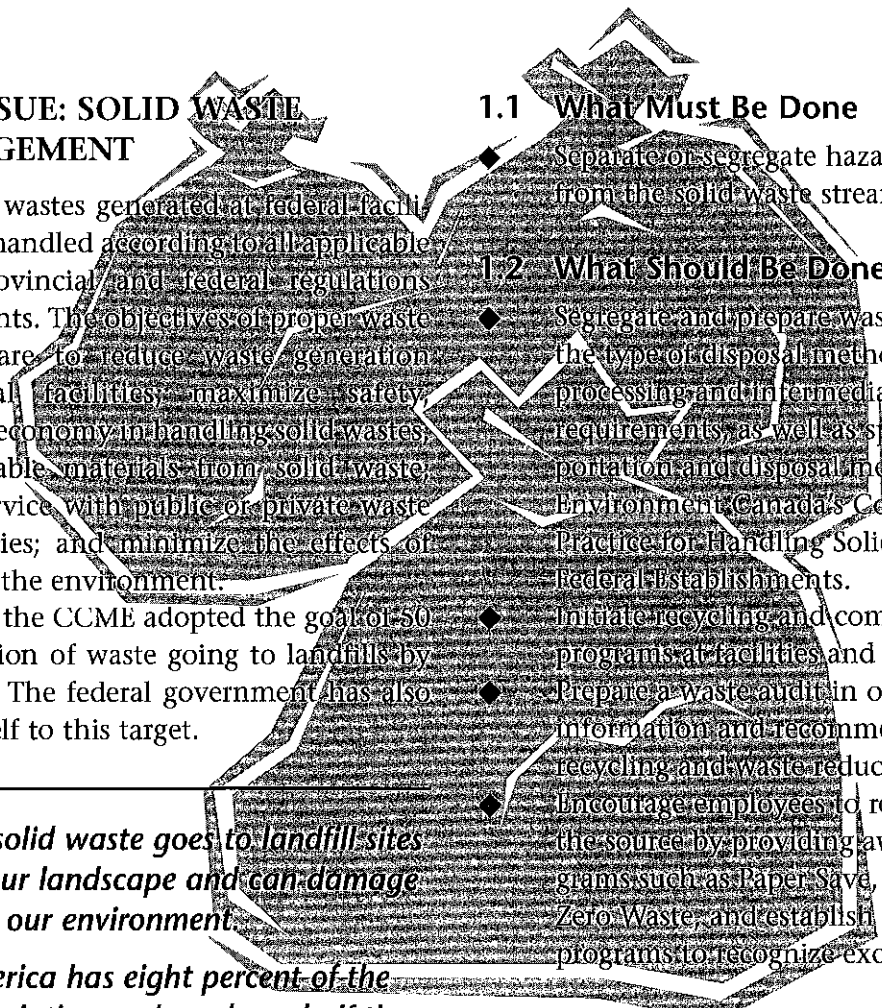
- Stormwater run-off from the site must meet whatever water quality guidelines exist for the body of water it runs into

## 4.2 What Should Be Done

- The location of snow stockpiles should be selected in order to minimize the effects of spring run-off on the environment.
- The application of chemicals to control ice hazards should be minimized while still protecting the safety of personnel.
- Identify or construct snow dump areas where the run-off can be controlled and monitored.

# Chapter 7

## *Solid Waste*



## 1 THE ISSUE: SOLID WASTE MANAGEMENT

All solid wastes generated at federal facilities should be handled according to all applicable municipal, provincial and federal regulations and requirements. The objectives of proper waste management are: to reduce waste generation within federal facilities; maximize safety, efficiency and economy in handling solid wastes; recover recyclable materials from solid waste; co-ordinate service with public or private waste disposal agencies; and minimize the effects of solid waste on the environment.

In 1989, the CCME adopted the goal of 50 percent reduction of waste going to landfills by the year 2000. The federal government has also committed itself to this target.

***Most of our solid waste goes to landfill sites which scar our landscape and can damage our environment.***

***North America has eight percent of the world's population and produces half the world's solid waste.***

### 1.1 What Must Be Done

- Separate or segregate hazardous waste from the solid waste stream.

### 1.2 What Should Be Done

- Segregate and prepare waste according to the type of disposal method, appropriate processing and intermediate storage requirements, as well as specific transportation and disposal methods. See Environment Canada's Code of Good Practice for Handling Solid Wastes at Federal Establishments.
- Initiate recycling and composting programs at facilities and on ships.
- Prepare a waste audit in order to provide information and recommendations for recycling and waste reduction.
- Encourage employees to reduce waste at the source by providing awareness programs such as Paper Save, No Waste, or Zero Waste, and establish a rewards/awards programs to recognize exceptional efforts.

## 2 THE ISSUE: BIOMEDICAL WASTE

The CCME has identified three main categories of biomedical waste: human anatomical waste, animal infectious waste and non-anatomical wastes. Biomedical wastes include items such as: cultures, stocks or specimens of micro

organisms, live or attenuated vaccines; human blood and blood products, body fluids and saturated items; and sharps capable of causing punctures or cuts. Biomedical waste does not include waste generated in the production of food or in general building maintenance, animal husbandry waste, or waste controlled in accordance with the *Health of Animals Act*.

Solid pathological wastes include such items as tissues, fish, and carcasses (human or animal), disposable garments, swabs, diapers, or any other material which has the potential to contain pathogenic bacteria. Liquid pathological wastes are generally produced at laboratories or research facilities and include potentially infectious body fluids.

***Appropriate handling of biomedical waste is vital in preventing the transmission of diseases.***

***DFO laboratories often deal with biological wastes, and Coast Guard ships may have medical clinics.***

## 2.1 What Must Be Done

- Dispose of untreated biomedical waste according to authorized procedures; do not place in landfill sites or in sanitary sewers.
- Follow prescribed standards when shipping biomedical wastes. They are classified as poisonous and infectious substances under *TDGA*.
- Provide pertinent training on the assessment of waste management procedures to all workers handling biomedical waste, in accordance with the *Canada Labour Code*. Ensure that all workers have the appropriate protective equipment.

## 2.2 What Should Be Done

- Biomedical waste should be handled according to CCME's *Guidelines for the Management of Biomedical Wastes in Canada*.
- All pathological wastes should be segregated and collected in clearly marked airtight, leak-proof containers. Biomedical waste should be segregated from other wastes at the point of generation.
- Biomedical waste should be refrigerated at 4°C, if stored for more than four days.
- Containers for pathological wastes should be colour coded as described in CCME's *Guidelines for the Management of Biomedical Waste in Canada*. Puncture-proof containers should be used for the collection of syringes, needles, Petri dishes and other similar materials.
- On-site storage should be as close to generation locations as possible, totally enclosed and separate from food preparation areas.

# Chapter 8

## *Water & Energy Management*

## 1 THE ISSUE: ENERGY AND WATER CONSERVATION

In addition to the benefit to the environment, the reduction of energy and water usage has been shown to provide significant cost savings to federal departments. Water and energy usage plans can be adopted at all government levels to facilitate efficient and effective energy and water conservation.

Natural Resources Canada's Federal Buildings Initiative (FBI) program provides assistance to departments in negotiating with private consultants and financial institutions for the funding of energy efficient building upgrades. A typical energy efficient upgrade can reduce energy operating costs by 15 to 20 percent. Such projects not only save money, but can also make a significant contribution toward Canada's overall goal of stabilizing $CO_2$ emissions.

***A leaking tap wastes more than 25 litres of water per day — that's 9,000 litres each year.***

***DFO has opportunities for cost savings by increasing energy efficiency in all its facilities.***

***Leaving your computer and desk lamp on every night will add about $100/year to your energy costs.***

### 1.1 What Must Be Done

- Endeavour to conserve Canadian resources and expenditures as part of *Greening Government Policy.*

### 1.2 What Should Be Done

- Conduct energy and water audits.
- Implement an energy and water management plan.
- Develop efficiency and conservation strategies and training/education programs.
- Consider equipment and facility retrofitting where economically effective.
- Monitor usage meters and implement a regular preventive maintenance program.
- Use grey water from showers and cleaning areas for landscaping and irrigation where municipalities permit.
- Ensure that contracts for energy efficiency projects contain energy performance clauses.

## 2 THE ISSUE: WASTEWATER AND STORMWATER MANAGEMENT

Wastewater and stormwater from facility operations require appropriate management to ensure that they do not create environmental problems.

Most undesirable and/or hazardous substances can be transported in water, either in solution or adhered to the surfaces of small particles. Thus, wastewater discharges, if not properly managed, can contaminate soil or groundwater. The subsequent clean-up of such

contamination can prove to be both expensive and difficult, and there may be environmental damage. Remember that our surface water is often our drinking water.

It is particularly important that government operations control and effectively treat stormwater run-off from finished surfaces and structures, since such run-off may carry undesirable and/or hazardous substances directly into freshwater or marine habitats.

The *Fisheries Act* requires any person who causes the release of a deleterious substance into waters frequented by fish to report the release to the authorities. Polluters may have to pay the cost of clean-up and mitigation, as well as fines exceeding $50,000 per day.

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***Any pollutant that is poured down drains or storm sewers will eventually find its way into our natural environment.***

***DFO generates wastewater from its offices and facilities, 'fishwater' from laboratories and stormwater run-off from parking and storage areas.***

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## 2.1 What Must Be Done

- Waste water from your facility discharged into a municipal sewer must meet local and provincial discharge requirements.
- Stormwater (such as from parking areas) from your facility must be free of toxic or harmful materials, solids or sludges, floating debris and oil or scum .

## 2.2 What Should Be Done

- Conduct a water use assessment for your facility and implement conservation measures to reduce the quantity of water used, and pollution prevention measures to improve the quality of water discharged.
- Treat effluent in accordance with direct-discharge standards prior to discharge to the sewer, if the local municipal wastewater treatment facilities do not provide secondary treatment. Guidelines for *Effluent Quality and Wastewater Treatment at Federal Establishments* indicate that dilution of an effluent prior to discharge is not acceptable and that secondary treatment is the minimum acceptable.
- An assessment should be conducted to inventory all outfall/release points and their sources, ensuring that contaminated flows are segregated.
- Facility wastewater should be sampled periodically to ensure that it meets the applicable discharge requirements. This may be annually or semi-annually, depending on the seasonal variation in discharge quantity and quality.
- Facility stormwater run-off should be sampled periodically to ensure that it meets guidelines. This may be annually or semi-annually, depending on the seasonal variation in discharge quantity and quality.
- Install stormwater interceptors in catch basins to separate oil and debris from stormwater run-off prior to its discharge off site.
- Adopt a policy aimed at voluntary compliance with the *Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments.*

# Chapter 9

## *Vehicle Fleet Management*

## 1 THE ISSUE: VEHICLES

*FleetWise* is a comprehensive program designed to green the federal government's vehicle fleet. This program includes driver training, vehicle maintenance, waste recycling, vehicle technology solutions and the use of alternative transportation fuels. The benefits of increased efficiency are lower fuel consumption, reduced tailpipe emissions, increased vehicle utilization, lower vehicle maintenance costs and decreased environmental impact resulting from vehicle use. *A Manager's Guide to Greening the Fleet: FleetWise* can be obtained from Natural Resources Canada.

Motor vehicles contribute substantially to the production of airborne pollutants and greenhouse gases that result in global warming. The *Alternative Fuels Act* applies when a federal agency purchases or leases a new automobile, passenger van or light truck for longer than 12 months. The Act requires that a proportion of these vehicles be capable of operating on one of the identified alternative fuels, where it is cost-effective and operationally feasible to do so. The alternative fuels identified are ethanol, methanol, propane, natural gas, hydrogen and electricity.

***Vehicles consume fossil fuels and are a significant contributor to air pollution, and to the negative health impacts of poor air quality.***

***In DFO a wide variety of vehicles are used.***

***Radial tires get three to five percent more fuel economy, and properly inflated tires a further ten percent.***

### 1.1 What Must Be Done

- Where feasible, ensure that 60 per cent of new cars, vans and light trucks acquired in 1998–99 (75 per cent in 1999–2000) use alternative fuels.

### 1.2 What Should be Done

- Conduct driver training, and ensure that all drivers receive a copy of the Green Fleet Checklist.
- Consider adopting Natural Resources Canada's *FleetSmart Program, which includes the Pro-Trucker Program,* if your fleet includes trucks or other heavy vehicles.
- Ensure correct maintenance practices, use of pre-trip checklists, regular tune-ups, and regular inspection of the emission control systems.

- Ensure that your garage recycles all your automotive wastes, including oil, anti-freeze, lubricants, batteries, and tires.
- Ensure that fuel storage tanks are in compliance and that fuel inventory is maintained and reconciled/updated on a regular basis.
- Confirm that air conditioning units are regularly tested for leaks, and that your garage has the capability of recovering and correctly disposing of the ozone-depleting substances.
- Review and log your routes so that conversion to alternative fuels can be planned.
- Ensure that the vehicle servicing area and/or garage where your vehicles are maintained is in environmental compliance.

# Chapter 10

## *Green Office Practices*

## 1 THE ISSUE: GREEN OFFICE

The goal of an environmentally responsible office is to make the most efficient use of all resources and reduce waste in order to minimize negative effects on the environment. Reduced consumption and waste translate into financial savings. In nearly all cases, any initial expenditures needed to transform an office into one that is "green" are offset by the resulting long-term savings.

Volatile organic compounds (VOCs) are chemicals typically released from many construction and furnishing products, including solvents, adhesives, wood finishes, retardants, sealers, and waxes. VOCs contribute to ground-level ozone, a pollutant that causes eye, nose and throat irritation.

***Protecting the environment, improved indoor air quality and reducing costs are some of the benefits of a green office.***

***Paper accounts for about 35% of municipal garbage by weight.***

***A typical office worker can send 500 disposable cups to landfill each year.***

### 1.1 What Should be Done

- Produce only double-sided documents, cutting paper consumption by up to 50 percent.
- Circulate documents and post notices electronically or on a central memo board rather than distributing multiple copies.
- Edit documents on-screen rather than printing unnecessary draft copies.
- Use electronic mail rather than hard copies for both internal and external distribution.
- Return cerlox bindings and binders for reuse.
- Collect paper that has previously been used on one side and reuse it within the office for fax messages, draft documents and notepads. To avoid confusion, stroke out the previously used side.
- Turn off lights when they are not needed.
- Turn off personal computers if they will be idle for two hours or more. Shared office equipment, including printers and photocopiers, should be turned off at the end of the day.
- Use your own mug for coffee at your desk and at internal meetings, and have additional mugs available for visitors to the office.
- Recycle solid waste.

- Reuse supplies rather than replacing them. Designate an area in the office for used supplies such as binders, diskettes, padded envelopes and file folders.
- Use products certified by the Environmental Choice Program, such as refilled toner cartridges and energy-efficient light bulbs.
- Use products with the highest recycled content available, including a high proportion of post-consumer content. In the case of paper products (such as envelopes, copy paper and file folders), unbleached, non-deinked products are best.
- Buy reusable and durable supplies, such as rechargeable batteries and mechanical pencils.
- Use products with minimal packaging, such as bulk coffee, cream and sugar, rather than individually portioned packages.
- Develop a green procurement program.
- Consult *The Green Renovation Guide* at www.buygreen.com/gcg
- Consider the use of a composter to compost organic waste on site.

# Appendix A

## *Federal Code of Environmental Stewardship*

The Government of Canada fully supports the principle of sustainable development. To reflect this commitment in all aspects of its operations and activities, from facilities and real property management to procurement and waste management, the government commits:

- To integrate environmental concerns with operational, financial, safety, health, economic development and other relevant concerns in decision-making.
- To meet or exceed the letter and spirit of all applicable federal environmental laws and, where appropriate, to be compatible with provincial and international standards.
- To improve the level of awareness throughout the public service of the environmental and health benefits and risks of operational decisions, and to encourage and recognize employee actions.
- To apply environmentally responsible management practices to hazardous substances used in operations, including biological products, specifically with regard to the acquisition, handling, storage, safety in use, transportation and disposal of such substances.
- To ensure that environmental considerations are integrated into government purchasing policies and practice.
- To seek cost-effective ways of reducing the input of raw materials, toxic substances, energy, water and other resources, and of reducing the generation of waste and noise associated with day-to-day operations.
- To acquire, manage and dispose of lands in a manner that is environmentally sound, including the protection of ecologically significant areas.

### Sustainable Development

*Humanity has the ability to make development sustainable — to ensure that it meets the needs of the present without compromising the ability of future generations to meet their needs.*

Our Common Future, World Commission on Environment and Development, 1987

# Appendix B

## Glossary

**ARET** Accelerated Reduction/ Elimination of Toxics

**Audit Criteria** The norms or standards on which decisions may be based. Often formulated as rules, principles or regulations, they can be use by auditors to evaluate an operation's economy, efficiency and effectiveness, as well as its performance against the newer criterion of sustainability.

**CCME** Canadian Council of Ministers of the Environment

**CEAA** *Canadian Environmental Assessment Act*

**CEPA** *Canadian Environmental Protection Act*

**Cradle-to-Grave Management** An approach to managing industrial, hazardous and other wastes from the point of generation (the 'cradle'), to the point of final treatment and disposal (the 'grave').

**Due Diligence** A legal concept requiring that activities be undertaken with the attention and care legally required or generally expected and accepted by qualified peers to be appropriate.

**Effluent** Liquid waste, often from industrial processes. In many cases, effluent contains harmful contaminants which must be removed by treatment processes before it can be released into the environment.

**Emissions** Waste, often from industrial processes, in the form of gases or suspensions of fine particles released into the atmosphere. Air emissions often contain harmful contaminants which must be reduced to acceptable concentration levels.

**Environmental Assessment (EA)** An environmental study of a proposed project. The study may include an assessment of the need for the project; various alternatives to the project; potential social and environmental impacts; ways to reduce the potential for negative effects; methods to remediate any problems which do occur; and monitoring techniques and frequency.

**Environmental Audit** A systematic study of the environmental performance of an operation to obtain and evaluate objective information and communicate it to appropriate parties for the purpose of improving performance.

**Environmental Auditor** An individual of suitable competence, experience, and training who carries out an environmental audit. This environmental professional is generally qualified to carry out a range of environmental investigations of which the specific activities of auditing are only a part.

**Environmental Choice** A registered trade mark allowed by the federal government on particular items or brands which meet specific criteria, indicating that these items or brands are considered less harmful for the environment than others.

**Environmental Health** Aspects of human health and quality of life that are determined by physical, biological, social and psycho-social factors in the environment. Refers to a theory and practice of assessing, correcting, controlling and preventing those factors in the environment that can adversely affect the health of present and future generations.

**Environmental Investigation** Any examination of the environmental condition, performance or potential performance of a site or operation.

**Environmental Liability Assessment** An examination of the environmental condition of a site with specific focus on the potential for civil liability.

**Environmental Management System (EMS)** That part of the overall management system which develops, implements, achieves, reviews and maintains environmental policy.

**Environmental Manager** An individual position carrying responsibility for co-ordinating business activities related to the environmental performance of an operation, including review, evaluation, recommendation for and co-ordination of action for improvement and response to outside influences.

**Environmentally Friendly** A term, often used as a marketing tool, which many people think means 'good for the environment'. It may mean that based on current information the product or package causes less harm than many of its competitors.

**Environmentally Responsible** A term used to describe activities carried out, or choices made, taking into account the potential impact of those activities or choices on the environment. Note that it is not the products but the decisions, which are environmentally responsible (e.g. the choice to buy bulk food items and to use reusable shopping bags).

**Garbage** Used material people no longer want and for which they can find no further use. Unfortunately, much of what we call garbage often contains many reusable or recyclable items.

**Guideline** An indication or outline of conduct which carries the force of good judgment, but lacks the greater authority of a standard.

**Hazard** Any inherent physical or chemical characteristic of a material or system which gives it the capacity to damage the environment or adversely affect human health and well-being.

**Hazardous Materials** Materials which are potentially harmful to living organisms because they are corrosive, inflammable, reactive or toxic. These items cannot normally be included with municipal solid waste.

**HPA** *Hazardous Products Act*

**Landfill Site** An area of land used for the burial of wastes under controlled conditions.

**Life-cycle Analysis** A way of determining the total amount of resources and energy used and waste generated by a particular product at all stages of its development. Life-cycle analysis is still a relatively new science.

**MARPOL 73/78** Refers to the International Convention for the Prevention of Pollution from Ships. The convention imposes mutually agreed-upon restrictions aimed at worldwide prevention of marine pollution. Canada became a party to MARPOL 73/78 in 1993.

**Mitigation** The elimination, reduction, or control of an adverse environmental effect of a project. Mechanisms can include avoidance, prevention, replacement, restoration, or compensation.

**NWPA** *Navigable Waters Protection Act*

**ODS** Ozone-depleting substances. Substances that contribute to the break down of the earth's protective, ozone layer.

**Phase 1 Site Assessment** A brief examination of the environmental condition of a physical site, including the land, buildings and building contents. The purpose is to identify potential environmental liabilities.

Phase 1 Assessment uses information obtained from files, historical records, regulatory agency records, desktop survey and other sources.

**Phase 2 Site Investigation** A study of the nature and preliminary quantitative importance of environmental problems identified in a Phase 1 Site Assessment. In general, a Phase 2 Site Investigation is intrusive, in that it requires physical sampling and testing of the site contents to gather the desired information.

A Phase 2 Site Investigation may be contingent on findings of a Phase 1 Site Assessment, or may be carried out separately to define environmental conditions quantitatively.

**Phase 3 Remediation Alternatives Assessment** Quantitatively determines the extent of the contamination of a site with sufficient accuracy to support decisions concerning remedial action.

**Polychlorinated Biphenyls (PCBs)** A group of very stable organic compounds. PCBs had a variety of uses, mostly as electrical insulating fluids, until the mid-1970s, when they were banned for use in Canada because they persist in the environment and are carcinogens. In Ontario, anything containing PCBs is considered to be a hazardous material.

**Protocol** A protocol is a procedure for carrying out an environmental audit, organized as a routine combined with application of experienced judgment to deal with any necessary departures from standard procedures.

**Proponent** The person, body, or authority that proposes a project.

**Regulatory Compliance Audit** A systematic, periodic review of the achievements of an organization based on quality of performance in monitoring, reporting and meeting established policy using the formal legislated and regulated requirements as a benchmark.

**Risk Assessment** Risk is a combination of the probability of an occurrence and the damage that the occurrence would cause. Risk assessment is the evaluation of potential hazards, the mechanisms and routes (pathways) by which these hazards might impact on the environment and the probability that these impacts might occur.

**SDS** Sustainable Development Strategy

**Standards** Criteria established by authority, custom, or general consent as a model, example and/or a measure of quality.

**TDGA** *Transport of Dangerous Goods Act*

**WHMIS** Workplace Hazardous Materials Information System

# Appendix C

## Reference Material and Suggested Reading

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- Environment Canada. *The Environmentally Responsible Construction & Renovation Handbook.*
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- **Air Quality** Health Canada. *Indoor Air Quality in Office Buildings: A Technical Guide.* 1993.
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- **Vehicles** Government of Canada. *A Manager's Guide to Greening the Fleet.* 1995.

# Appendix D

## *Sources of Information*

**Canadian Council of Ministers of the Environment**
*Mail:* CCME Secretariat 326 Broadway, Suite 400, Winnipeg, Manitoba R3C 0S5
*Internet site:* http://www.mbnet.mb.ca/ccme/index.html
*Telephone:* (204) 948-2090
*Fax:* (204) 948-2125

**Canadian Environmental Assessment Agency**
*Mail:* 200 Sacre Coeur Blvd, 14th Floor Hull, Quebec K1A 1H3
*Telephone:* (819) 997-1000
*Fax:* (819) 994-1469

**Environment Canada's Green Lane**
*Internet site:* http://www.ec.gc.ca
*E-mail:* grngvt@cpgsv1.am.doe.ca
*Telephone:* 1-800-734-3232

**Environment Canada's Inquiry Centre**
*Mail:* Enquiry Centre, Environment Canada, Ottawa, Ontario K1A 0H3
*E-mail:* enviroinfo@cpgsv1.am.doe.ca
*Telephone:* 1-800-668-6767
*Fax:* (819) 953-2225

**Natural Resources Canada**
*Internet site:* http://eeb-dee.nrcan.gc.ca/fleetsmart
*Mail:* c/o Canada Communication Group, Ottawa, Ontario K1A 0S9
*E-mail:* Fleet.Smart@es.nrcan.gc.ca
*Telephone:* (819) 997-1107
*Fax:* (819) 994-1498

**Canadian Environmental Protection Act Office**
*Mail:* Environmental Protection Service, Environment Canada, Ottawa, Ontario K1A 0H3
*Telephone:* (819) 953-0152
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**Canadian Standards Association**
*Mail:* 178 Rexdale Boulevard, Etobicoke, Ontario M9W 1R3
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**Health Canada**
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# Appendix E

## *Environmental Contacts in DFO*

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