



# Survey of Environmental Protection Expenditures, 2004

Confidential when completed

Collected under the authority of the *Statistics Act*, Revised Statutes of Canada, 1985, Chapter S19.

Si vous préférez ce questionnaire en français, veuillez cocher

### Correct as required

Company name

Establishment name

C / O

Address

City

Province/Territory

Postal code



## Please read before completing

### PURPOSE OF THE SURVEY

This survey provides a measure of the expenditures made by industry for environmental protection in Canada in response to Canadian and international environmental regulations, conventions and voluntary agreements. The survey also aims at identifying environmental management practices and technologies used in Canadian industry for the purpose of preventing or abating pollution. These data will be aggregated with information from other sources to produce official estimates of environmental protection expenditures.

The results of this survey will be published in the Statistics Canada publication *Environmental Protection Expenditures in the Business Sector, 2004*, Catalogue No. 16F0006XIE.

### CONFIDENTIALITY

Statistics Canada is **prohibited by law** from publishing any statistics which would divulge information obtained from this survey that relates to any identifiable respondent, without the previous written consent of that respondent. The data reported will be treated in strict confidence, used for statistical purposes and published in aggregate form only. The confidentiality provisions of the *Statistics Act* are not affected by either the *Access to Information Act* or any other legislation.

### AUTHORITY

This survey is conducted under the authority of the *Statistics Act*, Revised Statutes of Canada, 1985, Chapter S19. **COMPLETION OF THIS QUESTIONNAIRE IS A LEGAL REQUIREMENT UNDER THE STATISTICS ACT.**

### INQUIRIES

If you require assistance in completing this questionnaire or if you have any questions or comments regarding this survey, please refer to the *Guide to Definitions and Classification Details* found at the end of this questionnaire or contact:

**Operations and Integration Division  
Statistics Canada  
Ottawa, ON, Canada, K1A 0T6**

Telephone (toll-free): **1-800-255-7726**

Fax: **1-800-755-5514**

Email: **enviro.oid.exp@statcan.ca**

The questionnaire is available in an electronic spreadsheet format. Please contact the Operations and Integration Division if you prefer to use this reporting option.

In all correspondence concerning this questionnaire, please quote the identification number that appears on the address label.

**Important** : Please read the *Guide to Definitions and Classification Details* included at the end of this form before answering. If your response for an item is zero, please write "0" in the corresponding box rather than leaving the cell blank.

**Please return this questionnaire within 30 days of receipt.**

If you are unable to do so, kindly inform the Operations and Integration Division of the expected completion date.

For Statistics Canada use only

|      |   |   |  |
|------|---|---|--|
| Rec. |   |   |  |
| Y    | M | D |  |

|     |   |   |  |
|-----|---|---|--|
| Ed. |   |   |  |
| Y   | M | D |  |

|      |   |   |  |
|------|---|---|--|
| Kyd. |   |   |  |
| Y    | M | D |  |

|      |  |  |  |
|------|--|--|--|
| Bat. |  |  |  |
|      |  |  |  |

|       |  |
|-------|--|
| Coll. |  |
|       |  |

|     |  |
|-----|--|
| FSC |  |
|     |  |

**Please report in thousands of Canadian dollars**

**1. Reporting year**

Report must cover your most recent fiscal year that **ended** any time between **April 1, 2004 and March 31, 2005.**

**From**

| Year |  |  |  | Month |  | Day |  |
|------|--|--|--|-------|--|-----|--|
| 010  |  |  |  |       |  |     |  |

**to**

| Year |  |  |  | Month |  | Day |  |
|------|--|--|--|-------|--|-----|--|
| 040  |  |  |  |       |  |     |  |

If the reporting period is less than 12 months, please indicate the circumstances in the Comments section at the end of the questionnaire.

**2. Environmental monitoring**

*If the expenditure is zero, please write "0" in corresponding box.*

**Include**

- ◆ Expenditures related to equipment, supplies, labour and purchased services required for monitoring pollutants emitted by this establishment. Expenditures associated with participation in the National Pollutant Release Inventory (NPRI) and other similar programs are to be included

| Operating expenses | Capital expenditures | Total       |
|--------------------|----------------------|-------------|
| \$ '000 CDN        | \$ '000 CDN          | \$ '000 CDN |
| 100                | 110                  | 120         |

**3. Environmental assessment and audits**

*If the expenditure is zero, please write "0" in corresponding box.*

**Include**

- ◆ Expenditures for reviews of current operations for compliance with regulations (audits)
- ◆ Expenditures to evaluate the environmental impact of proposed programs or projects (assessments)
- ◆ Expenditures for associated legal and consulting costs

| Operating expenses | Capital expenditures | Total       |
|--------------------|----------------------|-------------|
| \$ '000 CDN        | \$ '000 CDN          | \$ '000 CDN |
| 130                | 140                  | 150         |

**4. Site reclamation and decommissioning**

*If the expenditure is zero, please write "0" in corresponding box.*

**4.1 Expenditures on site reclamation made during your fiscal year 2004 for any active site belonging to your establishment**

| Operating expenses | Capital expenditures | Total       |
|--------------------|----------------------|-------------|
| \$ '000 CDN        | \$ '000 CDN          | \$ '000 CDN |
| 161                | 171                  | 181         |

**4.2 Expenditures on site decommissioning made during your fiscal year 2004 following the closing down of a site (even if closing occurred before 2004)**

| Operating expenses | Capital expenditures | Total       |
|--------------------|----------------------|-------------|
| \$ '000 CDN        | \$ '000 CDN          | \$ '000 CDN |
| 162                | 172                  | 182         |

**Exclude**

- ◆ Fines or compensation for environmental damage (this is to be reported in Question 8)
- ◆ Provisions for future environmental liability

**Please report in thousands of Canadian dollars**

**5. Protection and restoration of wildlife and habitat**

If the expenditure is zero, please write "0" in corresponding box.

**Include**

- ◆ Expenditures made to protect or restore wildlife and habitat that could be or have been adversely affected by this establishment's operations

**Exclude**

- ◆ Expenditures for site reclamation and decommissioning which are already reported in Question 4
- ◆ Expenditures for aesthetic purposes

| Operating expenses | Capital expenditures | Total       |
|--------------------|----------------------|-------------|
| \$ '000 CDN        | \$ '000 CDN          | \$ '000 CDN |
| 190                | 200                  | 210         |

**6. Pollution abatement and control (end-of-pipe processes) and waste management**

Abatement and control of pollution are performed using end-of-pipe equipment or installations. **These end-of-pipe processes are not an integral part of production;** their sole purpose is to abate or to control undesirable substances resulting from normal production. *Refer to page 13 of this questionnaire.*

**6.1 Pollution abatement and control and waste management expenditures**

If the expenditure is zero, please write "0" in corresponding box.

**Include**

- ◆ Expenditures for equipment or facilities that are separately identifiable and that have been installed exclusively to reduce or eliminate pollutants resulting from production
- ◆ Expenditures related to hazardous and non-hazardous waste collection, disposal and treatment done by your establishment's or company's employees not already reported in Question 4 or 5
- ◆ Purchase of hazardous and non-hazardous waste services not already reported in Question 4 or 5. Any sewerage management services or any other purchase of services reported in Question 11

**Exclude**

- ◆ Expenditures specific to workers' health and safety
- ◆ Expenditures on waste management or services reported in Question 4 or 5
- ◆ Expenditures for on-site recycling (Question 7)

| Operating expenses | Capital expenditures | Total       |
|--------------------|----------------------|-------------|
| \$ '000 CDN        | \$ '000 CDN          | \$ '000 CDN |
| 250                | 220                  | 270         |

**6.2 Did you report capital expenditures in Question 6.1 (cell 260)?**

- Yes     No <sup>275</sup> ► *Go to Question 6.3*



What proportion of capital expenditures reported in Question 6.1 (cell 260) was spent on reducing or abating each of the following? *Refer to page 13 of this questionnaire.*

| Substances released to air | Substances released to surface waters | On-site releases to land/underground injection | Noise, vibration or radiation |
|----------------------------|---------------------------------------|--|-------------------------------|
| 280 %                      | 290 %                                 | 300 %  | 310 %                         |

**= 100%**

**6.3 Does your establishment track the quantity (kg, tonnes, etc.) of non-hazardous solid waste it produces?**

- Yes     No <sup>2050</sup>

**Does this establishment record the share of its non-hazardous solid waste that is disposed of versus that which is recycled or reused?**

- Yes     No <sup>2055</sup>

**7. Pollution prevention**

"Pollution prevention is the use of processes, practices, materials, products or energy that avoid or minimize the creation of pollutants and waste, and reduce overall risk to human health or the environment."

*Pollution Prevention - A Federal Strategy for Action, Government of Canada (1995)*

This question identifies expenditures and methods used for the purpose of preventing or minimizing pollution and waste, or promoting resource conservation. **Refer to page 13 of this questionnaire.**

**7.1 Expenditures on pollution prevention**

*If the expenditure is zero, please write "0" in corresponding box.*

**Include**

- ◆ Expenditures for equipment or facilities integrated to a production process that avoid or minimize the production of pollutants and waste
- ◆ Expenditures for equipment or facilities related to leak and spill prevention. They may include expenditures on the following: spill containments; dyke extensions; and accessories (valves, pumps)
- ◆ Expenditures for equipment or facilities used for conserving energy or water
- ◆ Expenditures for equipment or facilities associated with recirculation, recovery, reuse and **on-site** recycling of materials or substances
- ◆ Expenditures related to operational or process changes aimed at pollution prevention. Examples include product re-design (e.g., feedstock/raw material substitution), good operating practices (e.g., modification of process, staff training), etc.

**Exclude**

- ◆ Expenditures specific to workers' health and safety
- ◆ Expenditures already included in Questions 2 to 6

| Operating expenses | Capital expenditures | Total       |
|--------------------|----------------------|-------------|
| \$ '000 CDN        | \$ '000 CDN          | \$ '000 CDN |
| 500                | 510                  | 520         |

**7.2 Did you report capital expenditures in Question 7.1 (cell 510)?**

Yes   
  No <sup>525</sup> ► *Go to Question 7.3*  
 ▼

**What proportion of capital expenditures reported in Question 7.1 (cell 510) was spent on preventing or minimizing each of the following? Refer to the information for Question 6.2 on page 13 of this questionnaire.**

| Substances released to air | Substances released to surface waters | On-site releases to land/ underground injection | Noise, vibration or radiation | Other |
|----------------------------|---------------------------------------|---|-------------------------------|-------|
| 530 %                      | 540 %                                 | 550 %   | 560 %                         | 570 % |

**= 100 %**

**Please report in thousands of Canadian dollars**

**7. Pollution prevention (Concluded)**

**7.3 Pollution prevention methods**

If you prevented or reduced waste, pollutants or conserved resources in your fiscal year 2004, please indicate how it was achieved by checking the appropriate box(es). Please include all projects whether or not they are required by regulation, convention or voluntary agreement. Refer to page 13 of this questionnaire for a description of each method.

|   | Yes                          | No                       |
|---|------------------------------|--------------------------|
| Product design or reformulation . . . . .   | 810 <input type="checkbox"/> | <input type="checkbox"/> |
| Equipment or process modifications (integrated process) . . . . .                             | 830 <input type="checkbox"/> | <input type="checkbox"/> |
| Recirculation, on-site recycling or reuse or recovery of materials or substances . . . . .    | 850 <input type="checkbox"/> | <input type="checkbox"/> |
| Materials or feedstock substitution, solvent reduction, elimination or substitution . . . . . | 870 <input type="checkbox"/> | <input type="checkbox"/> |
| Improved inventory management or purchasing techniques . . . . .                              | 875 <input type="checkbox"/> | <input type="checkbox"/> |
| Prevention of leaks and spills . . . . .  | 880 <input type="checkbox"/> | <input type="checkbox"/> |
| Good operating practices or pollution prevention training . . . . .                           | 885 <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Other (Please specify)</b> . . . . .   | 890 <input type="checkbox"/> | <input type="checkbox"/> |

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**8. Environmental charges**

If the expenditure is zero, please write "0" in corresponding box.

\$ '000 CDN

|     |
|-----|
| 760 |
|-----|

**Include**

- ◆ Permits, fees, levies, special assessment and related fees
- ◆ Any fines, penalties, or damage awards paid to government agencies or to individuals
- ◆ Other charges paid to regulating bodies in order to allow operations to take place at this establishment

**9. Other environmental protection expenditures**

If the expenditure is zero, please write "0" in corresponding box.

\$ '000 CDN

|     |
|-----|
| 770 |
|-----|

**Include**

- ◆ The operating costs of administrating your environmental program not included elsewhere
- ◆ Environmental training and information programs not included elsewhere
- ◆ Any other additional expenditures not specified elsewhere that are required to comply with environmental regulations, conventions or voluntary agreements

**Exclude**

- ◆ Research and development expenditures



**12. Greenhouse gas emission reduction technologies**

**12.1 Did this establishment extract, refine, transport or distribute fossil fuels (e.g., coal, bitumen, crude oil or natural gas) in your fiscal year 2004?**

Yes  Go to Question 12.2      No  <sup>2000</sup> Go to Question 12.3

**12.2 Did this establishment use systems or equipment to reduce fugitive or vented greenhouse gas emissions in your fiscal year 2004?** Refer to page 14 of this questionnaire for the definition of fugitive greenhouse gas emissions and related technologies.

Yes       No  <sup>2001</sup>

**Did this establishment use systems or equipment to reduce greenhouse gas emissions other than fugitive or vented emissions (e.g., from the combustion of fossil fuels)?**

Yes       No  <sup>2002</sup>

**12.3 Did this establishment generate electricity in your fiscal year 2004?**

Yes  Go to Question 12.4      No  <sup>1999</sup> Go to Question 12.5

**12.4 Did this establishment use systems or equipment to reduce greenhouse gas emissions from the generation of electricity in your fiscal year 2004?** Refer to page 14 of this questionnaire for examples and the definition of fugitive greenhouse gas emissions and related technologies.

Yes       No  <sup>2003</sup>

**12.5 Did you use one or more of the following systems or equipment in your fiscal year 2004?**

Please check all that apply. Refer to page 14 of this questionnaire for a description of each technology or process.

|  |      | Yes                      | No                       |
|--|------|--------------------------|--------------------------|
| 1. Cogeneration .....  | 1282 | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Alternative fuel systems or equipment .....   | 2006 | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Fuel substitution .....   | 1284 | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Waste energy recovery/reuse (e.g., heat recovery) .....                             | 2031 | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Use of energy management or monitoring system(s) to improve efficiency .....        | 2032 | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Performed energy audit in the last three years (2002-2004) .....                    | 2033 | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Other systems, equipment or employee training that improved energy efficiency ..... | 1292 | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Please specify most important</i>   |      |                          |                          |
| _____  |      |                          |                          |
| _____  |      |                          |                          |

**Renewable energy source:**

|   |      | Yes                      | No                       |
|---|------|--------------------------|--------------------------|
| 8. Small, mini- or micro-hydroelectric facility .....             | 2004 | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Solar energy systems or equipment .....                        | 1288 | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Wind energy systems or equipment .....                        | 1289 | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Biomass energy (e.g., energy crops and waste-to-energy) ..... | 1285 | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Geothermal .....  | 1290 | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. Other renewable energy systems or equipment .....             | 2005 | <input type="checkbox"/> | <input type="checkbox"/> |
| <i>Please specify most important</i>                              |      |                          |                          |
| _____   |      |                          |                          |
| _____   |      |                          |                          |

**Please report in thousands of Canadian dollars**

**12. Greenhouse gas emission reduction technologies (Continued)**

**12.6** Did you answer "Yes" to any part of Questions 12.2, 12.4 or 12.5?

Yes  Go to Question 12.7

No  2007 Go to Question 12.9

**12.7** What were your operating expenses and capital expenditures in fiscal year 2004 on the systems or equipment reported in Question 12.2, 12.4 or 12.5? *If the expenditure is zero, please write "0" in the corresponding box. Your best estimate is acceptable.*  
Please exclude fuel costs.

| Operating expenses<br>\$ '000 CDN |   | Capital expenditures<br>\$ '000 CDN |   | Total<br>\$ '000 CDN              |
|-----------------------------------|---|-------------------------------------|---|-----------------------------------|
| <input type="text" value="2008"/> | + | <input type="text" value="2009"/>   | = | <input type="text" value="2010"/> |

**12.8** What proportion of your capital expenditures in fiscal year 2004 on machinery and equipment that reduced your greenhouse gas emissions was spent on goods manufactured in Canada? *If the proportion is zero, please write "0" in the corresponding box. Your best estimate is acceptable.*

|                                   |   |
|-----------------------------------|---|
| <input type="text" value="2011"/> | % |
|-----------------------------------|---|

**12.9** During the last three years, 2002 to 2004, did this establishment put into operation new or significantly improved systems or equipment that reduced greenhouse gas emissions? *Refer to page 15 of this questionnaire for a description of "new or significantly improved".*

Yes

No  2012 Go to Question 12.10

**Rank the overall impact of these new or significantly improved systems or equipment to reduce greenhouse gas emissions. Please check the appropriate box.**

2013  Low

2014  Moderate

2015  High



## 12. Greenhouse gas emission reduction technologies (Concluded)

### 12.10 Obstacles and drivers

During the last three years, 2002 to 2004, which of the following factors were obstacles or drivers to the adoption of new or significantly improved systems or equipment to reduce greenhouse gas emissions?

Please check all that apply.

#### Possible obstacles

Indicate the obstacles even if the system or equipment was not adopted.

- |   |      |                          |
|---|------|--------------------------|
| 1. Lack of information or knowledge related to new or significantly improved systems or equipment . . .         | 2016 | <input type="checkbox"/> |
| 2. Lack of available new or significantly improved systems or equipment. . . . .                                | 2017 | <input type="checkbox"/> |
| 3. Lack of skilled personnel to put new or significantly improved systems or equipment into operation . . . . . | 2018 | <input type="checkbox"/> |
| 4. High cost of equipment . . . . .   | 2019 | <input type="checkbox"/> |
| 5. Lack of financing (internal, private or government) . . . . .  | 2020 | <input type="checkbox"/> |
| 6. Regulatory/policy barriers . . . . .   | 2021 | <input type="checkbox"/> |
| 7. Other (Please specify) _____   | 2022 | <input type="checkbox"/> |
| 8. None . . . . .   | 2023 | <input type="checkbox"/> |

#### Possible drivers

- |   |      |                          |
|---|------|--------------------------|
| 1. Sufficient return on investment . . . . .    | 2024 | <input type="checkbox"/> |
| 2. Regulations . . . . .                        | 2025 | <input type="checkbox"/> |
| 3. Voluntary agreement . . . . .                | 2026 | <input type="checkbox"/> |
| 4. Public relations . . . . .                   | 2027 | <input type="checkbox"/> |
| 5. Corporate policy/culture/awareness . . . . . | 2028 | <input type="checkbox"/> |
| 6. Other (Please specify) _____                 | 2029 | <input type="checkbox"/> |
| 7. None . . . . .                               | 2030 | <input type="checkbox"/> |

### 13. Environmental management practices

Please indicate the environmental management practices adopted or utilized by this establishment in your fiscal year 2004 to avoid or minimize pollution or to conserve resources. Refer to page 15 of this questionnaire for a description of each practice.

- |  | Yes                          | No                       |
|--|------------------------------|--------------------------|
| 1. Did this establishment use an environmental management system? .....  | 951 <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Did this establishment use Life Cycle Management, Life Cycle Assessment or Design for Environment for decision making? .....                | 965 <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Was this establishment ISO 14000 certified? .....   | 953 <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Did this establishment develop and implement a pollution prevention plan? .....   | 970 <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Did this establishment implement any environmental voluntary agreement, or did it participate in any voluntary environmental program? ..... | 955 <input type="checkbox"/> | <input type="checkbox"/> |
| Examples include Environmental Performance Agreements (EPAs) or Voluntary Challenge and Registry (VCR).  |                              |                          |
| <i>If yes, please list programs, accords or agreements.</i>  |                              |                          |

---

---

---

---

---

---

---

---

---

---

- |  |                              |                          |
|--|------------------------------|--------------------------|
| 6. Did this establishment have a "green" procurement policy? .....   | 957 <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Were any of the goods produced by this establishment certified by an environmental program, such as the "Enviro Choice Program" operated by Terrachoice Inc.? .....   | 959 <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Did this establishment publish or contribute to annual or other reports on its environmental performance or sustainable development? .....  | 963 <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Did this establishment experience any cost savings as a result of implementing any of the environmental management practices outlined in this question or environmental technologies outlined in Question 4 or pollution prevention methods outlined in Question 7? ..... | 969 <input type="checkbox"/> | <input type="checkbox"/> |
| 10. <b>Other</b> (Please specify) .....  | 967 <input type="checkbox"/> | <input type="checkbox"/> |

---

---

---

---

---

---

---

---

---

---





## Survey of Environmental Protection Expenditures

### Guide to Definitions and Classification Details



#### Definitions

##### **Establishment**

An establishment is defined as the most homogeneous unit of production for which a business maintains accounting records. From these accounting records, it is possible to assemble all the data elements required to compile the total sales or shipments, inventories, cost of materials and services, labour and capital used in production.

##### **Environmental protection expenditures**

Environmental protection expenditures are defined as all operating expenses and capital and repair expenditures that are incurred in order to anticipate or to comply with Canadian or international environmental regulations, conventions or voluntary agreements. They consist of expenditures for pollution prevention, abatement and control, expenditures for protecting and restoring wildlife and habitat, expenditures for environmental monitoring, environmental assessments and audits, and expenditures for reclamation and decommissioning of sites. **Environmental protection expenditures incurred that are not in response to current or anticipated Canadian or international regulations, conventions or voluntary agreements should be excluded. In addition, expenditures to improve employee health, workplace safety and site beautification should also be excluded.**

Expenditures to produce pollution prevention, abatement and control equipment for sale are also excluded as they would appear twice in the expenditure data produced by Statistics Canada. Expenditures for environment-related research and development are also excluded since they are collected elsewhere in Statistics Canada.

**Environmental conventions or voluntary agreements** refer to any formal, multi-party commitment by an industry or an industry association for instance, to meet specific targets in terms of habitat protection, waste reduction, or the elimination or reduction of specific materials that are considered to be harmful or toxic to the natural environment in Canada. Examples include the following: the Montreal Protocol (elimination of CFCs by 1998); the Canada-U.S. Air Quality Agreement; the "Responsible Care" program from the Canadian Chemical Producers Association; the Voluntary Challenge and Registry (VCR) Program on climate change; etc.

**Environmental regulations** refer to any current Canadian federal, provincial or municipal law or international legislation that is intended to protect or to restore the environment in Canada. Expenditures related to anticipated legislation may be included as long as its provisions are known.

##### **How to report**

Please report expenditures in **thousands of Canadian dollars for your 2004 fiscal year**. If, for certain categories, no expenditures have been incurred, **please write "0" in the corresponding box**. Where precise data are not available, your best estimate is acceptable. If additional information is available in an annual report or an environmental performance report, **please include a copy** when you return the questionnaire.

##### **To report capital expenditure:**

**Include** all relevant outlays for machinery and equipment and their installation and repair that have been capitalized, as well as for the construction of non-residential facilities (contractors or own employees). For construction, include all costs associated with demolition, planning and design (such as engineering and consulting fees), any materials supplied to construction contractors for installation and any costs associated with the purchase of land that are neither amortized nor depreciated.

**Exclude** any provisions for future environmental liability.

##### **To report operating expenses**

**Include** all expenses related to environmental protection incurred for labour, materials and supplies, maintenance and repair, and purchased services (include fuel and electricity expenses for machinery and equipment whose sole purpose is to protect the environment).

**Exclude** depreciation on machinery and equipment.

### **For logging activities**

Use Question 5 to report additional expenditures for logging caused by environmental regulation or convention. **Include** the extra cost of any practice that would not otherwise be followed in the absence of environmental regulation or convention. **Exclude** the foregone revenues resulting from regulations or conventions that reduce the allowable harvest.

### **For mining activities**

Use Question 6 or 11 to report any expenditures that are related to the handling and treatment of mine tailings and that are required by environmental regulation. Even if some of these activities are now considered to be "standard practice", include related expenditures if they are required by regulation or convention. Use Question 9 to report imputed interest on funds held in trust against future environmental liabilities. Report only actual expenditures.

### **For petroleum operations**

Please report separately, if possible, environmental protection expenditures associated with different petroleum operations: exploration, refining, chemical products, pipeline transportation.

### **Question 6) Pollution abatement and control and waste management expenditures**

**6.1** Pollution abatement and control (end-of-pipe processes) can be described as equipment and processes that treat pollution and wastes *after* they have been created. Examples of these types of equipment or processes include scrubbers at the end of emission stacks, biological and chemical systems for treating water (such as a water treatment plant), filtration systems, cyclones or other barrier systems. These end-of-pipe processes are not an integral part of production; their sole purpose is to abate or to control undesirable substances resulting from normal production.

**6.2** **Substances released to air** - emissions of pollutants (including greenhouse gases) to the atmosphere.

**Substances released to surface waters** - releases of pollutants to water bodies.

**On-site releases to land/underground injection** - releases of pollutants to land and/or injected into the ground within the boundaries of your establishment.

**Noise, vibration or radiation** - control of noise, vibration or radiation.

### **Question 7) Pollution prevention**

Pollution prevention is technologies, equipment or processes that reduce or eliminate pollution at the source instead of at the end-of-pipe or stack. Examples include the installation of more efficient processes that consume less energy or inputs, the redesign or reformulation of the production process to reduce pollution or emissions, reuse, recirculation or recycling of materials on-site (does not include materials sent off-site for recycling).

### **7.3 Pollution prevention methods**

Examples are listed for each category of pollution prevention. *Note:* lists are not exhaustive.

**Product design or reformulation** - changing product specifications to reduce or eliminate the use of toxic substances; modifying product design or composition to make them more environmentally friendly; modify packaging.

**Equipment or process modifications (integrated process)** - instituting recycling within a process; switching from the use of solvents to mechanical paint-stripping devices; modified or installed rinse systems; improved rinse equipment design; improved rinse equipment operation; modifying equipment, layout or piping; use of a different process catalyst; institute better controls on operating bulk containers or changing from small volume containers to bulk containers to minimize discarding of empty containers.

**Recirculation, on-site recycling or reuse or recovery of materials or substances generated during production** - such as using a small distillation unit to reclaim solvents on-site; vapour recovery; recovery of sludge; water recirculation; reuse of water for refrigeration condenser operation. *Excludes materials transferred or recycled off-site.*

**Materials or feedstock substitution, solvent reduction, elimination or substitution** - the use of aqueous-based rather than solvent-based cleaners; increased purity of raw materials; substituted raw materials; other raw material modifications.

**Improved inventory management or purchasing techniques** - avoiding the unnecessary generation of waste by ensuring that materials do not stay in inventory beyond shelf life; eliminate shelf-life requirements for stable materials; instituting better labelling procedures; instituting a clearinghouse to exchange materials that would otherwise be discarded.

**Prevention of leaks and spills** - taking measures to prevent releases such as installing splash guards and drip trays around equipment; modified containment procedures for cleaning units; improved draining procedures; improved storage or stacking procedures; improved procedures for loading, unloading and transfer operations; installed overflow alarms or automatic shut-off valves; installed vapour recovery systems; implemented inspection or monitoring program of potential spill or leak sources.

### 7.3 Pollution prevention methods (concluded)

Examples are listed for each category of pollution prevention. *Note:* lists are not exhaustive.

**Good operating practices or pollution prevention training** - changing production schedules to minimize equipment and feedstock changeovers; improved maintenance scheduling, record keeping or procedures; training staff to recognize and implement pollution prevention opportunities.

**Other, specify** - please specify your pollution prevention activities if they are not listed in the preceding categories.

### Question 12) Greenhouse gas emission reduction technologies

Examples are listed for each of the technologies and processes found in Question 12. *Note:* lists are not exhaustive.

**Greenhouse gases:** The group of chemical compounds that are responsible for the so-called 'greenhouse effect.' The most important greenhouse gases produced by economic activity are *carbon dioxide* (CO<sub>2</sub>), *methane* (CH<sub>4</sub>), *nitrous oxide* (N<sub>2</sub>O), *chlorofluorocarbons* (CFCs), *hydrofluorocarbons* (HFCs), *perfluorocarbons* (PFCs) and *sulphur hexafluoride* (SF<sub>6</sub>).

**Fugitive or vented greenhouse gas emissions from fossil fuels:** Intentional or unintentional releases of greenhouse gases from the production, processing, transmission, storage and delivery of fossil fuels. Released gas that is combusted before disposal (e.g., flaring of natural gases at oil and gas production facilities).

**12.1 Transportation** refers to the transport of fossil fuels from the field or processing plant to the local distribution centre.

*Distribution* refers to the distribution of natural gas or oil to the individual consumer.

**12.2 Examples of systems or equipment to reduce fugitive or vented greenhouse gas emissions from the extraction, refining, transportation or distribution of fossil fuels** - high efficiency flares; lower emission pneumatic valves; flash tank separators; floating roof tanks; leak detection and repair programs.

**Examples of systems or equipment to reduce greenhouse gas emissions other than fugitive or vented emissions** - enhanced recovery technologies; high efficiency motors or engines; energy management systems; maintenance planning; drag reducing agents; electric micro turbines; energy recovery systems such as waste heat recovery; cogeneration; renewable energy sources; switching to lower or zero-carbon energy sources; CO<sub>2</sub> capture or disposal.

**12.4 Examples of systems or equipment to reduce greenhouse gas emissions from the generation of electricity** - high efficiency motors or engines; energy management systems; maintenance planning; drag reducing agents; electric micro turbines; energy recovery systems such as waste heat recovery; cogeneration; renewable energy sources; switching to lower or zero-carbon energy sources; CO<sub>2</sub> capture or disposal.

### 12.5 Description of the systems and equipment listed in Question 12.5:

- 1. Cogeneration** - systems and equipment used to produce both heat and electricity from biomass (organic matter from forest and agricultural sources), waste and industrial residues, and other fuel sources.
- 2. Alternative fuel systems or equipment** - process equipment for production or use of biofuels (ethanol, biodiesel); clean fuel systems (reformulated fuel and oxygenated fuels); fuel cell technologies; hydrogen (production, storage, distribution and use, infrastructure); and advanced batteries. Also included are industrial equipment and engine systems that use alternative fuels.
- 3. Fuel substitution** - switching from a carbon fuel such as coal or petroleum to a lower carbon (such as natural gas) or carbon-free fuel.
- 4. Waste energy recovery/reuse (e.g., heat recovery)** - a conservation system whereby some space heating or water heating is done by actively capturing byproduct heat that would otherwise be ejected into the environment.
- 5. Use of energy management or monitoring systems** - an energy conservation feature that uses computers, instrumentation, control equipment and software to manage a building's energy use for heating, ventilation, air-conditioning, lighting and for business-related processes.
- 6. Performed energy audit in the last three years (2002-2004)** - an analysis of the energy consuming systems within a facility and the identification of potential areas for reducing energy consumption.

## 12.5 Description of the systems and equipment listed in Question 12.5: (concluded)

7. **Other systems, equipment or employee training that improved energy efficiency** - please specify any other equipment or systems not listed in Question 12.5 that improved energy efficiency or energy conservation. Examples include: installation of more efficient process equipment such as boilers, turbines and furnaces; process control equipment; energy efficient engines and motors; low NO<sub>x</sub> burners.
8. **Small, mini- or micro-hydroelectric facility** - Micro-hydro = less than 100 kW; Mini-hydro = 100 kW to 1 000 kW (1MW); Small hydro = 1 MW to 25 MW (50 MW in British Columbia).
9. **Solar energy systems or equipment** - active and passive solar systems; photovoltaics; solar thermal generators; solar water and space heating systems.
10. **Wind energy systems or equipment** - horizontal and vertical axis turbines; towers and other types of equipment used to generate energy and electricity.
11. **Biomass energy** - systems and equipment (turbines, boilers, process equipment) that use organic matter such as forest and agricultural residues to produce electricity, steam, or heat.
12. **Geothermal** - hot water or steam extracted from the Earth's interior and used for geothermal heat pumps, water heating or electricity generation.
13. **Other renewable energy systems or equipment** - please specify your renewable energy systems and equipment if they are not listed in the preceding categories (e.g., systems and equipment for energy production from wave, tidal, and ocean thermal energy conversion systems).

**12.9 New or significantly improved systems or equipment to reduce green house gas emissions:** A *new system or piece of equipment* is one that is new to the establishment and whose characteristics or intended uses differ significantly from those systems or equipment previously used by the establishment. A *significantly improved system or piece of equipment* is an existing system or piece of equipment whose performance has been significantly enhanced or upgraded. Excludes maintenance, repair and replacement in kind.

## Question 13) Environmental management practices

1. An **environmental management system** is a management structure that allows an organization to assess and control the environmental impact of its activities.
2. **Life Cycle Management, Life Cycle Assessment** refer to tools that identify and measure direct and indirect environmental, energy and resource impacts associated with a product, process or service through its design, production, usage and final disposal. *Design for Environment* is the integration of environmental considerations into the design, production, distribution, use and end-of-life of products.
3. **ISO 14000** is an internationally recognized set of standards and guidelines primarily concerned with environmental management systems developed by the International Organization for Standardization.
4. A **pollution prevention plan** establishes a plan to meet or exceed compliance and improve the efficiency and environmental performance of an establishment, a specific operation or a particular product.
5. **Voluntary actions** include codes of environmental practice, guidelines, emission and waste reduction targets, as well as agreements with governments.

(Continued ...)

**Question 13) Environmental management practices (concluded)**

6. **Green procurement** describes the procurement of goods and services that minimize environmental impacts compared with goods and services with similar performance requirements. The costs and environmental impacts of a product at various stages of its life cycle are taken into consideration, such as the process used to manufacture the product (including raw materials), transportation, storing, handling and operating and disposal of the product.
7. **Eco-labelling programs** such as Enviro Choice (operated by TerraChoice Environmental Services Inc. for Environment Canada) are designed to encourage manufacturers and suppliers to develop environmentally preferable products and services. These eco-labelling programs are meant to help consumers identify products and services that are less harmful to the environment.
8. Your establishment can either publish its own **environmental report** or be a contributor to the parent company's environmental report or annual report that includes a section dealing with its environmental performance or sustainable development.

FOR INFORMATION ONLY