

# GUIDANCE ON APPLICATIONS FOR PERMITS UNDER THE *ENVIRONMENTAL MANAGEMENT ACT* – TECHNICAL ASSESSMENT

## Recommended content of a technical assessment report for submission by the applicant as part of the application for a permit or a significant amendment

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In order for the director to fully understand the application and its potential impacts on the environment, technical information must be provided about the source(s) of the waste, the discharge quality and quantity, as well as details about the receiving environment and the potential for the discharge to cause an impact. **Prior to or during the pre-application meeting, the ministry staff will specify if the required technical information is to be supplied on the application forms or provided in a technical assessment report.** The applicant, with the assistance of an appropriately qualified professional, will, if requested by a director, use this guidance document to assist in preparation of the technical assessment.

A qualified professional means a person who

- (a) is registered in British Columbia with an appropriate professional association, acts under that professional association's code of ethics, and is subject to disciplinary action by that professional association, and
- (b) through suitable education, experience, accreditation and knowledge may be reasonably relied on to provide advice within an area of expertise related to this application.

The scope of the technical assessment report that will accompany the application forms will be discussed at the **pre-application meeting** with the manager. Applicants submitting a technical assessment must ensure that the information specified in [Part 3 Discharge Details](#), and [Part 4 Receiving Environment](#) is included as part of the technical assessment report. The applicant should provide the ministry staff with a detailed draft terms of reference for the technical assessment before preparing the document, to ensure all required information is included. The report should be submitted in hard copy and electronic copy.

## Suggested Content for Technical Assessment Report

### 1. Executive Summary

The executive summary typically includes a brief statement of the purpose of the application, the project objectives, process description, list of discharges, baseline environmental quality, proposed monitoring program and anticipated impacts of the project and discharges.

### 2. Table of Contents

A **table of contents** and/or a **list of tables, figures, and appendices** must be included in the technical assessment report.

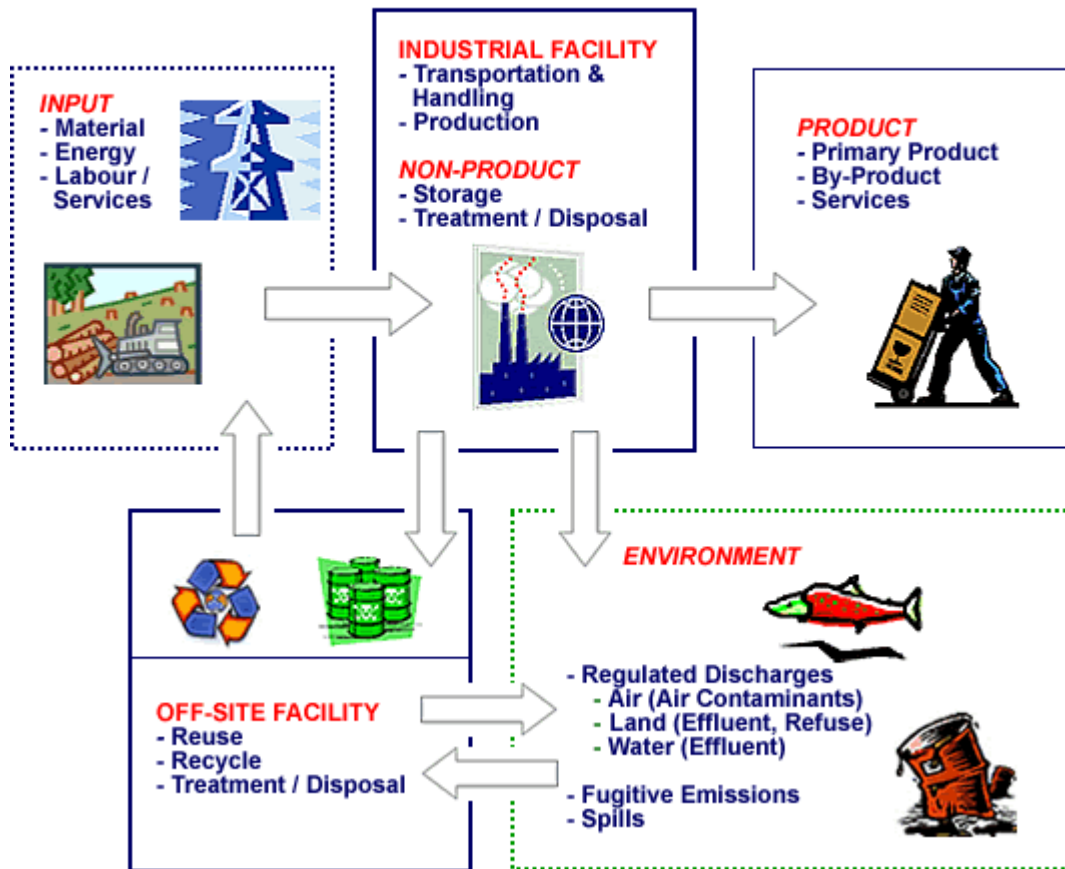
### 3. Introduction

- a) Background information and summary of the application.
- b) Overview of company:
  - Legal name and address of company;
  - Head office contact name and phone and fax numbers;
  - Site office location and contact name, phone, fax numbers and email address;
  - Corporate Environmental Policy
- c) Property description
- d) Facilities layout

### 4. Project Description

- a) **Project history** leading up to the application; including a list of previous related reports.
- b) **Overview** of products and markets.
- c) **Proposed phases** of the project including:
  - Site preparation and construction (e.g. sediment control, open burning, waste rock handling, soil salvaging, interim domestic effluent and solid waste treatment during construction, etc.),
  - Site operations (e.g. operational sediment control; recycling programs; source control programs; effluent, air emissions and solid waste treatment systems, etc.), and
  - Site closure (e.g. reclamation, end land use, contaminated site issues, etc).
- d) **Operational System**
  - This section should include process mapping/flow charts; showing production processes; the types and location of inputs, product and the nonproduct outputs (continuous – episodic) for all stages of the operations, for example:

## Industrial Facility Operational System



- **Inputs** include all material, process chemicals and energy entering the operational system, used in the operations, or stored for reuse. The quantities may be measured or estimated.
- **Non-product outputs** may include materials sent to offsite facilities, or lost to the environment as:
  - Air contaminants – including those listed in the application or that are currently authorized, spills, fugitive emissions from all processes (including cooling), emissions from ponds and yards.
  - Effluents – including those listed in the application or that are currently authorized, spills, exfiltration, spray irrigation other losses from processes including cooling, and storm water discharges.
  - Refuse – including those listed in the application or that are currently authorized, spills and other losses of materials including leachate, materials from landfilling or land-farming or recyclable materials.
  - Site Contamination – an inventory of known or suspected site contamination and the potential for further soil/groundwater contamination on or near the site; and proposed site decommissioning

and/or planned site remedial activities including information required for the completion of a site profile as described in the [Contaminated Sites Regulation](#), at [http://www.qp.gov.bc.ca/statreg/reg/E/EnvMgmt/EnvMgmt375\\_96/375\\_96.htm](http://www.qp.gov.bc.ca/statreg/reg/E/EnvMgmt/EnvMgmt375_96/375_96.htm).

e) **Management Systems** – this section includes:

- Statutory requirements – applicable local, provincial or federal environmental standards and guidelines including permit requirements, regulations, and orders.
- Industry requirements – all applicable sector-specific standards, guidelines and codes of practice (e.g., Responsible Care, CSA, ASTM).
- Operations and maintenance – guidelines and training requirements for facility maintenance, material and energy use, and the prevention and management of spills and fugitive emissions.
- The applicant should conduct a systematic identification of risks. This should include the identification and quantification of chemical risks and hazards and the ranking of hazards for spills of deleterious and regulated substances to the environment.
- The procedure for conducting a risk analysis can be obtained from the following document: *CAN/CSA-Q634-M91 Risk Analysis Requirements and Guidelines* published by the Canadian Standards Association. Copies of this document may be obtained by visiting their internet site at <http://www.csa.ca>.
- A contingency plan should be developed for preventing, minimizing or containing emergencies. The contingency plan should also include plans for process upsets and non-compliant discharges (i.e. collection ponds with pump back systems; back up treatment systems). Guidance for contingency planning is provided in:
  - *Guidelines for Industry Emergency Response Plans*, at <http://www.env.gov.bc.ca/eemp/industcplan.html>; and
  - *CAN/CSA-Z731-M91 Emergency Planning for Industry* published by the Canadian Standards Association, at <http://www.csa.ca>.
  - *Spill Reporting Regulation* BC Reg. 263/90

## 5. Discharges and Treatment

Characterize the quantity and quality of all discharges, including the application form

### Part 3. Discharge / Storage Details:

- a) A description of methods for determining the quantity and quality of the effluent, air emissions and solid-waste pollution-control works and sources of discharge (i.e. bench scale tests; pilot plant results; manufacturer's design specifications and performance guarantees, etc.).
- b) Tracking of all inputs at each stage in the process through to output, especially identifying all contaminants produced at each stage of the process (chemicals / reagents used; contaminants liberated/created, etc.)
- c) Describe how the pollution control works are properly designed and are appropriate for the intended use. The ministry expects applicants will select works or systems adequate to meet or exceed the statutory requirements and industry standards for preventing or minimizing adverse public health and environmental impact. The evaluation should consider capital and operating cost, design capacity, effectiveness, reliability and weaknesses (dealing with issues such as fires, power outage, flooding, etc.), waste products, maintenance and personnel training. Identify alternatives and pollution prevention approaches that have been assessed.

Total cost assessment (TCA) provides a framework for assessing the selection of potential investments. The analysis provides an estimate of costs and revenues—both initial investment costs and annual operating costs and revenues of an option with environmental implications. It incorporates all financial costs and indicators including hidden costs related to the activities that cause them and uncertain or less quantifiable costs reflected over the full economic or commercial life of a project. This information, together with other qualitative information, provides a solid foundation for making an investment decision.

A complete description of TCA can be found at <http://www.tellus.org/> See P2/FINANCE software: Business & Sustainability Group - at: <http://www.tellus.org/general/software.html>

## 6. Receiving Environment

This section should provide a summary of the existing baseline receiving environment quality, and review any existing monitoring-and-impact assessments relevant to the proposed discharge(s). The summary should review the location and physical, chemical and biological characteristics of the receiving environment, focusing on sensitive receptors that are relevant to the potential project impacts. Environmental receptors and factors may include:

### Geophysical information

Including a description and site plan of the facility and surrounding area geology, hydrogeology (at minimum, description of the occurrence and depth to groundwater), soils, terrain, local land use/settlement patterns and archeological resources.

### Ecosystems

Providing a description of onsite and adjacent terrestrial and aquatic ecosystems, and an inventory of potential biological receptors, including human populations.

## Meteorology

Statistical summaries of meteorological conditions that may affect the operations and discharge plume dispersion patterns.

The applicant should also identify receiving environment information gaps that will be relevant to the assessment, by considering issues such as what air or water quality data will be needed to set water quality objectives or determine the cumulative effects of the operation. Significant gaps may require the collection of receiving environment data, stressing the need for early discussion with Ministry of Water, Land and Air Protection staff.

## 7. Assessment

The applicant must provide an assessment of the overall risks of this development and the discharges to aquatic, terrestrial and atmospheric resources. The assessment typically uses a watershed/airshed and land-use management approach. It includes an identification of critical biological receptors, in each of the environmental media (air, water, and land) which are, or could be, impacted by losses from the operations. This assessment should include:

- a) Comparison of proposed discharge quality to known discharge criteria, guidelines or industry practices;
- b) modeling work performed to project the emissions into the receiving environment;
- c) predicted incremental increases in relevant ambient parameters;
- d) cumulative impact when the incremental increase is added to the existing receiving environment levels; and
- e) potential impacts to humans and other receptors by comparison of predicted ambient environmental quality to:
  - established provincial or federal ambient environmental quality guidelines.
  - comparison to other relevant scientific studies or sensitivity estimates of the human and nonhuman biotic components of the environment and the potential for acute, chronic or episodic damage and/or cumulative and synergistic effects.
  - the use of human health and ecological risk assessment exposure models are one way for conducting a detailed impact analysis, considering the following guidelines:
    - *Recommended Guidance and Checklist for Tier 1 Ecological Risk Assessment of Contaminated Sites in British Columbia*, which can be obtained at:  
[http://www.env.gov.bc.ca/epd/epdpa/contam\\_sites/policy\\_procedure\\_protocol/protocols/tier\\_1/index.html](http://www.env.gov.bc.ca/epd/epdpa/contam_sites/policy_procedure_protocol/protocols/tier_1/index.html)
    - *Qualitative Human Health Assessment – Phase 1 Review of Methods and Framework Recommendations*, at:  
[http://www.env.gov.bc.ca/epd/epdpa/contam\\_sites/guidance/external/humanhealthreport.html](http://www.env.gov.bc.ca/epd/epdpa/contam_sites/guidance/external/humanhealthreport.html)

- *Risk Assessment Guidance – Volume 1 Human Health Evaluation Manual (Part A)* – USEPA, at:  
<http://www.epa.gov/superfund/programs/risk/ragsa/index.htm>

Note that when conducting any emission dispersion modeling it is important that models used are those accepted by the province. Please verify acceptability of models with the regional Environmental Protection contact to prevent ineffective use of your time and financial resources. The pre-application meeting and follow-up terms of reference discussions are to review such issues.

The ministry's Municipal Sewage Regulations also provide guidance on how to deal with terms of reference for increasingly complex projects, using sewage and aquatic systems as examples. The *Municipal Sewage Regulation Environmental Impact Study Guideline* document may be obtained at:

[http://www.env.gov.bc.ca/epd/epdpa/mpp/pdfs/EIS\\_Guideline\\_Dec2000.pdf](http://www.env.gov.bc.ca/epd/epdpa/mpp/pdfs/EIS_Guideline_Dec2000.pdf)

## 8. Proposed Monitoring

- a. The applicant must propose a discharge monitoring program, using physical, chemical and biological indicators, to track the quantity and quality of all the emissions, effluent and solid waste discharges. This proposal must include proposed analytical methods and the QA/QC program. The program must conform to the standards specified in the *British Columbia Field Sampling Manual:2003*, which may be obtained at:  
[http://www.env.gov.bc.ca/air/wamr/labsys/field\\_man\\_03.html](http://www.env.gov.bc.ca/air/wamr/labsys/field_man_03.html)  
the *Stationary Air Emissions Testing Manual*, at  
[http://www.env.gov.bc.ca/air/cpr\\_files/stationary.pdf](http://www.env.gov.bc.ca/air/cpr_files/stationary.pdf),  
and the Environmental Data Quality Assurance Regulation, at  
[http://www.qp.gov.bc.ca/statreg/reg/E/EnvMgmt/301\\_90.htm](http://www.qp.gov.bc.ca/statreg/reg/E/EnvMgmt/301_90.htm).
- b. Analysis must be performed using standard analytical methods, as specified in the *British Columbia Environmental Laboratory Manual*, 2003 edition and supplements to the manual, available at [http://wlapwww.gov.bc.ca/wat/wamr/labsys/lab\\_man\\_03.html](http://wlapwww.gov.bc.ca/wat/wamr/labsys/lab_man_03.html).
- c. The applicant's monitoring program must also provide details for the methods of collection of data, archiving of records, processing and reporting.

The monitoring program may require an environmental-effects monitoring program to track the impact of the discharges on the receiving environment. Where appropriate, this should dovetail with federal requirements and other joint programs such as airshed planning processes. The Municipal Sewage Regulation Environmental Impact Study Guideline document referred to previously in section 8 also provides advice.