



Guidance for
Applications to Discharge
Air Contaminants from Oil and Gas Facilities
in British Columbia

December 2006

PURPOSE

The purpose of this document is to provide guidance to industry and consultants preparing applications for air discharge permits for natural gas processing plants and compressor stations. A majority of the requirements contained within this document are adapted from the BC Ministry of Environment's waste discharge permit guidance and application documents.

REGULATORY FRAMEWORK

Air discharges from Oil and Gas facilities in British Columbia are governed by the provisions of the *Environmental Management Act* (EMA) and the *Oil and Gas Waste Regulation* (OGWR).

Facilities that are regulated under the OGWR are authorized to discharge air contaminants subject to certain conditions. Small operations as defined under Section 4 are authorized to discharge air contaminants subject to Sections 3 and 8. Larger operations, as defined under Section 6, require a Registration and are authorized to discharge air contaminants subject to Sections 3, 6, 8 and 9. Registrations for facilities can be obtained by contacting the Ministry of Environment in Fort St. John or Prince George at:

Room 400, 10003 - 110 th Avenue Fort St. John BC V1J 6M7 Phone: (250) 787-3411 Fax: (250) 787-3490	#325 - 1011 Fourth Avenue Prince George BC V2L 3H9 Phone: (250) 565-6135 Fax: (250) 565-6629
--	---

Facilities that are not regulated by the OGWR are defined under Section 2 of the regulation and require a waste discharge permit or approval under the EMA to discharge air contaminants.

As waste discharge approvals can only be issued for periods of up to 15 months, they are generally not appropriate for compressor stations or gas processing plants.

Facilities that require a waste discharge permit to discharge air contaminants are as follows:

- a) A facility that removes from natural gas or discharges to the environment 30 tonnes or more of total sulphur in a 15 day period;
- b) A facility that discharges 4 tonnes or more of volatile organic carbon compounds, as defined in the United States Code of Federal Regulations, Title 40, Part 51, Section 51.100, to the environment in a 15 day period;
- c) A facility where the combined total power of all compressor drivers at the facility is greater than 3000 kilowatts;

- d) A facility where the combined total power of all oil pump drivers at the facility is greater than 3000 kilowatts;
- e) A facility where the combined total power of all electricity generator drivers at the facility is greater than 3000 kilowatts;
- f) Facilities that are located in or on a tidal body of salt water.

In addition to the requirements of the EMA, the construction of new facilities or the modification of existing facilities may be classified as Reviewable Projects under the *Reviewable Projects Regulation* and trigger the requirement for an Environmental Assessment under the *Environmental Assessment Act*.

Table 8 of the *Reviewable Projects Regulation* lists the following thresholds that trigger an Environmental Assessment for natural gas processing plants:

- a) A new natural gas processing plant that will result in sulphur emissions to the atmosphere of ≥ 2 tonnes/day;
- b) A new natural gas processing plant that has the design capacity to process natural gas at a rate of ≥ 5.634 million m^3/day ;
- c) Modification of an existing natural gas processing plant that will result in an incremental increase in sulphur emissions to the atmosphere of ≥ 2 tonnes/day; or
- d) Modification of an existing natural gas processing plant that will result in an incremental increase to natural gas processing capacity that is ≥ 5.634 million m^3/day .

For more information regarding Environmental Assessments, contact the BC Environmental Assessment Office www.eao.gov.bc.ca.

APPLICATION REQUIREMENTS

The following table summarizes the requirements for each type of waste discharge application. The Application Guidance section of this document gives detailed guidance for completing each part of the application.

- ✓ The parts of the waste discharge application are:
 - Part 1 – Applicant Details
 - Part 2 – Environmental Protection Notices 2(a) New Application, 2(b) Amendment
 - ✓ Part 3 – Discharge Details
 - Part 4 – Receiving Environment
 - Part 5 – Maps 5(a) Site Plan, 5(b) Location Map
 - Part 6 – Consultation Report
 - Part 7 – Technical Assessment ✓
 - Part 8 – Application Fee
 - ✓ Part 9 – Agent authorization

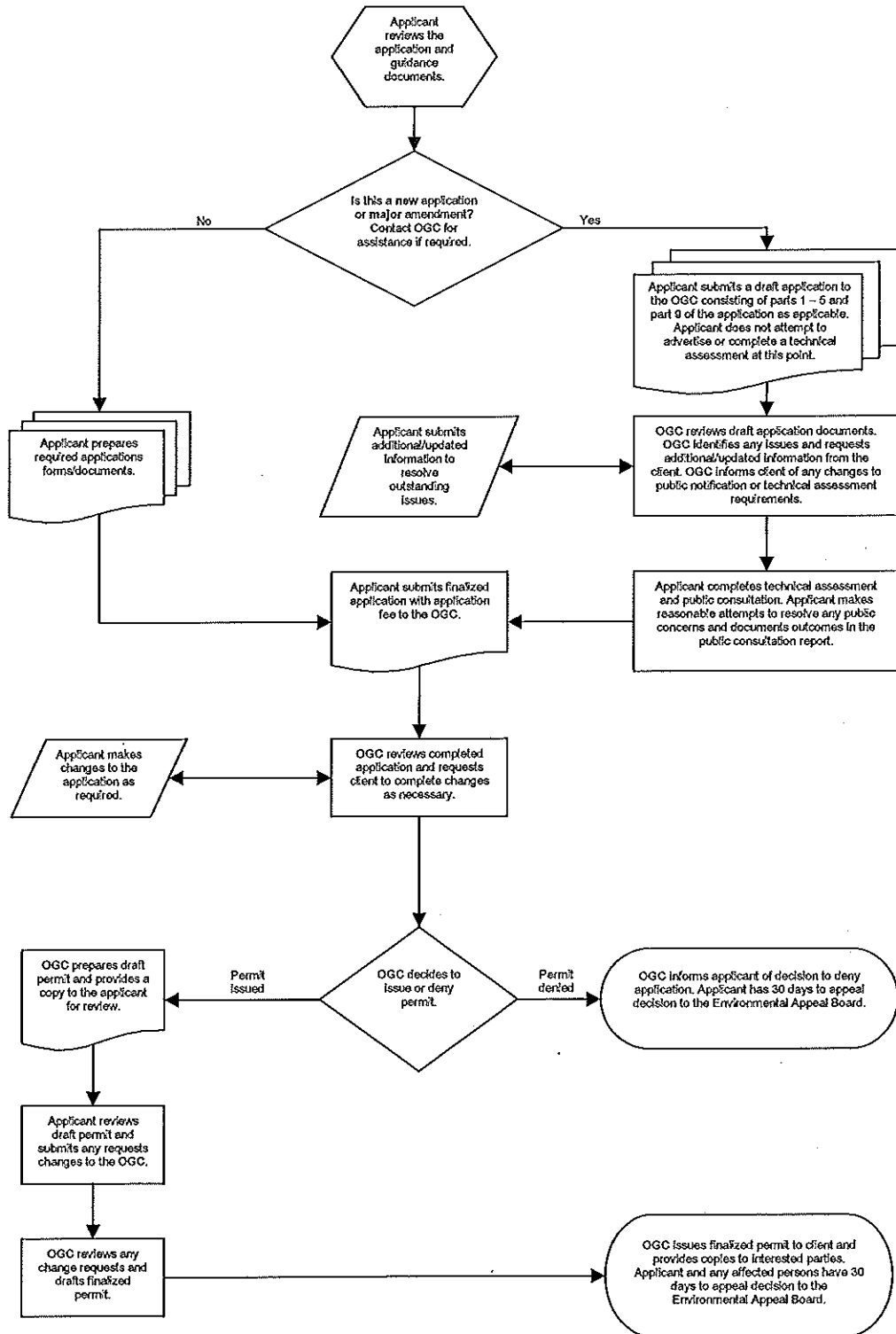
The application documents required for each type of waste discharge permit application are described in the following table.

Type	Description	Required Information*
New Permit	Any new facility or expansion of an existing facility such that it is not regulated by the OGWR.	Parts 1 – 8 and 9 (if applicable).
Major Amendment	Any alteration that results in a greater than 10% increase in maximum emissions.	Parts 1 – 3, 5a, 6 – 8 and 9 (if applicable).
Minor Amendment	Alterations resulting in a 10% or less increase in emissions or a decrease in emissions.	Parts 1, 3, 5a (if necessary), 8 and 9 (if applicable).
Name Change	A company name change.	Letter requesting the name change and Part 8.
Transfer	Sale of the facility.	Letters from the previous and new owners requesting the transfer. Part 8.
Cancellation	Discharge ceases or the facility is altered such that it is regulated by the OGWR.	Letter requesting cancellation of the existing permit with rationale for the cancellation request given.

*

* Nothing in this document limits the ability of OGC staff to implement any additional requirements deemed necessary to resolve application-specific issues.

APPLICATION PROCESS FLOWCHART



APPLICATION GUIDANCE

Refer to the blank application forms when reading the guidance section. Example forms can be downloaded for section 2, 3 and 5.

Part 1 – Applicant Details

- 1) Provide the date of the pre-application meeting (if available).
Provide the name of the consultant representative (if applicable).
Provide the name of the applicant representative.
Provide the name of the OGC representative.
Note: The pre-application meeting is generally conducted by phone.
- 2) Indicate if application is for a permit, approval or amendment. A permit is required for discharges greater than 15 months in duration, while an approval may be obtained for discharges which do not exceed 15 months duration. If an amendment is desired, provide the permit or approval number.
- 3) Provide full legal name of company and legal address (the British Columbia registered name and address). The applicant should supply a copy of BC Online printout with, if applicable, a contact name, phone, fax and email information.
- 4) Provide the local address of applicant (if applicable) with the name of the company representative who can be contacted regarding the application. Include phone, fax and email information.
- 5) Identify the location of the facility site (Latitude/Longitude, NTS or DLS description) and OGC Facility number.
- 6) Identify the registered owner of any discharge location that is not a part of the facility site (Latitude/Longitude, NTS or DLS description). Attach a survey plan of the site and relevant documents necessary to demonstrate that the applicant has a right to occupy the site (certificate of title, crown lease, letter of authorization, etc.).
- 7) The applicant or, if the applicant is a company, a representative of the company must sign the application and provide the date that the application is signed.

Part 2 – Environmental Protection Notices

The public notification section, Part 2(a) Environmental Protection Notice (new application) or Part 2(b) Environmental Protection Notice (amendment) must be completed and submitted as part of the application package. The completed Environmental Protection Notice **must** be submitted to the OGC for review prior to

publication. If a published Environmental Protection Notice is deemed to be inaccurate, the applicant will be required to republish the notice.

Advertising must be conducted in accordance with the requirements of the *Public Notification Regulation* (B.C. Reg. 202/94). Under the regulation, a completed copy of the Environmental Protection Notice must be:

- 1) Posted in a conspicuous place at all main road entrances to the site within 15 days of the application date. The notice must be posted for at least 30 days and the date that the application was posted must be provided to the OGC in writing.
- 2) Published at least once in at least one local newspaper. The OGC will specify the newspaper(s) in which the notice must be published. The notice shall be published in an advertisement that is:
 - a) At least 10 centimetres in width;
 - b) At least 100 square centimeters in area;
 - c) Entitled "ENVIRONMENTAL PROTECTION NOTICE" in a minimum type size of 12 points; and
 - d) Has the text size of the notice in a minimum type size of 8 points.

The applicant must, within 30 days after the date of publication, provide to the OGC a copy of the **full page** tear sheet as proof that the application was published.

- 3) Mailed or delivered to the clerk of the municipality (if applicable) and the secretary of the regional district in which the discharge is located. Proof of the mailing or delivery must be provided to the OGC within 30 days.
- 4) Published in Part 1 of the BC Gazette. A copy of the advertisement must be provided to the OGC within 30 days of publication.

Additional public notification may be required by the OGC on an application-specific basis.

Any person who may be adversely affected by the granting or amendment of a permit or approval may, within 30 days after the last date of posting, publishing, service or display as detailed above, notify the OGC in writing stating how that person is affected. The OGC may take into consideration any information received after the 30 day period has elapsed if a decision on the application has not been made.

The OGC may require the applicant to meet with any person or persons who, in the opinion of the OGC may be adversely affected by the discharge to clarify the application and to describe the discharge and its potential effect on the environment.

Part 3 – Discharge Details

A Discharge Details form must be completed and submitted for **each** discharge source. Discharge sources include equipment used continuously (i.e. compressor, dehydrator vent), equipment used intermittently (i.e. truck loading station flare) and equipment used for emergency operations (i.e. high pressure flare, emergency generator).

- 8) Identify the source of waste (i.e. compressor, line heater). If applicable, provide the model number, power rating and fuel source.
- 9) Describe the discharge treatment system listing all process components including make, model and design capacity, if applicable. Examples of treatment systems include catalytic converters and sulphur recovery units.
- 10) Provide the maximum rate/volume of waste in the appropriate metric units per unit of time. If applicable, provide the average daily rate/volume of waste in the appropriate metric units per unit of time.

For example, a flare stack may have an average discharge for pilot operation and a maximum discharge for emergency flaring.

For air discharges, the waste discharge should be reported as m³/s at 20 °C, 1 atmosphere pressure and zero water vapour. The discharge of specific contaminants within the waste stream is reported under section 13.

- 11) Provide the operating period during which the discharge will occur.

For discharges that occur continuously during the normal course of operations, the discharge period may be reported as “continuous”. For periodic discharges, the discharge period may be reported in days per year, hours per week or other suitable units. For periodic discharges related to maintenance or emergency operations, the discharge period may be reported as “variable” or “as required for maintenance and emergency purposes”.

- 12) Describe the discharge works.

For a stack discharge, the following information is **required**:

- a) Stack height
- b) Stack inside diameter
- c) Elevation of the stack base
- d) Stack gas exit velocity
- e) Stack gas discharge temperature

The stack gas exit velocity can be calculated from the discharge rate given in section 10 by the following equation:

$$V = \frac{Q \left(\frac{T_{Gas} + 273}{293} \right)}{\pi \left(\frac{d^2}{4} \right)}$$

Where:

- V is the gas exit velocity in m/s at the conditions of stack temperature.
 Q is the gas flow rate in m³/s at STP.
 T_{Gas} is the stack gas discharge temperature in degrees Kelvin.
 d is the stack inside diameter in metres.

- 13) Describe the characteristics of the waste. This section refers to the concentrations or mass discharges of specific parameters within the waste stream.

For discharges related to upstream oil and gas operations, the parameters of interest are generally limited to:

- a) Total Particulate (TP)
- b) Sulphur Oxides (SOx)
- c) Nitrogen Oxides (NOx)
- d) Volatile Organic Compounds (VOC)
- e) Carbon Monoxide (CO)

Total Reduced Sulphur (TRS) may also be of concern in certain situations.

Each parameter may be reported on a mass basis (g/s) or as a concentration of the waste stream (mg/m³). If parameters are reported as concentrations, they must be reported at standard conditions of 20 °C, 1 atmosphere pressure and zero water vapour.

Data for the waste characteristics may be supplied from manufacturers data, engineering calculations, field measurements or standard discharge factors. The OGC will apply standard discharge factors at their discretion. If field measurements are taken, documentation that the measurements are accurate and representative must be provided.

Part 4 – Receiving Environment

Detailed information (a dispersion modeling report) is required in Part 6 of the application. The purpose of Part 4 is to obtain general information about the discharge location and the presence of any potentially affected persons.

Where reference is made to “the vicinity of the site”, areas “affected by the discharge”, or other language describing an area surrounding the discharge location, the following guidelines should be used:

- a) For most discharges, a radius of influence of 5 km is usually acceptable.
 - b) For large discharges, a larger radius of influence may be considered.
 - c) A radius of influence may be selected based on the results of dispersion modeling.
 - d) In heavily populated areas the applicant may focus on a smaller area for the purpose of providing detailed information if it is representative of the larger radius of influence.
- 14) Provide details about the receiving environment that are pertinent to how the proposed discharge will assimilate into the environment.

For air discharges, this information should include:

- a) The elevation and topography in the vicinity of the site (include a topographic map).
 - b) A description of the vegetation and the general height of trees in the vicinity of the site.
 - c) Identification of any other air discharges within the vicinity of the site.
 - d) Any information on historical air quality (if relevant to the discharge) in the vicinity of the site and a brief description of the meteorological conditions at the site. This information is generally limited or unavailable for most areas of northern British Columbia.
- 15) Provide the distance to the nearest waterbody, residence, farm, recreational area and any other feature that may be affected by the discharge.
- 16) Provide a general description of land use in the vicinity of the discharge location.
- 17) Identify all other air discharges to the environment in the vicinity of the discharge location. Focus should be directed towards other air discharges that may increase the background levels of air pollutants in the vicinity of the discharge.
- 18) List the names and addresses of persons who could be affected by the proposed discharge. Such persons would include adjacent landowners/land users and other persons within the air impingement zone.

Part 5 – Site Plan and Location Map

Part 5(a) Site Plan and Part 5(b) Location Map must be submitted in a form that is **complete, clear, readable, reproducible** and be **on letter sized paper**. Applications containing parts 5(a) or 5(b) submitted without due regard to the requirements outlined in this section will not be accepted.

The Location Map must include the following as a minimum requirement:

- a) North arrow.
- b) Show an area large enough to include a significant landmark (town, highway, major topographical feature).
- c) If a town is not shown on the map, the map should include text indicating the distance and direction to the nearest town centre.
- d) The site location.

The Site Plan must include the following as a minimum requirement:

- a) North arrow.
- b) Some indication of scale (measured dimension, scale, scale bar).
- c) Location and identification of all structures on the site.
- d) Locations of access roads, fencing and site boundaries as applicable.
- e) Location and identification of all discharge points.
- f) For large sites, the site plan may be placed on multiple pages if necessary.

Part 6 – Consultation Report

A consultation report will be required for the application to be accepted by the OGC. The report must include a referral list with contact names, copies of the agency response letters, dates of posting, publishing and distributing notices, plus copies of notices and tear sheets from publications. All comments received must be documented in the consultation report with an explanation of efforts made to resolve the concerns. The applicant is expected to make a reasonable effort to resolve any concerns.

Part 7 – Technical Assessment

The technical assessment will include the completion of dispersion modeling and the submission of a report describing the findings and the expected effect on air quality in the vicinity of the discharge.

Guidance for the completion of dispersion modeling should be taken from the current version of the “Guidelines For Air Quality Dispersion Modeling in British Columbia” published by the BC Ministry of Environment. Guidance may also be taken from the “Air Quality Model Guideline” published by Alberta Environment, however care should be taken as there are differences between the BC and Alberta guidelines.

Specific items that must be addressed in the technical assessment (dispersion modeling) report are:

- a) Concentrations of pollutants at ground level and treetop receptors.
- b) Consideration of terrain effects.
- c) Air quality predictions during normal and emergency operations.
- d) Consideration of building downwash.

For sweet facilities, modeling usually must be completed for NO_x discharges. For sour facilities, modeling usually must be completed for NO_x and SO_x discharges.

In general air discharge modeling should demonstrate that the most stringent BC and Canadian objectives/guidelines for SO₂ and NO₂ concentrations are met at ground level. Consideration may be given to thresholds for foliar injury at tree canopy height. Minor modeled exceedences of the air quality objectives may also be tolerated on a site-specific basis depending on the expected magnitude, duration and extent.

Part 8 – Application Fee

Application fee cheques must be made payable to the “Minister of Finance” and should be included with the draft application. Applications cheques should reference the permit or approval number for ease of processing.

For permits or permit amendments, the application fee is \$200 (no GST or PST is charged).

For approvals, a variable fee must be calculated based on the magnitude of the discharge. The fee will be calculated by the OGC after the application is submitted.

Part 9 – Agent Authorization

The applicant may authorize a consultant to act as an agent on their behalf. If an agent is authorized, part 9 must be completed and submitted as part of the application package. The OGC will deal directly with the agent on most aspects concerning the application.

Disclaimer

This guidance document does not replace the *Environmental Management Act* or its regulations. It does not list all provisions relating to waste discharges. If there are differences or omissions in this document, the *Act* and regulations apply.

This document is general in nature and does not in any way limit the ability of the OGC to add conditions or request additional information that it feels necessary for the processing of a given application.