Ministry of Environment and Climate Change Strategy

Guidance for Air Discharge Authorization Applications

Oil & Gas Sector

This document provides additional guidance to applicants seeking authorization under the Environmental Management Act (EMA) to discharge air contaminants from facilities in the oil & gas sector, complementing and expanding on the requirements outlined in the Structured Application Process (SAP 2.0). The British Columbia (BC) Ministry of Environment and Climate Change Strategy (the Ministry) SAP 2.0 process is a uniform application platform for all industries and activities subject to EMA. The application process and requirements are described in detail on the Waste Discharge Authorization Home Page including all required forms and templates. Additional guidance for some sectors, such as oil and gas or mining, is developed to specifically describe and clarify requirements that are typical for the sector but not described in the general guidance.

This document describes an application process overview (Section I) with a specific focus on nuances for the oil & gas sector and it outlines requirements for the *Technical Assessment Report* (TAR) that is usually a requirement for the final application.

I. Application Process Overview

The Ministry's Waste Authorization Home Page referenced above summarizes the SAP2.0. A routine application process includes four phases: *Intake Phase, Preliminary Application Phase, Screening Phase*, and the *Review and Decision Phase*, which are illustrated by a process description flow diagram. Supplemental requirements for the oil & gas sector are described below:

1. Intake Phase

Since the *Intake Phase* is not enhanced for the oil & gas sector, there will be no additional information on this phase in this document. Please refer to Waste Discharge Authorization Home Page for guidance on the *Intake Phase*.

2. Preliminary Application Phase

To facilitate a more productive *Preliminary Application Phase*, the applicant is encouraged to familiarize themselves with the application process Waste Discharge Authorization Home Page and the Information Requirements Table (IRT) specifically catered to the oil & gas sector https://www2.gov.bc.ca/assets/download/AB75BA7840D74A0BB27F50A2EFEB933B.

The applicant should also include this **extra information** in the *preliminary application* in addition to the routine application requirements outlined in the application process:

2.1 An emission inventory for all point emission sources.
- 2.1.1 ***If applying for an amendment***: Changes in the emission inventory to determine whether the amendment is a *minor amendment* or a *significant amendment* (as defined in the Public Notification Regulation).

2.2 A preliminary dispersion modelling plan.

2.3 A preliminary *Consultation Plan* (e.g. this plan will identify which Indigenous groups they will engage with and the potential impacts associated with the proposal)

At or shortly after the preliminary application meeting, the Ministry will issue an *Application Instruction Document* (AID) describing information requirements for the *final application package*. The AID includes details of the technical information and assessments (e.g. air quality dispersion modelling), application publication, public notification, stakeholder and Indigenous engagement requirements, as well as timelines to complete the *final application*. For simple new applications or minor amendments, the AID may only consist of a letter with standard-type requirements. However, most AIDs for the oil & gas sector will outline additional requirements for air dispersion

modeling and include a detailed Information Requirements Table (IRT). The IRT will specify content for the TAR and the *final application package*.

3. Screening Phase

At this stage a Ministry meteorologist will review the *Air Modeling Plan*. Usually a meeting will be required between the Ministry meteorologist, the applicant and their air modelling consultant. Once deemed satisfactory, the Ministry meteorologist will approve the *Air Modeling Plan* (further revisions still may be required). The meteorologist may also provide requirements for the *Air Quality Assessment Report (*AQAR) based on the *Air Modeling Plan*.

4. Review and Decision Phase

Once the *final application package* is accepted during the *Screening Phase*, Ministry staff will assess the information provided in the *final application package*, including the TAR.

In addition to reviewing the TAR, a major undertaking for Ministry staff at this stage is Indigenous consultation. Following Indigenous consultation, certain mitigation/monitoring measures may be necessary to accommodate the potential impact from the project or the application/amendment may not proceed. If no significant concerns or objections are raised during Indigenous consultation, the regional case manager will complete the *Ministry Assessment* and develop a draft authorization document to recommend to the Statutory Decision Maker to approve or reject the application.

II. Technical Assessment Report (TAR)

Report Format

The TAR is the principle document submitted to meet the information requirements described in the IRT. ***Guidance on Applications for Permits under the Environmental Management Act*** (General Guidance) for writing the TAR is found at the Ministry applications home page which applicants are encouraged to review.

This guidance document describes the requirements of applications specific to the oil & gas sector. To facilitate comprehension and an efficient review of the report, the applicant is encouraged to follow these format recommendations:

- Embed tables and figures within the report wherever possible, rather than placing them in appendices.
- Number all emission points and use the numbering system consistently through-out the application.
- Tables and figures must be legible and presented in 8.5 x 11 size. Use 11x17 if necessary for larger submissions.
- Appendices may be used for independent/detailed technical information or reports from Qualified Professionals (QPs) in support of the application. However, the body of the report must discuss and interpret the technical appendices and the QPs' reports and conclusions.

Detailed Information Requirements

The following sections describe and explain all items that appear in the *Air Emissions IRT - Oil & Gas Sector* (https://www2.qa.gov.bc.ca/assets/gov/environment/waste-management/waste-discharge-authorization/guides/irt/og_large_air_emissions_irt.pdf). Items that are not unique to the oil & gas sector will not be described here. Please refer to the Ministry website Waste Discharge Authorization Home Page for standard/general IRT items.

1. Table of Contents

The table of contents must include a list of tables, figures and appendices. The numbering in the report must match the numbering recorded in the IRT.

2. Executive Summary

An executive summary is usually required for large or complex applications. It will include at least the following items:

2.1 A brief description of the purpose of the application, confirming operation as a prescribed activity under the Waste Discharge Regulation (WDR), and under which category it is prescribed.

For an amendment, indicate whether the request is a significant or minor amendment, as defined by the Public Notification Regulation.

2.2 A brief description of the proposed emissions and pollution control technology. Indication of whether effluent and refuse are generated, how they are managed or disposed and whether disposal of either will be included in the application.

For an amendment, describe only the changes requested and the resulting changes in air emissions, effluent and /or refuse.

2.3 A description of the key environmental and operational issues identified during the application process, along with proposed solutions and/or mitigation measures.

3. Project Introduction

In addition to the information in the General Guidance, include the following information:

3.1 A list and brief description of the applicant's operations in Canada and BC.

If the application is for an amendment:

3.2 Summarize the permitting history, including a chronology of amendments, if applicable. Briefly describe the nature of each amendment.

3.3 Include a list of relevant reports, such as previous emission inventories and air quality modelling results, and the date submitted to the Ministry.

3.4 Include current and historic compliance status with the permit, including work undertaken to address previous non-compliances.

4. Operational System Description

4.1 Provide detailed process and control system information that may directly relate to emission quality and quantity. This information should include non-routine emission events such as emergency shut down, flaring and venting resulted form process upsets, etc.

For an amendment, describe the proposed changes to processes and equipment, operation procedures, the monitoring program, or other conditions in the permit, and reasons for the proposed changes.

A photo inventory of all existing emission points should be included and updated accordingly. See Appendix A for an example of a simple but acceptable photo inventory. Ensure that the naming of the emission points is consistent with the detailed site plan required in Section 4.4 below.

4.2 Include a system/block diagram showing the gas streams into and out of the facility, and the relationship with the associated gathering and sales gas system.

For an amendment, ensure that the diagram clearly depicts all changes from the original diagram.

4.3 Include process flow diagrams (PFDs) illustrating process details within the facility.

For an amendment, clearly indicate all changes to the existing PFDs.

4.4 Provide a detailed site plan including all point source emissions (e.g., flare stacks/pits, pigging receiving and sending locations, and emergency blow-down points, etc.). This site plan should include a table listing all emission points by number.

For an amendment, submit an updated site plan highlighting all changes due to the amendment.

Note:

This detailed site plan is required for detailed technical reviews. It is in addition to the location map and site plan required as per the templates on the Waste Discharge Authorization Home Page

5. Air Discharges and Treatment

An air emissions inventory is required in the *Pre-Application Stage* for the Ministry to determine if air emission modelling is required, and whether screening-level or detailed modelling is needed. The air emissions inventory needs to include the information detailed below. The inventory must be approved by the Ministry prior to or simultaneously with approving the air modelling plan.

Air Emissions Inventory

5.1 Point emissions in tabulated format

- Source Name (e.g. compressor exhaust stack, blowdown stack), identification number (from the site plan), make (manufacturer) model and rating, and fuel source if applicable.

For an amendment application, the EMS numbers (the unique number assigned to each discharge point) of existing sources in the permit.

- Characteristics of point emissions
    - Emission flow rate (m3/s, at STP and at stack conditions), maximum and average discharge rates (g/s) of Criteria Air Contaminants (CACs):
        - NOx as NO2
        - SO2
        - CO
        - TPM (or TPM as PM 2.5 if fuel is natural gas)
        - VOCs (defined in the United States Code of Regulations, Title 40, Part 51, Section 51.100).
    - Emission duration and frequency (i.e. hours/day, days/year, e.g. for emergency generators).
    - For flare stacks/pits – provide the average/normal discharge rates (m3/s) (this is usually for the pilot gas)
    - Benzene emissions rate (g/s) (If applicable). This is required for each dehydrator if there are glycol dehydrators at the facility. Emission data or estimates are required to demonstrate compliance with the newest version of the Canadian Association of Petroleum Producers (CAPP) *Best Management Practices for the Control of Benzene Emissions from Glycol Dehydrators.*

- Source of emissions data. Data sources are the methodologies by which the emission data are determined. These can be manufacturers' data, engineering and/or design specifications, combustion calculations, emission testing, emission factors or a combination of sources.

5.2 Non-routine emission scenarios relating to operational upsets, maintenance and emergency discharges.

- Describe emission scenarios other than normal operations and frequencies, such as operational upsets, maintenance and emergency discharges.
- Provide a tabulated summary of relevant emissions resulting from such scenarios and indicate how these non-routine emission scenarios have been/will be handled in air dispersion modeling.

5.3 Fugitive emission sources and management.

- Identify and describe fugitive sources, emission quality and quantity.
- Describe the *Fugitive Emission Management Plan* (FEMP), including the Leak Detection and Repair (LDAR) program, the reduction technology or operational strategies, and long-term plans for fugitive emission reduction.

5.4 Pollution control works and treatment efficiencies.

- Describe the pollution control works and treatment efficiencies.
- Describe the efficiency data from similar equipment in similar service, if available.

5.5 Discharge evaluation.

- Compare existing and new emissions to current and anticipated regulatory requirements using the same units as presented in the published regulatory criteria, guidelines and industrial practices.
- If emissions do not meet emission standards or criteria, describe plans, if they exist, for upgrading.

5.6 Best Achievable Technology (BAT) Assessment.

Following the Ministry's BAT Fact Sheet , execute a BAT assessment, justify the choice of technology for the proposed project overall, and the "best" technology and alternatives for major emission controls.

For an amendment, describe the BAT status of the existing (pre-application) operation. If the existing facility is not BAT, discuss plans for upgrading or replacing old equipment or processes. More information is in the Air Quality Assessment section below.

6. Receiving Environment

The proponent should follow the requirements described in Section 6 of General Guidance and also include air quality concerns in the airshed where the project is located, including airshed capacity and sensitivity to incremental discharges. To better understand, when possible, an airshed emissions inventory, formal or informal airshed management committees or groups in the airshed. Existing monitoring program(s) and associated results should be provided.

7. Air Quality Assessment

In to addition to the requirements in the General Guidance, this section should summarize and present the results of the AQAR conducted by a QP. The AQAR must follow the *BC Air Quality Dispersion*

Modelling Guideline and any additional directions from the Ministry's meteorologist when approving the modeling plan. To properly assess the impact from the project, the applicant is required to:

7.1 Approach air quality assessment in the context of airshed and land-use management, using a cumulative impact assessment approach.

7.2 Address the potential impact on receiving air quality related to non-routine operational upsets and "worst case" scenarios.

7.3 Propose an *Emission Reduction Plan, prepared by a QP*, if ambient air quality objectives are not met.

7.4 Describe the limitations of the modelling results and their significance to the predicted impacts.

8. Receiving Environment Information Gaps

Identify and discuss gaps in information that are relevant to the assessment of the application. Discuss whether additional air quality data is required to set objectives and/or to determine the effects of the project. Identify if additional information or sampling is needed to assess impacts to vegetation, soils or surface water. Significant gaps may require further collection of receiving environment data.

9. Other Discharges

To develop a comprehensive understanding of the facility's potential environmental impacts, applicants are required to provide brief descriptions of all types of waste (i.e. solid, liquid, air) generated at the facility and how they will be managed. Permits are usually only issued for one waste type (air, in this case), but may include management of collected precipitation (runoff) if there are no other effluent discharges from the facility.

9.1 Effluent

"Effluent" includes both process effluent and collected precipitation (runoff) from areas that might be contaminated by the operations.

- Briefly describe all effluents that will be generated at the facility and how each will be managed. If no effluent will be generated, (*or, for an amendment, if there are no changes to effluent management at the facility*), make a statement to that effect.
- State whether a separate application will be made for an effluent discharge permit. If the application for an air permit includes a request to authorize the release of collected runoff, describe the approach for managing runoff, melting snow and long return period rain events. Include:
    - Procedures for all sources of effluent management.
    - Descriptions of works to manage precipitation, including design specifications for capacity and construction details.
    - Proposed release quality criteria, monitoring procedures (sampling and analyses) and a description of release procedures.

9.2 Refuse (Non-hazardous)

- Briefly describe refuse generated at the facility and how it will be managed.
- Indicate if a separate refuse permit is required. *For an amendment, describe any changes in solid waste generation and management.*

9.3 Hazardous Waste Management

- State whether hazardous wastes as defined by the BC Hazardous Waste Regulation (HWR) will be generated at the facility, and if so provide the BC Generator Number for the facility.
- If hazardous waste is generated, briefly describe how it will be managed, including any on-site storage facilities.
- Indicate if an application for a facility registration is required under the BC HWR.

10. Environmental Management Systems

This section lists all applicable statutory legislation, regulations and guidelines pertaining to the proposed project to protect the receiving environment based on all discharges from the proposed project:

10.1 Corporate Environmental Policy.

10.2 Statutory requirements – applicable local, provincial and federal environmental standards and guidelines including permit requirements, regulations, including those under development when the application is submitted.

10.3 Industry sector-specific standards, guidelines and codes of practice.

10.4 List of existing plans developed by the applicant/QP or required by other regulatory agencies (e.g. National Energy Board), and a brief summary of the objectives of these plans.

10.5 Proposed emission reduction and management plans to address:

- Emission quality (Section 5.5 of this guidance document).
- Ambient air quality in the receiving environment when exceedances of the *Ambient Air Quality Objectives* (AAQO) are predicted based on modeling results from the AQAR. The AAQOs include federal (NAAQOs) and provincial objectives (BC AQOs).

10.6 Operation Plans and Procedures

Operation Plans and procedures are required in permits depending on the complexity of the operating conditions. Applicants can volunteer or may be directed by Ministry staff to include operation plans and/or procedures to provide extra insight and context for the application.

11. Proposed Monitoring Programs and Reporting

If exceedances of NAAQOs, and BC AQOs are predicted (Section 7): The TAR should include a proposed monitoring program commensurate to the nature and magnitude of emissions with the appropriate level of evaluating the potential impacts on the receiving environment.

The monitoring program should include emission testing for medium to large, complex facilities, and/or facilities located in sensitive airsheds. It should also include ambient monitoring of air and/or receptors (e.g. biological, soil or water) based on the impact assessment and confidence level of the modeling.

Both emissions monitoring and ambient monitoring programs must include the following components: Sampling and analysis protocols in accordance with the most current versions of the *British Columbia Field Sampling Manual* and the *British Columbia Environmental Laboratory Manual*.

12. Changes to the Permit Clauses

If changes to the wording of clauses in the permit are requested, use the *Clause Amendment Form EPD-EMA-07* on the Waste Discharge Authorization Home Page for the request. Please

keep in mind that many clauses are standard and are non-negotiable. A rationale must be provided for why the clause is no longer required or why the wording is not appropriate.

Appendix A: Photo Inventory