

BIO-METHANE FACILITY OR SITE REQUIREMENTS

This directive is being issued by a provincial safety manager pursuant to section 30 of the *Safety Standards Act*.

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General Details

This directive details the design and installation requirements for biogas, digester gas and landfill gas facilities or sites in accordance with the *Safety Standards Act* (SSA), Safety Standards General Regulation (SSGR) and Gas Safety Regulations (GSR).

Companies operating with a valid Safety Management Plan under the Alternative Safety Approaches Regulation must comply with the requirements of this directive unless an acceptable alternative has been specifically identified under the terms of any current plan.

Definitions for this directive

Bio-methane - a digester gas, landfill gas, or biogas, or digester gas that is clean and dry and has a heating value averaging approximately 15 to 26 MJ/m³ (400 to 700 Btu/ft³).

Biogas - a gas produced in a digester at a location other than a municipal wastewater treatment plant. It is generally composed of approximately one-half to two-thirds methane and one-third carbon dioxide that is produced from the decomposition of organic residues, with a heating value averaging approximately 22 to 26 MJ/m³ (600 to 700 Btu/ft³). By the nature of the biological process under anaerobic conditions, its production and constituents are considered flammable, corrosive, wet, and potentially hazardous. It can contain traces of water, hydrogen sulphide gas, dissolved ammonium, and bicarbonate ions.

Digester gas - a gas produced in a digester from organic sludge from a municipal wastewater treatment plant. It is generally composed of approximately one-half to two-thirds methane and one-third carbon dioxide that is produced from the decomposition of organic residues, with a heating value averaging approximately 22 to 26 MJ/m³ (590 to 700 Btu/ft³). By the nature of the biological process under anaerobic conditions, its production and constituents are considered flammable, corrosive, wet, and potentially hazardous. It can contain traces of water, hydrogen sulphide gas, and dissolved ammonium and bicarbonate ions.

Landfill gas - gas consisting primarily of methane, carbon dioxide, water, and traces of hydrogen sulphide gas from the decomposition of organic waste material at a landfill site.

Renewable natural gas (RNG) - a digester gas, biogas, or landfill gas that has been upgraded, dried, or treated to meet the specifications of the receiving utilities, and thus considered commercial grade or pipeline natural gas.

Design Registration and Installation Requirements

1. An application for design registration for bio-methane facilities regulated equipment or systems must be submitted to, accepted by and registered by Technical Safety BC **prior** to installation
2. All applicable installation permits must be obtained and in place **prior** to performing any regulated work . [Gas Installation Permits](#)
3. A bio-methane facility or site design registration application is required to demonstrate compliance towards the below noted currently adopted code(s) under the GSR:
 - a. CSA B149.1 Natural gas and propane installation code
 - b. CSA B149.2 Propane storage and handling code
 - c. CSA B149.3 Code for the field approval of fuel-related components on appliances and equipment
 - d. **CSA B149.6 Code for digester gas, landfill gas, and biogas generation and utilization**
 - e. CSA Z662 Oil and gas pipeline systems
4. The design registration submittal must contain:
 - a. A statement of compliance
 - b. All drawings, specifications, calculations and instructions necessary to construct, install, operate and maintain the equipment
 - c. A detailed site-specific risk assessment and demonstration of the management systems employed to control process hazards may be required, **CAN/CSA Z767 Process Safety Management Standard** is considered a best practice document. Documentation must be signed off and sealed by a professional engineer who is registered with the Association of Professional Engineers and Geoscientists of BC.
5. Significant design alterations of an existing facility or site installation must be re-submitted to Technical Safety BC for approval.
6. All regulated gas equipment being installed must be certified or listed to a nationally recognized standard where one exists. If a recognized standard **does not** exist for a piece equipment, then a separate design registration and product approval must be applied for, or the services of a recognized inspection body obtained.
7. In accordance with the SSGR, **prior** to final approval of all installation permits, an **industrial operating permit** application may need to be submitted if gas appliances are being used for processing or process water heating, have a total input greater than 1500 kW and used for purposes other than space heating or domestic water heating.
8. It is the sole responsibility of the equipment and system owner to ensure compliance is maintained throughout the lifecycle of the associated site.

For detailed information on gas design registration applications see: [Gas Design Registration](#)

Other Agencies

Local governments, fire departments, and/or other applicable ministries of both federal and provincial governments may have approval or permit requirements for other aspects of a bio-methane facility or site, such as land use etc. Technical Safety BC approval does not constitute approval by any other regulatory body or agency. The applicant is responsible for identifying and complying with any applicable requirements from agencies or jurisdictions which administer those requirements.

Issued by: Nav Chahal,
Provincial Safety Manager

References:

Safety Standards Act

Safety Standards General Regulation

Gas Safety Regulation

CSA B149.1 Natural Gas and Propane Installation Code

CSA B149.2 Propane storage and handling code

CSA B149.3 Code for the field approval of fuel-related components on appliances and equipment

CSA B149.6 Code for digester gas, landfill gas, and biogas generation and utilization

CSA Z662 Oil and gas pipeline systems