

Biogas, Digester Gas, and Landfill Gas Facility and Site Requirements
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This directive is being issued by a provincial safety manager pursuant to section 30 of the *Safety Standards Act*.

Date of Issue: August 5, 2022

Directive No: D-GA 2022-01

Scope

This directive details the design and installation requirements for biogas, digester gas, and landfill gas facilities and 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

Biogas – A gas produced in an anaerobic digester at a location other than a municipal wastewater treatment plant. It is mainly composed of methane and one-third carbon dioxide and is produced from the decomposition of organic materials. 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 sulfide, hydrogen, and ammonia.

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 – 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 sulfide gas, and dissolved ammonium and bicarbonate ions.

Landfill gas – A gas consisting primarily of methane, carbon dioxide, water, and traces of hydrogen sulfide gas that is produced 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.

Details**Design registration overview:**

1. A design package submission must be prepared for bio, digester, and landfill gas systems to Technical Safety BC's [Design Portal](#) and shall be assessed and registered **prior** to installation.
2. The webform must be prepared by a qualified professional and the design must be authenticated by a licensed Professional Engineer of Engineers and Geoscientists of British Columbia, as per the [Quality Management Guidelines](#).
3. When alterations and modifications are required to the existing design of a registered facility, the design must be submitted as a revision to the [Design Portal](#) for assessment and registration.

For a full list of required documentation for design registration please see: [Gas Design Registration](#).

Permitting requirements

1. After completion of design registration, all applicable installation permits must be obtained and in place **prior** to performing any regulated work. [Learn more about gas installation permits](#).
2. A biogas, digester gas, and landfill gas facility and 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
3. 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 of equipment, then a separate design registration and product approval must be applied for or demonstrate equipment approval from an accredited inspection body listed as per Directive DG5 051201 2.
4. 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.
5. It is the sole responsibility of the equipment and system owner to ensure compliance is maintained throughout the lifecycle of the associated site.

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 biogas, digester gas, and landfill gas facility and 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.

Vicky Kang
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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