



Joint Meeting
Regulatory/Oil Industry
November 26, 2002
Lloydminster



Joint Meeting
- Regulatory / Oil Industry

Meeting Co-Chairs

- Gordon Williams - SaskPower
- Carey LaRose - Alberta Municipal Affairs



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Joint Meeting - Regulatory/Oil Industry

Introductions

- SaskPower
- Alberta Municipal Affairs
- Sask/Alta Worksite Health & Safety
- Oil Industry / Producers
- Equipment Manufacturers



Why are we here

Incidents in Alberta and
Saskatchewan

Opportunity to work together to
make the oil and gas industry safer



Joint Meeting Discussion Items

- Applicable Legislation
 - Governing Gas Installations
- Incidents / Safety concerns
 - Work Site Health and Safety
- Applicable Codes
- Installer Qualifications
- Gas Equipment Approvals
- Questions



Applicable Legislation - Alberta

- Safety Codes Act (Chapter S-1)
 - <1995 - formerly Gas Protection Act>
- Gas Code Regulation (AR 67/2001)
- Certification and Permit Regulation (AR 168/2002)

Safety Codes Act

- “Gas System”
 - means any equipment or installation used or intended to be used in or in conjunction with the processing, transmission, storage, distribution, supply or use of gas but does not include anything excluded by the regulations from the definition of gas system;

Safety Codes Act

- “Gas”
 - means any gas or compressed gas or any mixture or dilution of gases and includes any combustible or flammable fluid but does not include any gas, mixture or dilution of gases or combustible or flammable fluid excluded by the regulations from the definition of gas;

Safety Codes Act

2(1) This Act applies to fire protection and applies to the design, manufacture, construction, installation, operation and maintenance of:

- (a) buildings;
- (b) electrical;
- (c) elevating devices;
- (d) gas systems;
- (e) plumbing and private sewage disposal systems; and
- (f) pressure equipment.

Gas Code Regulation

- Adopts the B149 Series Gas Codes

Natural Gas and Propane Installation Code
CSA-B149.1

Propane Storage and Handling Code
CSA-B149.2

CSA-B149.4; CSA-B149.5; CSA-B108

By Reference - CSA-B149.3; CSA-Z662

Gas Code Regulation

- Gas Systems Equipment

3(1) No person may manufacture, install, sell or offer for sale any equipment related to gas systems for use in Alberta unless it has been:

Gas Code Regulation

- Gas Systems Equipment

3(1)(a) tested and certified by a certification organization accredited by the Standards Council of Canada, or

Gas Code Regulation

- Gas Systems Equipment

3(1) (b) inspected and accepted by a certification organization accredited by the Standards Council of Canada, and the equipment bears evidence of having been accepted in the manner authorized by the certification organization.

(See Standata #G-02-01a-IB)

Applicable Legislation - Alberta

- Does not contain any exemptions from the requirements for any *structure* based on its occupancy, industrial application or specific industry where "gas" is to be used for fuel purposes.

The CSA-B149 codes does not apply to:

- Gas where used as a feed stock in petroleum refineries or chemical plants



Applicable Legislation - Saskatchewan

- Gas Inspection Act 1993 & Regulations
- Occupational Health and Safety Act 1993
& Regulations 1996
- Gas Licensing Act 1993 & Regulations



Gas Inspection Division

Gas Inspection Act 1993

Application

3 Subject to section 4, this Act applies to:

- (a) all gas installations and gas equipment;
- (b) the inspection of gas installations and gas equipment;
- (c) the design, manufacture, display, advertising, sale and use of gas equipment;
- (d) filling plants;
- (e) portable propane storage containers;
- (f) the filling of propane automobile storage containers.



Gas Inspection Division

Gas Inspection Act 1993

Non-application

4 This Act does not apply to:

- (a) the collection, transmission and distribution systems of supply authorities;
- (b) any prescribed gas equipment or prescribed gas installation; or
- (c) card-lock equipment used at a filling plant.

Act binds Crown

5 The Crown is bound by this Act.



Gas Inspection Division

Gas Inspection Act 1993

Interpretation

2 In this Act:

(m) **"gas equipment"**:

- (i) means any apparatus, appliance, device, instrument, fitting, fixture, machinery, material or thing used in or for, or capable of being used in or for, the transmission, distribution, supply or utilization of gas;
- (ii) includes any assemblage or combination of materials or things that is used, or is capable of being used or adapted, to serve particular purpose or to serve a particular function when connected to a gas installation;
- (iii) does not include any electrical equipment within the meaning of *The Electrical Inspection Act, 1993*;



Gas Inspection Division

Gas Inspection Act 1993

Interpretation

2 In this Act:

(o) **"gas installation"**:

- (i) means the installation of gas equipment and a system of gas piping in or on any premises from the meter or regulator where gas is delivered to the premises up to the point or points where the gas can be consumed or used in or on the premises by any gas equipment;
- (ii) includes the connection of any of that gas piping with any of that equipment and any part of the gas system and the alteration, extension and repair of that gas piping;
- (iii) does not include any electrical installation within the meaning of *The Electrical Inspection Act*;



Gas Inspection Division

Gas Inspection Act 1993

Interpretation

2 In this Act:

- (y) **"supply authority"** means a person who supplies gas directly to a customer by means of a distribution system or from a bulk storage tank



Gas Inspection Division

SaskPower has the legal responsibility to conduct all electrical and gas inspections in Saskatchewan.

SaskPower's gas inspections division is mandated to ensure the safe installation and operation of gas equipment. Through inspections, a permit system and safety education, the safe use of gas equipment among customers, contractors, suppliers and employees is supported.



Incidents / Installation Concerns

- The following are EXAMPLES of non-conformance to the Applicable Codes and Standards that have been reported to the Gas Safety Authorities in Alberta and Saskatchewan.

Unsafe Conditions Reported

Examples

- That have the potential to create a hazard to persons and property

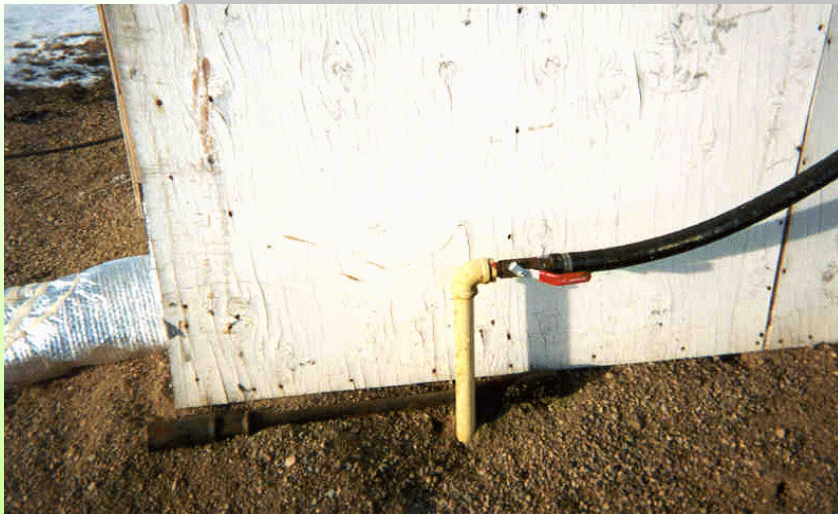
Wellhead Gas - (1) Pressure ?



Wellhead Gas - (2) Materials ?



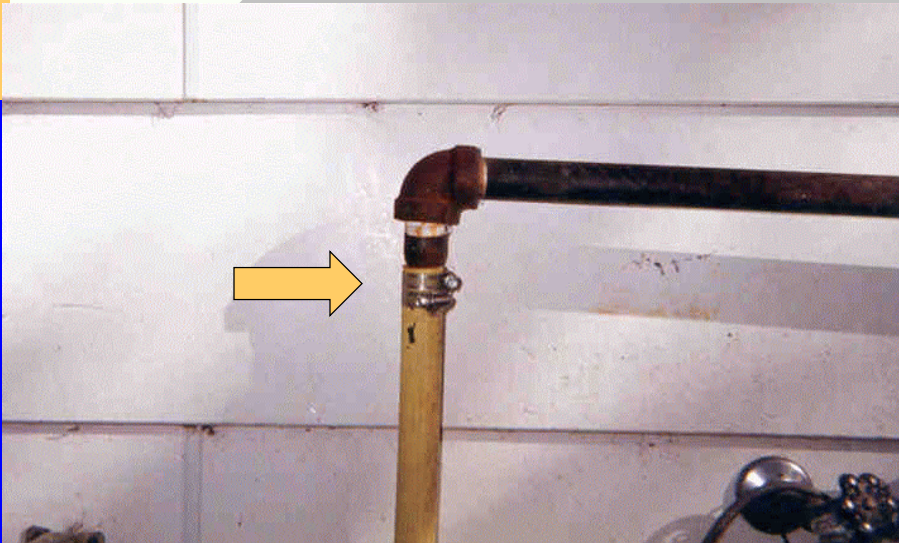
Swing Joint !!! Underground Piping??



Gas Entry - ? Pressure - Materials



Gas Piping - Unacceptable



Not Acceptable Report Unsafe Installations - AHJ



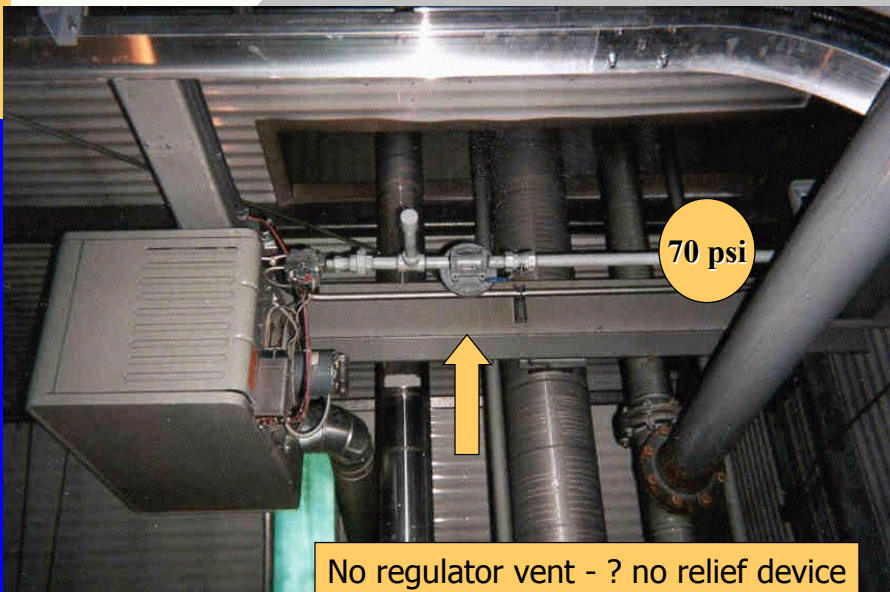
Not Acceptable



Not Acceptable



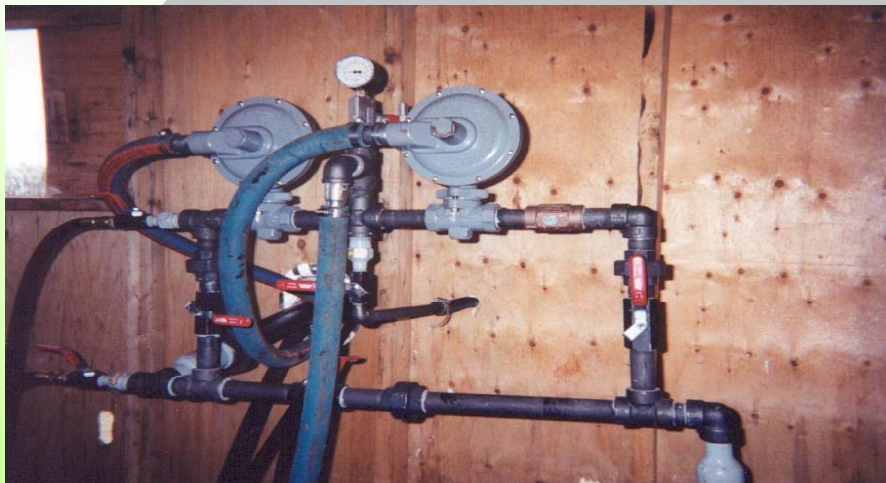
Adjacent Building - Explosion/Fire



Installation Problems - ? Materials



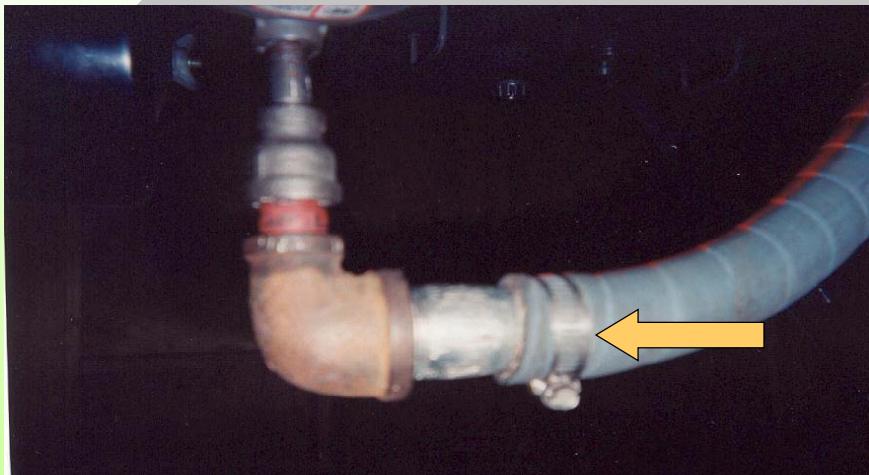
Installation Problems - Hoses



Installation Problems - Hose Connection



Installation Problems



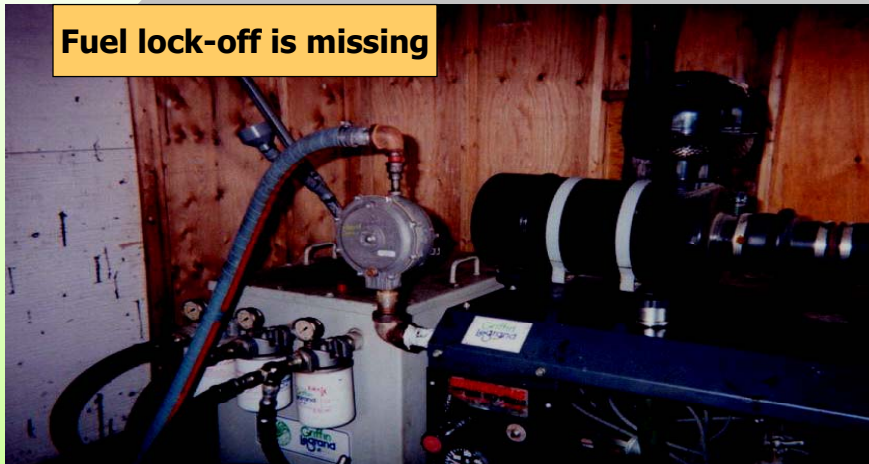
Installation Problems - Unapproved Hose



Hose shall comply CGA Standard 8.1 or 8.3

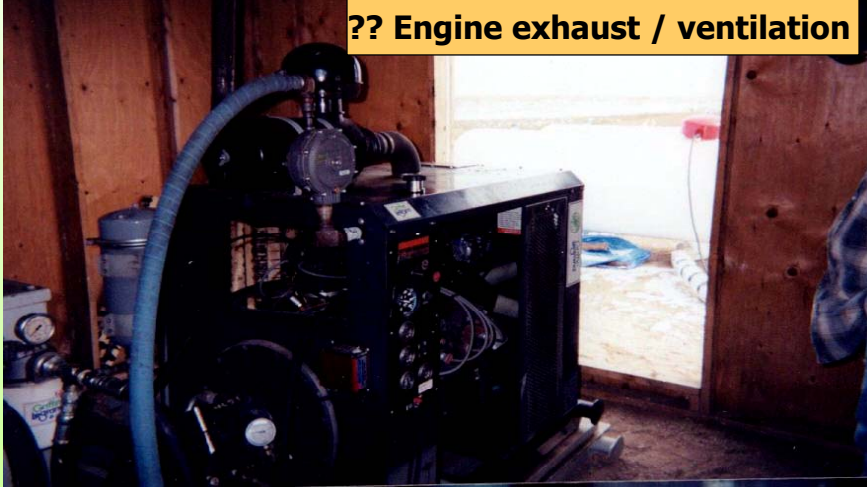
Installation Problems

Fuel lock-off is missing



Installation Problems

?? Engine exhaust / ventilation



Engine Exhaust



Propane Tank Sets - Materials ?



Propane Tanks - Protection ?



Bomb - !#?

A -!! Friend



Not Acceptable



Not Acceptable



Not Acceptable



10. Powers of Inspectors

- An inspector may:
 - (a) at any reasonable time, enter premises for the purpose of enforcing this Act or the regulations;

Safety Codes Act

Part 4 Unusual Situations

If there is an imminent serious danger to persons or property, the SCO may take any action that the officer considers necessary to remove or reduce the danger.

Reporting Fires / Explosions

Alberta - Safety Codes Act - Admin. Reg.

14(1) Accidents in the Gas Discipline

- a Fatalities
- property damage estimated to exceed \$250 if the accident is a fire or explosion, or
- an injury to a person requiring professional medical treatment

Reporting Fires / Explosions

• Reporting of accidents

29 Where an accident involving a gas installation or gas equipment occurs and results in the death or injury of a person or in a fire or an explosion, the contractor or the contractor's agent or the owner of the gas equipment or the owner's agent shall immediately notify the chief inspector, stating the precise location of the accident, its general nature and results.

Saskatchewan

Alberta

Worksite Health & Safety

Issues Sask/Alta

- **Responsibilities**
 - Employer / Employee
 - Owner / Contractor
- **Accidents/Investigations**
- **Focus on reducing worksite incidents**

Overview of the Saskatchewan Occupational Health and Safety Act and Regulations Concerning Flammable, Combustible and Explosive Products and or Substances

Act

General Duties of Employers

3 Every employer shall:

- (d) co-operate with any other person exercising a duty imposed by this Act or the regulations; and**
- (e) comply with this Act and the regulations. 1993, c.O-1.1, s.3.**

Duties - Act

General duties of contractors

6 Every contractor shall:

- (a) ensure, insofar as is reasonably practicable, that every:**
 - (i) work process or procedure carried on at every place of employment where an employer, employer's worker or self-employed person works pursuant to a contract between the contractor and the employer or self-employed person;****that is not in the direct and complete control of an employer or self-employed person under contract with the contractor is safe for, without risk to the health of, and adequate with regard to facilities for the welfare of, all employers, workers or self-employed persons at the place of employment; and**
- (b) comply with this Act and the regulations**

General duties of owners

7 Every owner of any plant used as a place of employment shall:

- (a) ensure, insofar as is reasonably practicable, that any:**
 - (i) area of the plant; or**
 - (ii) activity occurring in or on an area of the plant;****that is not in the direct and complete control of any contractor, employer or self-employed person who works or employs one or more workers who work in or on the plant, is maintained or is carried on in compliance with this Act and the regulations and does not endanger the health or safety of any contractor, employer, worker or self-employed person who works in or on the plant; and**
- (b) comply with this Act and the regulations**

Regulations

Purging and ventilating of unsafe atmosphere

- 273(1)** In addition to the requirements of section 369, where a concentration of a toxic, flammable or explosive substance is present or an oxygen enrichment or deficiency exists in a hazardous confined space, an employer shall ensure that the hazardous confined space is:
- (a) purged and ventilated before a worker is allowed to enter the space, so that:
 - (i) any hazard associated with a toxic, flammable or explosive substance is reduced to the extent that is possible or eliminated; and

Precautions where safe atmosphere not possible

- 274(6)** If any flammable or explosive dusts, gases, vapours or liquids are or may be present in a hazardous confined space, an employer shall ensure that all sources of ignition are eliminated or controlled.

Fire and Explosion Hazards

359 In this Part:

- (a) "combustible liquid" means a liquid that has a flashpoint above 37.8° Celsius and below 93.3° Celsius;
- (c) "flammable liquid" means a liquid that has a flashpoint below 37.8° Celsius and has a vapour pressure not exceeding 275.8 kilopascals at 37.8° Celsius;
- (d) "flammable substance" means:
 - (i) a flammable or combustible solid, liquid or gas; or
 - (ii) dust that is capable of creating an explosive atmosphere when suspended in air in concentrations within the explosive limit of the dust;
- (e) "hot work" means work that produces arcs, sparks, flames, heat or other sources of ignition;
- (f) "system" means a system into which compressed or liquified gases are delivered and stored and from which the compressed or liquified gas is discharged in the liquid or gaseous form, and includes containers, pressure regulators, pressure relief devices, manifolds, interconnecting piping and controls.

Control of Ignition Sources, Static Charges

367 An employer or contractor shall ensure that:

- (a)** suitable procedures are developed and implemented to prevent the ignition of flammable liquids or explosive dusts that are present at a worksite;
- (b)** all sources or potential sources of ignition are eliminated or controlled where an explosive atmosphere exists or is likely to exist; and
- (c)** static charge accumulations during transfer of flammable liquids or explosive substances from one container to another are prevented by electrically bonding the containers

Fire and Explosive Hazards

Flammable or explosive substance in atmosphere

369(1) Where a flammable or explosive substance is present in the atmosphere of a worksite at a level that is more than 20% of the lower explosive limit of that substance, an employer or contractor shall not require or permit a worker to enter or work at the worksite

Hot work

370(1) Where a flammable substance is or may be present, an employer or contractor shall ensure that no hot work is performed until:

- (a)** suitable tests have been conducted that:
 - (i)** indicate whether the atmosphere contains a flammable substance in a quantity sufficient to create an explosive atmosphere; and
- (b)** the work procedures developed pursuant to clause 363(1)(b) have been implemented to ensure continuous safe performance of the work

Oil and Gas - Part 29

Application of Part

411 This Part applies to all drilling procedures for the exploration of oil and gas and to the drilling, operation and servicing of a gas well or an oil well, the production of oil or gas from a well and the ancillary processes associated with these activities

Piping Systems at Well Sites

445 An employer, contractor or owner shall ensure that:

- (a) a piping system at a well site is designed, constructed, installed, operated and maintained to contain safely any material at the maximum operating pressures anticipated; and**
- (b) all pipe and components used in the piping system meet the requirements of an approved standard.**

Electrical

Electrical equipment

- 452(1)** An employer or contractor shall ensure that only approved electrical equipment is used by workers and that the electrical equipment is:
- (a) approved for the intended use and location of the electrical equipment;
 - (b) maintained in proper working condition and capable of safe operation; and
 - (c) tested in accordance with the manufacturer's recommendations

Covers for switches, receptacles, connections, etc.

- 453** An employer or contractor shall ensure that:
- (a) all switches, receptacles, luminaires and junction boxes are fitted with a cover that is approved for the intended use and location of the cover;
 - (b) all wire joints or connections are:
 - (i) fitted with an approved cap or other approved cover;
 - (ii) enclosed in an approved box; or
 - (iii) where the wire joints or connections are not permanently installed, protected from damage by another approved means; and

***Saskatchewan Labour
Occupational Health and Safety
1870 Albert Street
Regina, SK S4P 3V7***

***Toll Free:
1 - 800 - 567 - 7233***

***Website:
www.labour.gov.sk.ca***

Due Diligence

Alberta Human Resources & Employment
(AHRE)

- Occupational Health & Safety Act

“General Duty Clause” every province and territory in Canada has similar occupational health and safety legislation that describes of employers and workers.

Why Care About Due Diligence?

Alberta's clause reads as follows:

2(1) Every employer shall ensure, as far as it is reasonably practicable for the employer to do so,

(a) the health and safety of:

(i) workers engaged in the work of that employer, and

(ii) those workers not engaged in the work of that employer but present at the work site at which that work is being carried out, and

Why Care About Due Diligence?

- (b) that the worker engaged in the work of that employer are aware of their responsibilities and duties under this Act and the regulations.
- (2) Every worker shall, while engaged in an occupation,
 - (a) take reasonable care to protect the health and safety of the worker and of other workers present while the worker is working, and

Why Care About Due Diligence?

- (b) co-operate with the worker's employer for the purposes of protecting the health and safety of:
 - (i) the worker,
 - (ii) other workers engaged in the work of the employer, and
 - (iii) other workers not engaged in the work of that employer but present at the work site at which that work is being carried out.

Why Care About Due Diligence?

- (3) Every supplier shall ensure, as far as it is reasonably practicable for the supplier to do so, that any tool, appliance or equipment that the supplier supplies is in a safe operating condition.
- (4) Every supplier shall ensure that any tool, appliance, equipment, designated substance or hazardous material that the supplier supplies complies with this Act or the regulations

Why Care About Due Diligence?

- (5) Every contractor who directs the activities of an employer involved in work at a work site shall ensure, as far as it is reasonably practicable to do so, that the employer complies with this Act and the regulations in respect of that work site.

Due Diligence

“ Due diligence - is the level of judgement, care, prudence, determination, and activity that a person would reasonably be expected to do under particular circumstances ”.

Due Diligence

Failure to prove that you have been duly diligent in complying with occupational health and safety legislation can result in significant penalties.

Due Diligence is measured by 3-Factors

- (1) Foreseeability - could a reasonable person have foreseen that something could go wrong?
- (2) Preventability - was there an opportunity to prevent the injury or accident?
- (3) Control - who was the responsible person who could have prevented the accident or incident?

Call Centre

24 hr

- *open 24-hr to report accidents*
- *normal hours for General Info*

Alberta Human Resources & Employment has developed its Partnership Program to promote the use of health and safety management systems within the Alberta workplaces. For more information call the AHRE Call Centre at 1-866-415-8690

or visit the AHRE Web site at
www.whs.gov.ab.ca

Applicable Codes

CSA-B149.1

This code is intended to establish essential requirements and minimum standards for the installation of natural gas and propane appliances and equipment for the adoption by authorities having jurisdiction.

Applicable Codes

CSA-B149.1 - Scope

This Code applies to:

- (a) the installation of appliances, equipment, components, and accessories where gas is to be used for fuel purposes;

Applicable Codes

The installation of a “**gas system**” in any industrial application where **gas** is to be used for **fuel purposes** shall be in accordance with the CSA-B149 Codes.

***B149.1** contains the **MINIMUM** requirements

This includes the oil industry.

Applicable Codes

- Term “**Gas**” - CSA-B149.1

.... gases or mixture of them: Natural Gas, manufactured gas, or mixture of propane gas and air, propane, propylene, butanes, (normal butane or isobutane), and butylenes.

(Hydrogen, digester gas and carbon monoxide)

Approval of Appliances, Etc.

Clause 3.2.1 - CSA-B149.1 & .2

*An **appliance, accessory, component, equipment,** or material used in an installation shall be of a type and rating **approved** for the specific purpose for which it is employed.*

Applicable Codes

CSA-B149.2

This code is intended to establish essential requirements and minimum standards for the storage and handling of propane / butane.

Applicable Codes

CSA-B149.2 - Scope

This Code applies to:

- (a) the storage, handling, transportation, and transfer of propane

Applicable Codes

CSA-B149.2 - Propane Tank Sets

- 6.1.14** - When a tank is installed in a location that does not afford reasonable protection from motor vehicle damage, it shall be protected by posts or guardrails as specified in Clause 6.19.4.

Applicable Codes

CSA-B149.2 - Propane Tank Sets

6.1.7 - A propane *tank* shall not be installed within a diked area containing a *tank* of *flammable* or *combustible* liquids and shall be located not less than 20 ft (6 m) from the centreline of the dike.

Applicable Codes

CSA-B149.2 - Propane Tank Sets

6.10.1 - Every *tank* shall be located outside of a building.

6.10.2 - A *tank* shall be located with respect to a building wall in accordance with Table 6.10.2

Applicable Codes

CSA-B149.2 - Vaporizer see Clause 8

Vaporizer - an *appliance* for converting liquid propane to vapour by means other than atmospheric heat transfer through the surface of the container.

8.1.2 - A direct-fired *tank heater* shall not be used.

Applicable Codes

CSA-B149.3 - Scope

A.1.1. This Code contains the requirements, which include *valve train* diagrams, for fuel-related components and accessories and their assembly on an appliance utilizing gas, downstream of the manual shut-off valve specified in Clause 5.18.2 of the CSA Standard B149.1

Applicable Codes

CSA-B149.3 - Scope

A.1.2. This Code does not apply to:

- (b) gas where used as a feedstock in petroleum refineries or chemical plants;

Applicable Codes - CSA-B149.3

A.1.5. The requirements in this Code, including *valve train* diagrams, apply:

- (a) to new noncertified appliances and *equipment* of all inputs for which there is no approved standard;
- (b) when the upgrading of an existing certified or noncertified appliance is required; and
- (c) to programmable logic controllers or microprocessor-based controls used for flame safety.



Applicable Codes

CSA-Z662 - Oil and Gas Pipeline Systems

This Code applies to the design, construction, operation, and maintenance of oil and gas industry pipelines.



Applicable Legislation - Alberta

On a plant site as defined by Alberta Boilers Safety Association (ABSA) pressure piping in excess of 15 psi falls under their jurisdiction.

The requirements for the appliances, accessories, components, or equipment shall comply with the B149 Codes.

ABSA's Web Site: www.albertaboilers.com



Installer Qualifications

Saskatchewan

- Apprenticeship & Trades Certification

Web site: www.gov.sk.ca

Alberta

- Alberta Learning
 - Apprenticeship & Industrial Training

Web Site: www.tradesecrets.org



Installer Qualifications

Saskatchewan

- General Gasfitter
- Domestic Gasfitter

Alberta

- First Class Gasfitter
- Second Class Gasfitter



Installer Qualifications

Saskatchewan / Alberta

Commercial & Industrial Gas Permits

- issued to licensed gas contractors / employers
- issued to Journeyman Gasfitters



Responsibilities of the Installers

Before leaving installations,

installers shall ensure that an *appliance, accessory, component, or equipment* installed by them comply with the Code requirements, and the person initially activating the *appliance* shall ensure that the *appliance* is in safe working order.

Approved/Certified

Definition CSA-B149's

Approved - acceptable to the *authority having jurisdiction*.

Certified - investigated and identified by a designated testing organization as conforming to recognized standards, requirements, or accepted test reports.

Approach

- Identify high risk installations
- Utilize qualified installers
- Use certified equipment
- Develop methods to certify equipment
- Develop guidelines to mitigate and minimize risks

Risks

- High BTU installations
- Occupied areas
- Unapproved piping practices
- Unapproved equipment
- Etc.