Notes to Part 5
Hazardous Processes and Operations

A-5.1.2.1.(1) In addition to the general requirements of CSA C22.1, "Canadian Electrical Code, Part I," which is adopted by the British Columbia Electrical Safety Regulation, special attention must be given to Sections 18, 20 and 22: Section 18 specifies wiring requirements for Class I, II and III hazardous locations; Section 20 provides specific requirements for areas where flammable or combustible liquids are stored or dispensed; Section 22 specifies wiring requirements for areas where corrosive liquids or vapours or excessive moisture are present.

A-5.2.3.1.(2)(c)(ii) As a result of roofing operations, sparks and open flames can ignite combustible material in areas that are hidden from plain view, such as concealed spaces in roofs. A comprehensive inspection should include visual inspection of concealed spaces, building equipment, storage arrangements, and combustible refuse within the hot work area and exposed areas adjacent to the hot work area. Equipment such as thermal scanners or infrared thermometers can be used to take temperature readings in areas where visual inspection is impeded by obstructions.

A-5.2.3.3.(1) In areas where the visual inspection of combustible materials is impeded by obstructions, thermal scanners or infrared thermometers can be used to take temperature readings during or after the completion of roofing operations.

A-5.2.3.4.(1)(b) The following documents are examples of good engineering practice as regards safety measures for the activities described in Clause 5.2.3.4.(1)(b):

- API RP 2009, "Safe Welding, Cutting and Hot Work Practices in the Petroleum and Petrochemical Industries,"
- API 2015, "Safe Entry and Cleaning of Petroleum Storage Tanks, Planning and Managing Tank Entry From Decommissioning Through Recommissioning,"
- API RP 2201, "Safe Hot Tapping Practices in the Petroleum and Petrochemical Industries," and
- API RP 2207, "Preparing Tank Bottoms for Hot Work."

A-5.3.1.3.(2) NFPA standards on dust explosions include:

- NFPA 61, "Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities,"
- NFPA 91, "Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Noncombustible Particulate Solids,"
- NFPA 120, "Fire Prevention and Control in Coal Mines,"
- NFPA 484, "Combustible Metals,"
- NFPA 654, "Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids,"
- NFPA 655, "Prevention of Sulfur Fires and Explosions," and
- NFPA 664, "Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities."

A-5.3.3.2.(2) A conveyor belt having a surface resistivity of less than 300 megaohms is considered to provide protection against electrostatic charge accumulation in a grain handling facility.

A-5.5.1.1.(1) The provisions in this Section apply only to laboratory operations involving the use of dangerous goods, including flammable or combustible liquids. They shall not apply to the incidental use of such substances or to their use for maintenance or cleaning purposes only, in which case, requirements in other sections of the Code would apply.

A-5.5.3.4.(1) "Electrical equipment" refers to anything – any apparatus, appliance, device, instrument, fitting, fixture, luminaire, machinery, material, etc. – used in or for, or capable of being used in or for, the generation, transformation, transmission, distribution, supply, or utilization of electricity. Electrical equipment manufactured on site must conform to CAN/CSA-C22.2 No. 61010-1, "Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements," as stipulated in CSA C22.1, "Canadian Electrical Code, Part I."

A-5.5.5.1.(1) The intent of Sentence 5.5.5.1.(1) is to limit the quantities of dangerous goods that are

(a) stored outside of storage areas and cabinets referred to in Sentences (2) and (3),

(b) kept in the laboratory on a permanent or semi-permanent basis, e.g. dangerous goods that are normally kept out overnight because they are frequently needed, and

(c) connected to equipment and/or devices required to conduct an experiment in the laboratory.

The intent is also to limit the quantities of dangerous goods that are actually "in use" during normal operations and those used for special experiments or processes, which may require that greater quantities be brought into the laboratory for the duration of these operations.

However, the quantities of dangerous goods in a laboratory should be limited to the quantities allowed in a single fire compartment as stated in Part 3, on the basis that they present at least the same level of risk whether they are stored or connected to equipment, i.e. "in use" during normal operations.

A-5.5.5.3.(5)(b) and (7)(b) NFPA 55, "Compressed Gases and Cryogenic Fluids Code," is an example of good engineering practice for the design of a treatment system referred to in Clauses 5.5.5.3.(5)(b) and (7)(b).

A-5.5.5.5. For the purposes of this Code, unstable dangerous goods are determined to be dangerously reactive materials based on their reactive properties. Dangerously reactive materials, such as perchloric acid, include various classes of unstable or reactive dangerous goods, such as flammable solids, pyrophoric materials, oxidizers, corrosives, water-reactive substances and organic peroxides.

A-5.5.5.5.(2) Water can only be used with water-compatible dangerously reactive materials. Refer to the Safety Data Sheet for guidance on all the properties and incompatibilities of the reactive material being used.

A-5.5.5.6. Perchloric acid is the most commonly used unstable substance in laboratories. Although Article 5.5.5.6. deals specifically with perchloric acid, it is intended to also apply to other highly unstable substances having similar properties to perchloric acid, such as hydrazine, peracetic acid, picric acid and sodium hydride. Unstable substances are capable of a rapid release of energy by themselves. They are susceptible to reactions when exposed to air, water, pressure, heat, shock, vibration, light or sound waves. These reactions include vigorous polymerization or self-accelerating decomposition.

These substances must be stored, handled, used and processed in a location and manner that will prevent an undesired reaction. Safety Data Sheets provide guidance based on the properties of the unstable substance.

A-5.5.5.6.(2) Water can only be used if the unstable substance is compatible. (Perchloric acid is an example of a substance that is compatible with water.) Safety Data Sheets indicate whether an unstable substance is compatible with water and provide guidance on the properties and other incompatibilities of the unstable substance.

A-5.6.1.1. The degree of application should be determined in advance in conjunction with the authority having jurisdiction. In construction, alteration or demolition operations that do not pose an exposure hazard to other buildings or to occupants, the degree of application of Section 5.6. may be minimal.

The degree of application of Section 5.6. to each operation should be determined in advance, as part of the fire safety plan for the operation, taking into consideration such issues as the size of the operation, exposure of adjacent buildings or facilities to hazards, and the site conditions. Operations can range from large multi-storey buildings to small single-storey residences and may include additions or alterations to existing buildings.

A-5.6.1.2.(1) Methods and materials used to protect adjacent buildings and facilities can range from active to passive systems such as spatial separation, installing water curtains, using construction methods and materials that include gypsum sheathing, or erecting a temporary fire barrier such as a fire tarpaulin.

A-5.6.1.3.(1)(c) The control of fire hazards in and around buildings being constructed, renovated or demolished includes fire protection for combustible construction materials and combustible refuse on the site. The sizes of piles of materials and refuse and the location of such piles in relation to adjacent buildings are factors that should be taken into consideration in determining which fire protection measures to implement. The selection of fire protection measures for demolition operations will also depend on the demolition procedure being used, the specific conditions existing on the site and the firefighting capabilities of the responding fire department.

It is the intent of this Code that requirements regarding the outdoor storage of materials stated in Section 3.3. be referred to and applied at construction and demolition sites.

A-5.6.1.4.(4) The fire safety plan for the construction or demolition site of buildings conforming to Article 3.2.2.50. or 3.2.2.58. of Division B of the BCBC should take into consideration the design of the access route to the building under construction as well as the elevation of the access route relative to the uppermost floor level to facilitate firefighter access to the roof. (See Sentence 3.2.5.6.(2) of Division B of the BCBC.)

A-5.6.1.5.(2)(a) Moveable equipment includes, but is not limited to, cutting and welding equipment.

A-5.6.1.6. Not all aspects of Subsection 3.2.5. of Division B of the BCBC are applicable to unoccupied areas of buildings, parts of buildings, facilities and associated areas undergoing construction, alteration or demolition operations.

When the temperature causes freezing conditions, the standpipe should be drained to prevent damage to the equipment. It is not expected that hoses and nozzles be made available in the building undergoing construction, alteration or demolition operations, as they will be brought to the relevant floor by the responding fire department.

A-5.6.1.8. Minimum clearances shown on certified heating equipment or as described in Part 6 of Division B of the BCBC should be provided between combustible materials and temporary heating equipment, including flues such as exhaust discharges from internal combustion engines.

A-5.6.1.9.(1) A safe area for the location of terminated building services, such as gas and fuel lines, electrical lines, and water and steam piping, is in an area away from the building or part thereof that is safe enough so as not to cause damage to the building or part thereof in the event of their accidental breakage. In some cases, terminated services can be located directly outside the building or part thereof if adequate protection is provided, and in others, they can be located at the property line and/or service connection.

A-5.6.1.11.(4) Guidance on methods of rendering inert tanks, piping and machinery reservoirs is available in NFPA 326, "Safeguarding of Tanks and Containers for Entry, Cleaning, or Repair."

A-5.6.3.2.(1) Note that the intent of Sentence 5.6.3.2.(1) in relation to the alteration of a floor, suite or room in an existing building is not to prevent smoking elsewhere in the building where smoking would normally be permitted.

A-5.6.3.5.(1) The water supply referred to in Sentence 5.6.3.5.(1) may be either natural or developed, and need not be the final water supply for the finished building.

A-5.6.3.7.(3) It is recognized that, during construction of the building, one stairway might be out of service at any given time to allow the further construction of the stairway or to accommodate other construction activities. However, this out-of-service period should be kept as short as possible to ensure that workers have two options for evacuation and that emergency responders have two means of access to each floor.

Note that the stairways required by Sentence 5.6.3.7.(3) could be temporary ones, which would, nevertheless, still need to be separated from the remainder of the storey by an assembly that will provide protection from fire for a minimum of 30 min. Furthermore, doors must be operable but should be kept in the closed position at all times, unless they need to be kept open temporarily for operational reasons. Fusible-links or other acceptable means can be used to ensure that doors close automatically.

A-5.6.4.3.(1) The extent to which the structure under construction may need to be protected in accordance with Sentence 5.6.4.3.(1) may vary based on the fire safety plan. The protective encapsulation material or assembly of materials is intended to limit the potential for fire spread within the storey as well as to limit the potential for fire spread to upper storeys, thereby also limiting the potential exposure of adjacent structures to fire.