Oklahoma Uniform Building Code Commission
Building, Existing Building, and Fire Technical Committee (BEBF)

Emergency rule recommendations for the 2015 editions of the
International Building Code® (IBC®), and International Fire Code® (IFC®)

Presented By:
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Kasha Egan (Alternate Engineer), Travis Guess (Alternate Code Official), Ruben Hacman (Alternate Contractor), and John Taylor (Alternate Fire Code Official)
Proposed Code Change:
Committee Comment Form BEBF CCF #78, Modifying Chapters 2, 9, and 10 of the 2015 edition of the IBC®; and modifying Chapters 1, 2, 9, 10, and 53, and adding Chapter 39 to the 2015 edition of the IFC®

IBC® - CHAPTER 2 DEFINITIONS

GAS DETECTION SYSTEM. A system or portion of a combination system that utilizes one or more stationary sensors to detect the presence of a specified gas at a specified concentration and initiate one or more responses required by this code, such as notifying a responsible person, activating an alarm signal, or activating or deactivating equipment. A self-contained gas detection and alarm device is not classified as a gas detection system.

IBC® - CHAPTER 9 FIRE PROTECTION SYSTEMS

SECTION 916 GAS DETECTION SYSTEMS

916.1 Gas detection systems. Gas detection systems required by this code shall comply with Sections 916.2 through 916.11.

916.2 Permits. Permits shall be required as set forth in Section 105.7 of the International Fire Code.

916.2.1 Construction documents. Documentation of the gas detection system design and equipment to be used that demonstrates compliance with the requirements of this code shall be provided with the application for permit.
916.3 Equipment. Gas detection system equipment shall be designed for use with the gases being detected and shall be installed in accordance with manufacturer's instructions.

916.4 Power connections. Gas detection systems shall be permanently connected to the building electrical power supply or shall be permitted to be cord connected to an unswitched receptacle using an approved restraining means that secures the plug to the receptacle.

916.5 Emergency and standby power. Standby or emergency power shall be provided or the gas detection system shall initiate a trouble signal at an approved location if the power supply is interrupted.

916.6 Sensor locations. Sensors shall be installed in approved locations where leaking gases are expected to accumulate.

916.7 Gas sampling. Gas sampling shall be performed continuously. Sample analysis shall be processed immediately after sampling, except as follows:

1. For HPM gases, sample analysis shall be performed at intervals not exceeding 30 minutes.

2. For toxic gases that are not HPM, sample analysis shall be performed at intervals not exceeding 5 minutes, in accordance with Section 6004.2.2.7 of the International Fire Code.

3. Where a less frequent or delayed sampling interval is approved.
Upon activation of a gas detection alarm, alarm signals or other required responses shall be specified by the section of this code requiring a gas detection system. Audible and visible alarm signals associated with a gas detection alarm shall be distinct from fire alarm and carbon monoxide alarm signals.

916.8 System activation. A gas detection alarm shall be initiated where any sensor detects a concentration of gas exceeding the following thresholds:

1. For flammable gases, a gas concentration exceeding 25 percent of the lower flammability limit (LFL).

2. For nonflammable gases, a gas concentration exceeding one-half of the IDLH, unless a different threshold is specified by the section of this code requiring a gas detection system.

916.9 Signage. Signs shall be provided adjacent to gas detection system alarm signaling devices that advise occupants of the nature of the signals and actions to take in response to the signal.

916.10 Fire alarm system connections. Gas sensors and gas detection systems shall not be connected to fire alarm systems unless approved and connected in accordance with the fire alarm equipment manufacturer's instructions.

916.11 Inspection, testing and sensor calibration. Gas detection systems and sensors shall be inspected, tested and calibrated in accordance with the International Fire Code.

SECTION 916 917 EMERGENCY RESPONDER RADIO COVERAGE

916.1 917.1 General. Emergency responder radio coverage shall be provided in all new buildings in accordance with Section 510 of the International Fire Code.
IBC® - CHAPTER 10 MEANS OF EGRESS

SECTION 1010 DOORS, GATES AND TURNSTILES

1010.1.9.8 Sensor release of electrically locked egress doors. The electric locks on sensor-released Sensor release of electric locking systems shall be permitted on doors located in a means of egress in buildings with any occupancy in Groups A, B, E, I-1, I-2, I-4, M, R-1 or R-2 and entrance doors to tenant spaces in occupancies in Groups A, B, E, I-1, I-2, I-4, M, R-1 or R-2 are permitted except Group H where installed and operated in accordance with all of the following criteria:

1. The sensor shall be installed on the egress side, arranged to detect an occupant approaching the doors, and shall cause the electric locking system to unlock. The doors shall be arranged to unlock by a signal from or loss of power to the sensor.

2. The electric locks shall be arranged to unlock by a signal from or loss of power to the sensor.

3. Loss of power to the lock or locking system shall automatically unlock the doors electric locks.

4. The doors shall be arranged to unlock from a manual unlocking device located 40 inches to 48 inches (1016 mm to 1219 mm) vertically above the floor and within 5 feet (1524 mm) of the secured doors. Ready access shall be provided to the manual unlocking device and the device shall be clearly identified by a sign that reads “PUSH TO EXIT.” When operated, the manual unlocking device shall result in direct interruption of power to the electric lock— independent of other electronics —and the doors electric lock shall remain unlocked for not less than 30 seconds.
45. Activation of the building fire alarm system, where provided, shall automatically unlock the doors-electric lock, and the doors-electric lock shall remain unlocked until the fire alarm system has been reset.

56. Activation of the building automatic sprinkler system or fire detection system, where provided, shall automatically unlock the doors-electric lock. The doors-electric lock shall remain unlocked until the fire alarm system has been reset.

67. The door locking system units shall be listed in accordance with UL 294.

1010.1.9.9 Electromagnetically-Door hardware release of electrically locked egress doors. Door hardware release of electric locking systems shall be permitted on doors in the means of egress in buildings with any occupancy in Group A, B, E, I-1, I-2, I-4, M, R-1 or R-2 and doors to tenant spaces in Group A, B, E, I-1, I-2, I-4, M, R-1 or R-2 shall be permitted to be locked with an electromagnetic locking system where equipped with hardware that incorporates a built-in switch and except Group H where installed and operated in accordance with all of the following:

1. The door hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions.

2. The door hardware is capable of being operated with one hand and shall comply with Section 1010.1.9.5.
3. Operation of the door hardware directly interrupts the power to the electromagnetic electric lock and unlocks the door immediately.

4. Loss of power to the electric locking system automatically unlocks the door.

5. Where panic or fire exit hardware is required by Section 1010.1.10, operation of the panic or fire exit hardware also releases the electromagnetic electric lock.

6. The locking system units shall be listed in accordance with UL 294.

1010.1.10 Panic and fire exit hardware. Doors—Swinging doors serving a Group H occupancy and swinging doors serving rooms or spaces with an occupant load of 50 or more in a Group A or E occupancy shall not be provided with a latch or lock other than panic hardware or fire exit hardware. Exceptions:

1. A main exit of a Group A occupancy shall be permitted to have locking devices in accordance with Section 1010.1.9.3, Item 2.

2. Doors provided with panic hardware or fire exit hardware and serving a Group A or E occupancy shall be permitted to be electromagnetically electrically locked in accordance with Section 1010.1.9.8 or 1010.1.9.9.

Electrical rooms with equipment rated 1,200 amperes or more and over 6 feet (1829 mm) wide, and that contain over-current devices, switching devices or control devices with exit or exit access doors, shall be equipped with panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.
105.6.9 Compressed gases. An operational permit is required for the storage, use or handling at normal temperature and pressure (NTP) of compressed gases in excess of the amounts listed in Table 105.6.9. Exception: Vehicles equipped for and using compressed gas as a fuel for propelling the vehicle.

**TABLE 105.6.9 PERMIT AMOUNTS FOR COMPRESSED GASES**

<table>
<thead>
<tr>
<th>TYPE OF GAS</th>
<th>AMOUNT (cubic feet at NTP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon dioxide used in carbon dioxide systems</td>
<td>875 (100 lbs.)</td>
</tr>
<tr>
<td>Carbon dioxide used in insulated liquid carbon dioxide beverage dispensing applications</td>
<td>875 (100 lbs.)</td>
</tr>
<tr>
<td>Corrosive</td>
<td>200</td>
</tr>
<tr>
<td>Flammable (except cryogenic fluids and liquefied petroleum gases)</td>
<td>200</td>
</tr>
<tr>
<td>Highly toxic</td>
<td>Any amount</td>
</tr>
<tr>
<td>Inert and simple asphyxiant</td>
<td>6,000</td>
</tr>
<tr>
<td>Oxidizing (including oxygen)</td>
<td>504</td>
</tr>
<tr>
<td>Pyrophoric</td>
<td>Any amount</td>
</tr>
<tr>
<td>Toxic</td>
<td>Any amount</td>
</tr>
</tbody>
</table>

For SI: 1 cubic foot = 0.02832 m³.
105.6.49 **Plant extraction systems.** An operational permit is required to use plant extraction systems.

105.7.19 **Gas detection systems.** A construction permit is required for the installation of or modification to gas detection systems. Maintenance performed in accordance with this code is not considered a modification and shall not require a permit.

105.7.20 **Plant extraction systems.** A construction permit is required for installation of or modification to plant extraction systems. Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit.

**IFC® - Chapter 2 Definitions**

**CARBON DIOXIDE ENRICHMENT SYSTEM.** A system where carbon dioxide gas is intentionally introduced into an indoor environment, typically for the purpose of stimulating plant growth.

**DESOLVENTIZING.** The act of removing a solvent from a material.

**GAS DETECTION SYSTEM.** A system or portion of a combination system that utilizes one or more stationary sensors to detect the presence of a specified gas at a specified concentration and initiate one or more responses required by this code, such as notifying a responsible person, activating an alarm signal, or activating or deactivating equipment. A self-contained gas detection and alarm device is not classified as a gas detection system.

**MISCELLA.** A mixture, in any proportion, of the extracted oil or fat and the extracting solvent.
SECTION 902 DEFINITIONS

902.1 Definitions. The following terms are defined in Chapter 2:

GAS DETECTION SYSTEM

SECTION 916 GAS DETECTION SYSTEM

916.1 Gas detection systems. Gas detection systems required by this code shall comply with Sections 916.2 through 916.11.

916.2 Permits. Permits shall be required as set forth in Section 105.7.

916.2.1 Construction documents. Documentation of the gas detection system design and equipment to be used that demonstrates compliance with the requirements of this code shall be provided with the application for permit.

916.3 Equipment. Gas detection system equipment shall be designed for use with the gases being detected and shall be installed in accordance with manufacturer's instructions.

916.4 Power connections. Gas detection systems shall be permanently connected to the building electrical power supply or shall be permitted to be cord connected to an unswitched receptacle using an approved restraining means that secures the plug to the receptacle.

916.5 Emergency and standby power. Standby or emergency power shall be provided or the gas detection system shall initiate a trouble signal at an approved location if the power supply is interrupted.
916.6 Sensor locations. Sensors shall be installed in approved locations where leaking gases are expected to accumulate.

916.7 Gas sampling. Gas sampling shall be performed continuously. Sample analysis shall be processed immediately after sampling, except as follows:

1. For HPM gases, sample analysis shall be performed at intervals not exceeding 30 minutes.

2. For toxic gases that are not HPM, sample analysis shall be performed at intervals not exceeding 5 minutes, in accordance with Section 6004.2.2.7.

3. Where a less frequent or delayed sampling interval is approved.

916.8 System activation. A gas detection alarm shall be initiated where any sensor data detects a concentration of gas exceeding the following thresholds:

1. For flammable gases, a concentration exceeding 25 percent of the lower flammability limit (LFL).

2. For nonflammable gases, a concentration exceeding one-half of the IDLH, unless a different threshold is specified by the section of this code requiring a gas detection system.

Upon activation of a gas detection alarm, alarm signals or other required responses shall be specified by the section of this code requiring a gas detection system. Audible and visible alarm signals associated with a gas detection alarm system shall be distinct from fire alarm and carbon monoxide alarm signals.
916.9 **Signage.** Signs shall be provided adjacent to gas detection system alarm signaling devices that advise occupants of the nature of the signals and actions to take in response to the signal.

916.10 **Fire alarm system connections.** Gas sensors and gas detection systems shall not be connected to fire alarm system unless approved and connected in accordance with the fire alarm equipment manufacturer's instructions.

916.11 **Inspection, testing and sensor calibration.** Inspection and testing of gas detection systems shall be conducted not less than annually. Sensor calibration shall be confirmed at the time of sensor installation and calibration shall be performed at the frequency specified by the sensor manufacturer.

**IFC® - CHAPTER 10 MEANS OF EGRESS**

**SECTION 1010 DOORS, GATES AND TURNSTILES**

1010.1.9.8 **Sensor release of electrically locked egress doors.** The electric locks on sensor-released doors shall be permitted on doors located in a means of egress in buildings with any occupancy in Groups A, B, E, I-1, I-2, I-4, M, R-1 or R-2 and entrance doors to tenant spaces in occupancies in Groups A, B, E, I-1, I-2, I-4, M, R-1 or R-2 are permitted except Group H where installed and operated in accordance with all of the following criteria:

1. The sensor shall be installed on the egress side, arranged to detect an occupant approaching the doors, and shall cause the electric locking system to unlock. The doors shall be arranged to unlock by a signal from or loss of power to the sensor.
2. The electric locks shall be arranged to unlock by a signal from or loss of power to the sensor.

23. Loss of power to the lock or locking system shall automatically unlock the doors electric locks.

34. The doors shall be arranged to unlock from a manual unlocking device located 40 inches to 48 inches (1016 mm to 1219 mm) vertically above the floor and within 5 feet (1524 mm) of the secured doors. Ready access shall be provided to the manual unlocking device and the device shall be clearly identified by a sign that reads “PUSH TO EXIT.” When operated, the manual unlocking device shall result in direct interruption of power to the electric lock—indisputable of other electronics—and the doors electric lock shall remain unlocked for not less than 30 seconds.

45. Activation of the building fire alarm system, where provided, shall automatically unlock the doors-electric lock, and the doors-electric lock shall remain unlocked until the fire alarm system has been reset.

56. Activation of the building automatic sprinkler system or fire detection system, where provided, shall automatically unlock the doors-electric lock. The doors-electric lock shall remain unlocked until the fire alarm system has been reset.

67. The door locking system units shall be listed in accordance with UL 294.
1010.1.9.9 Electromagnetically-Door hardware release of electrically locked egress doors. Doors—Door hardware release of electric locking systems shall be permitted on doors in the means of egress in buildings with any occupancy in Group A, B, E, I-1, I-2, I-4, M, R-1 or R-2 and doors to tenant spaces in Group A, B, E, I-1, I-2, I-4, M, R-1 or R-2 shall be permitted to be locked with an electromagnetic locking system where equipped with hardware that incorporates a built-in switch and except Group H where installed and operated in accordance with all of the following:

1. The door hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions.

2. The door hardware is capable of being operated with one hand and shall comply with Section 1010.1.9.5.

3. Operation of the door hardware directly interrupts the power to the electromagnetic electric lock and unlocks the door immediately.

4. Loss of power to the electric locking system automatically unlocks the door.

5. Where panic or fire exit hardware is required by Section 1010.1.10, operation of the panic or fire exit hardware also releases the electromagnetic electric lock.

6. The locking system units shall be listed in accordance with UL 294.
1010.1.10 Panic and fire exit hardware. Doors. Swinging doors serving a Group H occupancy and swinging doors serving rooms or spaces with an occupant load of 50 or more in a Group A or E occupancy shall not be provided with a latch or lock other than panic hardware or fire exit hardware. Exceptions:

1. A main exit of a Group A occupancy shall be permitted to have locking devices in accordance with Section 1010.1.9.3, Item 2.

2. Doors provided with panic hardware or fire exit hardware and serving a Group A or E occupancy shall be permitted to be electromagnetically-electrically locked in accordance with Section 1010.1.9.8 or 1010.1.9.9.

Electrical rooms with equipment rated 1,200 amperes or more and over 6 feet (1829 mm) wide, and that contain over-current devices, switching devices or control devices with exit or exit access doors, shall be equipped with panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.

IFC® - CHAPTER 39 PLANT EXTRACTION SYSTEMS

SECTION 3901 GENERAL

3901.1 Scope. Plant processing or extraction facilities shall comply with this chapter and the International Building Code. The extraction process includes the act of extraction of the oils and fats by use of a solvent, desolventizing of the raw material, production of the miscella, distillation of the solvent from the miscella and solvent recovery. The use, storage, transfiling, and handling of hazardous materials in these facilities shall comply with this chapter, other applicable provisions of this code and the International Building Code.
3901.2 Existing buildings or facilities. Existing buildings or facilities used for the processing of plants or where the medium of extraction or solvent is changed shall comply with this chapter.

3901.3 Permits. Permits shall be required as set forth in Sections 105.6 and 105.7.

SECTION 3902 DEFINITIONS

3902.1. Definitions. The following terms are defined in Chapter 2:

DESOLVENTIZING.

MISCELLA.

SECTION 3903 PROCESSING AND EXTRACTION

3903.1 Construction. Processing shall be located in a building complying with the International Building Code.

3903.2 Prohibited occupancies. Extraction processes utilizing flammable gases or flammable cryogenic fluids shall not be located in any building containing a Group A, E, I or R occupancy.

3903.3 Location. The extraction equipment and extraction processes utilizing hydrocarbon solvents shall be located in a room or area dedicated to extraction.

3903.4 Post-process purification and winterization. Post-processing and winterization involving the heating or pressurizing of the miscella to other than normal pressure or temperature shall be approved and performed in an appliance listed for such use. Domestic or commercial cooking appliances shall not be used.
3903.4.1 Industrial ovens. The use of industrial ovens shall comply with Chapter 30.

3903.5 Use of flammable and combustible liquids. The use of flammable and combustible liquids for liquid extraction processes where the liquid is boiled, distilled or evaporated shall be located within a hazardous exhaust fume hood, rated for exhausting flammable vapors. Electrical equipment used within the hazardous exhaust fume hood shall be rated for use in flammable atmospheres. Heating of flammable or combustible liquids over an open flame is prohibited. Exception: The use of a heating element not rated for flammable atmospheres, where documentation from the manufacturer, or approved testing laboratory indicates the element is rated for heating of flammable liquids.

3903.6 Liquefied petroleum gas. Liquefied petroleum gases shall not be released to the atmosphere except where released in accordance with Section 7.3 of NFPA 58.

SECTION 3904 SYSTEMS AND EQUIPMENT

3904.1 General requirements. Systems and equipment used with the processing and extraction of oils and products from plants shall comply with Sections 3904.2 through 3904.4 and 5003.2, and other applicable provisions of this code, the International Building Code and the International Mechanical Code.

3904.2 Systems and equipment. Systems or equipment used for the extraction of oils from plant material shall be listed or approved for the specific use. If the system used for extraction of oils and products from plant material is not listed, the system shall be reviewed by a registered design professional. The registered design professional shall review and consider any information provided by the system's designer or manufacturer. For systems and equipment not listed for the
specific use, a technical report in accordance with Section 3904.3 shall be prepared and submitted to the fire code official for review and approval. The firm or individual preparing the technical report shall be approved by the fire code official prior to performing the analysis.

3904.3 Technical report. A technical report, reviewed and approved by the fire code official as required in Section 3904.2, is required prior to the equipment being located or installed at the facility. The report shall be prepared by a registered design professional or other professional approved by the fire code official.

3904.3.1 Report content. The technical report shall contain all of the following:

1. Manufacturer information.
2. Preparer of record of the technical report.
3. Date of review and report revision history.
4. Signature page, including all of the following:
   4.1 Author of the report.
   4.2 Date of report.
   4.3 Date and signature of registered design professional of record performing the design or peer review.
5. Model number of the item evaluated. If the equipment is provided with a serial number, the serial number shall be included for verification at the time of site inspection.

6. Methodology of the design or peer review process used to determine minimum safety requirement. Methodology shall consider the basis of design, and shall include a code analysis and code path to demonstrate whether specific codes or standards are applicable.

7. Equipment description. A list of every component and subassembly, such as fittings, hose, quick disconnects, gauges, site glass, gaskets, valves, pumps, vessels, containers and switches, of the system or equipment, indicating the manufacturer, model number, material and solvent compatibility. Manufacturer's data sheets shall be provided.

8. A general flow schematic or general process flow diagram of the process. Post-processing or winterization shall be included in this diagram. Primary components of the process equipment shall be identified and match the equipment list required in Item 7. Operating temperatures, pressures and solvent state of matter shall be identified in each primary step or component. A piping and instrumentation diagram (PID or P&ID) shall be provided.

9. Analysis of the vessel(s) if pressurized beyond standard atmospheric pressure. Analysis shall include purchased and fabricated components.

10. Structural analysis for the frame system supporting the equipment.

11. Process safety analysis of the extraction system, from the introduction of raw product to the end of the extraction process.
12. Comprehensive process hazard analysis considering failure modes and points of failure throughout the process. The process hazard analysis shall include a review of emergency procedure information provided by the manufacturer of the equipment or process and not that of the facility, building or room.

13. Review of the assembly instructions, operations and maintenance manuals provided by the manufacturer.

14. List of references used in the analysis.

**3904.4 Site inspection.** Prior to operation of the extraction equipment, where required by the fire code official, the engineer of record or approved professional, as approved in Section 3904.2, shall inspect the site of the extraction process once equipment has been installed for compliance with the technical report and the building analysis. The engineer of record or approved professional shall provide a report of findings and observations of the site to the fire code official prior to the approval of the extraction process. The field inspection report authored by the engineer of record shall include the serial number of the equipment used in the process and shall confirm that the equipment installed is the same model and type of equipment identified in the technical report.

**SECTION 3905 SAFETY SYSTEMS**

**3905.1 Gas detection.** For extraction processes utilizing flammable gases as solvents, a continuous gas detection system shall be provided. The gas detection threshold shall be not greater than 25 percent of the lower explosive limit/lower flammability limit (LEL/LFL) of the materials.
3905.1.1 **System design.** The flammable gas detection system shall be listed or approved and shall be calibrated to the types of fuels or gases used for the extraction process. The gas detection system shall be designed to activate when the level of flammable gas exceeds 25 percent of the LFL.

3905.1.2 **Gas detection system components.** Gas detection system control units shall be listed and labeled in accordance with UL 864 or UL 2017. Gas detectors shall be listed and labeled in accordance with UL 2075 for use with the gases and vapors being detected.

3905.1.3 **Operation.** Activation of the gas detection system shall result in all the following:

1. Initiation of distinct audible and visual alarm signals in the extraction room.
2. Deactivation of all heating systems located in the extraction room.
3. Activation of the mechanical ventilation system, where the system is interlocked with gas detection.

3905.1.4 **Failure of the gas detection system.** Failure of the gas detection system shall result in the deactivation of the heating system; activation of the mechanical ventilation system where the system is interlocked with the gas detection system; and initiation of a trouble signal to sound in an approved location.

3905.1.5 **Interlocks.** Electrical components with the extraction room shall be interlocked with the gas detection system. Activation of the gas detection system shall disable all light switches and electrical outlets.

3905.2 **Emergency shutoff.** Extraction processes utilizing gaseous hydrocarbon-based solvents shall be provided with emergency shutoff systems in accordance with Section 5803.1.3
IFC® - CHAPTER 53 – COMPRESSED GASES

SECTION 5307 CARBON DIOXIDE (CO2) SYSTEMS USED IN BEVERAGE APPLICATIONS COMPRESSED GASES NOT OTHERWISE REGULATED

5307.1 General. Compressed gases in storage or use not regulated by the material-specific provisions of Chapters 6, 54, 55, and 60 through 67, including asphyxiant, irritant and radioactive gases, shall comply with this section in addition to other requirements in this chapter.

5307.2 Ventilation. Indoor storage and use areas and storage buildings shall be provided with ventilation in accordance with Section 5004.3. Where mechanical ventilation is provided, the systems shall be operational during such time as the building or space is occupied. Exceptions:

1. A gas detection system complying with Section 5307.2.1 shall be permitted in lieu of mechanical ventilation.

2. Areas containing insulated liquid carbon dioxide systems used in beverage dispensing applications shall comply with Section 5307.3.

5307.3 Insulated liquid carbon dioxide systems used in beverage dispensing applications. Insulated liquid carbon dioxide systems with more than 100 pounds (45.4 kg) of carbon dioxide used in beverage dispensing applications shall comply with Section 5307.2 through 5307.5.2 Section 5307.3.1.

5307.2 Permits. Permits shall be required as set forth in Section 105.6.

5307.3 Equipment. The storage, use and handling of liquid carbon dioxide shall be in accordance with Chapter 53 and the applicable requirements of NFPA 55, Chapter 13. Insulated liquid carbon dioxide systems shall have pressure relief devices vented in accordance with NFPA 55.
5307.4 Protection from damage. Carbon dioxide systems shall be installed so the storage tanks, cylinders, piping and fittings are protected from damage by occupants or equipment during normal facility operations.

5307.5 5307.3.1 Required protection Ventilation. Where insulated liquid carbon dioxide storage tanks, cylinders, piping and equipment are located indoors, rooms or areas containing carbon dioxide storage tanks, cylinders, piping and fittings equipment, and other areas where a leak of carbon dioxide can collect is expected to accumulate, shall be provided with either mechanical ventilation in accordance with Section 5307.5.1 or an emergency alarm system in accordance with Section 5307.5.2 and designed to maintain the room containing carbon dioxide at a negative pressure in relation to the surrounding area. Exception: A gas detection system complying with Section 5307.3.2 shall be permitted in lieu of mechanical ventilation.

5307.5.1 Ventilation. Mechanical ventilation shall be in accordance with the International Mechanical Code and shall comply with all of the following:

1. Mechanical Ventilation in the room or areas shall be at a rate of not less than 1 cubic foot per minute per square foot [0.00508 meters squared/(s times meters squared)].

2. Exhaust shall be taken from a point within 12 inches (305 mm) of the floor.

3. The ventilation system shall be designed to operate at a negative pressure in relation to the surrounding area.
5307.5.2 Emergency alarm system. An emergency alarm system shall comply with all of the following:

1. Continuous gas detection shall be provided to monitor areas where carbon dioxide can accumulate.

2. The threshold for activation of an alarm shall not exceed 5,000 parts per million (9,000 mg/cubic meter).

3. Activation of the emergency alarm system shall initiate a local alarm within the room or area in which the system is installed.

5307.3.2 Gas detection system. When ventilation is not provided in accordance with Section 5307.3.1, a gas detection system shall be provided in rooms or indoor areas and in below grade outdoor locations with insulated carbon dioxide systems. Carbon dioxide sensors shall be provided within 12 inches (305 mm) of the floor in the area where the gas is expected to accumulate or other approved locations. The system shall be designed as follows:

1. Activates an audible and visible supervisory alarm at a normally attended location upon detection of a carbon dioxide concentration of 5,000 ppm (9,000 mg/cubic meter).

2. Activates an audible and visible alarm within the room or immediate area where the system is installed upon detection of a carbon dioxide concentration of 30,000 ppm (54 000 mg/cubic meter).
5307.4 **Carbon dioxide enrichment systems.** The design, installation and maintenance of carbon dioxide enrichment systems with more than 100 pounds (45.4 kg) of carbon dioxide, and carbon dioxide enrichment systems with any quantity of carbon dioxide having a remote fill connection, shall comply with Sections 5307.4.1 through 5307.4.7.

5307.4.1 **Documentation.** The following information shall be provided with the application for permit:

1. Total aggregate quantity of liquid carbon dioxide in pounds or cubic feet at normal temperature and pressure.
2. Location and total volume of the room where the carbon dioxide enrichment operation will be conducted. Identify whether the room is at grade or below grade.
3. Location of containers relative to equipment, building openings and means of egress.
4. Manufacturer's specifications and pressure rating, including cut sheets, of all piping and tubing to be used.
5. A piping and instrumentation diagram that shows piping support and remote fill connections.
6. Details of container venting, including but not limited to vent line size, material and termination location.
7. Alarm and detection system and equipment, if applicable.
8. Seismic support for containers.
5307.4.2 Equipment. Pressure relief, vent piping, fill indicators, fill connections, vent terminations, piping systems and the storage, use and handling of carbon dioxide shall be in accordance with Chapter 53 and NFPA 55.

5307.4.3 Gas detection system. A gas detection system complying with Section 916 shall be provided in rooms or indoor areas in which the carbon dioxide enrichment process is located, in rooms or indoor areas in which container systems are located, and in other areas where carbon dioxide is expected to accumulate. Carbon dioxide sensors shall be provided within 12 inches (305 mm) of the floor in the area where gas is expected to accumulate or leaks are most likely to occur. The system shall be designed as follows:

1. Activates a low-level alarm upon detection of carbon dioxide concentration of 5,000 ppm (9000 mg/cubic meter).

2. Activates a high-level alarm upon detection of carbon dioxide concentration of 30,000 ppm (54 000 mg/cubic meter).

5307.4.3.1 System activation. Activation of the low level gas detection system alarm shall automatically:

1. Stop the flow of carbon dioxide to the piping system.

2. Activate the mechanical exhaust ventilation system.

3. Activate the audible and visible supervisory alarm signal at an approved location within the building.
Activation of the high-level gas detection system alarm shall automatically:

1. Stop the flow of carbon dioxide to the piping system.
2. Activate the mechanical exhaust ventilation system.
3. Activate an audible and visible evacuation alarm both inside and outside of the carbon dioxide enrichment area, and the area in which the carbon dioxide containers are located.

5307.4.4 Pressurization and ventilation. Rooms or indoor areas in which carbon dioxide enrichment is provided shall be maintained at a negative pressure in relation to the surrounding areas in the building. A mechanical ventilation system shall be provided in accordance with the International Mechanical Code that complies with all of the following:

1. Mechanical ventilation in the room or area shall be at a rate of not less than 1 cfm per square foot [0.00508 cubic meters/s times meters squared)].
2. When activated by the gas detection system, the mechanical ventilation system shall remain on until manually reset.
3. The exhaust system intakes shall be taken from points within 12 inches (305 mm) of the floor.
4. The ventilation system shall discharge to the outdoors in an approved location.

5307.4.5 Signage. Hazard identification signs shall be posted at the entrance to the room and indoor areas where the carbon dioxide enrichment process is located and at the entrance to the room or indoor area where the carbon dioxide containers are located. The sign shall be not less than 8 inches (200 mm) in width and 6 inches (150 mm) in height and indicate:
CAUTION – CARBON DIOXIDE GAS
VENTILATE THE AREA BEFORE ENTERING.
A HIGH CARBON DIOXIDE (CO2) GAS CONCENTRATION IN THIS AREA CAN CAUSE ASPHYXIATION.

5307.4.6 Seismic and structural design. Carbon dioxide system containers and piping shall comply with the seismic design requirements in Chapter 16 of the International Building Code and shall not exceed the floor loading limitation of the building.

5307.4.7. Container refilling. Carbon dioxide containers located indoors shall not be refilled unless filled from a remote connection located outdoors.

SECTION 5308 COMPRESSED GASES NOT OTHERWISE REGULATED

5308.1 General. Compressed gases in storage or use not regulated by the material specific provisions of Chapters 6, 54, 55, and 60 through 67, including asphyxiant, irritant and radioactive gases shall comply with this section in addition to other requirements of this chapter.

5308.2 Ventilation. Indoor storage and use areas and storage buildings shall be provided with mechanical exhaust ventilation in accordance with the requirements of Section 5004.3 or 5005.1.9. Where mechanical ventilation is provided, the systems shall be operational during such time as the building or space is occupied.
Summary of Change:
The submitter noted the change proposal was made to address the hazards involved in growing and extracting fats and oils from plant material. They added, with the passage of State Question 788, a new industry that involves these hazards has begun in the State of Oklahoma. The submitter stated the hazards are not limited to the plant material addressed in State Question 788; however, to their knowledge, the processes that involve the hazards had not previously been utilized in the agricultural industry in the State of Oklahoma.

The submitter noted there were several hazards addressed by the proposal that included: the introduction of carbon dioxide into the growing environment; the use of flammable and combustible chemicals or other hazardous materials to extract the valuable fats and oils from plant materials; many of the facilities were utilizing construction materials and processing equipment not tested in accordance with the code; and security measures employ locking devices that are prohibited in the occupancy group according to the currently adopted code.

The submitter explained the carbon dioxide enrichment process and noted while it can be beneficial to increase plant yields, in high concentrations, the gas could asphyxiate occupants in the space. The submitter noted the ideal concentration of carbon dioxide was well below the allowable level for sustaining human life, but equipment could malfunction or fail.

The submitter stated the proposed language came from the 2018 edition of the IFC® to address these hazards, and added in the 2015 edition carbon dioxide systems were addressed in Chapter 9 for extinguishing systems and in Chapter 53 for beverage dispensing systems only.
The submitter explained the proposal did the following:
1. Added language to Chapter 1 of the IFC®, 2015 to require construction permits for the installation of carbon dioxide enrichment systems and operational permits for the utilization of the systems;
2. Added definitions to Chapter 2 to the IBC® and IFC®
3. Added language to Chapter to the IBC® and IFC® by adding Section 916 to address all of the requirements for a gas detection system.
4. Modified language in Chapter 10 of the IBC® and IFC® for locking systems; and
5. Combined in the IFC®, 2015, Chapter 53, Sections 5307 and 5308 for clarity, since Section 5308 addresses all compressed gases and 5307 regulates carbon dioxide in beverage dispensing applications.

The submitter noted none of the proposed language currently existed in the 2015 editions of the IBC® and IFC® to address the hazards involved with the materials and the proposal provides guidance for regulators.

The submitter noted an issue existed with the security measures, required by regulatory agencies within the State of Oklahoma. The submitter stated while there were no specific requirement for the type of security measures a business must utilize, they were directed to adequately protect the premises from entrance by unauthorized persons and prevent threat of diversion of the product they are growing, manufacturing, or selling. Typically, conventional door hardware with a locking mechanism is not sufficient to prevent this unauthorized entry. Access control systems are installed utilizing sophisticated technology such as electric locks or high powered magnetic locks. Depending on the amounts of hazardous materials used and stored in each facility, the building will primarily be classified as a Group F-1 occupancy.
The submitter noted the 2015 IBC® and IFC® in Sections 1010.1.9.8 and 1010.1.9.9 prohibited the use in that occupancy classification. The submitter added that the 2018 IFC® and IBC® have been modified to allow the use of these types of systems in all occupancy groups except Group H.

**Committee Commentary:**
The submitter and the committee discussed the need to create emergency rules for life safety and before the 2018 code was adopted, modifications would need to be made to remove the changes from the agency's rules; who would be responsible for issuing permits in unincorporated areas of the State; the numbering in the proposal matched the 2015 sections, not the 2018 since the emergency rules would amend the 2015 adoption; if systems involved in the process were really closed; and the need to provide some protections for personnel in the facilities.

**Committee Action Taken:**
Unanimous vote to approve BEBF CCF #78 to recommend emergency rules to the 2015 IBC® and IFC® (3/12/2019)
Proposed Code Change:
BEBF CCF #95 and BEBF CCF #95 Revision #1, modifying language in the 2015 IBC®, via emergency rules for Chapter 4, newly created section 429 Cultivation, Extraction and Processing Plant Materials; and adding and modifying additional requirements to the 2015 IFC® via emergency rules for the newly created Chapter 39 Processing and Extraction Facilities; and CCF #95, Revision 1 with further modifications to the sections listed above.

CCF #95:
IBC® CHAPTER 4, SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY

SECTION 429 CULTIVATION, EXTRACTION AND PROCESSING PLANT MATERIAL

429.1 General. Plant growing facilities that utilize carbon dioxide enrichment systems in accordance with Section 5307.4 of the International Fire Code and plant processing or extraction facilities in accordance with Chapter 39 of the International Fire Code shall also comply with Sections 429.2 through 429.5.

429.2 Construction. The construction of buildings used for the extraction process that include the act of extraction of the oils and fats by use of solvent, desolventizing of the raw material, production of the miscella, distillation of the solvent from the miscella and solvent recovery shall comply with Sections 429.2.1 through 429.2.2.
429.2.1 **Noncombustible construction.** Extraction equipment and processes utilizing hazardous materials shall be located in a room constructed of noncombustible materials.

429.2.2 **Prohibited occupancies.** Extraction equipment and extraction processes utilizing hazardous materials shall not be located in any building containing a Group A, E, I or R occupancy.

429.2.3 **Location.** The extraction equipment and extraction processes utilizing hazardous materials as solvents shall be located in a room dedicated to extraction and the room shall not be used for any purpose. There shall be no storage of solvents in the extraction room.

429.3 **Interior finish.** Interior finish of walls and ceilings in plant growing, processing and extraction facilities shall comply with Sections 429.3.1 and 803.

429.3.1 **Plastic, mylar and other thin sheeting.** Plastic, mylar and other thin sheeting that covers any walls or ceilings shall comply with Section 803.

429.3.1.1 **Installation.** Plastic, mylar and other thin sheeting shall not be hung from ceilings or suspended overhead structures to create divider walls or rooms.

429.4 **Emergency power system.** For extraction processes utilizing hydrocarbon gases or liquids as solvents, the extraction room lighting and ventilation system shall be provided with emergency power in accordance with Section 2702.
429.5 Means of egress. Extraction rooms using hazardous materials shall have a minimum of one exit access door that swings in the direction of egress travel. The exit access door shall be equipped with panic hardware or fire exit hardware and a self-closing or automatic-closing device.

IFC® CHAPTER, 39 PROCESSING AND EXTRACTION FACILITIES

3903.2 Prohibited occupancies. Extraction equipment and extraction processes utilizing flammable gases or flammable cryogenic fluids hazardous materials shall not be located in any building containing a Group A, E, I or R occupancy.

3903.3 Location. The extraction equipment and extraction processes utilizing hydrocarbon hazardous materials as solvents shall be located in a room or area dedicated to extraction and the room shall not be used for any purpose. There shall be no storage of solvents in the extraction room.

CCF 95, Revision 1:

IBC Chapter 4
SECTION 427 CULTIVATION, EXTRACTION AND PROCESSING OF PLANT MATERIAL

427.1 General. Plant growing facilities that utilize carbon dioxide enrichment systems in accordance with Section 5307.4 of the International Fire Code and plant processing or extraction facilities in accordance with Chapter 39 of the International Fire Code shall also comply with Sections 427.2 through 427.6.
427.2 Construction. The construction of buildings used for the extraction process that include the act of extraction of the oils and fats by use of solvent, desolventizing of the raw material, production of the miscella, distillation of the solvent from the miscella and solvent recovery shall comply with this section.

Exception: Extraction process that utilizes nonhazardous solvents or CO2.

427.2.1 Noncombustible construction. Extraction equipment and processes utilizing materials classified as physical hazards in accordance with Section 307 and the International Fire Code shall be located in a room constructed of noncombustible materials.

427.2.2 Prohibited occupancies. Extraction equipment and extraction processes utilizing materials classified as physical hazards in accordance with Section 307 and the International Fire Code shall not be located in any building containing a Group A, E, I or R occupancy.

427.3 Equipment Location. The extraction equipment and extraction processes utilizing materials classified as physical hazards in accordance with Section 307 and the International Fire Code as solvents shall be located in a room dedicated to extraction and the room shall not be used for any other purpose. There shall be no storage of solvents in the extraction room.

427.4 Interior finish. Interior finish of walls and ceilings in plant growing, processing and extraction facilities shall comply with this section and 803.

427.4.1 Plastic, mylar and other thin sheeting. Plastic, mylar and other thin sheeting that covers any walls or ceilings shall comply with this section and Section 803.
427.4.1.1 Installation. Plastic, mylar and other thin sheeting shall not be hung from ceilings or suspended overhead structures to create divider walls or rooms.

427.5 Emergency power system. For extraction processes utilizing hydrocarbon gases or liquids as solvents, the extraction room lighting and ventilation system shall be provided with emergency power in accordance with Section 2702.

427.6 Means of egress. Extraction rooms using materials classified as physical hazards in accordance with Section 307 and the International Fire Code shall have a minimum of one exit access door that swings in the direction of egress travel. The exit access door shall be equipped with panic hardware or fire exit hardware and a self-closing or automatic-closing device.

IFC Chapter 39 PROCESSING AND EXTRACTION FACILITIES

3903.2 Prohibited occupancies. Extraction equipment and extraction processes utilizing flammable gases or flammable cryogenic fluids materials classified as physical hazards in accordance with Section 307 and the International Fire Code shall not be located in any building containing a Group A, E, I or R occupancy.

3903.3 Location. The extraction equipment and extraction processes utilizing hydrocarbon materials classified as physical hazards in accordance with Section 307 and the International Fire Code as solvents shall be located in a room or area dedicated to extraction and the room shall not be used for any other purpose. There shall be no storage of solvents in the extraction room.
Summary of Change:
CCF 95: The submitter noted the modifications mirrored NFPA 1, Chapter 38. NFPA 1 listed requirements for growing, extraction and processing of plant materials that are either not covered in 2018 IFC or are more stringent. This change provides requirements related to construction normally covered by IBC. Specifically, NFPA 1 requires extraction rooms utilizing certain hazardous materials to be constructed of noncombustible materials. Second, the use of plastic or other sheeting materials that are used to separate or enclose plants during growing are required to meet interior finish requirements in the IBC and also are not allowed to be hung from the ceiling. Third, extraction rooms shall be provided with doors that swing in the direction of travel, have panic or fire exit hardware and are self or automatic closing. Next, emergency power is required where hydrocarbons are used. The two items that are more restrictive in NFPA 1 than IFC are prohibiting any extraction process in a building with assembly, education, institutional or residential occupancy groups and requiring all extraction processes utilizing any hazardous material to be in a separate room not used for any other purpose.

CCF 95, Revision #1: The submitter noted the form was revised to utilize the term "materials classified as physical hazards in accordance with Section 307 of the International Fire Code" in place of "hazardous materials" based on the definition of "physical hazards" from the IBC and the classifying of materials in accordance with IFC Section 5001.2.2.1. Specifically, the definition of hazardous materials.
Committee Commentary:
At the April 8, 2019 meeting, the submitter reviewed each section of proposed code change and provided reasons for each change. The committee discussed the language in Section 429.3.1.1 related to tenting; hazards associated with a fire with the burning sheathing falling on someone; if any of the proposed comments addressed fire-resistant plastic sheathing; that the intent of the change was to deal with either the equipment or the processes utilizing a hazardous material; why the specific hazards were deleted and replaced with the term "hazardous material." There was further discussion on the hazardous material thresholds in the IFC®, and how amounts utilized over and under the thresholds allowed in the IFC® would be affected by the proposed change. After further discussion the comment form was tabled for revision.

At the June 11, 2019 meeting the committee reviewed the modifications made to the revised version on the comment form. After reviewing the wording changes related to hazards, the committee discussed making a slight modification to the language in the portion dealing with the IFC®.

Committee Action Taken:
BEBF CCF #95 was tabled at the April 8, 2019 meeting; the submitter requested the form to be brought back without changes at the May 7, 2019 meeting but at the meeting requested it be tabled again.

Unanimous vote to approve CCF 95, Revision #1 as modified by replacing wording in Sections 3903.2 and 3903.3 from "The International Fire Code" with the wording "this code" for inclusion in the 2015 IBC® and IFC® emergency rules (06/11/2019)
Proposed Code Change:
Committee Comment Form BEBF #96; modifying language in the 2015 IFC® via emergency rules to the newly created Chapter 39 Processing and Extraction Facilities

3903.4 Post-process purification and winterization. Post-processing and winterization involving the heating, cooling or pressurizing of the miscella to other than normal pressure or temperature shall be approved and performed in an appliance listed for such use and shall comply with Sections 3903.4.1 or 3903.4.2. Domestic or commercial cooking appliances and cooling appliances shall not be used.

3903.4.1 Industrial ovens. The use of industrial ovens shall comply with Chapter 30.

3903.4.2 Refrigerators, freezers and other cooling equipment. Refrigerators, freezers and other cooling equipment used to store or cool flammable liquids shall be listed for the storage of flammable and/or combustible liquids or shall be listed for Class I, Division I locations in accordance with NFPA 70.

Summary of Change:
The submitter noted the change mirrors NFPA 1, Section 38.6.1.5.2.2, when a flammable or combustible liquid is placed in a refrigerator or freezer that is not rated for such material, the vapors from the liquid can be sparked by the electrical systems of the refrigerator or freezer causing an explosion.
Committee Commentary:
At the April 8, 2019, the committee discussed the proposed change came from NFPA 1; different scenarios and ways the winterization process could be done and if the change would cover those different scenarios; possible further modification of the language to cover "flammable materials" instead of just "flammable liquids;" if lab-grade freezers would be listed for flammable gasses; off-gassing issues and flashpoints of different solvents; further language in NFPA 1 related to the section; and if the modifications would apply when flammable gasses were still within the product and the product was frozen. After discussion the item was tabled for revision.

Committee Action Taken:
BEBF CCF #96 was tabled at the April 8, 2019 meeting; the submitter requested the form to be brought back without changes at the May 7, 2019 meeting, but at the meeting requested it be tabled again.

Unanimous vote to approve BEBF CCF #96 for inclusion in the 2015 IFC® emergency rules (06/11/2019)
Proposed Code Change:
Committee Comment From BEBF #97, modifying language in the 2015 IFC® via emergency rules to the newly created Chapter 39 Processing and Extraction Facilities

3903.4.3 Post-processing. Post-processing operations, including dispensing of flammable liquids between containers, shall be performed within a hazardous exhaust fume hood rated for exhausting flammable vapors and listed to UL1805. Electrical equipment used within the hazardous exhaust fume hood shall be rated for use in flammable atmospheres. Exception: A hazardous exhaust fume hood is not required where an approved exhaust system is installed in accordance with NFPA 91.

Summary of Change:
The submitter noted the modification mirrored NFPA 1, Section 38.6.3.2.1 and was a companion change to BEBF #96. They noted the 2018 IFC® provides for requirements of the use of flammable and combustible liquids in the extraction process; however, the change addresses the use of those same chemicals when used after the extraction process occurs. From raw plant material to final product, there are several times the hazardous materials are utilized for processing. The modification addresses the hazards involved with the flammable liquid at any time the vapors can escape into the air, not just when the extraction process is being conducted.

Committee Commentary:
The committee reviewed the form and agreed with the proposed change. They discussed making sure the chemical fume hood was rated to UL 1805.

Committee Action Taken:
Unanimous vote to approve BEBF CCF #97 as amended by adding the words "and listed to UL 1805" to the end of the first sentence for inclusion in the 2015 IFC® emergency rules (04/08/2019)
Proposed Code Change:
Committee Comment Form BEBF CCF #98, modifying language in the 2015 IFC® via emergency rules to the newly created Chapter 39 Processing and Extraction Facilities

3903.5 Use of flammable and combustible liquids. The use of flammable and combustible liquids for liquid extraction processes, including dispensing of flammable liquids between containers, where the liquid is boiled, distilled or evaporated shall be located within a hazardous exhaust fume hood, rated for exhausting flammable vapors and listed in accordance with UL 1805. Electrical equipment used within the hazardous exhaust fume hood shall be rated for use in flammable atmospheres. Heating of flammable or combustible liquids over an open flame is prohibited. Exceptions:
1. The use of a heating element not rated for flammable atmospheres, where documentation from the manufacturer, or approved testing laboratory indicates the element is rated for heating of flammable liquids.
2. Unheated processes at atmospheric pressure using less than 16 oz (473 ml) of flammable liquids are not required to be located within a hazardous exhaust fume hood.
3. A hazardous exhaust fume hood is not required where an approved exhaust system is installed in accordance with NFPA 91. Electrical equipment used within this room shall be rated for use in flammable atmosphere.

Summary of Change:
The submitter noted the change mirrored the requirements in NFPA 1, Section 38.6.3. They stated while the 2018 IFC had requirements in Chapter 39 for extraction processes with flammable and
Combustible liquids, NFPA 1 provided two exceptions for the exhaust requirements. They noted the modification includes those two items and the change included a requirement for dispensing of the flammable liquid to be conducted under the exhaust fume hood. They noted the change also addressed the hazards involved with the flammable liquid at any time the vapors could escape into the air, not just when the extraction process was being conducted.

Committee Commentary:
The committee agreed it was a good modification to be made and discussed adding the same requirement for the exhaust fume hood to be rated to UL 1805.

Committee Action Taken:
Unanimous vote to approve BEBF CCF #98 as amended by adding the words "and listed in accordance with UL 1805" to the end of the first sentence for inclusion in the 2015 IFC® emergency rules (04/08/2019)
Proposed Code Change
Committee Comment Form BEBF CCF #99 and BEBF CCF #99, Revision #1, modifying language in the 2015 IFC® via emergency rules to the newly created Chapter 39 Processing and Extraction Facilities; BEBF CCF 99, Revision #1, with revised modifications.

CCF 99:

3903.6 Liquefied petroleum gas. Liquefied petroleum gases shall not be released to the atmosphere except where released in accordance with Section 7.3 of NFPA 58. Plant processing and extraction utilizing liquefied petroleum gas shall comply with Sections 3903.6.1 through 3903.6.3 and other applicable provisions of this code.

3903.6.1 Release of gas. Liquefied petroleum gases shall not be released to the atmosphere except where released in accordance with Section 7.3 of NFPA 58.

3903.6.2 Exhaust. Plant processing and extraction utilizing liquefied petroleum gas, including processes for off-gassing spent plant material and oil retrieval, shall be located under a chemical fume hood. Exception: A chemical fume hood is not required where an approved exhaust system is installed in accordance with NFPA 91.

3903.6.3 Electrical. The extraction room where liquefied petroleum gases is used as a solvent shall be classified as Class I, Division I hazardous location in accordance with NFPA 70. All conductive equipment and conductive objects within the extraction room shall be bonded and grounded with a resistance of less than $1.0 \times 10^6$ ohms in accordance with NFPA 70.
CCF 99 Revision #1:

3903.6 Liquefied petroleum gas. Liquefied petroleum gases shall not be released to the atmosphere except where released in accordance with Section 7.3 of NFPA 58. Plant processing and extraction utilizing liquefied petroleum gas shall comply with Sections 3903.6.1 through 3903.6.4 and other applicable provisions of this code.

3903.6.1 Release of gas. Liquefied petroleum gases shall not be released to the atmosphere except where released in accordance with Section 7.3 of NFPA 58.

3903.6.2 Exhaust. Plant processing and extraction utilizing liquefied petroleum gas, including processes for off-gassing spent plant material and oil retrieval, shall be located under a chemical fume hood, listed in accordance with UL 1805.

Exception: A chemical fume hood is not required where an approved exhaust system is installed in accordance with NFPA 91.

3903.6.3 Electrical. The extraction room where liquefied petroleum gas is used as a solvent shall be classified as Class I, Division I hazardous location in accordance with NFPA 70. All conductive equipment and conductive objects within the extraction room shall be bonded and grounded with a resistance of less than $1.0 \times 10^6$ ohms in accordance with NFPA 70.

3903.6.4 Automatic fire-extinguishing system. Chemical fume hoods and enclosures, including ductwork, required by Section 3903.6.2 shall be provided with an automatic fire-extinguishing system complying with Section 903.3.1.1, 904.6, 904.8 or 904.10.

Summary of Change:

CCF #99: The submitter noted the proposed changes mirrored NFPA 1, Section 38.6.2 and while the IFC had requirements in Chapter 39 for the extraction processes with LNG, NFPA 1 provided additional requirements with regard to the exhaust and electrical systems inside the extraction
room and the change brought them into the code requirements.

**CCF #99, Revision #1:** The submitter noted the form was modified to include requirements for a fire-extinguishing system within a hood or enclosure where LPG was utilized during the extraction process, similar to NFPA 1, Section 38.6.2.5. The section specifically lists water systems in accordance with NFPA 13, carbon dioxide systems in accordance with NFPA 12, dry-chemical system in accordance with NFPA 17, or gaseous agent extinguishing systems in accordance with NFPA 2001 as acceptable extinguishing systems.

**Committee Commentary:**
At the April 8, 2018 meeting, the committee discussed the proposed change and the differences between hazardous exhaust fume hoods and chemical fume hoods; modifying the language to require a listing for the chemical fume hood; and if the language related to the fume hoods should be changed so it matched the two previous changes. The committee determined the comment form should be tabled for revision.

At the June 11, 2019 meeting, the committee reviewed the modifications to the original comment form.

**Committee Action Taken:**
BEHF CCF #96 was tabled at the April 8, 2019 meeting; the submitter requested the form to be brought back without changes at the May 7, 2019 meeting, but at the meeting requested it be tabled again.

Unanimous vote to approve Committee Comment Form BEHF CCF #99, Revision 1, for inclusion in the 2015 IFC® emergency rules (06/11/2019)
Proposed Code Change
Committee Comment Form BEBF CCF #100, modifying language in the 2015 IFC® via emergency rules to the newly created Chapter 39 Processing and Extraction Facilities

3903.7 Carbon dioxide extraction. Plant processing and extraction facilities utilizing carbon dioxide solvents shall comply with this section, Section 5307 and other applicable provisions of this code.

3903.7.1 Storage and handling. All carbon dioxide compressed gas cylinders shall be secured to a fixed object to prevent falling.

3903.7.2 Gas detection system. A gas detection system complying with Sections 916 and 5307.4.3 shall be provided in a room where carbon dioxide solvents are used in the extraction process.

3903.7.3 Carbon dioxide discharge. The carbon dioxide extraction equipment pressure relief device and blow-off valves shall be piped to the exterior of the building.

Summary of Change:
The submitter noted the change came from NFPA 1 and that Chapter 39 and Section 5307 of the IFC addressed the use of carbon dioxide enrichment systems, but did not directly address the use of carbon dioxide as an extraction solvent. They noted the change includes language to address the hazards involved in using carbon dioxide as an extraction solvent. The submitter noted the change also required the carbon dioxide tank to be secured.
Committee Commentary:
The committee discussed the requirement for the carbon dioxide tank to be secured had been in place for restaurants for years. They noted the requirement was addressed in the NBIC Supplement 2 for liquid carbon dioxide vessels and discussed if the standard should be referenced. There was discussion on the Department of Labor requirements for issuing a license to operate a carbon dioxide tank; if the storage tanks were equipped with the pressure relief valves or blow-off valves; high pressure vessel requirements; and if the requirements in Section 5303 of the IFC were adequate.

Committee Action Taken:
Unanimous vote to approve BEBF SCF #100 to add sections 3903.7, 3903.7.1, 3903.7.2, and 3903.7.3 for inclusion in the 2015 IFC® emergency rules (04/08/2019)
Proposed Code Change
Committee Comment Form BEBF CCF #101, modifying language in the 2015 IFC® via emergency rules to the newly created Chapter 39 Processing and Extraction Facilities

3905.3 Emergency power system. For extraction processes utilizing hydrocarbon gases or liquids as solvents, the extraction room lighting and extraction room ventilation system shall be provided with emergency power in accordance with Section 2702 of the International Building Code.

Summary of Change:
The submitter noted the change mirrored NFPA 1, Section 38.6.2.3.5 and the modification required emergency power for the lights and ventilation whenever hydrocarbons were used in the extraction process.

Committee Commentary:
The committee reviewed the proposed change and thought it should be part of the emergency rules.

Committee Action Taken:
Unanimous vote to approve BEBF CCF #101 for inclusion in the 2015 IFC® emergency rules (04/08/2019)
Proposed Code Change:
Staff Comment Form BEBF SCF #121; modifying Section 902.1 in the IBC® and Section 5302.1 in the IFC®

IBC®
902.1 Definitions. The following terms are defined in Chapter 2:
GAS DETECTION SYSTEM.

IFC®
5302.1 Definitions. The following terms are defined in Chapter 2:
CARBON DIOXIDE ENRICHMENT SYSTEM.

Summary of Change:
OUBCC staff created the form to address items missed in Committee Comment Form: BEBF CCF #78. Comment form BEBF CCF #78 added definitions in Chapter 2 of both codes but the corresponding section listing out those definitions in the Chapters where they were added for was not addressed.

Committee Commentary:
The committee discussed the change was to add the terms to the list of existing terms for each section and did not delete the remainder of the lists published in those sections.

Committee Action Taken:
Unanimous vote to approve Staff Comment Form BEBF SCF #121 for inclusion in the 2015 IBC® and IFC® emergency rules (06/11/2019)