SEATTLE FIRE DEPARTMENT	Administrative Rule 53.01.15

SUBJECT: **MARIJUANA GROWING AND OIL EXTRACTION PROCESSES**	EFFECTIVE DATE: February 12, 2015
REFERENCES: Seattle Fire Code Chs. 50, 53, 57 & 61 Washington Administrative Code 314-55-104 NFPA 497 NFPA 30	SUPERSEDES: NONE – NEW RULE FCAB REVIEW DATE: January 20, 2015
NOTICE: Administrative Rules are established per Seattle Fire Code Section 104.1, and they are subject to the Administrative Sections 104.9 Alternate Materials and Methods, Section 104.8 Modifications, and Section 108.1 Appeals.	APPROVED: JOHN NELSEN, FIRE MARSHAL

Section 1. SCOPE

The growing and processing of marijuana can involve several hazardous processes such as carbon dioxide gas enrichment, liquefied petroleum gas extraction, alcohol extraction etc. These hazardous processes are regulated by the Seattle Fire, Building, Mechanical, Plumbing and Electrical codes and Washington State Administrative Code 314-55-104. Washington State Administrative Code 314-55-104 can be found at the following link: http://apps.leg.wa.gov/WAC/default.aspx?cite=314-55-104

This rule provides specific requirements for each of these processes for controlling the fire, explosion and asphyxiation hazards associated with marijuana growing and processing operations. This rule does not provide a list of all possible fire code requirements applicable to every possible hazard, only the most common requirements applicable this particular occupancy have been provided in this rule.

Section 2. PERMITS

The following permits may be required depending on the extent of building construction and specific operations being conducted in each facility:

Building Permits: A building permit issued by the Seattle Department of Planning and Development (DPD) is required for any modifications made to the building, except for work listed in Section 106.2 of the Seattle Building Code which can be read at the following link: http://www.seattle.gov/dpd/codesrules/codes/building/default.htm

In addition, if the occupancy of the existing building is other than a F-1 occupancy, a building permit for change of occupancy is required from DPD. Regardless of occupancy changes, if the quantity of hazardous material exceeds the maximum allowable quantities per Ch. 50 of the Seattle Fire Code, the occupancy is required to be Group H and will require the installation of automatic sprinklers in addition to other safety features depending on the specific hazards within the building. Building permit applications can be found at the following link:
http://www.seattle.gov/dpd/permits/applyforapermit/default.htm

Electrical Permits: An electrical permit issued by the DPD is required any time electrical wiring is installed, altered, extended, or connected to any electrical equipment. Electrical permit applications can be found at the following link:
http://www.seattle.gov/dpd/permits/permittypes/electrical/default.htm

Mechanical Permits: A mechanical permit issued by DPD is required for the installation of mechanical equipment such as heating and air condition systems, fume hood and other exhaust systems, and CO_2 gas generators. Mechanical permit applications can be found at the following link:
http://www.seattle.gov/dpd/permits/permittypes/mechanical/default.htm

Plumbing Permit: A plumbing permit issued by Public Health – Seattle & King County is required for the installation of gas piping such as LP gas, natural gas, CO_2 etc. Plumbing permit applications can be found at the following link:
http://www.kingcounty.gov/healthservices/health/ehs/portal.aspx

Pressure Vessel Permit: A pressure vessel permit issued by DPD is required for unfired pressure vessels (such as CO_2 extraction equipment) that operate at pressures greater than 250 psi or with a volume greater than 5 cubic feet. Pressure vessel permit applications can be found at the following link:
http://www.seattle.gov/dpd/permits/permittypes/boilerpressurevessel/default.htm

Fire Department Permits: Hazardous material operational permits issued by Seattle Fire Department are required when the quantity of material in storage or use meets or exceeds the amounts shown in the following table:

MATERIAL	PERMIT AMOUNT
LP gases (propane, butane, isobutane etc.)	Any amount
Flammable liquids	5 gallons indoor/10 gallons outdoor
Simple Inert Gas (Carbon Dioxide)	6,000 cu.ft./686 gallons

Fire department permit applications can be found at the following link:
http://www.seattle.gov/fire/FMO/permits/permits.htm

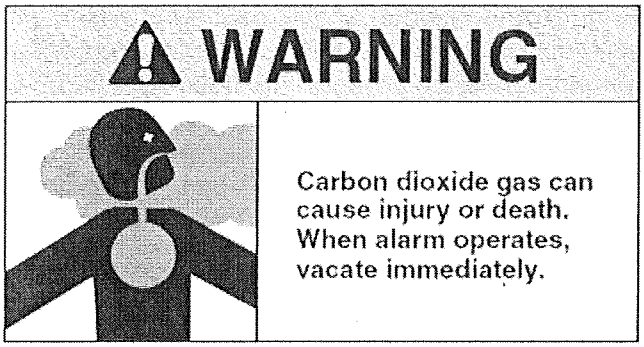
Section 3. CARBON DIOXIDE (CO_2) GAS ENRICHMENT SYSTEMS

CO_2 Generation Methods: There are a variety of methods used to generate CO_2, including natural gas and LP gas fueled generators, dry ice, fermentation methods, distribution of gas from portable or fixed tanks and cylinders, etc. The use of heaters designed for outdoor use to generate CO_2 is prohibited.

CO_2 Control System: Any area or room where CO_2 gas is discharged or generated shall be provided with a control system that utilizes CO_2 sensor(s) and limits the CO_2 levels to a maximum of 5,000 ppm.

CO_2 Alarm System: Any room or area within a building where CO_2 is stored or where CO_2 gas is discharged shall be provided with a CO_2 alarm system. The alarm system shall consist of continuous gas detection that activates a local alarm within the room or area and on the outside of the entrance to each area when CO_2 accumulations reach 5,000 ppm. In addition, the alarm shall be transmitted to an on-site location that is staffed by trained personnel.

Signs: Signage shall be provided on the exterior door of each grow cultivation room/area utilizing CO_2 and in each room storing CO_2 stating:



Section 4. PLANT EXTRACTION SYSTEMS USING FLAMMABLE GASES

Location: The storage and use of LP Gas is prohibited in basements.

Extraction Equipment: Plant extraction systems are required to be professional grade closed loop extraction systems designed to recover the solvents. The extraction equipment is required to be listed, or alternatively, the design and installation of extraction equipment must be evaluated by a licensed engineer.

For non-listed extraction systems the licensed engineer is required to prepare a report that identifies all applicable standards and verifies the installation meets WAC 314-55-104, all applicable ASME and NFPA Standards for the operating pressures it will be subject to, has pressure relief devices on any trapped gas sections, and that all hoses, fittings, vacuum pumps etc. are compatible with the specific flammable gas used in the equipment.

The engineering report is required as part of the permit application for approval by Seattle Fire Department.

Where closed extraction systems use refrigeration recovery systems, the unit is required to be rated for hydrocarbon refrigerants. Vacuum ovens shall be suitable for use with flammable solvents

The release of LP Gas to the atmosphere is prohibited by Seattle Fire Code.

Refrigerators and freezers used for the storage of flammable gases are required to be appropriate for use in a location requiring Class I Division 2 electrical.

Exhaust System: The room or area where plant extraction is conducted shall be provided with an exhaust system providing a minimum of 6 air changes per hour or 1 cfm/sq.ft. of the room or area. The system shall use explosion-proof or intrinsically safe fans, have air inlets located no more than 3 ft. above floor level, and have supply air in accordance with the Seattle Mechanical Code. The exhaust system shall be interlocked with the extraction system (or other approved interlock), unless Class I Division 2 electrical equipment and appliances are provided as detailed below. In addition to Class I Division 2 electrical, a non-interlocked ventilation system requires an activation switch in the vicinity of the extraction equipment with a sign stating "EXHAUST SYSTEM MUST BE IN OPERATION DURING THE EXTRACTION PROCESS"

Electrical Systems and Appliances: Plant extraction rooms or areas that are not provided with an interlocked exhaust system as described above shall be provided with Class I Division 2 electrical. The rated electrical is required to be provided in a zone defined as a 25 feet radius from the extraction equipment at heights between the floor level and 3 feet above the floor. In addition to the 25 feet zone, the Class I Division 2 electrical is also required within a 5 feet radius of the extraction equipment, including above the equipment. Class I Division 2 applies to any appliance in the room as well as electrical installations. Equipment with heated surfaces having a temperature sufficient to ignite vapors shall not be located in locations where Class I Division 2 electrical equipment is required.

Hydrocarbon Alarm System: Any room or area where flammable gas extraction is conducted shall be provided with a hydrocarbon alarm system. The system shall include a hydrocarbon detector that activates an alarm throughout the room or area and on the outside of the entrance to such areas when gas concentrations reach 25 percent of the Lower Explosive Limit. In addition, the alarm shall be transmitted to an on-site location that is staffed by trained personnel.

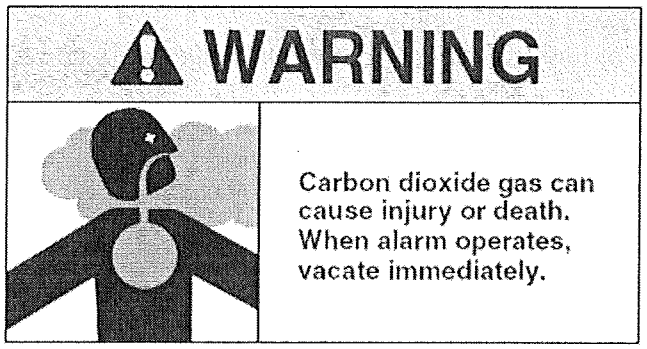
Section 5. PLANT EXTRACTION SYSTEMS USING CO_2 GAS

Extraction Equipment: Plant extraction systems are required to be professional grade closed loop extraction systems . The design and installation of the extraction equipment is required to be listed, or alternatively, must be evaluated by a licensed engineer.

For non-listed extraction systems the licensed engineer is required to prepare a report that identifies all applicable standards and verifies the installation meets WAC 314-55-104 and all applicable ASME and NFPA Standards for the operating pressures it will be subject to. The engineering report is required as part of the permit application for approval by Seattle Fire Department.

CO_2 Alarm System: The room or area where CO_2 extraction systems are located shall be provided with a CO_2 alarm system. The alarm system shall consist of continuous gas detection that activates a local alarm within the room or area and on the outside of the entrance to each area when CO_2 accumulations reach 5,000 ppm. In addition, the alarm shall be transmitted to an on-site location that is staffed by trained personnel

Signs: Signage shall be provided on the entry doors to areas or room using CO_2 extraction systems stating:



Section 6. PLANT EXTRACTION SYSTEMS USING FLAMMABLE LIQUIDS

Exhaust System: Extraction processes using alcohol or other flammable liquids are required to be conducted under a fume hood in accordance with the Seattle Mechanical Code. Alternatively, the room or area can be provided with ventilation and Class 1 Division 2 electrical as detailed below. The room ventilation system shall provide a minimum of 6 air changes per hour or 1 cfm/sq.ft. of the room or area. The system shall use explosion proof or intrinsically safe fans, have air inlets located no more than 3 feet above floor level, and have supply air in accordance with the Seattle Mechanical Code.

Electrical Systems and Appliances: Flammable liquid plant extraction operations that are not located under a fume hood as described above shall be provided with Class I Division 2 electrical. The Class I Division 2 electrical is required to be provided in a zone defined as a 25 feet radius from the extraction equipment at heights between the floor level and 3 feet above the floor. In addition to the 25 feet zone, the Class I Division 2 electrical is also required within a 5 feet radius of the extraction equipment, including above the equipment. Class I Division 2 electrical applies to any appliance in the room as well as electrical installations. Equipment with heated surfaces having a temperature sufficient to ignite vapors shall not be located in locations where Class I Division 2 electrical equipment is required. Vacuum ovens shall be suitable for use with flammable solvents

Section 7. GENERAL FIRE CODE REQUIREMENTS

Electrical: The use of extension cords is prohibited as an alternative to permanent wiring. Extension cords are only permitted serve as temporary wiring for portable appliances other than electric heaters. Portable electric heaters are required to be plugged directly into an outlet.

Flexible cables, including power cables between ballast and lamps, shall be supported in accordance with the Seattle Electrical Code so that there is no tension at the connection to the ballast from the weight of the cable.

Flammable liquid storage and handling: Quantities of flammable and combustible liquids in excess of 10 gallons shall be stored in flammable liquid storage cabinets meeting the requirements of Seattle Fire Code Section 5704.3.2.

Class I liquids (such as ethanol) shall be transferred by one of the following methods:

- From original shipping containers with a capacity of 5.3 gallons or less,
- From safety cans meeting UL30,

- Through an approved closed piping system,
- From containers or tanks by an approved pump taking suction through an opening in the top,
- From containers or tanks by gravity through an approved self-closing or automatic closing valve when the area is provided with spill control and secondary containment in accordance with Seattle Fire Code Section 5703.4.

Fire extinguishers: Provide portable fire extinguisher in accordance with Seattle Fire Code section 906. The grow areas are considered to be ordinary hazard occupancies with Class A fire hazards, and processing areas are considered to be extra hazard occupancies with Class B fire hazards. .

Smoking: Smoking is prohibited in areas where flammable liquids or combustible materials are stored or handled. "No Smoking" signs shall be provided in a conspicuous location in each location where smoking is prohibited.

Wall Construction: The use of plastic sheeting greater than or equal to 0.9 mm thick as walls or as wall finish is prohibited, unless the plastic meets Class C criteria for flame spread and smoke development as defined in Seattle Fire Code Chapter 8.

Testing and Maintenance: All control, detection and alarm systems shall be maintained in operable condition. Each device and system shall be tested not less than once each year, and in accordance with the manufacturer's requirements. Written records of such tests shall be maintained on the premises for a minimum of three years and be available to the fire department upon request.

Extraction equipment shall be maintained in accordance with all applicable requirements from the Seattle Mechanical Code and ASME Standards.

Hazardous Waste: Hazardous wastes associated with marijuana growing and oil extraction processes shall be disposed of in accordance with federal, state and local regulations. Information regarding the proper disposal of hazardous wastes can be obtained from the Local Hazardous Waste Management Program at http://www.hazwastehelp.org/BHW/index.aspx