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<http://www.colorado.gov/cs/Satellite/Rev-MMJ/CBON/1251592984795>

A Colorado Infused Products Manufacturer that engages in the production of Solvent-Based IMBOUOJM Concentrate must **obtain a report from an Industrial Hygienist or a Professional Engineer** that certifies that the equipment, Licensed Premises, and standard operating procedures comply with these rules and all applicable local and state building codes, fire codes, electrical codes, and other laws.

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*LOCAL FIRE DEPARTMENT*

***DO NOT START YOUR EXTRACTOR UNTIL YOU  
HAVE CONTACTED YOUR LOCAL FIRE  
MARSHALL***

*Your Fire Department has the authority to inspect buildings, fire hazards, equipment installations, and prevention measures. Your Fire Department may require a permit for the use of flammable gases inside of buildings.*

*Keep your life simpler and **work with your Fire Marshall** from the start.*

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## XII OPEN BLASTING IS ILLEGAL, DANGEROUS, AND STUPID!

The use of Butane Plant Oil (BPO) extraction systems has been increasing rapidly in Colorado and other states. In underground markets, the use of open blasting through a tube (see fig.15) is a popular method.

Open blasting is when a canister of butane is drained through a tube filled with biomass. The liquid mixture of butane and plant oil is then collected in a dish. **Open blasting is inherently dangerous.**

- In Colorado alone, during the first four months of 2014, firefighters in the state raced to at least 31 butane PLANT oil explosions. The use of open blasting causes a large number of injuries and significant property damage.
- The use of solvent-based extraction systems to recover plant oil by anyone other than a licensed facility is a felony in Colorado.
- Users have faced arson and numerous other charges from using these systems.
- Owners and managers at a biomass grow operations (even legal ones) who instruct employees to use open blasting techniques may face criminal charges.



Figure 15. open blasting set-up

If your business is relying on the use of open blasting for production of plant oil you need to STOP BLASTING IMMEDIATELY! One incident, fire, explosion, inspection, or burn, and your entire entrepreneurial accomplishments will be gone. **Do not open blast. Do not even think about doing it.**

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*It is in the interest of the newly legal, legitimate industry that uses properly installed closed loop to **stop everyone from open blasting.** If you own or run a retail operation, stop selling blasting tubes and cans of butane. They may come back to burn you.*

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### XIII SELECTING AN EXTRACTION SYSTEM

Business owners face difficult decisions when selecting extraction systems. In 2014, butane had most of the extraction market, with carbon dioxide in second place. In 2016, the market is wider.

CO<sub>2</sub> systems are expensive per unit of oil produced, but they provide extraction selectivity and do not necessarily use explosive gases. Therefore, facility costs are lower for CO<sub>2</sub> than for butane.

Propane and butane can be used together in some systems, but operating pressures are higher with propane. Facility costs continue to escalate for butane and propane systems while the system costs are moderate.

In 2016, ethanol and isopropyl alcohol systems are becoming widely used and are often less expensive than pressurized butane systems. Alcohol system operators claim that they can produce the same products at the same quality as butane or CO<sub>2</sub> systems. Alcohol is somewhat less hazardous to work with than butane, so facility costs can be significantly lower.

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*Whatever type of system you purchase, the operation of these devices can and will present hazards to you, your employees, and your facility business. Careful system selection, planning, training, documentation, and facility preparation will pay for itself many times over.*

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XIV CHECKLIST - ITEMS FOR CONSIDERATION

<p><b>Ventilation System Design</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Ventilation Air Flow Pattern</li> <li><input type="checkbox"/> Sufficient Supply/Makeup Air</li> <li><input type="checkbox"/> Fan Type and Construction</li> <li><input type="checkbox"/> Ventilation Volumetric Flow</li> <li><input type="checkbox"/> Air Flow Speed at Extractor</li> <li><input type="checkbox"/> Ventilation Always On</li> <li><input type="checkbox"/> Clutter Does Not Impact Air Flow</li> </ul>	<p><b>Butane Storage</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Butane Bottle Fill Limits at 2/3 of Capacity</li> <li><input type="checkbox"/> Storage Outside in Locked Cage</li> <li><input type="checkbox"/> Interior Total Volume (Including in Process) Limits Set and Observed</li> <li><input type="checkbox"/> Bottle Restraints in Place</li> <li><input type="checkbox"/> Butane/Air Mixture Separation Procedures</li> <li><input type="checkbox"/> 99+% n-Butane in Use</li> </ul>
<p><b>Limit Volume of Butane</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> High-Hazard Occupancy Limits Evaluated</li> <li><input type="checkbox"/> Explosion-proof Equipment</li> <li><input type="checkbox"/> If H-Occupancy: Is Architectural/Engineering Designer Involved</li> <li><input type="checkbox"/> Outdoor Butane Storage</li> </ul>	<p><b>Personal Protective Equipment</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Safety Glasses Free &amp; Available</li> <li><input type="checkbox"/> Safety Glasses Worn in Work Area</li> <li><input type="checkbox"/> Flame-resistant coveralls or lab coats</li> <li><input type="checkbox"/> Safe Work Clothing</li> <li><input type="checkbox"/> Closed-Top Shoes</li> </ul>
<p><b>Ignition Sources</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Placement and Type of Electrical Equipment (Switches, Outlets, Lighting)</li> <li><input type="checkbox"/> No Pilot Light Appliances Near Work Area</li> <li><input type="checkbox"/> Static Control</li> <li><input type="checkbox"/> Non-Sparking Tools</li> <li><input type="checkbox"/> No-Smoking Area</li> <li><input type="checkbox"/> No Portable Electric Tools During Operation</li> </ul>	<p><b>Training Program Documents</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Training Outline/Agenda</li> <li><input type="checkbox"/> Presentation Materials</li> <li><input type="checkbox"/> Taught In Person</li> <li><input type="checkbox"/> Standard Operating Procedures Covered</li> <li><input type="checkbox"/> Safety Procedures Covered</li> <li><input type="checkbox"/> Key Employee and Operators Trained</li> <li><input type="checkbox"/> Training Records: Signed &amp; Maintained</li> </ul>
<p><b>Flammable Gas Monitoring</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Hand-Held Combustible Gas Meter/Leak Detector In Place and Operational</li> <li><input type="checkbox"/> Area Combustible Gas Meter/Leak Detector In Place and Operational</li> <li><input type="checkbox"/> Solenoid Valves Connected to Detection System</li> <li><input type="checkbox"/> %LEL Alarm and Shutdown Levels Set</li> <li><input type="checkbox"/> Calibration of Detectors</li> <li><input type="checkbox"/> Daily Leak Check</li> </ul>	<p><b>Sanitation</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Written Cleaning Procedures</li> <li><input type="checkbox"/> Daily &amp; Weekly Cleaning</li> <li><input type="checkbox"/> Hand Washing Required</li> <li><input type="checkbox"/> No Sick Operators Allowed</li> <li><input type="checkbox"/> Dishwashing</li> <li><input type="checkbox"/> Cleanable Walls, Floors, Ceilings</li> </ul>
<p><b>Signage &amp; Posting</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> No Smoking Area</li> <li><input type="checkbox"/> Flammable Materials</li> <li><input type="checkbox"/> Hand Washing Mandatory</li> <li><input type="checkbox"/> Area Butane Volume Limits</li> <li><input type="checkbox"/> Extraction Room Identification</li> <li><input type="checkbox"/> Route to Nearest Emergency Room</li> </ul>	<p><b>Emergency Response</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Written Emergency Response Plan</li> <li><input type="checkbox"/> Fire Extinguishers in Place</li> <li><input type="checkbox"/> Fire Extinguishers Maintained</li> <li><input type="checkbox"/> Work Area Fire Sprinkler System Considered</li> <li><input type="checkbox"/> Leak and Spill Response Procedures</li> </ul>
<p><b>Hazard Communication Program</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Material Safety Data Sheets Kept for All Chemical Products</li> <li><input type="checkbox"/> Written Hazard Communication Program</li> <li><input type="checkbox"/> Manufacturers' Labels Maintained</li> <li><input type="checkbox"/> Employee Training</li> </ul>	<p><b>Extractor System Engineer Peer-Reviewed</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Extractor System Venting System in Place</li> <li><input type="checkbox"/> Fire Department Flammable Compressed Gas Permit</li> <li><input type="checkbox"/> Fire Marshall Contacted</li> <li><input type="checkbox"/> Certified Industrial Hygienist or Professional Engineer Review Documented</li> </ul>