Standard Operating Procedure

for working with 190 proof Ethanol **CAS # (Mixture)** 7732-18-5 and 64-17-5

PI: Dustin Powers	**Building(s):**
PI Signature:	**Room Number(s):**
Date:	**Designated Work Area:**

1. **Hazard Identification**

a. Preparation and Use:

a. Ethanol will be chilled with Dry Ice then used to extract cannabinoids and terpenes from Cannabis flower.
   i. **Concentration**- Use full concentration of (Insert product name and purchase location)
   ii. **Quantity**-1L of Ethanol : 2L Flower (Adjust based on flower potency)
   iii. **Frequency-**An initial volume of ethanol is chilled and used, no more is added.
   iv. **Location-**Bucket Extraction is to occur in the kitchen on a stainless table

Note: If identified as a **process**, provide additional detailed procedural steps for the use of **each** hazardous chemical in **Section 5**, below.

b. Potential Hazards and Risk:

See Ethanol MSDS for detailed risks. Adding Dry Ice to Ethanol can cause rapid evaporation of CO2, this can cause splashing. Pouring cold ethanol can lead to spills.

2. **Hazard Control**

a. **Selection and Purchasing:**

b. **Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective
threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

c. **Administrative and Work Practice Controls:**

i. Special handling requirements:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material.

ii. Special equipment requirements:
Mop and Bucket easily accessible.

iii. Chemical-specific antidotes or first aid treatments:

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids
open. Cold water may be used. Get medical attention.
Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated
clothing and shoes. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical
attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.
Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical
attention if symptoms appear.
Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If
breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical
attention.
Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious
person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

iv. Chemical segregation strategies (also address in sub-section 2e: Storage and Transportation).
Keep away from incompatibles such as oxidizing agents, acids, alkalis, moisture.

v. Describing additional safe work practices:
Always keep ethanol containers closed.

vi. How will the work surface and other items be decontaminated after use?
Use clean ethanol and a shop towel to clean any surfaces contaminated with ethanol/thc mix.

d. **Personal Protective Equipment (PPE):**

Splash goggles. Lab coat. Gloves.

e. **Storage and Transportation:**

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and
sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Do not store above 23°C (73.4°F).

3. Emergencies, Spill Procedures, and Exposures/Unintended Contact

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.
Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Exposure Limits:
Ethyl alcohol 200 Proof TWA: 1900 (mg/m3) from OSHA (PEL) [United States] TWA: 1000 (ppm) from OSHA (PEL) [United
States] TWA: 1900 (mg/m3) from NIOSH [United States] TWA: 1000 (ppm) from NIOSH [United States] TWA: 1000 (ppm)

[United Kingdom (UK)] TWA: 1920 (mg/m3) [United Kingdom (UK)] TWA: 1000 STEL: 1250 (ppm) [Canada] Consult local
authorities for acceptable exposure limits.

a. Stoppage of work and leaving the immediate area for inhalation hazard concerns.
b. Removal of contaminated clothing and/or PPE.
c. Flushing with emergency eyewashes and/or drench hoses for eye/skin contact.
d. Changing contaminated gloves.

4. **Waste**

Ecotoxicity: Not available.
BOD5 and COD: Not available.
Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

5. **Details of Process**

1.Determine initial volume of Ethanol based on flower volume (1L of EtOH : 2L Flower) Divide flower volume by 4-6 (depending on flower quality, 4 for high quality 6 for low quality) to determine batch size. Ex: 20lbs / 4 = 5 batches, 4lbs each.
2. Prepare Volume of EtOH by pouring total volume into "Chilling Bucket" (No more than ½ way full)
3. Slowly add dry ice to EtOH until temperature is -50C or colder (Throughout process continuously monitor temperature, add dry ice to maintain -45C to -50C
4. Fill "Extraction Bucket #1" ¾ way with flower to be extracted
5. Pour chilled EtOH from "Chilling Bucket" to "Extraction Bucket #1" until flower is submerged
6. Let soak for minimum 10 minutes
7. Fill "Extraction Bucket #2" ¾ way with flower to be extracted
8. Pour partially saturated EtOH from "Extraction Bucket #1" over flower in "Extraction Bucket #2" (This will not be enough EtOH to fully submerge flower in "Extraction Bucket #2")
9. Pour EtOH from "Chilling Bucket" over flower in "Extraction Bucket #2" until fully submerged
10. Let soak for minimum 10 minutes
11. Remove flower from "Extraction Bucket #1" and place in centrifuge to dry
12. Fill "Extraction Bucket #1" ¾ way with flower to be extracted
13. Pour partially saturated EtOH from "Extraction Bucket #2" over flower in "Extraction Bucket #1" (This will not be enough EtOH to fully submerge flower in "Extraction Bucket #1")
14. Pour chilled EtOH from "Chilling Bucket" to "Extraction Bucket #1" until flower is submerged
15. Let soak for minimum 10 minutes
16. Remove flower from "Extraction Bucket #2" and place in centrifuge to dry
17. Repeat steps 4-16 until initial volume of flower has been washed
18. Proceed to SOP #2 Carbon Scrub

6. **Training**

All personnel are required to complete the online General Lab Safety session thru the OESO website. This session includes an introduction to general chemical safety. Furthermore, all personnel shall read and fully adhere to this SOP when handling the chemical.

"I have read and understand this SOP. I agree to fully adhere to its requirements."

Last	First	Duke ID	Signature	Date
