

Odour Quantification and Mitigation from Cannabis Production Facilities in Ontario

May 2020 – May 2022

1 OVERVIEW

This study aims to evaluate the impact of odour generation and emissions from five cannabis production facilities, as well as assess the effectiveness of control technologies to mitigate cannabis odours. This research assists in establishing policy decisions based on science to reduce the nuisance concerns associated with cannabis production.

2 OBJECTIVES

1. Quantify and characterize odour at five locations in and around cannabis production facility using multiple techniques and at different stages of the production cycle.
2. Use air dispersion modelling to determine the factors impacting odour movement off property and the technology and practices needed to achieve one odour unit at the property line.
3. Evaluate effectiveness of odour control technologies specifically targeting cannabis production odours as well as their respective technical and economic feasibility.
4. Deliver an overall assessment of odour generation from cannabis production facilities along with viable control strategies to cannabis producers, municipalities, and government policy analysts.

3 SPECIFICATIONS

- Air samples taken in triplicate with a vacuum chamber system that can be sanitized to avoid contamination of samples and rooms
- Sampling done at typically five locations including: mature grow room, drying room, trimming room, upwind property line, and downwind property line
- Sampling done over multiple visits which will be scheduled in advance (so data set reflect changes due to times of day and season)
- Analysis will be done using a combined solid phase microextraction (SPME) gas chromatography-mass spectrometry (GC-MS) Fourier infrared transform (FTIR) method to determine individual terpene concentrations and an olfactory panel to determine odour unit of terpenes

4 OPPORTUNITY

This study will be the first of its kind, both in its application to cannabis production odour and magnitude of scope. The results have the potential to be far-reaching and encompassing, impacting not just Ontario but Canada and the global cannabis production sector.

5 REQUIRED INFORMATION & PERMISSIONS

The intention of this work is to demonstrate to other cannabis growers how the results relate to their own operation. Disclosure of the information listed below is open to negotiation but ideally is shared in full.

Category	Information	University of Guelph			OMAFRA
		Sampling at Facility	Odour Analysis & Impact Model	Evaluation of Odour Control Technologies	Use & Publication of Results
Facility Identifiers	Company name	✓	✓	✓	✓
	Location	✓	✓	✓	✓
	Photos outside (non-operations)	✓	✓	✓	✓
	Photos inside (operations)	✓	✓	✓	✓
Site Plan (must include)	Aerial View	✓	✓	✓	✓
	Size of facility	✓	✓	✓	✓
	Site perimeter (property line)	✓	✓	✓	
	Cultivation operations areas	✓	✓		
	Non-cultivation operations areas	✓	✓		
	Storage areas	✓	✓		
	Location of air filtration/ventilation system	✓	✓	✓	
	Location of odour control technologies	✓	✓	✓	
Cultivation Operations Details	Annual crop yield (Schedule 4 of Act)	✓	✓	✓	✓
	Type of operations (indoor, greenhouse)	✓	✓	✓	✓
	Growth medium (soil, hydroponics, etc.)	✓	✓	✓	✓
	Growth conditions (relative humidity, temperature, irrigation, lighting etc.)	✓	✓	✓	
	Description of harvesting procedure	✓	✓	✓	
Crop Details	Name/description of strains	✓	✓		✓
	Number of plants/grow room	✓	✓	✓	✓
	Stage of growth cycle	✓	✓	✓	
Non-cultivation Operations Details	Description of drying, trimming, etc.	✓	✓	✓	✓
	Description of extraction (solvent name)	✓	✓	✓	✓
	Description of other processing operations	✓	✓	✓	✓
	High level description of products	✓	✓	✓	✓
Air Filtration/Ventilation Details	Type(s) of filtration/ventilation		✓	✓	✓
	Maintenance of system		✓	✓	✓
	Flow rate(s)		✓	✓	✓
Odour Control Details	Type(s) of odour control technologies		✓	✓	✓
	Maintenance of system		✓	✓	✓
Biosecurity Details	Procedures/protocols to prevent contamination	✓			