



# Cannabis Production and Processing Operations

## MANAGING AIR EMISSIONS

Julie Saxton PhD P.Chem. Esther Bérubé P.Eng.

Francis Ries P.Eng.

BYLAW & REGULATION DEVELOPMENT, AIR QUALITY AND CLIMATE CHANGE

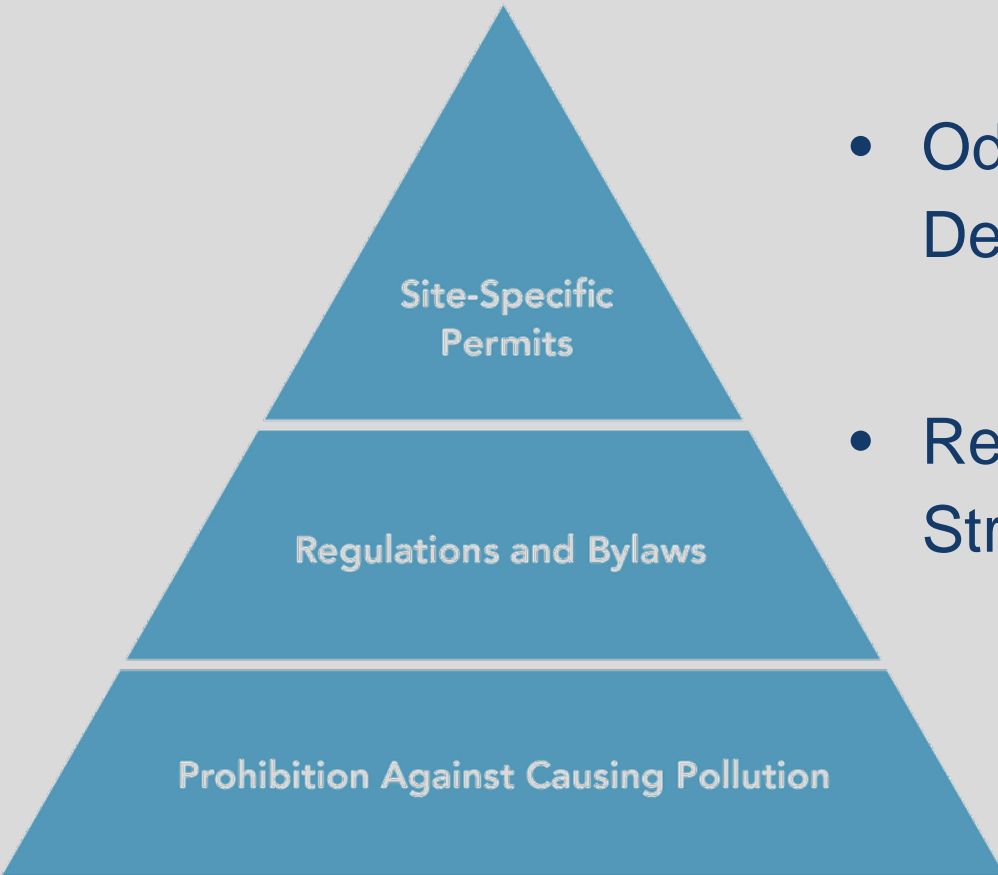
Industry Webinar, September 13, 2019

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# Policy Drivers

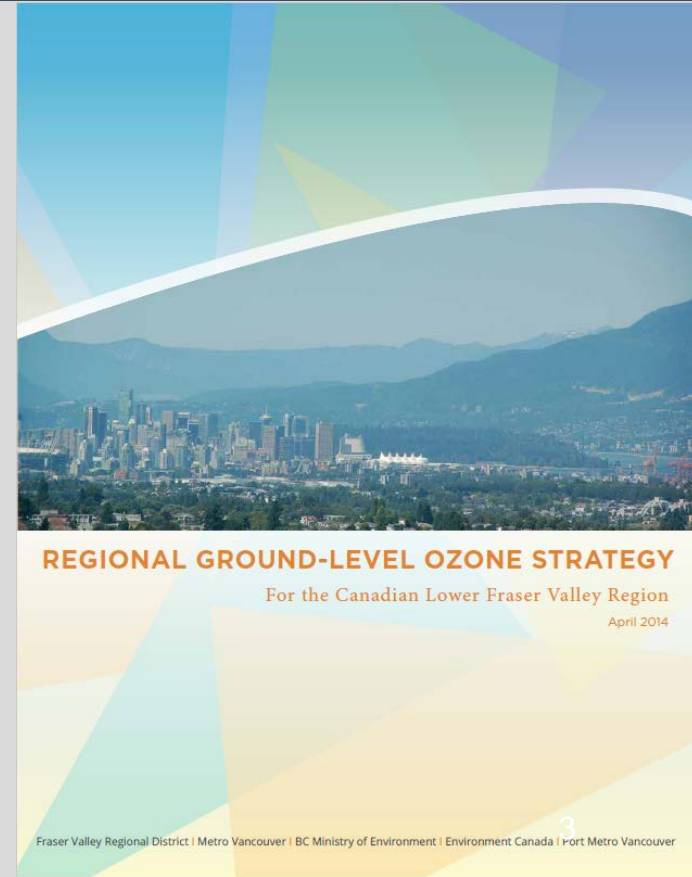


- Odour Management Policy Development Plan
- Regional Ground-Level Ozone Strategy

# Regional Ground Level Ozone Strategy

Strategy produced jointly by:

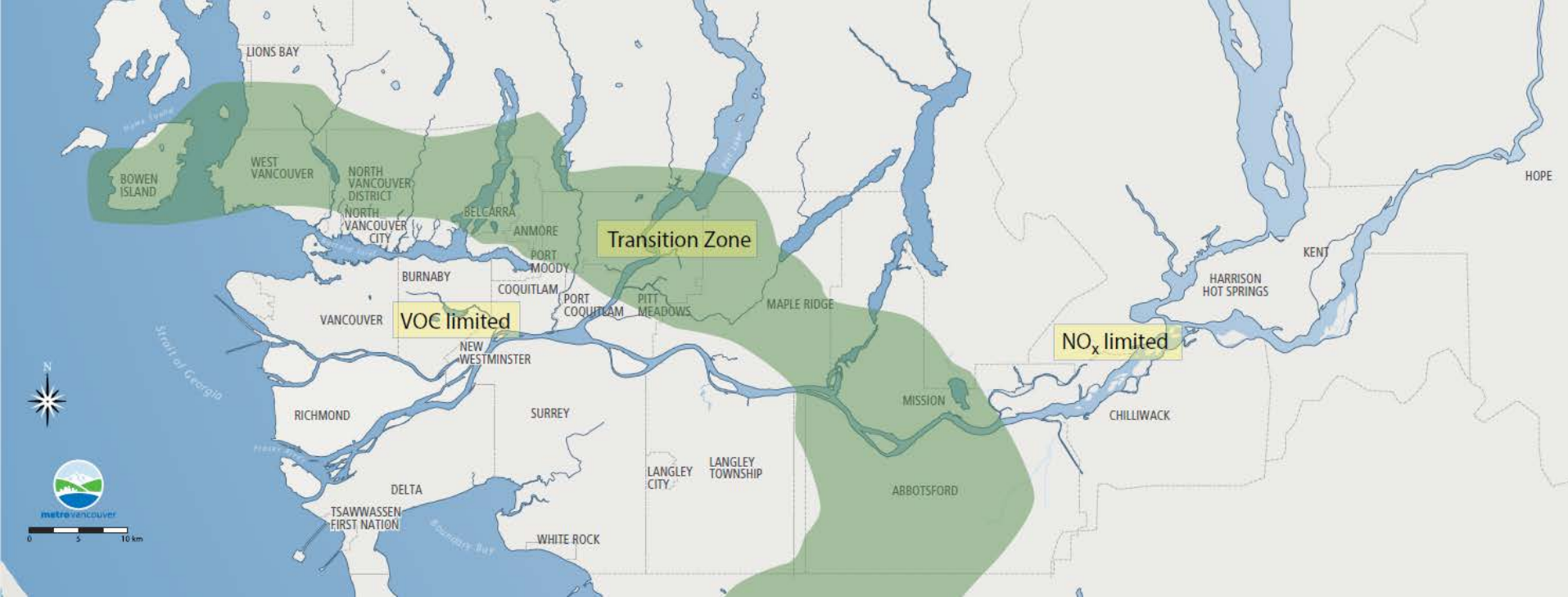
- Fraser Valley Regional District
- Metro Vancouver
- BC Ministry of Environment and Climate Change Strategy
- Environment and Climate Change Canada
- Port Metro Vancouver



**REGIONAL GROUND-LEVEL OZONE STRATEGY**

For the Canadian Lower Fraser Valley Region

April 2014



## Strategic Policy Directions for Peak and Non-Peak Periods

- Reduce VOCs west of transition zone to reduce ground-level ozone
- Reduce VOCs that are the most reactive in the presence of sunlight

# Estimation of VOC Emissions

## Assumptions

- Potential area of cultivation
- Plant density and total number of plants
- Emissions per plant
- Number of growth cycles per year
- Emissions are uncontrolled

# Estimation of VOC Emissions

## Potential area of cultivation

- 6,846,880 sq. ft., includes
  - Agrima (600,000 sq. ft.)
  - BC Tweed (3,000,000 sq. ft.)
  - Pure Sunfarms (1,030,000 sq. ft.)
  - Vintage Organics (125,000 sq. ft.)
  - Zenabis (2,091,880 sq. ft.)
- Does not include any other facilities (greenhouses, purpose-built, industrial or extraction)

# Estimation of VOC Emissions

## Total number of plants

- Plant count for 400,000 sq. ft. greenhouse
  - 116,667

## Equivalent to

- Plant count per 100 sq.ft.
  - 29

**Source:** <https://www.straight.com/cannabis/1052431/photos-inside-bc-tweed-largest-licensed-cannabis-greenhouse-world#>

# Estimation of VOC Emissions

## Emissions per plant

- Emission capacity
  - 0.109 kg VOC/plant/lifetime
- Emission factor
  - 0.0013 kg VOC/plant/day

## Sources:

Washoe County, Nevada Cultivation Emission Factors from "VOC Emissions from Marijuana Cultivation and Processing" presentation, May 2018

Personal Communications with Michael Wolf, Washoe County Air Quality Management Division



# Estimation of VOC Emissions

## Emissions per year

- Growth cycle
  - 12 weeks
- Crops per year
  - 4 cycles per year

**Source:** [https://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/cannabis-production/cannabis\\_bacts\\_report.pdf](https://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/cannabis-production/cannabis_bacts_report.pdf)

# Estimation of VOC Emissions

## Calculation

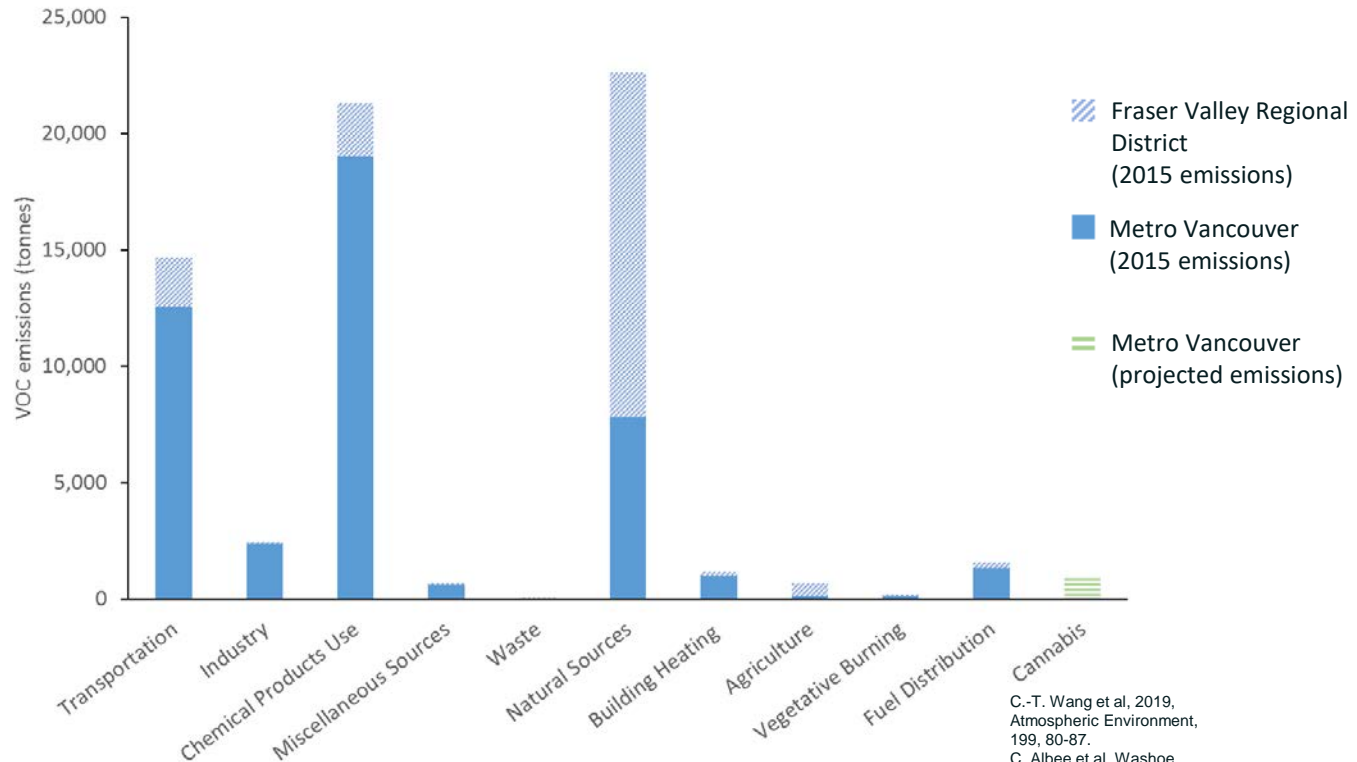
VOC emissions = Emission factor x Duration x Plant count

- Emission factor: (0.0013/1000) tonnes per plant per day
- Duration: 12 week growth cycle x 7 days per week x 4 cycles per year
- Plant count: 6,846,8880 sq.ft. x (116,667 plants/400,000sq.ft)

VOC emissions from 6 facilities = ~ 870 tonnes per year

# VOC Emissions Comparison

Emissions of volatile organic compounds in the Canadian Lower Fraser Valley by sector compared to projected potential range of emissions from cannabis production in Metro Vancouver





# Emission Management Approaches

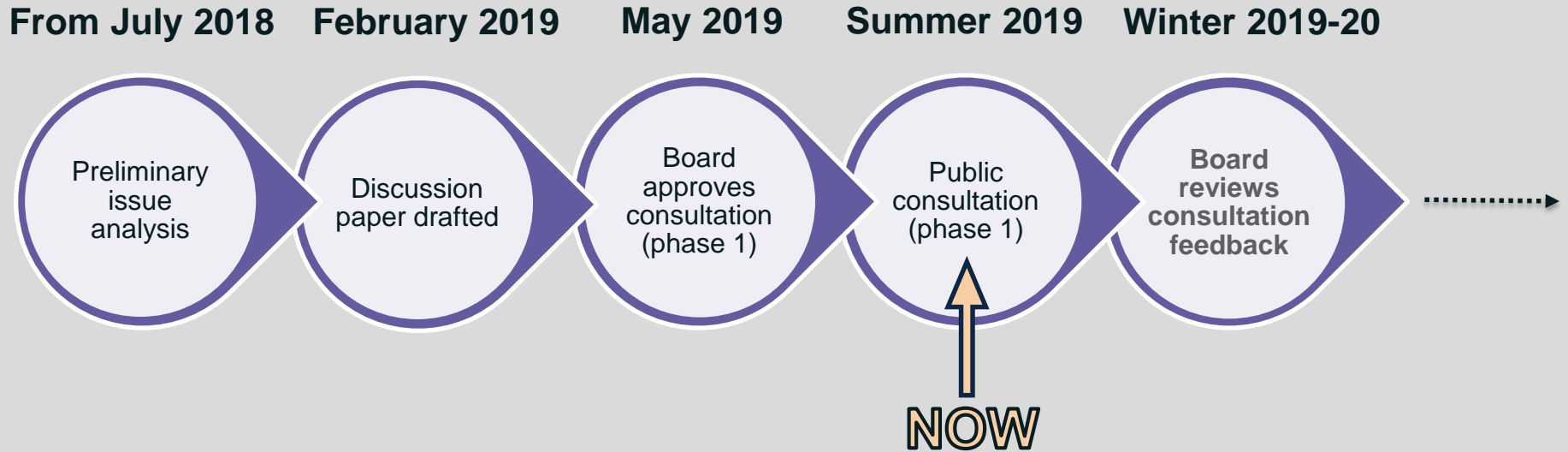
- Emissions released at the facility
- Concentrations beyond the facility
- Technology and management practices
- Measurement, monitoring and reporting
- Economic instruments

# Emission Management for Cannabis Production

- Emission Regulations
  - Agricultural Boilers
- Site-specific Permits
  - Cannabis cultivation
  - Reciprocating engines

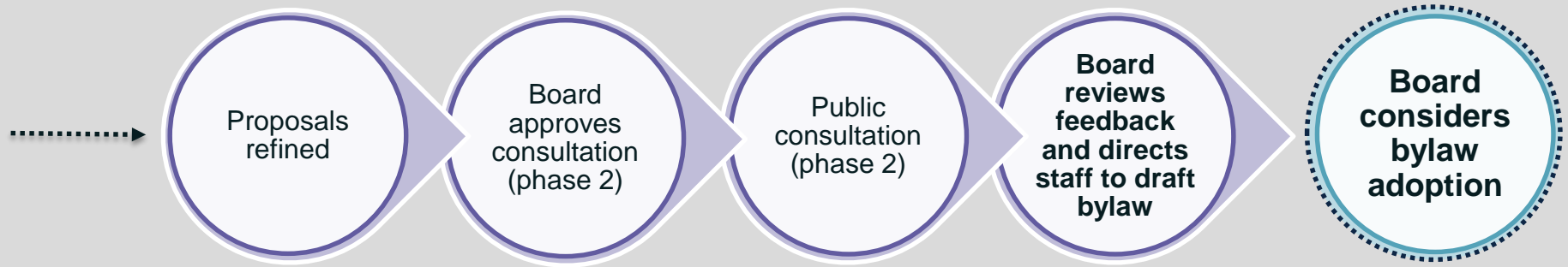


# Consultation on Potential Regulation – Phase 1

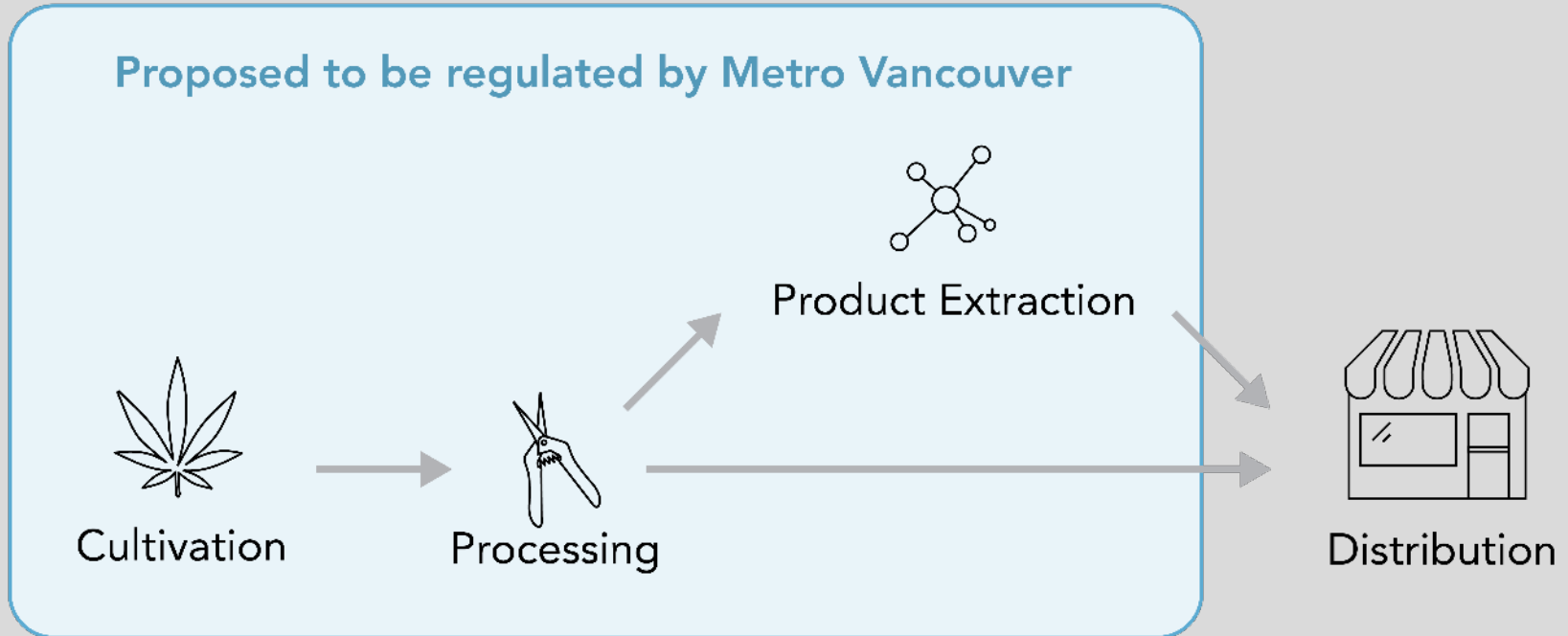


# Consultation on Potential Regulation – Phase 2

## Potential future steps



# Scope of Potential Regulation





# Potential Regulation

Measures controlling what is discharged:

- Enclosing or containing key emissions sources
- Treating air with activated carbon
- Limiting additional VOC sources

# Potential Regulation

Measures controlling how discharges can occur:

- Preventing the release of fugitive or uncontrolled emissions
- Minimizing risk during airshed air quality degradation
- Preventing impacts near sensitive receptors

# Supporting Provisions

Measures providing evidence of effectiveness:

- Approved emissions management plan
- Monitoring for odorous air contaminants beyond property boundary
- Compliance with other applicable regulatory requirements
- Record keeping



# Feedback Options

- In person
  - Meetings
  - Site visits
- Webinars
- Online and printed questionnaires
- Contact us at 604-432-6200 or [AQBylaw@metrovancover.org](mailto:AQBylaw@metrovancover.org)



Questions?



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