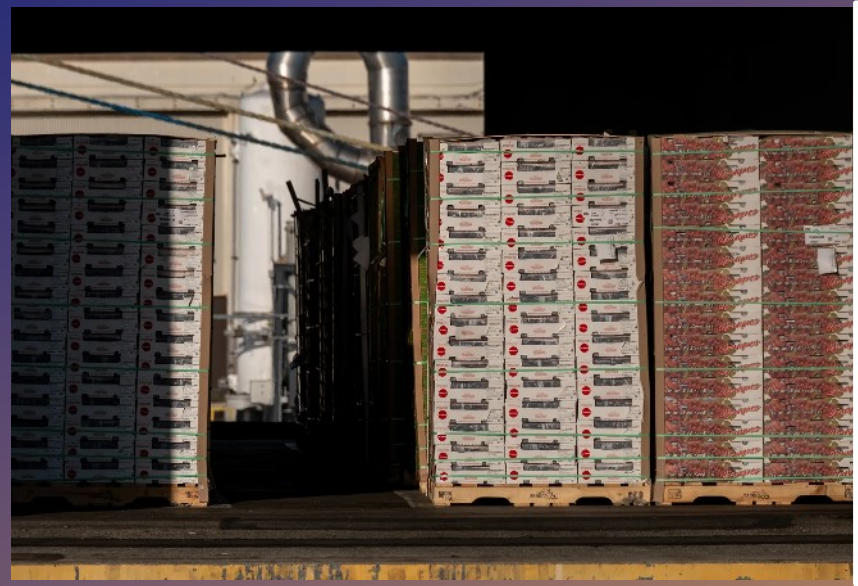

Proposed Rule 1495 – Commodity Fumigation

Working Group Meeting #1

January 29, 2026 – 2:00 pm

Zoom Meeting: https://aqmd.zoomgov.com/j/1600908662

Call-in Option: (669) 254-5252 – **Meeting ID**: 160 090 8662

Agenda

- Recap of Fumigation Investigation
- Introduction to Commodity Fumigation
- Facilities
- Fumigants
- Rule Development Process & Next Steps

Agenda

- Recap of Fumigation Investigation
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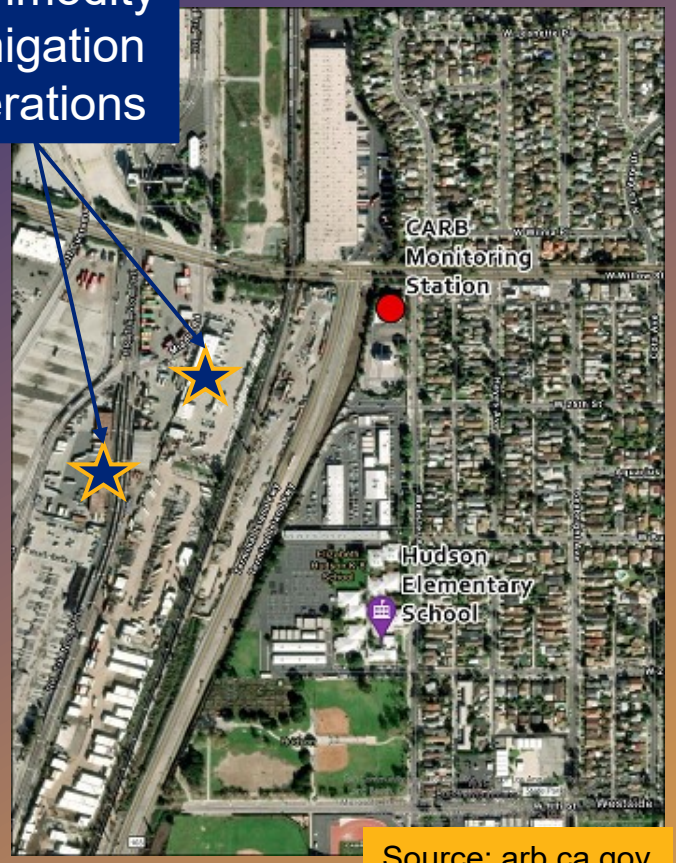
CARB Methyl Bromide Investigation



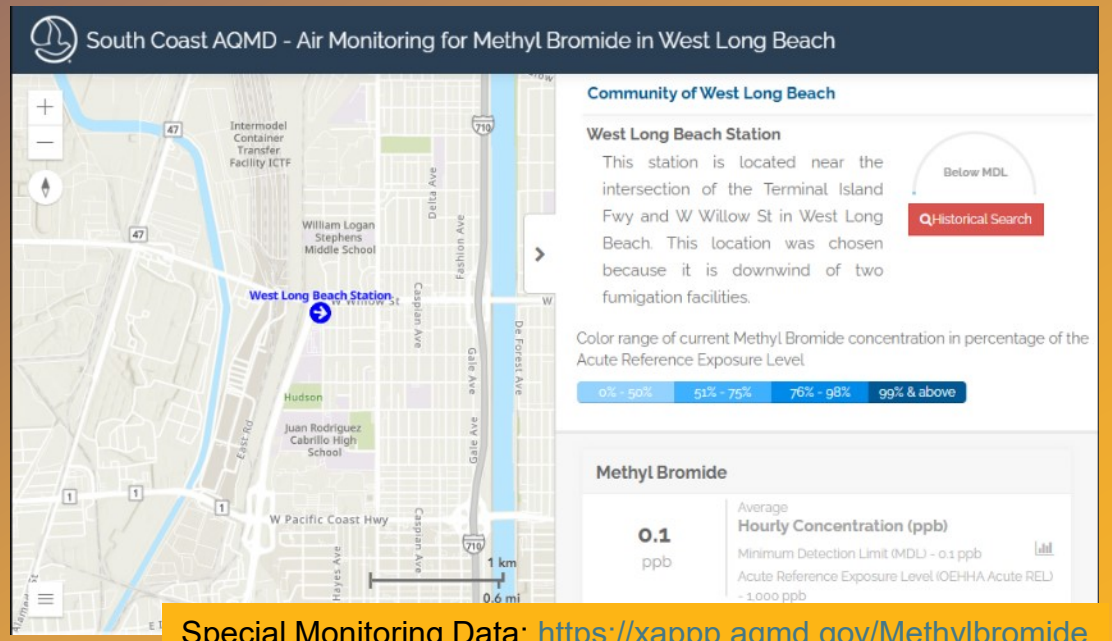
Source: arb.ca.gov

- **2023**: the California Air Resources Board (CARB) began monitoring methyl bromide near Hudson Park in West Long Beach near commodity fumigation operations
  - Within the Wilmington, Carson, West Long Beach (WCWLB) AB617 community
  - Elevated methyl bromide levels detected in spring months
- **2024**: CARB convened an interagency working group, including South Coast AQMD, to reduce potential risk
- **January 2025**: CARB with the interagency working group hosted a public meeting
- **March 2025**: South Coast AQMD held follow-up meeting:

https://www.aqmd.gov/docs/default-source/LPA-Outreach/fumigation-meeting-presentation.pdf

South Coast AQMD Activities

- Ambient Methyl Bromide Air Monitoring
  - Measured at 10 sites in Multiple Air Toxics Exposure Study (MATES) V (2018)
  - Special monitoring in West Long Beach area by CARB started in 2023
    - Transitioned to South Coast AQMD in 2025
  - Currently measuring at 10 sites, some modified, as part of MATES VI (started June 2025)
- Air Quality Permitting
  - Memorandum of Understanding (MOU) with county Agricultural Commissioners
  - South Coast AQMD has issued Title V facility permits to three (3) fumigation operators
  - MOU currently under review



Special Monitoring Data: https://xappp.aqmd.gov/Methylbromide

More info: https://www.aqmd.gov/home/news-events/community-investigations/fumigation-facilities

South Coast AQMD AB 2588 Activities

- Goals of AB 2588, or Air Toxics "Hot Spots" Information and Assessment Act, program:
  - Collect emission data on toxic air contaminants
  - Identify facilities with localized impacts
  - Determine and reduce heath risks to community
- Worked with county Agricultural Commissioners and refined data to identify 38 potential commodity fumigation facilities
- Conducted outreach to gather preliminary emissions data for AB 2588 prioritization and to ensure compliance with Emission Inventory Criteria and Guidelines Regulation (EICG)

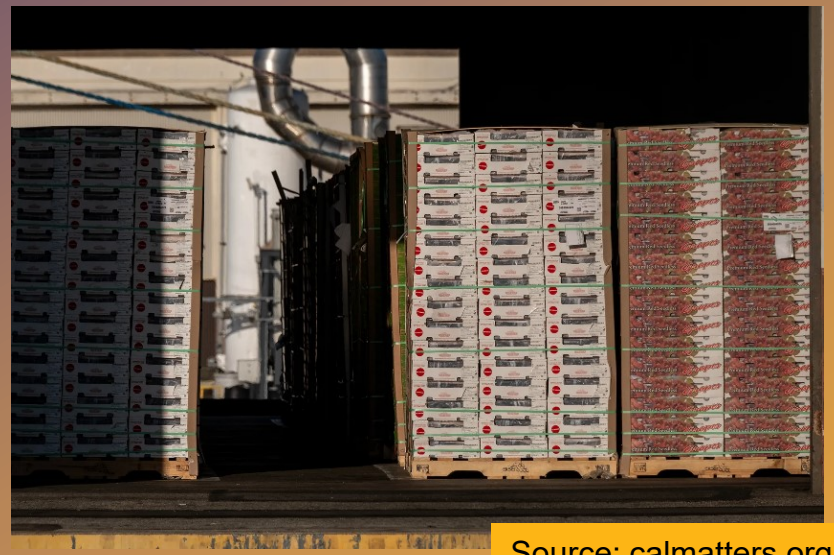
AB 2588 Current Status

As of October 2025:

- AB2588 team identified six (6) facilities with potential offsite impacts, based on preliminary risk screening
  - All located within Los Angeles County
  - Comprehensive Air Toxic Inventory Reports (ATIR) required
- ATIR approved for two (2) facilities, in review for three (3) facilities, under development at one (1) facility
  - Two facilities with approved ATIRs are required to submit Health Risk Assessments (HRAs) and potentially public notification

ATIR Facility	Submission Status	Review Status	Next Steps
A	Submitted	Approved	HRA
B	Submitted	Approved	HRA
C	Submitted	In Review	TBD
D	Submitted	In Review	TBD
E	Submitted	In Review	TBD
F	Pending	TBD	TBD

Rulemaking



Source: calmatters.org

- Initiating rulemaking to address concerns of ambient methyl bromide emissions and other fumigants in community
  - Fumigants may be toxic (acute, chronic, or carcinogenic) or have toxic byproducts after breakdown
- Reduce health risk to nearby residents, offsite workers, and other receptors in the surrounding community
- Industrywide approach as opposed to AB 2588 path of site-by-site reduction of risk

Agenda

- Recap of Fumigation Investigation
- Introduction to Commodity Fumigation
- Facilities
- Fumigants
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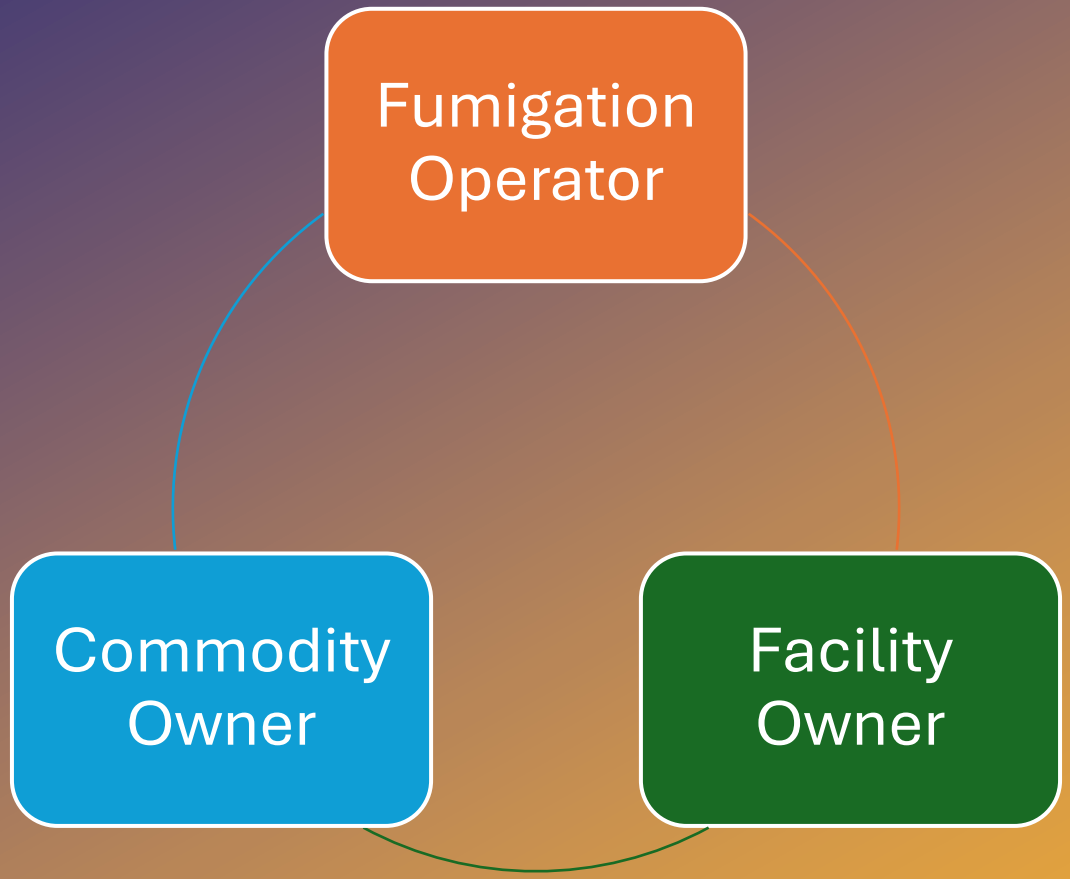
What is Commodity Fumigation?

- Using a gaseous pesticide in a confined area to eradicate target pests from goods
  - Ensures food or product safety
  - Protection from imported or exported pests
- To be effective, fumigant must:
  - Work effectively on commodity and any packaging
  - Eradicate all stages of life cycle of pest
  - Not damage commodity

Source: calmatters.org

Key Commodity Fumigation Roles



- **Fumigation Operator**
  - Maintains necessary registration, licenses, and training to obtain and perform commodity fumigation
- **Facility Owner**
  - Legal landowner or lease holder of facility where fumigation performed, typically a warehouse
- **Commodity Owners**
  - Legal property holder of the fumigated goods, typically imported or exported
- In some cases, a single entity fulfills two or even all three roles
- All of these entities share in the responsibility of proper commodity fumigation

Other Forms of Fumigation

- Other forms of fumigation outside of the scope of this rule project:
  - Soil fumigation
  - Structural fumigation
  - Sterilization (subject to Rule 1405)
- Other applications outside of scope:
  - Food ripening or preservation
  - Protection of clothing or utility poles
  - Manufacturing additives
- These other forms and applications are protected by other rules or there is no existing evidence of risk to communities

Soil Fumigation

Source: agnote.com

Structural Fumigation

Source: epa.gov

Sterilization

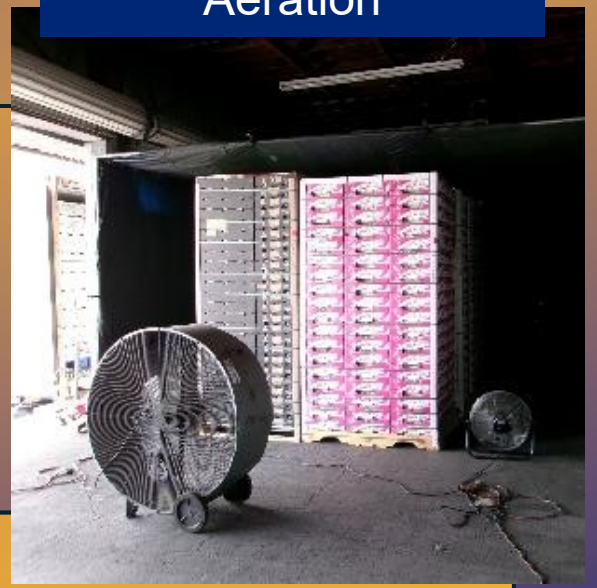
Source: lso-inc.com

Commodity Fumigation Process Overview

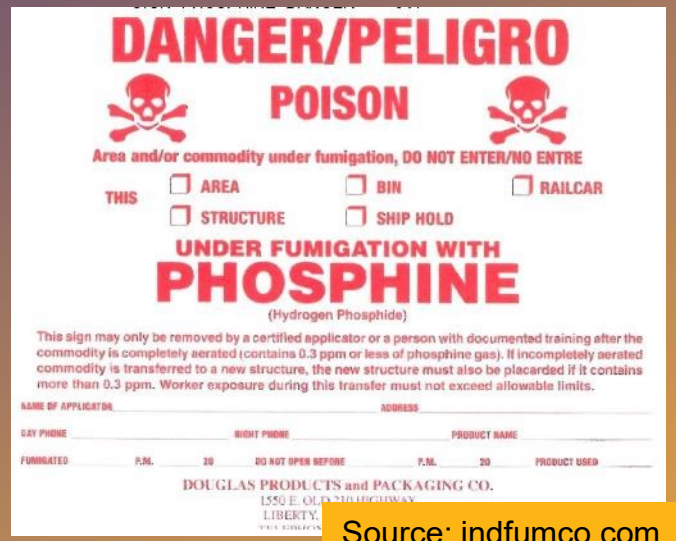
Pretreatment

Treatment

Aeration



Step 1 – Pretreatment



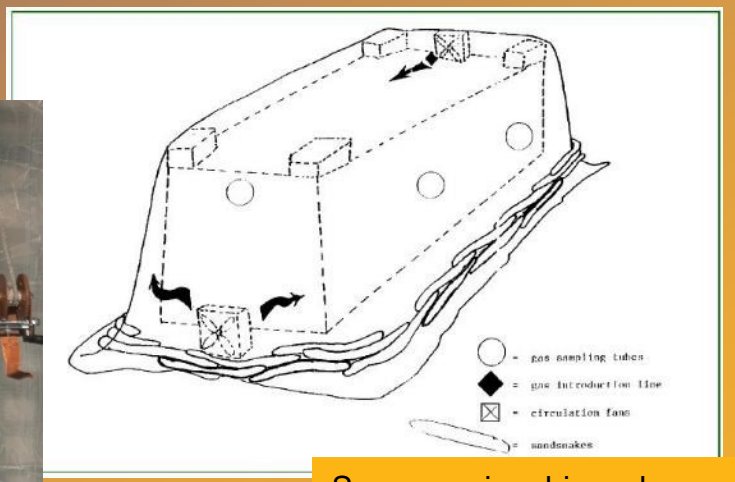
Source: indfumco.com

Source: uky.edu

- Determine if location's buffer zone is acceptable, if applicable
- Preparation of confined area
  - Tarpaulin (tarp)
  - Also silos, trailers, containers, or chambers
  - Visually check for holes
  - May need added heat for cold conditions
- Arrange commodity stacks and fans to ensure proper distribution of fumigant
- Install gas introduction lines, sampling tubes, safety signage
- Calculate fumigant dosage based on volume of confined area

Step 2 – Treatment

- Applying fumigant to confined area
  - Typically measured using scales
- Personnel required onsite with appropriate PPE and training
  - Check for leaks using gas detector
- Monitoring fumigant with periodic concentration readings
  - Typically expressed in pounds (lbs.) per 1000 ft^3
  - Concentration range: approximately 0.5% to 1%
- Treatment time: 24 hours or less



Source: acir.aphis.usda.gov

Source: hongocean.com

Step 3 – Aeration

Source: youtube.com

- Removal of fumigant from confined area after treatment
- If equipped with exhaust system, fumigants dispersed out stacks
- Floor fans used to disperse remaining fumigant
  - Also accelerates off-gassing
- Disposal of generated wastes
- Once fumigant concentration is below specific threshold, commodity released

Commodity Fumigation Concerns

- Nearby receptors, including residents and offsite workers, may be exposed to fumigants
- Fumigants typically vented via dispersion, not captured or controlled
- As mentioned earlier, fumigants may be toxic (acute, chronic, or carcinogenic) or have toxic byproducts after breakdown

Source: calmatters.org

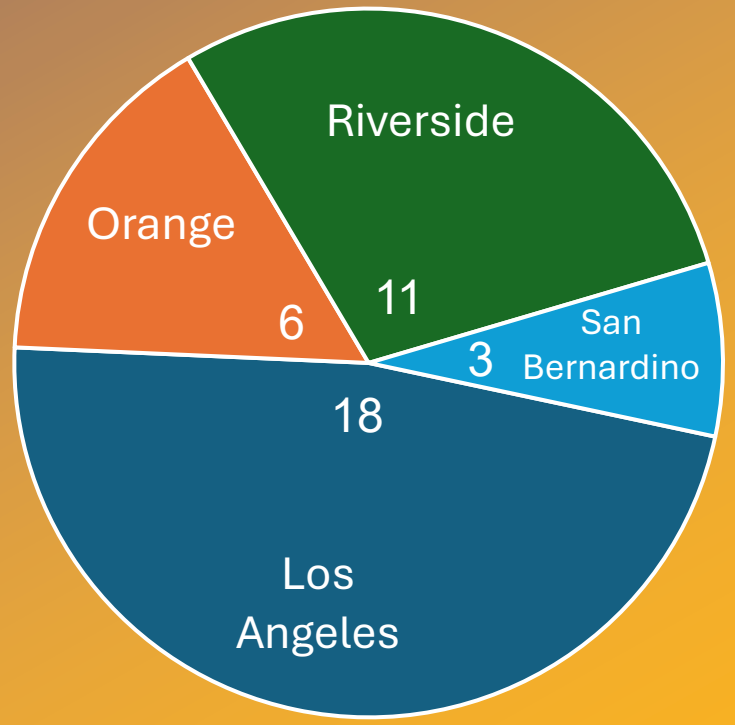
Agenda

- Recap of Fumigation Investigation
- Introduction to Commodity Fumigation
- **Facilities**
- Fumigants
- Rule Development Process & Next Steps

Commodity Fumigation Facilities

- Based on reporting to county Agricultural Commissioners and research by AB 2588 team
- Research is ongoing and subject to change
- Total of 38 active commodity fumigation facilities across South Coast AQMD
  - 22 facilities reported using one or more fumigant in 2024

Active Facilities by County



Map of Commodity Fumigation Facilities

Southeast Los Angeles AB 617 Community

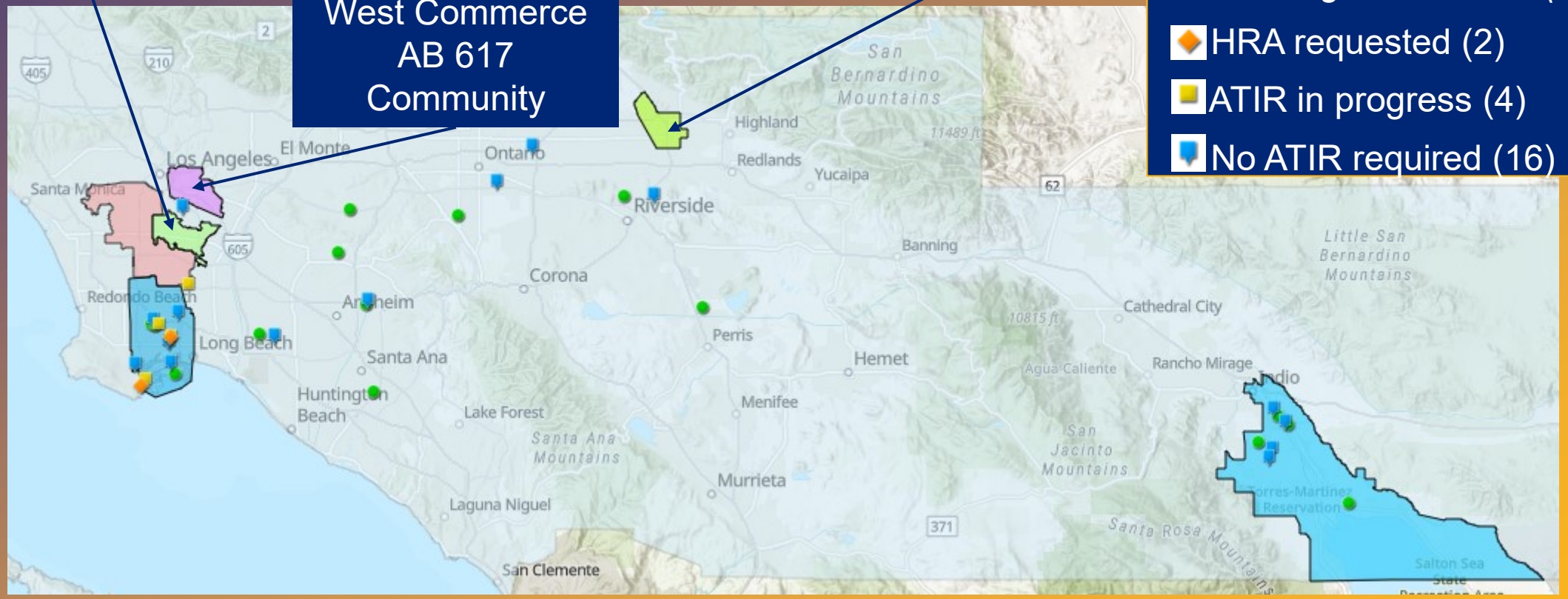
East Los Angeles, Boyle Heights, West Commerce AB 617 Community

San Bernardino, Muscoy AB 617 Community

- No 2024 usage (16)

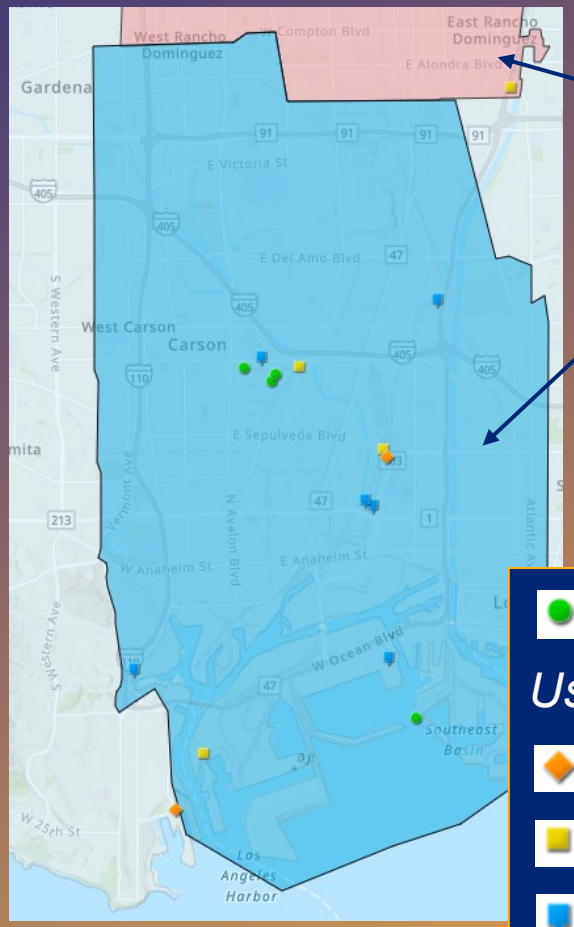
Used fumigants in 2024 (22)

- HRA requested (2)
- ATIR in progress (4)
- No ATIR required (16)



Research is ongoing and subject to change

Details of Commodity Fumigation Map



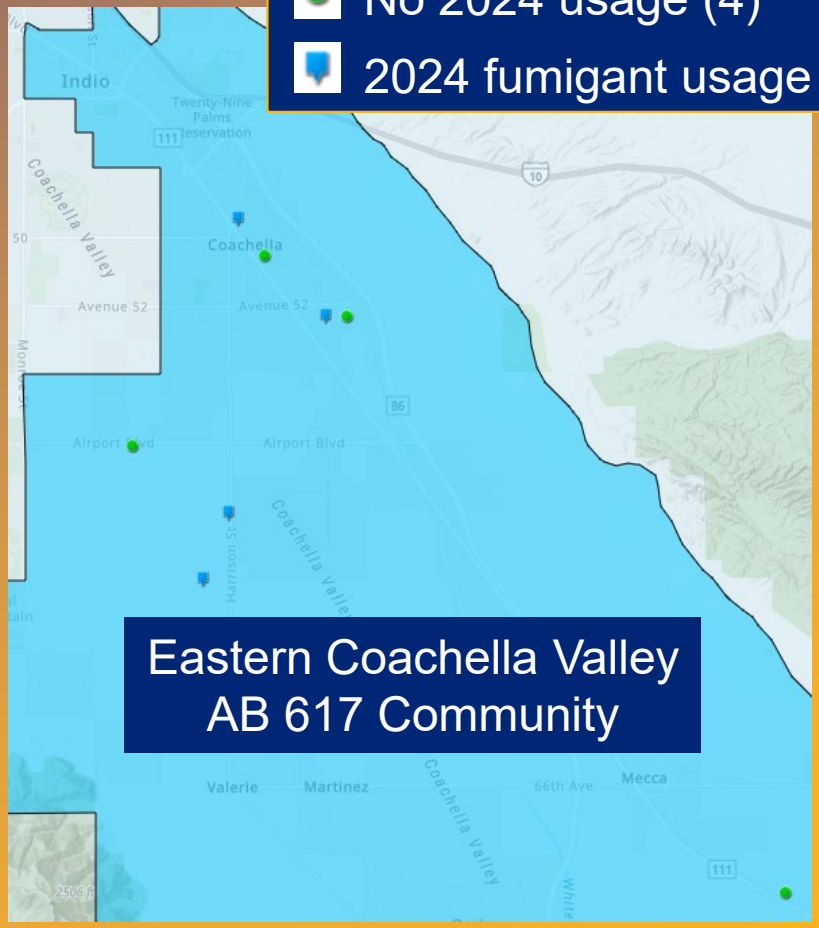
South Los Angeles
AB 617 Community

WCWLB
AB 617 Community

- No 2024 usage (4)

Used fumigants in 2024 (12)

- HRA requested (2)
- ATIR in progress (4)
- No ATIR required (6)



- No 2024 usage (4)
- 2024 fumigant usage (4)

Eastern Coachella Valley
AB 617 Community

Research is ongoing and subject to change

Agenda

- Recap of Fumigation Investigation
- Introduction to Commodity Fumigation
- Facilities
- **Fumigants**
- Rule Development Process & Next Steps

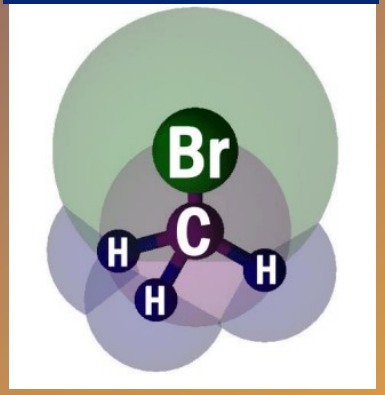
Introduction to Fumigants

- Under federal law, pesticides, including fumigants, are identified as either:
  - General Use Pesticides
    - Available for purchase and use by public
  - Restricted Use Pesticides
    - Certified applicators only
- In California, pesticides must also be registered and reviewed by California Department of Pesticide Regulation (CDPR)

Spotlighted Fumigants

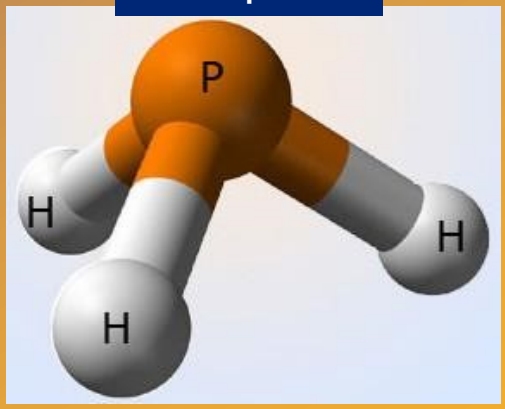
- For commodity fumigation, six pesticides pictured on right
  - Identified as in use within South Coast AQMD or potential candidate for use
- Other commodity fumigants:
  - Propylene Oxide (C_3H_6O)
  - Formic Acid (HCOOH)
  - Nitrogen (N_2)
  - Argon (Ar)

Methyl Bromide

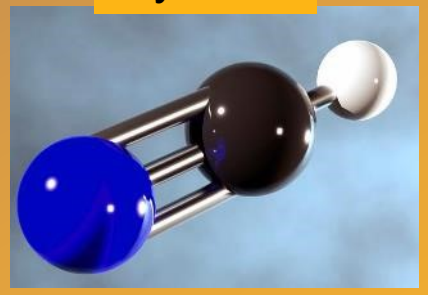


Sulfuryl Fluoride

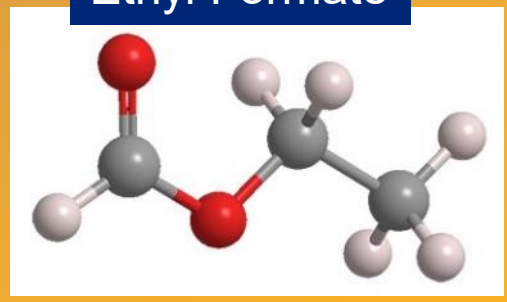
Phosphine



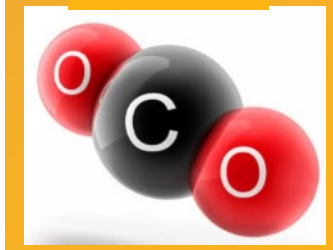
Cyanide



Ethyl Formate



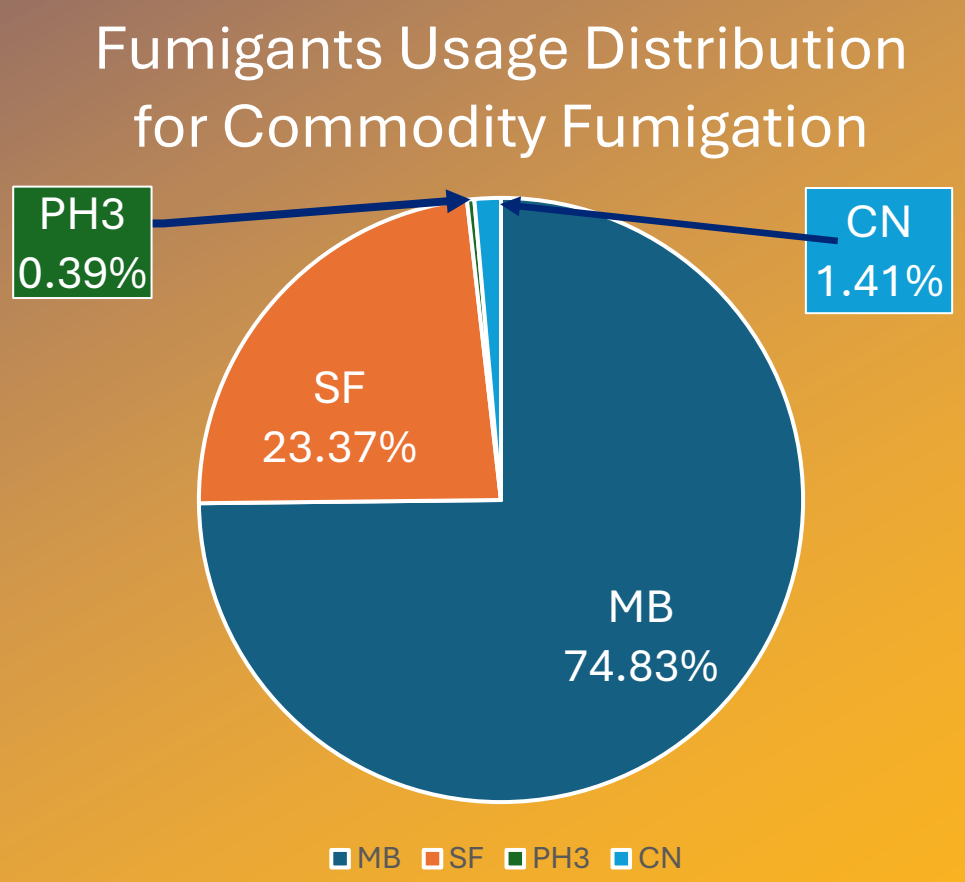
Carbon Dioxide



Commodity Fumigants 2024 Usage

The following fumigants were used for commodity fumigation within South Coast AQMD:

- Methyl Bromide (MB): 88,268 lbs
- Sulfuryl Fluoride (SF): 27,568 lbs
- Phosphine (PH_3): 458 lbs
- Cyanide (CN): 1,665 lbs
- Total quantity of fumigants used for commodity fumigation:
  - 116,294 lbs (about 58 tons)



Research is ongoing and subject to change

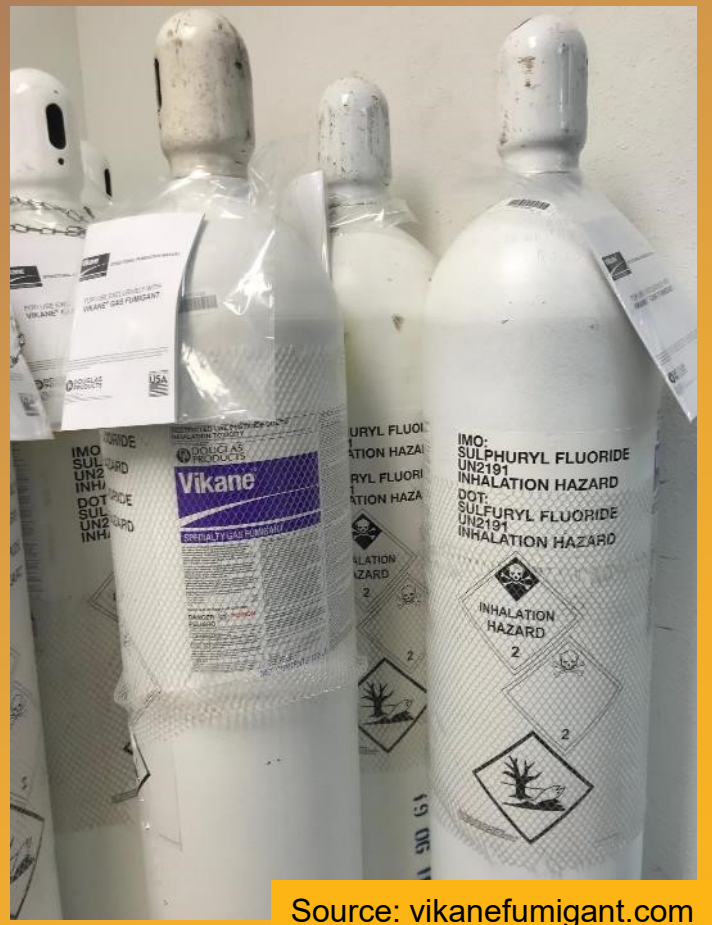
Methyl Bromide

Source: eximfumigation.org

- Odorless (at lower concentration) and colorless gas at ambient pressure
  - Marketed as Inbrom™, Meth-O-Gas™, Mebrom™, Tri-Con™, Tri-Brom™, Metabrom™
- Used as commodity and soil fumigant
  - Treatment of grapes, asparagus, lumber, and many other commodities
  - Effective against fungi, weeds, insects, roundworms, and rodents
- Identified by U.S. EPA as federal Hazardous Air Pollutant (HAP) and State of California as toxic air contaminant (TAC)
- Stratospheric ozone-depleting substance under Montreal Protocol with planned eventual phase-out
  - Critical use exemption allows quarantine, pre-shipment, and other limited purposes

Sulfuryl Fluoride

- Colorless and odorless gas at ambient pressure
  - Marketed as Vikane™, ProFume™, Zythor™, Master Fume™
- Used as commodity and structural fumigant
  - Treatment for grains, dry fruit, nuts, pet food
  - Effective against insects and rodents
- Listed as a TAC by California and equivalent by other states
  - Restricted use but not a HAP at federal level
- Identified as a potent greenhouse gas
- Breaks down to fluoride and other compounds
  - May lead to excessive fluoride levels downwind



Source: vikanefumigant.com

Phosphine

Source: cardinalproproducts.com

Source: wikipedia.org

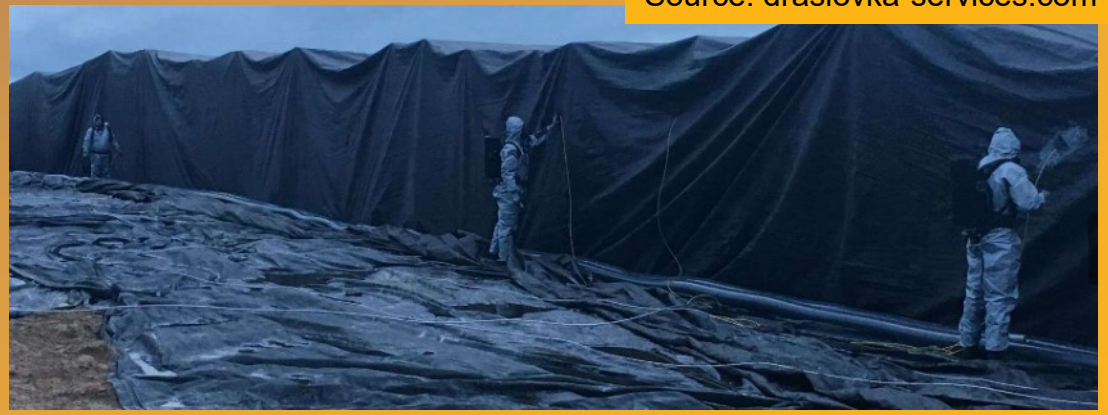
Source: indfumco.com

- Colorless, odorless, and flammable gas
  - Pre-mixed with CO_2 to reduce flammability
  - Also available in solid form as aluminum, magnesium, or zinc phosphide
  - Marketed as ECO_2FUME™, $VAPORPH_3OS$™, U-Phos™, Magnaphos™, FUMI-CEL/FUMI-STRIP™, Weevil-Cide™, Fumex™
- Commodity fumigant
  - Used on corn meal, flour, milled rice
  - Effective against insects and rodents
- Listed as a federal HAP and a state TAC
  - Highly toxic to humans
  - Because of toxicity, long aeration time required

Cyanide

- Colorless gas with bitter almond odor
  - Available in solid form as sodium cyanide or gas cyanogen
  - Marketed as EDN™ (ethanedinitrile)
- Commodity fumigant
  - Approved for citrus in the U.S.
  - Internationally used on timber
  - Effective against insects
- Federal HAP and state TAC
  - Highly toxic to humans
  - Because of toxicity, long aeration time required

Source: draslovka-services.com



Ethyl Formate

Source: linde.com

- Colorless, flammable gas with fruity odor
  - Pre-mixed with CO_2 to reduce flammability
  - Marketed as eFUME™, Vapormate™ (not registered in the U.S.)
- Commodity fumigant
  - Approved for citrus, kiwifruit, grapes
  - Effective against insects
- Not currently listed as a HAP or TAC
  - Restricted use pesticide for use by certified applicators only under federal law
- Registered for use in the U.S. in 2025
  - No reported use in South Coast AQMD
  - Registration pending review by CDPR

Carbon Dioxide

- Odorless and colorless gas
  - Marketed as CardO_2Fume™, IGI™
  - Mode of action is desiccation
- Used as commodity fumigant
  - Treatment of grains, cocoa, coffee, pasta, many other dry commodities
  - Effective against insects
- Not identified as toxic
  - Risks associated with oxygen-deficient air
- More challenging treatment protocol
  - 60% to 80% concentration to be effective
  - Typically 1 – 4 day treatment time
  - Gas-tight chambers or membranes required

Source: pureecoindia.in

Spotlighted Fumigants Summary Table

Fumigant	Federal HAP*	State TAC*	Special Notes
Methyl Bromide	Yes	Yes	• Broadly effective fumigant • Stratospheric ozone depleting
Sulfuryl Fluoride	No	Yes	• Fluoride byproduct • Potent greenhouse gas
Phosphine	Yes	Yes	• High human toxicity • Long aeration time required
Cyanide	Yes	Yes	• High human toxicity • Long aeration time required
Ethyl Formate	No	No	• Recent registration with limited approval • Flammable without added CO_2
Carbon Dioxide	No	No	• Long treatment time/high concentration • Special barriers/chambers required

** At present time, there is no federal National Emission Standards for Hazardous Air Pollutants (NESHAP), Maximum Achievable Control Technology (MACT) standard, or state Air Toxic Control Measure (ATCM) regulating the use of listed fumigants*

Agenda

- Recap of Fumigation Investigation
- Introduction to Commodity Fumigation
- Facilities
- Fumigants
- Rule Development Process & Next Steps

Overview of Rule Development Process

Note: Staff is available throughout rule development to meet with stakeholders via telephone, email, virtually, or face-to-face

Information Gathering and Analysis

Source: contentsnare.com

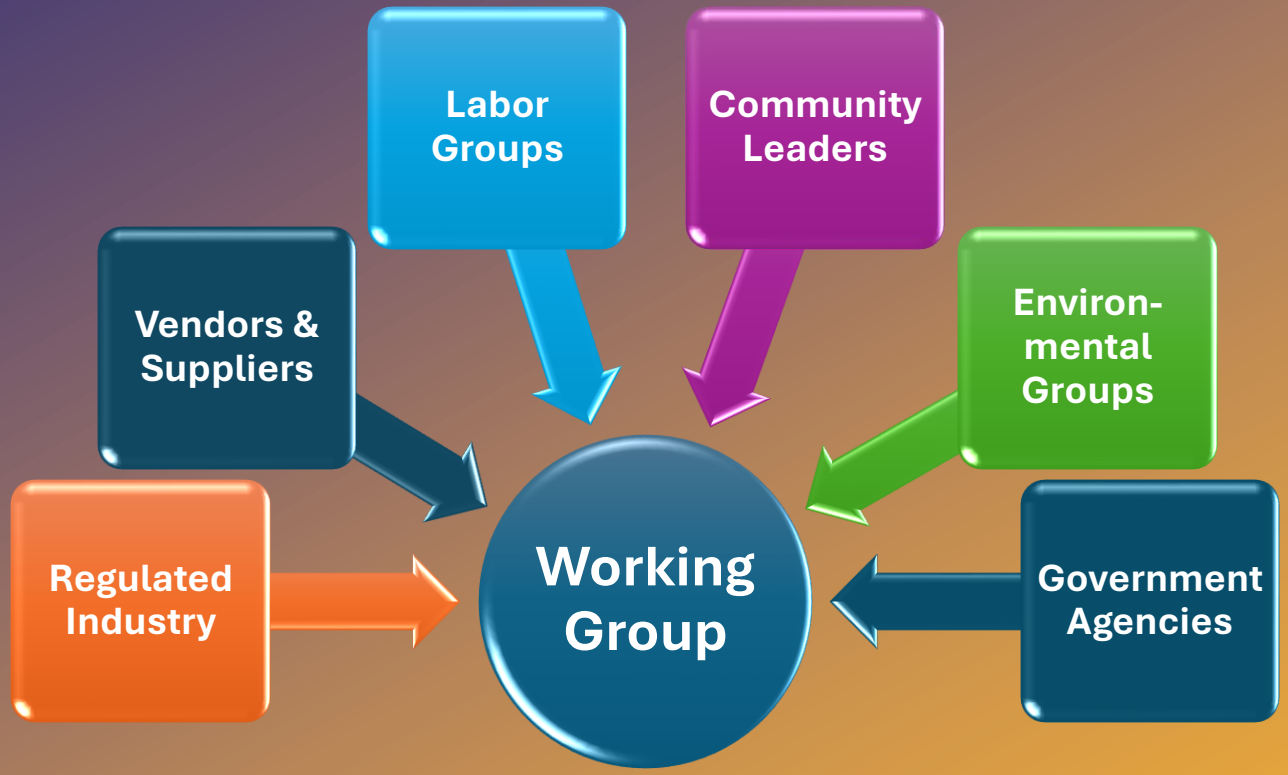
- Information gathering and analysis occurs throughout rulemaking
  - Initial data gathering is already underway to identify potential affected facilities and equipment
  - Additional information to be gathered from stakeholders, facilities, and technology vendors
- Data analysis results will be presented at subsequent Working Group Meetings

Initial Rule Concepts

- Staff will investigate the feasibility of control measures and practices
  - Best management practices
  - Capture and control of emissions
  - Periodic source testing
  - Direct or parametric emission monitoring
  - Recordkeeping and reporting
- Rule development process will determine which concepts are most appropriate
  - Cost and environmental impacts will be evaluated

Source: valuerecovery.net

Working Group Meetings



Working Group meetings are open to the public and held throughout the rulemaking process

Objectives:

- Increase understanding of complex terms, work practices, and technology
- Build consensus and work through challenges with robust discussion
- Provide input regarding concerns and solutions

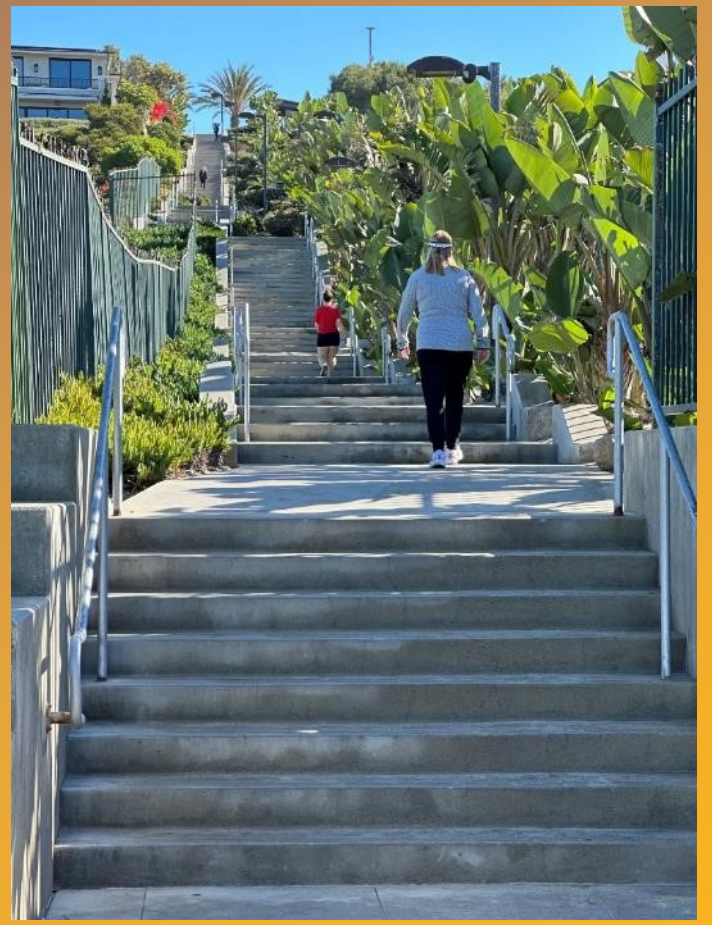
Government Agencies

Commodity fumigation regulated by a patchwork of local, city, county, state, and federal agencies, covering:

- Zoning and land use
- Licensing, registration, and certification
- Treatment, handling, and residuals
- Recordkeeping and reporting

Next Steps

Milestone	Projected Date
Working Group Meeting #2	February 2026
Public Workshop	Spring 2026
Set Hearing	Summer 2026
Public Hearing	Fall 2026



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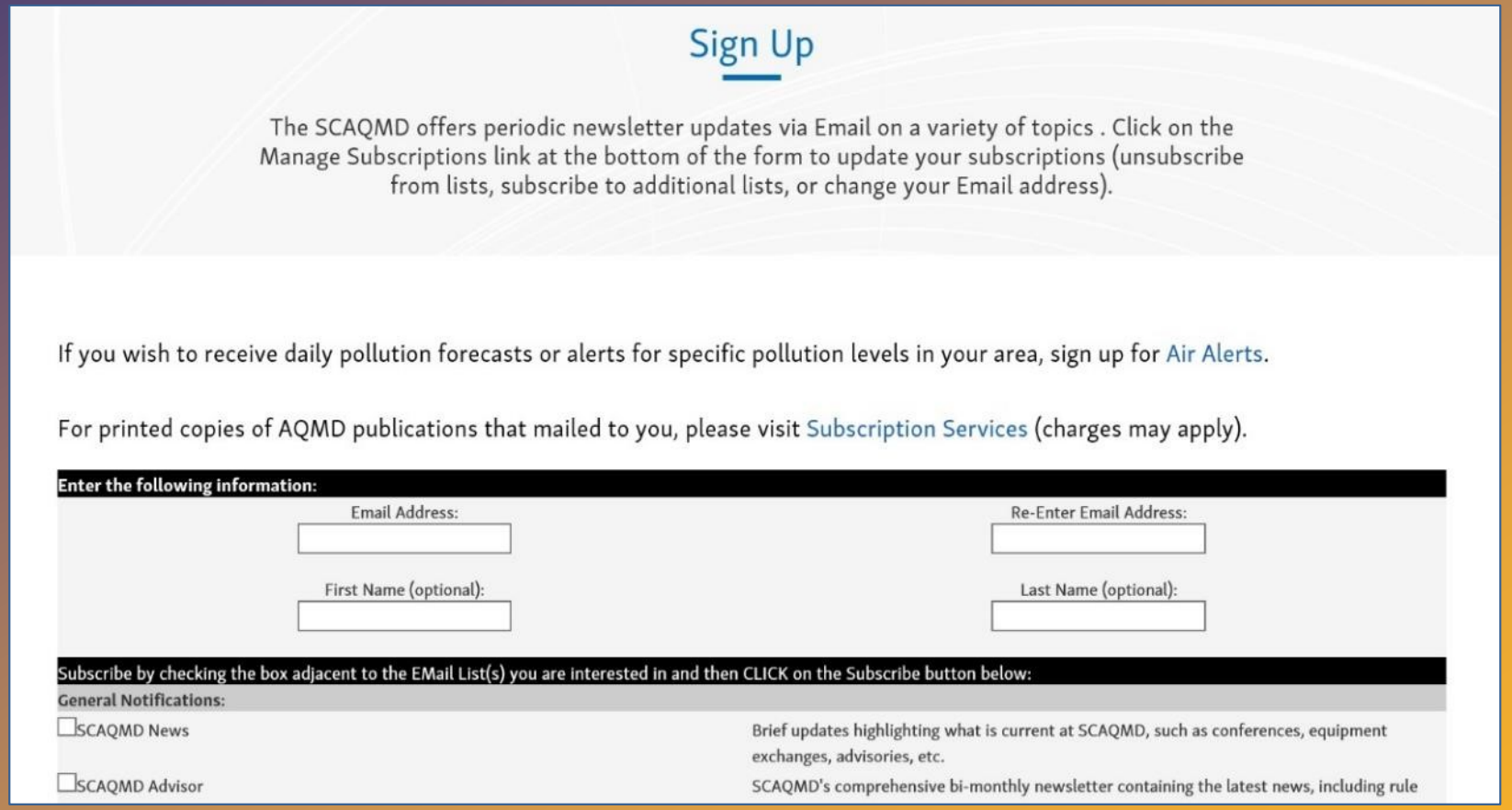

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