THE SCIENCE OF CANNABIS PLANT ODORS

AND COMMON METHODS OF CONTROLLING

OMI INDUSTRIES

RISE OF CANNABIS ODOR COMPLAINTS

87% ↑ ODOR COMPLAINTS IN SOME AREAS SINCE CANNABIS BECAME LEGAL

30% OF ALL ODOR COMPLAINTS IN DENVER AREA ARE CANNABIS-RELATED

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IMPORTANCE OF ODOR CONTROL

It is imperative for cannabis growers to understand the odors produced during cultivation and safely control them to maintain the quality of life for their neighbors and themselves.

DR. LAURA HAUPERT

Director of Research and Development at OMI Industries,
the leader in plant-based odor removing products.

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COMMON ODOR-CAUSING TERPENES

Terpene	Limonene	Pinene	Myrcene	Linalool	Caryophyllene	Terpinolene	Camphene
Aroma	Citrus, Lemon	Pine, Fir	Musky, Earthy, Cloves	Floral, Lavender	Spices, Black Pepper, Wood	Pine, Herbs	Damp Woods

Terpene	Terpineol	Phellandrene	Carene	Humulene	Pulegone	Sabinene	Geraniol
Aroma	Lilac, Flower Blossoms	Peppermint, Citrus	Sweet, Pungent (Fir)	Hops, Beer	Peppermint	Pine, Orange, Spices	Rose

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CANNABIS ODOR CONTROL METHODS

CARBON FILTERS

How it Works

Air passes through activated carbon and absorbs odors

Cons

- Not as effective at treating nitrogen-based compounds.
- They also must be replaced about every year, which can be costly and time consuming in larger facilities.
- Filters reduce airflow through greenhouse fans. Since airflow is so important to growing, additional fans are sometimes needed.

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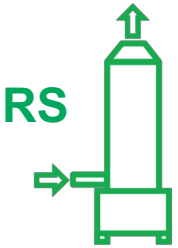
CANNABIS ODOR CONTROL METHODS

WET SCRUBBERS



How it Works

Wet scrubbers treat contaminated air by pumping it into an aqueous solution before it escapes outside.
The odorous compounds go into the liquid and chemically react with the solution, removing odors.

Cons

- Scrubbers can be expensive to build and must be operated by trained personnel and serviced in protective gear.
- The complex setups are designed for a specific application and have to include careful considerations for dangerous exhaust gas.
- Also, the chemicals used are considered reactive, hazardous, and must be neutralized before disposal.

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CANNABIS ODOR CONTROL METHODS

BIO FILTRATION

How it Works

Contaminated air passes through soil, compost, wood chips, or other organic material. As the odorous air flows through the material, pollutants (including odor molecules) transfer into a thin biofilm on its surface. Microorganisms are immobilized in the biofilm and eliminate odors.

Cons

- Only effective on odors that are both biodegradable and water-soluble.
- Not effective on chemicals containing nitrogen.
- Must be present in microbes for long periods.
- To scrub large amounts of odorous air, a sizable amount of material and a massive footprint are often needed.

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CANNABIS ODOR CONTROL METHODS

MASKING AGENTS

How it Works

Fragrances and chemicals “hide” odors outside greenhouse facilities so they do not impact the taste or smell of actual cannabis plants.

Cons

- Odors will eventually return.
- Chemicals can be harmful to people and not bio-friendly

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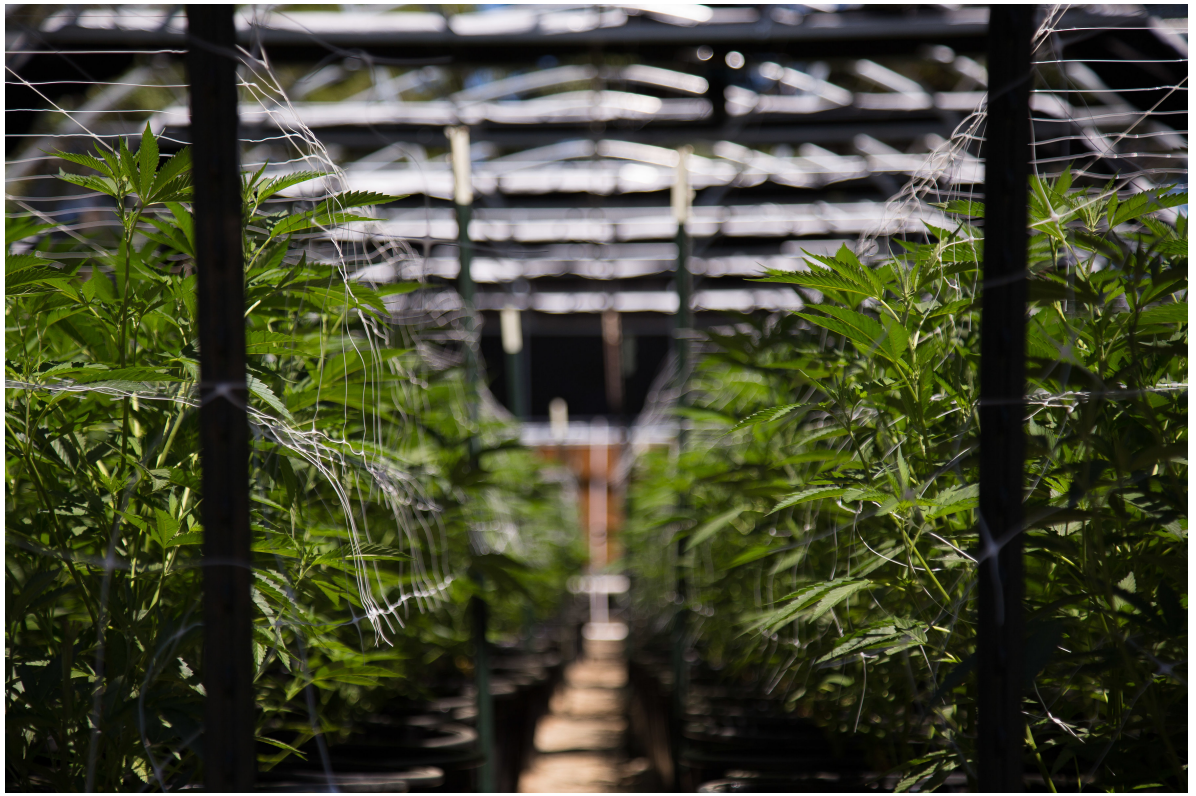
MORE ODOR CONTROL CHALLENGES

- Most municipalities now restrict how commercial cannabis grow operations handle odors.
- Large-scale ventilation systems that pump untreated air outdoors can be prohibited in some urban areas.
- Industrial filtration systems can be costly to install, operate and maintain.
- Some odor solutions require the use of water to distribute, adding additional costs and equipment (especially in areas of water conservation).
- Multiple partners are often needed for equipment, materials, setup and maintenance.



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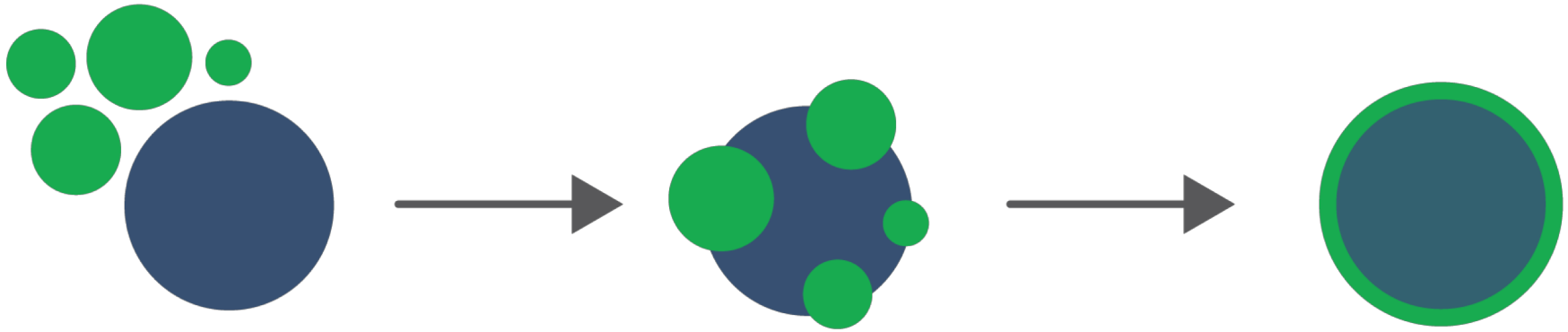
SCIENCE OF PLANT-BASED ODOR REMOVERS



CONTACT

Ecosorb is delivered into an area affected by odors and attracts to odor molecules.

ADSORPTION

Ecosorb attaches to odor molecules.

ABSORPTION

Ecosorb surrounds odor molecules, neutralizing their smell.

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COMPARING ODOR CONTROL METHODS

	Plant-Based Odor Removers	Masking Agents	Adsorption (Carbon Filters)	Ozone	Bio-Filtration
Uses Natural Ingredients	X		X		X
Non - Hazardous	X		X		X
Safe for the Environment	X	?*	X		X
Simple Setup and Use	X	X			
Removes Odors Completely	X			X	
Effective on Organic Odors	X		X	X	X
Effective on Inorganic Odors	X		X		X
Cost-Effective (Implementation)	X	X			
Cost-Effective (Maintenance)	X	X			

*Masking agents that use fragrances have been proven to include harmful ingredients. In University of Washington research of common air fresheners, they found on average 17 chemicals in each product — nearly a quarter which would be classified as toxic or harmful.

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COMPARING ODOR CONTROL METHODS

*Masking agents that use synthetic fragrances have been know to use harmful ingredients

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CNB100 BY ECOSORB

- Scientifically designed for the control of cannabis plant odors
- Eliminates odor-causing chemical compounds in cannabis-including cannabinoids, terpenes and sesquiterpenes
- Blend or purified wager, surfactant, and natural plant oils
- Does not contain harsh chemicals or synthetic fragrances
- Distribution requires no added water, thanks to advanced Vapor Phase technology

SAFE

Non-toxic, non-hazardous, biodegradable, non-flammable, and no harmful VOCs.

EFFECTIVE

Verifiably, scientifically proven to work.

NATURAL

Ecosorb uses the natural power of plant oils to remove odors, meaning no permits required

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ABOUT ECOSORB AND OMI INDUSTRIES

- 30 years of odor control expertise
- Experienced engineers, chemists, and equipment builders
- Success in eliminating odors across industries: wastewater, asphalt, manufacturing, solid waste, drilling, and more
- All products plant-based, safe for people and the environment
- State-of-the-art R&D / manufacturing campus
- Regional consultants across the globe

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ABOUT ECOSORB AND OMI INDUSTRIES

DESIGN

Using our years of expertise in odor control, we match your odor problem to an existing Ecosorb blend. In some cases, a custom formula is needed to battle unique odor combinations, like those found in cannabis grows of different strains. Chemists at OMI Industries can determine the best mix of ingredients for each odor issue.

BUILD

We manufacture, engineer and customize equipment to deliver Ecosorb, based on each application and its environment-weather, delivery method, output volume, and more.

OUTFIT

Ecosorb delivery systems fully integrate with your existing equipment and processes. Our engineers work with your team to install and maintain a complete odor solution.

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CONTACT

www.EcosorbIndustrial.com/Cannabis

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