

Volatile Organic Compounds (VOCs)

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Volatile Organic Compounds (VOCs) are chemicals commonly found within the air in your home; they are released by cleaning products, cosmetics, carpeting, furniture, air fresheners, and many other consumer products. These potentially dangerous substances can aggravate asthma, induce headaches, increase allergy symptoms, and cause cancer.

VOCs are too small to be captured by a traditional High Efficiency Particulate Air (HEPA) filters. Carbon filters are able to adsorb VOCs; however, VOCs bind loosely with carbon filters and if conditions change the VOCs can be re-released into the air.

Molekule's PECO Technology Reduces VOCs to Undetectable Levels in Just 90 Minutes

PURPOSE

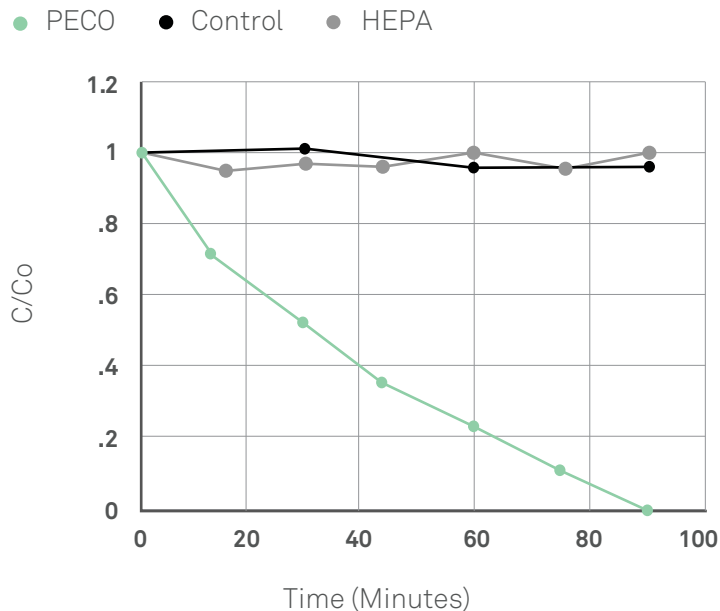
This test shows that Molekule's Photo Electrochemical Oxidation (PECO) technology can successfully destroy Volatile Organic Compounds (VOCs) in indoor air.

SET-UP

Toluene, a common VOC, was inserted into a chamber containing the Molekule's PECO technology and the device was allowed to run. To compare results between PECO, High Efficiency Particulate Air (HEPA), and natural dissipation, two additional chambers were set up: one contained no air purification system, and the second contained a HEPA filter.

RESULT

Toluene gas was reduced to undetectable levels only 90 minutes after PECO was turned on, indicating that the technology was highly effective in the elimination of VOCs. As a control, the same experiment was run in a chamber with no purifier, and 96% of the Toluene gas remained. In a chamber with a HEPA filter, 99% of the gas remained, as the gas particles are too small for HEPA filters to catch. This indicates that only Molekule's PECO technology successfully reduced and removed VOCs in the chamber.



Comparison of PECO vs HEPA filter on VOC destruction.



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Molekule's PECO Technology Outperforms Carbon Filters For VOC Reduction

PURPOSE

This study investigated how Molekule's PECO technology compares to carbon filters for reduction of Volatile Organic Compound (VOC) concentrations in air.

SET-UP

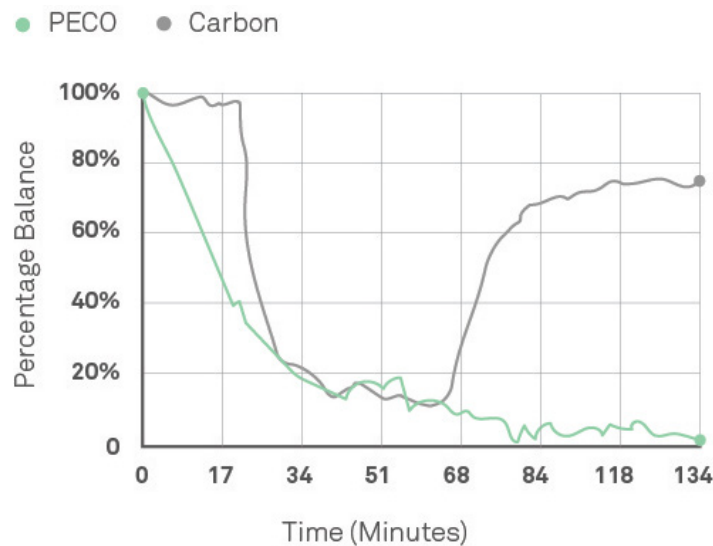
A test chamber containing Molekule's PECO technology was injected with approximately 1ppmv of acetone (a common VOC).

The same experiment was repeated replacing Molekule's PECO technology with a standard carbon filter, after 1 hr and 40 min, fresh air was introduced into the chamber to see if changing conditions impacted concentrations of VOCs.

RESULT

Molekule's PECO technology effectively reduced concentrations of acetone to near background levels within 6 hours.

Activated carbon filters initially showed reduction in VOCs; however, after air conditions changed, the carbon filter started releasing VOCs back into the air whereas the PECO simply destroyed the VOCs in a similar test.



Comparison of PECO vs Carbon filter in changing enviromental conditions.



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