

## Mireya Turner

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**From:** Doug Gearhart <doug@lcaqmd.net>  
**Sent:** Thursday, March 19, 2026 10:32 AM  
**To:** Mary Claybon; Mireya Turner  
**Subject:** Sampler for terpenes

This is the most common sampler I have found for terpenes from cannabis. We have to do a little more research on the potential use of this for downwind odor monitoring. I don't know what the odor threshold is for the average person to smell and recognize cannabis, so it's difficult to know what level is a nuisance.

But, it's an example of some of the monitoring that is available that could be utilized in response to complaints to develop a threshold over the next few years.

Doug

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> [https://www.sigmaaldrich.com/US/en/technical-documents/technical-article/environmental-testing-and-industrial-hygiene/cannabis-testing/sampling-analysis-of-terpenes-in-air-with-carbotrap-t420-thermal-desorption-tubes?srltid=AfmBOopFwxjRs5mkzdSbcyQXN\\_6RK40pbXO3YwEeLwzwQNp\\_EKY847R](https://www.sigmaaldrich.com/US/en/technical-documents/technical-article/environmental-testing-and-industrial-hygiene/cannabis-testing/sampling-analysis-of-terpenes-in-air-with-carbotrap-t420-thermal-desorption-tubes?srltid=AfmBOopFwxjRs5mkzdSbcyQXN_6RK40pbXO3YwEeLwzwQNp_EKY847R)  
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> Sampling and Analysis of Terpenes in Air with Thermal Desorption Tubes  
> Terpenes are fragrant organic compounds associated with the aromas and flavors of numerous plants from botanicals to conifers. Many sample preparation techniques are available for the measurement of the terpene concentrations in plant materials for identification and profiling; but those methods are not amenable for detection and measurement of the terpenes emitted from the plants into the air. Depending on the plant and the environment, terpene concentrations in the air can range from very weak to very strong, odorous, and unpleasant. The workers, mainly from the cannabis and hemp industries may experience negative respiratory health effects from working around these plants as no Personal Exposure Limits (PELs) have been established by regulatory agencies and guidance for the use of personal protective equipment (PPE) has not been identified or deemed as necessary. Additionally, the impact of the emissions from these growing facilities may result in adjacent neighborhoods complaints of strong unpleasant odors, however, no odor threshold limits have been established. Downwind of these facilities, neighboring agricultural operations may have their crops flavor unintentionally adulterated from these drifting terpenes.  
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> Other analytical methods for the extraction of terpenes from plants, namely cannabis and hemp, require processing the flowering portion for sample preparation and analysis which is a multi-step process after the plant materials arrive at the laboratory. Thermal desorption tubes streamline this process down to two steps in the workflow – Active sampling, to collect the air sample (non-destructive), and then straight to the laboratory for analysis with thermal desorption-gas chromatography-mass spectrometry (TD-GC/MS). There is no sample preparation step to break down the plant material and extract the terpenes for identification and profiling. Because thermal desorption does not require solvent extraction, it is more sensitive than other available methods because it does not dilute the sample. The

Carbotrap® T420 Thermal Desorption (TD) tube is specifically designed for detection and measurement of terpenes in air from growing operations aimed at identification and profiling environmental emissions – to evaluate employee exposures, terpene drift and odors.

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