

Federal Researchers Test New Breath-Based Cannabis Detection

Federal Government Explores New Protocol for Testing Recent Cannabis Use

The federal government is taking a new approach to testing for recent cannabis use, focusing on a revised protocol for screening breath samples for THC. This effort, led by researchers at the National Institute of Standards and Technology (NIST) in collaboration with the University of Colorado, aims to develop more reliable and accurate methods for field testing marijuana impairment, particularly among drivers. The proposed solution involves taking two separate breath samples within an hour of each other, which researchers believe could yield better results than a single test.

“If their research is successful,” NIST said in a press release, “it could lead to a roadside test for cannabis use that involves two breath tests given at a specified interval apart.”

Challenges in Detecting Recent Cannabis Use

One of the longstanding challenges in marijuana policy has been reliably testing for recent cannabis use that might still impair someone, such as a driver. Current testing methods can detect cannabis use from days or weeks ago but struggle to accurately determine current impairment. This has significant implications for law enforcement, as existing field sobriety tests—like walking heel-to-toe or repeating sentences—are not specifically designed for cannabis and can lead to false positives.

“This is potentially paradigm-changing,” said Kavita Jeerage, a NIST materials research engineer. “If successful, it could pave the way for on-the-spot detection of recent cannabis use by law enforcement.”

Two Breath Tests Approach

A single breath test has not proven conclusive for detecting recent cannabis use. To address this, NIST and the University of Colorado are exploring an alternative approach: administering two breath tests at a set time interval. This method is being tested in a pilot study supported by a \$1.5 million interagency agreement between NIST and the National Institute of Justice. The study will involve 45 participants from the Denver and Boulder areas who will consume THC-based cannabis and complete multiple breath tests in a mobile pharmacology lab parked near their homes.

Participants will also provide blood samples and complete questionnaires about their cannabis use. The breath samples will be analyzed for THC and its metabolites, as well as other cannabinoids, to assess the accuracy and reliability of the two-test protocol.

NIST’s Ongoing Research and the Public Safety Debate

NIST's involvement in cannabis research extends beyond this pilot study. The institute has been working on improving cannabinoid testing in marijuana and hemp samples since launching its Cannabis Laboratory Quality Assurance Program (CannaQAP) in 2020. Earlier this year, NIST released a report on determining cannabinoid content in plant material, following previous reports on moisture content and the presence of toxins and heavy metals.

Despite these advancements, there is ongoing debate about the best methods for assessing marijuana impairment. Frances Scott, a physical scientist at the National Institute of Justice (NIJ), has expressed skepticism about relying on THC concentration as an indicator of impairment. "Maybe what we need to do is kind of get away from that idea that we can sort of have a number when it comes to marijuana and have that mean that you're impaired," Scott said, suggesting that alternative measures might be necessary.

Legislative and Regulatory Perspectives

The issue of marijuana impairment testing has also caught the attention of lawmakers. Last summer, a congressional report for the Transportation, Housing and Urban Development, and Related Agencies (THUD) bill highlighted the need for developing an objective standard to measure marijuana impairment. Senator John Hickenlooper (D-CO) has also been involved, urging the Department of Transportation (DOT) to address research barriers inhibiting the development of a standardized test for marijuana impairment on the roads.

The DOT was required to complete a report on this issue by November under a large-scale infrastructure bill signed by President Joe Biden. However, the report was delayed and only published this April.

Studies on Cannabis and Driving Impairment

Research on marijuana's impact on driving has produced mixed results. A 2019 study found that individuals driving at the legal THC limit were not statistically more likely to be involved in an accident compared to those who hadn't used marijuana. Similarly, a 2022 study concluded that smoking CBD-rich marijuana had "no significant impact" on driving ability, even though participants exceeded the legal THC limit in their blood.

As the federal government continues to refine testing protocols, the debate over how best to measure marijuana impairment remains a complex and evolving issue. The success of NIST's new approach could play a crucial role in shaping future policies and ensuring public safety on the roads.

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