Breakthrough for law enforcement to rapidly distinguish hemp vs. controlled marijuana

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newly formed Center for Crime, Forensics, and Security Analysis. The teams have developed a new THC Rapid Field Test Kit that gives law enforcement an easy-to-use tool to distinguish hemp from marijuana in less than five minutes. Credit: Hemp Synergistics/Ron Fazio

As hemp-based products experience heightened popularity among consumers, leading forensic scientists collaborate to solve a growing problem for law enforcement, hemp farmers, private citizens and overburdened national labs.

Hemp Synergistics, LLC, a biotechnology company dedicated to transform the way consumers use hemp-derived cannabinoid-based formulations, has formed a partnership with leading forensic scientists at Purdue University Northwest's newly formed Center for Crime, Forensics, and Security Analysis. After a year of research, development, and testing, the teams have developed a new THC Rapid Field Test Kit that gives law enforcement an easy-to-use tool to distinguish hemp from marijuana in less than five minutes.

"Our partnership with Purdue University Northwest will provide law enforcement with the tools they need to protect the civil liberties of private citizens and hemp-based business owners. Up until now, there's been no in-the-field tool to accurately and effectively detect and respond to deviations in THC levels in products the public is consuming." said Ron Fazio, a former forensic scientist and current chief operations officer at Hemp Synergistics. "As a result, law enforcement is forced to divert valuable resources to investigate, citizens lose liberties, and an otherwise legal industry is hampered. It's a huge expense that no one wants."

Currently, law enforcement is obligated to investigate any controlled

substance, including marijuana. The trick is being able to quickly and reliably differentiate between hemp and marijuana. Unfortunately, "hemp" and "marijuana" are the same plant and are legally differentiated only by the amount of Delta-9-THC. Until now, measuring the amount of Delta-9 THC in the field, avoiding an unnecessary arrest or costly investigation, was impossible. The suspected controlled substance would have to be seized as evidence and submitted to a crime lab for full analysis, which can take months and cost thousands of dollars.

"The goal was to develop a test that was easily deployed in the field and was reliable and scientifically defensible—as opposed to sending a sample back to a lab with expensive high-powered instrumentation," continued Fazio.

According to Purdue University Northwest's Dr. Christian Westring, who served on the Board of Directors for the American Society for Crime Laboratory Directors, the nation's forensic laboratories, most of which are publicly funded, are often backlogged as a result of the nation's opioid crisis. Routine drug testing for example, can take as long as three months, or more. As a result, complex tests like THC quantitation can take much longer.

Current field tests give you a positive or negative result and don't take into account the exact percentage of THC. Therefore, if a product has a legal amount of THC—there's no way of knowing that unless it's sent to a national lab. For hemp growers, this demonstrates the need for a tool that can accurately measure how close to the legal limit their product is. For law enforcement, this demonstrates the need for precise estimations of how strong a product is and whether or not they should pursue additional sampling.

"The newly formed Center's primary function bridges academics, research and community engagement—working with industry partners

like Hemp Synergistics and police departments to help solve real world problems around public health and safety," said forensic science expert Christian G. Westring, Ph.D. Director and Professor at the Center for Crime, Forensics, and Security Analysis, who serves on the Organization for Scientific Area Committees (OSAC), a joint initiative of the National Institute of Standards and Technology (NIST) and the Department of Justice that supports the development of forensic science standards and guidelines for the United States.

According to Brightfield Group, hemp-derived CBD products, particularly within the health and wellness markets, are on track to grow to USD 23.7 Billion by 2023. Since COVID-19, consumer demand for CBD-based products, the active ingredient in hemp, has spiked.

The scientists at Purdue Northwest and Hemp Synergistics devised innovative improvements to existing lab technologies to create a field-ready application. Built from the ground up, the disposable field test kit test is based on the mechanism of an existing chemistry test used in the Duquenois-Levine reagent test. The scientists used novel modifications such as replacing certain activator chemicals with safe ingredients that minimize exposure while remaining readily deployable. The field test, named TRU (THC Recognition Units), utilizes a colorimetric panel—much like a pH test—that provides an identification and semi-quantitation of Delta-9 THC and Delta-9 THCA. Each test costs approximately $14 dollars—compared to the hundreds or thousands of dollars for crime lab testing.

"This product is not designed to replace full forensic laboratory testing, rather it is designed to give a rapid, accurate field test that can identify what doesn't need to go to the lab. We estimate it can lower forensic laboratory submittals of suspected marijuana cases by 50 percent," said Westring.

The product has been rigorously tested at Purdue University Northwest, which follows industry standards for method development and validation. Product deployment for law enforcement and agriculture industries will begin immediately.

Provided by Purdue University