

Body of evidence: New fast, reliable method to detect gravesoil

July 30 2010

Nothing against bloodhounds, but finding bodies buried by someone who wanted them to stay undiscovered can be difficult. However a new technique developed by scientists at the National Institute of Standards and Technology, can reliably detect biochemical changes in a decomposing cadaver.

Typically, cadaver-sniffing dogs or ground penetrating radar are used to detect clandestine gravesites. But these methods are not always useful in all scenarios, such as if a body is buried under concrete. The NIST instrument is a modification of a technique developed at the lab to sense minute levels of difficult-to-detect [chemical compounds](#). (See www.physorg.com/news171649873.html) The process uses an alumina-coated, porous layer, open tubular (PLOT) column with a motorized pipette that pulls in air samples at ambient temperatures. The device detects trace amounts of ninhydrin-reactive nitrogen (NRN) that collects in air pockets above and close to gravesoil. Previously, this process involved the tedious and expensive process of solvent extraction of [soil samples](#). Now, a simple probe slightly thicker than a human hair can be inserted into the ground to detect decaying flesh.

Developed by NIST chemists Thomas J. Bruno and Tara M. Lovestead and spelled out in a paper published in *Forensic Science International*, this is the only known example of detecting NRN in the vapor phase and gives detectives another tool for finding hidden graves. Moreover, Bruno said that the device can be used to detect a body buried under a concrete slab, merely by drilling a one-eighth-inch hole and inserting the probe,

thereby eliminating the need for unnecessary digging.

Bruno and Lovestead used frozen, dead feeder rats for their study and took samples of rats buried under 8 centimeters of soil, laid on top of the soil and from boxes with no dead rats in them. They took samples at one week intervals for six weeks and then again at 10 and 20 weeks and found that after five weeks, the amount of NRN was at its highest, but it was still detectable after 20 weeks.

The device operates at room temperatures, as opposed to ultra-cold temperatures, which is a big plus for future portability as well as the fact that it employs chemicals already in use by law enforcement officials (ninhydrin reagent) for exposing latent fingerprints. Bruno is working on making a portable version of the instrument—at present only the sampling device is portable; testing of samples must still be done in the lab—giving this new device and detection process great promise for use by law enforcement officials in the field.

More information: T.M. Lovestead and T.J. Bruno. Detecting gravesoil with headspace analysis with adsorption on short porous layer open tubular (PLOT) columns. Forensic Science International. Published online: June 23, 2010.

Provided by National Institute of Standards and Technology

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