

The Hound™ and Hound II™ Handheld Explosives Preconcentrators



The Hound™ (center) and the Hound II™ (right), a ruggedized version of the Hound, provide sample collection and preconcentration of air samples to enhance the capability of an ITI VaporTracer™ explosives detector. The Hound II units can be detached to allow easier sample collection.

Description

The Hound™ and Hound II™, developed by Sandia National Laboratories, are hand-portable sample collection and preconcentration devices capable of detecting vanishingly faint odors (parts per trillion) of explosives, drugs, and other chemicals. Recent advances in Sandia's patented chemical preconcentrator technology have enabled the development of these small sample collection and preconcentrator tools that are portable, inexpensive, sensitive, and fast. The Hound II is a ruggedized version of the original Hound. These portable devices use a miniaturized version of the technology first used in the explosives-detecting personnel portal developed by Sandia for the Federal Aviation Administration (FAA).

Features and Operations

The Hound™ and Hound II™ feature portability, high sensitivity, a low false alarm rate, ease and speed of operation, and adaptability to many detectors. Both devices combine swipe and vapor collection into a single portable unit. For swipe collection, a sampling screen is wiped across the suspect surface and inserted in the device. The combined unit of a Hound and an ion mobility spectrometer (IMS) can easily detect sub-fingerprint quantities of explosive residue. For vapor collection, a blower draws in a large volume of air, collects explosives and other chemicals from the air stream onto a metalized screen, and then vaporizes these compounds into a smaller parcel of air that is then delivered to a detector. The Hound II sample collection and preconcentration units can be detached from the detector to allow easier sample collection. The Hounds enhance the real-world detection capabilities of the IMS by delivering the sample to the detector in a concentrated form.

Applications

These devices could be used for explosives detection at military bases, sensitive facilities, embassies, airports, or border crossings. These devices can detect explosives vapor from several cubic feet of air drawn from such locations as the seams of a car trunk or school locker. Drug detection can also be accommodated.

Availability

Sandia is exploring licensing opportunities for the Hound™. Hand-portable devices are currently fabricated on a contractual basis to meet the requirements of individual customers. This project is funded by the Department of Energy, the Federal Aviation Administration, and the Federal Bureau of Investigation.

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