

## Gas Analyzer

At right center, a technician in protective gear is using a M200 Microsensor Gas Analyzer to check out a suspected hazardous container. Developed by Microsensor Technology Inc. (MTI), Fremont, California, and derived from space technology, the M200 features dual gas chromatographs, systems that separate a gaseous mixture into its components and measure the concentrations of each gas in the mixture. Such systems are widely used by research organizations and in such industrial applications as monitoring work areas for gas leaks or volatile chemical spills; monitoring stack gases for compliance with pollution laws; identifying gases produced during energy explorations; in police work, for breath alcohol analysis and arson investigations; and in medicine, for respiratory and anesthesiology analysis.

The M200 Microsensor is a second generation spinoff with a number of advancements over its predecessor, in particular the dual chromatograph feature. Innovative micromachining technology enabled MTI to fabricate a gas chromatograph on a silicon wafer and overcome design limitations that had earlier prevented production of a high speed, high resolution chromatograph. The M200 completes many analyses in less than 30 seconds; it has the ability to analyze a very large range of mixtures and to measure concentrations as small as one part in a million. Intended for use in plant, field or laboratory, the M200 weighs only 12 pounds. At right are the detector unit and the gas chromatograph column of the miniaturized M200.

The M200 traces its origin to work performed in the early 1970s by Ames Research Center, which sought to develop a gas analyzer for two unmanned Mars-exploring spacecraft known as Viking Landers. Ames wanted a highly sophisticated gas chromatograph for detection of life forms, if they existed on Mars, and for

analysis of the Martian soil and atmosphere. But space was at a premium in the Landers and therefore the chromatograph had to be extremely small and lightweight despite the exceptional performance demanded of it. Ames contracted with Stanford University for hardware development of the instrument.

The unit was not developed in time for use aboard the Viking Landers, but the technology interested the National Institute for Occupational Safety and Health (NIOSH). Looking for a portable device capable of detecting gas leaks in industrial environments, NIOSH provided funds for further development of the Ames/Stanford chromatograph. Subsequently, three researchers who had worked on the project left Stanford and formed MTI to produce a portable gas analyzer for the commercial market. They introduced the original version, called Michromonitor 500, in 1982 and the more advanced M200 in 1988.

