NEWS OF ENGINEERING FORENSICS

MDE Engineers, Inc. Vol. 15 No. 2 October 1998

DALE C. MANN JOINS MDE AS PRINCIPAL

Dale C. Mann has joined MDE as a principal and is responsible for all analytical and forensic chemistry investigations. Mr. Mann's experience in forensic analysis and environmental chemistry is a valuable resource as MDE continues to expand its capabilities. Fires, explosives, hazardous materials, chemical failure/misapplication, microanalysis and vehicular accidents are examples of forensic investigations in which Mr. Mann's expertise will be useful. He is certified by the State of Washington to respond to hazardous materials sites/clandestine drug laboratories to assess, sample and safely dismantle these sites.

Mr. Mann comes to MDE from the Washington State Patrol Crime Laboratory (WSPCL) where he worked for over 17 years, assisting in thousands of forensic investigations of all types. Mr. Mann supervised the Chemistry and Microanalysis Sections of the Tacoma Crime Laboratory for the last nine years. He has qualified as an expert in criminal and civil courts in over 320 cases. While with the WSPCL, he conducted several original research projects related to the recovery and identification of ignitable liquids from fire debris. He is a well recognized figure nationally, serving on several national boards, including the American Board of Criminalistics which is the national certifying organization for forensic scientists. He has published research, lectured at many national forensic meetings, and taught regularly at the FBI and other forensic institutes.

Before joining MDE, Mr. Mann was also the sole proprietor of Forensic and Analytical Services, a laboratory and consulting service available to the civil sector. He handled cases involving fire investigation, failure analysis of a variety of mechanical devices due to chemical exposure, hit-and-run determinations based on paint analysis, and a variety of other forensic investigations.

In the late 1970s, Mr. Mann gained valuable environmental chemistry experience with Battelle, Pacific Northwest Laboratories as a Research Scientist. He spent several years investigating the effects of chlorination of heat exchangers to prevent biofouling and studied the effects of shale oil production on the environment.

Mr. Mann received his Bachelor of Science degrees in Chemistry and Oceanography from the University of Washington. His undergraduate research was concentrated on analytical chemistry and organic analysis.

THE ROLE OF A CHEMIST IN FORENSIC INVESTIGATIONS

Trace organic and inorganic analysis plays an important role in determining fire and explosion cause. Environmentally, these analyses may help determine if a residence is safe for occupancy or if a septic system needs to be removed due to toxic materials, for instance from a clandestine drug manufacturing operation.

Paint analysis can play an important role in determining whether a particular vehicle (or other object with a painted surface) was responsible for observed damage.

Accidental/normal wear versus intentional damage to a variety of components can often be determined by a thorough microscopic exam followed in some cases by chemical analysis. Was the ruptured gas line cut, or did it fail due to old age? Was the LPG tank on at the outset of the fire? Was chemical exposure responsible for the failure of the gasket, or did it fail due to normal environmental exposure? These are a few questions Mr. Mann has answered by a combination of microscopic and chemical analysis.

Dale Mann's Research on FIRE DEBRIS ANALYSIS

Comparison of Automotive Gasolines, published in the **Journal of Forensic Sciences**, 1986. Capillary gas chromatography was used to compare the relative concentrations of hydrocarbons in a variety of gasoline samples. The chromatographic differences observed were used to distinguish gasolines from different sources. This technology is now used in fire investigations across the country to help determine who set the fire.

Bacterial Degradation of Gasoline in Soil, published in the **Journal of Forensic Sciences**, 1989. Microbiological research showed that bacteria in soil can utilize some hydrocarbons as a food source, thereby altering the typical chromatographic pattern for a liquid petroleum product (such as gasoline). This biodegradation was successfully modeled and is now available for use by forensic chemists.

If you need an engineer or chemist as an expert witness or accident reconstructionist, call MDE. We can advise you regarding your need and, if we don't have the required expertise, we can recommend the right person to you.

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INTRODUCING

Dale C. Mann, Forensic Chemist

and ADE Forensic Laboratories

Analytical Capabilities:

- Gas Chromatography/Mass Spectrometry (GC/MS)
- Analytical Chemistry
- Microscopy
- Micro/Infrared Spectrometry (FTIR)
- Scanning Electron Microscopy with Energy Dispersive X-Ray Spectrometry (SEM/EDS)

Applications:

- Fire Debris Analysis
- Forensic Analysis
- Paint/Polymer Analysis
- Chemical Failure Analysis
- Chemical Spill Remediation
- Drug Analysis
- Explosives Residues Analysis

Scanning Electron Microscope

Automated Gas Chromatograph/ Mass Spectrometer

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NEWS OF ENGINEERING FORENSICS
FALL 1998