

## Forensic Laboratories

Scientific experts at MDE provide laboratory testing, research, and analysis in many diverse projects. MDE offers a multi-faceted approach to your investigations with state-of-the-art laboratory equipment, all under one roof. The comprehensive forensic laboratories are complimented by a large testing and research center to serve you best. MDE's experts provide case review and consultation, and are expert witness qualified.

The forensic laboratory staff has solved many difficult problems including materials identification, deformation/reverse engineering of plastics, surface coatings, cosmetics and pharmaceuticals, evaluated the cause of many product failures and helped solve manufacturing issues. MDE routinely provides consulting services regarding drug contamination, accelerant and explosive residues after fires, water quality including MIC and biofouling studies, chemical incompatibilities, indoor air quality evaluations, and microbial investigations.

MDE forensic laboratories commonly performs microanalysis utilizing stereo, metallurgical and electron microscopes; composition mapping and detection utilizing x-ray system; micro and macro hardness surveys to detect degradation of components; hydrostatic and dynamic analysis to prove failure sequences; corrosion; and environmental studies to simulate actual applications.

### CHEMICAL ANALYSIS

- Drug Analysis
- Clandestine Drug Lab Remediation
- Chemical Spill Remediation
- Chemical Failure Analysis
- Deformulation
- Polymer Analysis
- Materials Identification
- Contaminant Identification

### MATERIALS ANALYSIS

- Composition Analysis
- Micro and Macro Hardness Surveys
- Corrosion Studies
- MIC Evaluations
- Polymer Analysis
- Tensile Testing
- Fracture Analysis

### MICROBIOLOGICAL ANALYSIS

- Mold Field Investigations
- Dust, Soot, Stain Evaluations
- Building Science Investigations
- On-Site Sample Collection
- Microbiological Induced Corrosion (MIC)
- IAQ Investigations
- Food Toxins
- Water Quality Evaluations

### FORENSIC INVESTIGATIONS

- Fire Investigations
- Fire Debris Analysis (ASTM Methods)
- Lubricants, Fuels, and Explosive Analysis
- Paint Analysis/Transfers
- Product Tampering
- Building Materials Analysis
- General Forensic Case Review
- Criminal Forensic Re-analysis

### FIRE SCIENCE

- Fire Origin & Cause Investigation
- Explosion Investigation
- Heat Transfer and Thermodynamic Analysis
- Full- and Reduced-Scale Fire and Explosion Testing
- Computer Fire Modeling
- Ignitable Liquid Residue Analysis
- Fire Debris Analysis
- Full Laboratory Fire Analysis

### ANALYTICAL CAPABILITIES

- Scanning Electron Microscopy/Dispersive X-Ray Spectrometry
- Micro/Infrared Spectrometry
- Gas Chromatography/Mass Spectrometry
- Optical Microscopy
- Thermal Gravimetric Analysis
- Polarized Light Microscopy
- General Analytical Chemistry

