Expert Technical Assistance
NEIC's Support Capabilities

Relevant Skill Areas:

- Chemistry
- Geochemistry
- Statistics and data analysis
- Toxicology

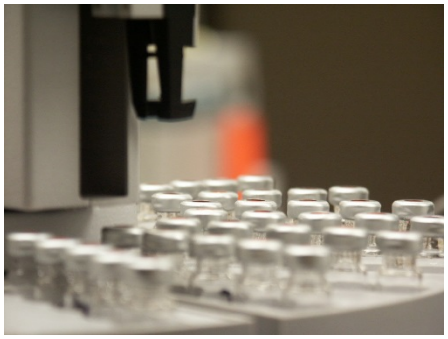
Results:

- Pilsen neighborhood soil lead contamination from brass and bronze foundry –The negotiated settlement saved the Agency approximately $1.1 million for the non-residential cleanup and $4 million for the residential portion of the cleanup.
- Berkshire Power Company – The owner and management company paid a combined $3.25 million in penalties for falsifying emissions reports. NEIC helped develop estimates of the pollution that was emitted from the falsified reports.
- Boasso – Two defendants were sentenced to 28 months incarceration, $50,000 in restitution, and 36 months probation for a nine-count sentence enhancement for the potential to cause harm or serious bodily injury, demonstrated by toxicology expert witness testimony.

Key Personnel:

- Jon Beihoffer – chemistry
- Richard Helmich, Ph.D. – chemistry
- Theresa Hosick – chemistry
- Kristen Keteles, Ph.D. – toxicology
- Joe Lowry, Ph.D. – chemistry
- Steven Machemer, Ph.D. – geochemistry
- Brad Venner, Ph.D. – statistics

The National Enforcement Investigations Center (NEIC) is often called upon to provide specialized expertise and consultation in support of investigations and enforcement cases. These requests originate from local, state, federal, tribal, and environmental and law enforcement agencies. This support ranges from the preparing expert reports, providing testimony in court, conducting statistical analysis, providing toxicological assessments, designing field sampling approaches, and conducting confirmatory laboratory analysis.



Chemistry Support: Analytical chemistry is fundamental in characterizing the presence, fate, and transport of chemicals for enforcement of environmental regulations. NEIC provides expertise in environmental forensic chemistry to support complex environmental cases. Some recent project examples are described below:

In response to residents' concerns regarding soil lead contamination in Chicago, Illinois, NEIC was asked to characterize lead-bearing particulate matter in industrial process materials and soils with elevated lead levels to discern possible lead sources. Alley, railroad, residential, and reference soils from the Pilsen neighborhood in Chicago were analyzed by scanning electron microscopy, lead isotope ratios, and inductively coupled plasma mass spectrometry. Analytical results indicated lead contamination near the foundry was consistent with brass and bronze foundry baghouse dust and slag. NEIC completed a comprehensive report delineating areas of contamination attributed to the brass and bronze foundry and assisted in negotiations through November 2016, when the Final Administrative Settlement Agreement and Order on Consent for Time Critical Removal Action (PDF) was signed.

During a Clean Air Act leak detection and repair (LDAR) compliance inspection at the DuPont Washington Works facility in West Virginia, the NEIC field team observed leaking process lines carrying various formaldehyde solutions. Formaldehyde is a hazardous air pollutant and known carcinogen. NEIC provided expertise on the chemistry of formaldehyde in aqueous solutions in support of the compliance inspection.

NEIC assisted the U.S. Drug Enforcement Administration (DEA) laboratory on developing an approach to identify unknown waste that was initially thought to contain illicit drugs. A very large volume of waste was shipped between two countries in the Middle East. After no illicit drugs were detected, the analysis was directed toward determining if the waste would be classified as hazardous under U.S. statutes. NEIC was able to assist the DEA laboratory with development of an analytical strategy, as well as subsequent data reviews, to enable the DEA chemists to perform the necessary testing themselves.

Statistical Support and Data Analysis: Uncertainty in measurement has become increasingly important in the presentation of enforcement evidence. NEIC provides statistical support for the development of rigorous estimates of measurement uncertainty, including design of experiments. Additionally, NEIC can assist with developing sampling plans. For example, NEIC helped support an investigation at a warehouse that held thousands of containers of hazardous waste. NEIC helped design a sampling plan, including cluster sampling and XRF screening, which was used to develop an estimate of the population of drums containing hazardous waste.

NEIC also provides data analytical services. Increasingly, companies collect massive amounts of data that are relevant to their compliance status, ranging from leak detection survey logs to air pollution control operational performance records. These data sets can be analyzed, and sometimes hidden non-compliance are detected through this analysis.

Toxicology Support: Toxicology is the study of the adverse effects of chemical, physical, or biological agents on people, animals, and the environment. Toxicologists are scientists trained to investigate, interpret, and communicate the nature of those effects. Therefore, a toxicologist can assist with investigations by providing technical assistance on the potential for exposure and potential harmful effects from exposure to toxic chemicals or biologicals. This information can be used in an indictment, can provide compelling evidence to leverage a plea agreement, or can assist with determining environmental harm for penalty calculations. A toxicologist can also provide expert witness testimony at trial to demonstrate harm or the potential for harm from exposure to a chemical or biological agent.

For example, NEIC staff provided an expert opinion at the sentencing hearing on the potential for harm to children from exposure to lead. The defendant falsely told customers that he was certified to perform lead-based paint inspections in homes where children lived. In one instance, the defendant gave the homeowner a false negative for the detection of lead. As a result of the ensuing exposure to the lead paint, some of the children in the home experienced increased lead levels in their blood. NEIC staff testified about the risks to children from lead exposure and that the elevated blood lead levels were likely due to the lead in the dust in the home. The judge sentenced the defendant to the maximum of 14 months incarceration for lying about lead test results, citing "The bottom line is, the actions you engaged in put children at risk. Our society just cannot allow that." The testimony of the toxicologist was instrumental in obtaining the maximum sentence.

Who we are: NEIC is the environmental forensics center that supports complex civil and criminal investigations for EPA's enforcement programs across the country. NEIC's mission is to serve as EPA's fully accredited forensics laboratory and provide for multi-disciplinary expert teams to conduct field investigations to gather and evaluate evidence and perform analytical services. NEIC provides support by gathering data, providing engineering evaluations, analyzing forensic evidence, supplying legally defensible data, serving as expert witnesses in the courtroom, and providing investigation training.

Expert capabilities: NEIC has a number of experts available to support the Agency's enforcement needs, including forensic chemistry, statistical, and toxicology expert support. As a forensics laboratory, NEIC also has team of civil and criminal enforcement investigators and laboratory analysts to support enforcement investigations.

How to obtain NEIC's support

If you would like more information on NEIC or to request field and/or laboratory support, technical assistance, or training from NEIC, please contact us at neic_project_requests@epa.gov. You may also contact your regional enforcement coordinator for more information on requesting NEIC's support on civil projects and EPA's Criminal Investigation Division (CID) for support on criminal projects.