

Mercury Risk Reduced

Mercury exposure poses significant health risks, especially during emergency response operations involving spills of mercury-containing devices or industrial materials. In response to these risks, one of the biggest fire services in Europe, guided by a lab that performs chemical and microbiological testing, environmental monitoring, and legal metrology, has equipped its technical support teams and mobile technical support laboratories with AMETEK Brookfield's Jerome Mercury Detection System. This state-of-the-art solution provides faster, more reliable detection of mercury vapors, significantly improving the efficiency and safety of hazardous material management in emergency settings.

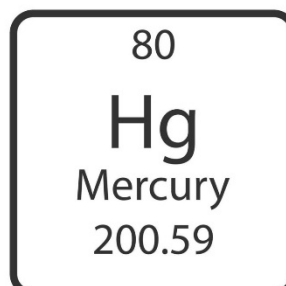


Accelerated Verification of Mercury Hazards

Historically, verifying potential mercury inhalation hazards required time-intensive testing within a technical support mobile laboratory, often taking up to 2-3 hours to confirm a hazard before teams could proceed with containment and mitigation. The AMETEK Brookfield Jerome Mercury Detection System significantly reduces this verification time by 50-75%, enabling fire and rescue personnel to promptly ascertain environmental safety. This rapid assessment capability ensures that, if an environment is deemed non-toxic, responders can quickly redirect efforts to other pressing emergencies, maximizing their effectiveness in multi-incident scenarios. The Jerome Mercury Detection System is engineered to provide a highly sensitive detection limit of $0.5 \mu\text{g}/\text{m}^3$, making it ideal for rapidly identifying mercury vapor in emergency settings. This new generation of portable analyzers aligns with the Health Protection Agency's public health guidelines, which set a recommended exposure threshold of $1 \mu\text{g}/\text{m}^3$ for air quality. The Jerome analyzer's user-friendly, one-button operation, combined with its advanced, stable gold film technology, has established it as a reliable instrument endorsed by emergency services for detection, inspection, and monitoring tasks. Fire and rescue personnel can operate the device in "survey mode" to trace sources of mercury vapor or in "analytical mode" for highly accurate measurements, achieving $\pm 10\%$ accuracy and repeatability of 15% RSD at $1 \mu\text{g}/\text{m}^3$.

Understanding Mercury: Properties and Risks

Mercury, also referred to as quicksilver or hydrargyrum, is a chemical element with the symbol Hg and atomic number 80. Unique among most elements, mercury remains in a liquid state at or near standard room temperature and pressure and is primarily obtained by reduction from the mineral cinnabar. Mercury is widely used in scientific and medical devices, including thermometers, barometers, manometers, and sphygmomanometers, as well as in various research applications. While mercury in an insoluble form, such as mercuric sulfide, is considered stable and relatively harmless, exposure to its soluble forms or vaporized state can result in mercury poisoning. Mercury vapor, particularly when inhaled, is highly toxic, potentially leading to significant health issues.



Health Risks of Mercury Exposure:

Mercury exposure poses numerous health hazards, with toxic effects that primarily affect the brain, kidneys, and lungs. Mercury poisoning, whether from inhaling vapor or ingesting contaminated substances, can cause neurological and physical impairments, including sensory disturbances (vision, hearing, and speech), loss of coordination, and cognitive dysfunction. Chronic or high-dose exposure to mercury can lead to severe conditions such as acrodynia (also known as pink disease), Hunter-Russell syndrome, and Minamata disease. The symptoms and severity of mercury poisoning vary based on the form of mercury, exposure dose, and duration. Consequently, mercury spills, particularly in populated or confined spaces, necessitate swift, accurate assessment and containment to prevent health and environmental consequences.



Deployment and Application in Emergency Response Scenarios

AMETEK Brookfield's Jerome Mercury Detection System is a critical tool for fire and rescue services managing mercury-related incidents. During an event, such as a spill, the system enables rapid, precise verification of mercury vapor presence and levels, ensuring responders can determine the safety of the environment before proceeding. This assessment is essential for various potential mercury spill scenarios, which can range from minor household thermometer breakages (releasing approximately 0.2 mg of mercury) to more substantial mercury quantities, such as 50-100 mg in barometers or even larger, unrestricted volumes encountered in industrial gauging applications.

Jerome J405 & J505

AMETEK Brookfield's Jerome J405 and J505 mercury vapor analyzers are designed to provide precise and reliable mercury detection, ensuring safety and compliance in various environments. The Jerome J405 utilizes advanced gold film sensor technology, capable of detecting mercury vapor concentrations as low as 0.5 $\mu\text{g}/\text{m}^3$. Its rugged construction and simple one-button operation make it ideal for demanding conditions, offering up to 24 hours of battery life for continuous monitoring.

On the other hand, the Jerome J505 employs Atomic Fluorescence Spectroscopy, providing a broader detection range of 0.05 to 500 $\mu\text{g}/\text{m}^3$. This portable and lightweight analyzer boasts a battery life of approximately 10+ hours per charge and can store up to 10,000 test results, making it a versatile tool for various applications. Both analyzers are essential for reducing mercury exposure risks, ensuring the safety of personnel and compliance with industry standards.

AMETEK Brookfield's Commitment to Safety

AMETEK Brookfield is dedicated to improving safety standards within the oil and gas industry by developing and providing advanced monitoring and detection solutions for both Hydrogen Sulfide and Mercury. Through innovative technology and a commitment to best practices, AMETEK Brookfield supports a safer operational environment, protecting both workers and the environment from the hidden dangers of toxic substances.

By prioritizing robust detection systems, preventive maintenance, and comprehensive safety protocols, oil and gas companies can protect their workforce and mitigate the risks posed by these invisible hazards, fostering a safer and more sustainable industry.