Hg253 Portable Mercury Analyzer

The **Hg253** represents a new standard for Mercury detection. It is a precise, accurate and portable solution to your mercury analysis requirements. The large color touch screen, seen in the picture above, sets a new standard for operational simplicity. Also, samples are recorded in non-volatile memory for laboratory reference, automatically time and date stamped for compliance with Good Laboratory Practice (GLP) practice. **Hg253's** on-board monitoring circuits continually check the status of batteries, detectors, and calibration for unparalleled reliability. The **Hg253** employs atomic absorption methodology for true mercury detection, avoiding costly and time consuming false positives. As an atomic absorption method instrument, the **Hg253** does not require regeneration periods.

Mercury in the Workplace

Mercury in the environment poses significant health risks. Mercury is absorbed into the body through three different routes. The primary route is through inhalation of mercury vapor. The human body retains approximately 75% of the mercury that is inhaled. Small concentrations of mercury in the air concentrate quickly in the human body. Mercury is also absorbed into the body through the skin. The dermal absorption rate is much less than the pulmonary rate. Numerous regulatory agencies have established limits for exposure to mercury. These limits are in place to prevent exposure to dangerous levels of mercury. The American Conference of Governmental Industrial Hygienists (ACGIH) has established a threshold level value of 0.025 mg/m^3 for an eight hour time period. The ACGIH additionally recommends that women of childbearing age should not be exposed to air concentrations of mercury greater than 0.010 mg/m^3. Additional regulatory agency guidelines for mercury exposure levels are as follows. The Mine Safety and Health Administration (MSHA), National Institute for Occupational Safety and Health (NIOSH), and the World Health Organization (WHO) have established an exposure limit of 0.050 mg/m^3 for an eight-hour time period. The Occupational Safety and Health Administration (OSHA) has established a ceiling exposure level of 0.100 mg/m^3. Workers are not allowed into areas with this level or higher without protective equipment.

Case Study

A large metropolitan area of the Midwest, once the home for thousands of mercury laden pressure regulators/gas meters is significantly contaminated through inadvertent and improper removal of these meters. The homes are grossly contaminated with elemental mercury, spilled from the regulators on removal. EPA Region 4 recently passed strict new regulations concerning remediation, and houses built before 1965 must have certification of being mercury-free prior to being sold. The remediation company involved in this work has tested many instruments and selected the Hg253 for this project. It won hands down over the competition through its ease of use, stability, accuracy and lack of interference from common chemicals, water vapor and other elements.

Mercury Contamination - Why the Danger

Exposure to high levels of elemental mercury vapor can result in nervous system damage including tingling sensations, muscle weakness, unsteady gait, tunnel vision, slurred speech, hearing loss, abnormal behavior, and personality alterations. Exposure to relatively high levels of inorganic mercury salts can cause kidney damage. Adult exposure to relatively high levels of methylmercury through fish consumption can result in numbness or tingling in the extremities, sensory losses and loss of coordination. Exposure of the developing fetus through maternal intake of contaminated fish can result in neurologic developmental abnormalities in cognitive and motor functions. Whether any of these symptoms actually occur, and the nature and severity of the symptoms, depend on the amount of exposure. The Environmental Protection Agency considers 21 micrograms to be the maximum safe daily dose.

Features

- Large color touch screen interface sets a new standard for operational simplicity.
- The quick swap battery offers 4 hours of continual use with just one battery.
- Samples are automatically time and date stamped for compliance with Good Laboratory Practice (GLP) methods.
- Samples are recorded in non-volatile memory for laboratory reference, export to a PC, or field review on a large 4.5" X 3.4" color touch screen.
- On-board monitoring circuits continuously check the status of the batteries, detectors, and calibration for unparalleled reliability.
- Works at the atomic level ensuring interference free analysis you can trust.
- Analytical information is protected with flash memory technology.
- Yearly calibration certification contracts for confidence in your reported analytical results.
- Client Side Software for easy trouble-free data transfer from Hg 253 to the PC.

Color Touch Screen

Technical Specifications

Methodology
Atomic absorption spectroscopy

Analysis
Analysis produces results at a rate of one sample per second. On-board memory allows analysis storage of 24 hours of data at the 1 second rate.

Battery operated
Four hours between charges

Detection limit
0.0001 mg/m^3 in a court defensible protocol
Hg 253 does not require regenerations after a high sample.

Target Analyte
Elemental gas-phase mercury.

Baseline correction
Automatic baseline correction

Power Source
Replaceable, rechargeable 12V, 5200mAh Lithium Ion battery.

Physical Dimensions
10.5"W x 6.5"D x 6.25"H
(267mm W x 165mm D x 159mm H)

Weight (with battery) 7.5lb (3.4kg)

Advantages

- Atomic absorption spectroscopy is an analytical chemistry method where the actual atom must absorb the light to be counted as a hit. Due to this technique the Hg 253 to does not report the false indications common by the gold conductive measurement units.
- Hg 253 employs a dual beam spectrometer for drift compensation.
- Once per year calibration with no filter charges.
- One Hg 253 does the work of three conductive units.

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