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Press Release

Nippon Instruments Corporation Publishes Method for Measurement of Total Mercury in Bauxite Using Direct Mercury Analysis

October 25, 2017 – Osaka, Japan. Nippon Instruments Corporation ([NIC](#)) has published a new application report describing the measurement of mercury (Hg) in bauxite, an aluminum ore, by thermal decomposition using atomic absorption spectroscopy. The method described in the report complies with [US EPA Method 7473](#), *Mercury in Solids and Solutions by Thermal Decomposition, Amalgamation, and Atomic Absorption Spectrophotometry*.

NIC Application Note MA-3A-IN-001, *Total Mercury in Bauxite Using Direct Mercury Analysis*, includes information about calibration and measurement, and highlights the performance of the [NIC MA-3000](#) direct thermal decomposition mercury analyzer.

Bauxite is an ore that serves as the world's main source of aluminum. It consists mostly of the minerals gibbsite, boehmite and diaspore. Aluminum, iron and silicon are the major components. The mercury content can vary significantly. To produce alumina, the ore must first be chemically processed. Bauxite residue, which contains most of the mercury from the ore, is the portion that remains undigested during processing. After washing, the residue is contained in special facilities known as Bauxite Residue Disposal Areas (BRDA) or Residue Storage Areas (RSA). Runoff from the areas can contaminate aquatic organisms with mercury and enter the food chain. Mercury is known to also bioaccumulate in humans, so bioaccumulation in seafood carries over into human populations where it can result in mercury poisoning.



**NIC MA-3000 Direct Thermal
Decomposition Mercury Analyzer**

Mercury is dangerous to both natural ecosystems and humans because it is highly toxic, especially due to its ability to damage the central nervous system. Mercury poses a particular threat to human development in utero and in early childhood. To prevent mercury poisoning, it is necessary to accurately quantify total mercury in bauxite and bauxite residue.



For the analysis described in the report, calibration was done using certified aqueous ionic-mercury standard solution diluted to the required concentration. Measurement was performed by the MA-3000 analyzer, a dedicated direct mercury analyzer that selectively measures total mercury by thermal decomposition, gold amalgamation and cold vapor atomic absorption spectroscopy on virtually any sample matrix.

The MA-3000 analyzer is designed to provide quick results without an elaborate, time-consuming sample preparation process. The results show that the instrument is able to analyze bauxite samples with accuracy and precision.

A copy of this report may be requested at shar-nic@rigaku.co.jp

About Nippon Instruments Corporation

Nippon Instruments produces a broad line of Hg monitors suitable for surveying for vapor-phase elemental mercury in air, and elemental and mercury compounds including methylmercury, in gases, liquids and solids. Materials analyzed include fuels – coal, lignite, crude oil, natural gas; liquids such as waste, drinking and river water; incinerator stack gases; animal products; human tissue and blood and solid waste streams.

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