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# Press Release

## Nippon Instruments Corporation Publishes Method for Measurement of Total Mercury in Copper Ore Using Direct Mercury Analysis

**September 14, 2017 – Osaka, Japan.** Nippon Instruments Corporation ([NIC](#)) has published a new application report describing the measurement of mercury (Hg) in copper 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-003, *Total Mercury in Copper Ore Using Direct Mercury Analysis*, includes information about calibration and measurement, and highlights the performance of the [NIC MA-3000](#) direct thermal decomposition mercury analyzer.

Mercury occurs in elemental form as a natural amalgam - an alloy of mercury with another metal- in native metals such as copper. Copper ores typically contain only a small amount of copper metal bound within valuable ore minerals, with the remainder of the ore being gangue (unwanted materials). When processed, the ore is first crushed and the resulting particles of individual mineral phases are separated to remove gangue, which is where mercury rich tailings can enter the local watershed. Mercury vapor can also be released into the atmosphere during the smelting process, where the ore is heated and reduced to remove other elements as gases or slags. Although elemental mercury is only present in the atmosphere in trace amounts, this has been established as a significant source of mercury for aquatic environments.

Mercury is dangerous to both natural ecosystems and humans because it is highly toxic, and 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 copper ore.



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



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 copper ore with accuracy and precision.

A copy of this report may be requested at [shar-nic@rigaku.co.jp](mailto: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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