

The first evidence of pre-industrial mercury pollution in the Andes

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The study of ancient lake sediment from high altitude lakes in the Andes has revealed for the first time that mercury pollution occurred long before the start of the Industrial Revolution.

University of Alberta Earth and Atmospheric Sciences PhD student Colin Cooke's results from two seasons of field work in Peru have now provided the first unambiguous records of pre-industrial mercury pollution from anywhere in the world and will be published in the May 18th Early Edition of the *Proceedings of the National Academy of Sciences* (PNAS).

"The idea that mercury pollution was happening before the industrial revolution has long been hypothesised on the basis of historical records, but never proven," said Cooke whose research was funded by the National Geographic Society.

Cooke and his team recovered sediment cores from high elevation lakes located around Huancavelica, which is the New World's largest mercury deposit. By measuring the amount of mercury preserved in the cores back through time, they were able to reconstruct the history of mercury mining and pollution in the region.

"We found that mercury mining, smelting and emissions go back as far as 1400 BC," said Cooke. "More surprisingly, mining appears to have begun before the rise of any complex or highly stratified society. This represents a departure from current thinking, which suggests mining only

arose after these societies emerged," said Cooke.

Initially, mercury pollution was in the form of mine dust, largely resulting from the production of the red [pigment](#) vermillion. "Vermillion is buried with kings and nobles, and was a paint covering gold objects buried with Andean kings and nobles," said Cooke. However, following Inca control of the mine in 1450 AD, mercury vapour began to be emitted.

"This change is significant because it means that mercury pollution could be transported over much greater distances, and could have been converted into methylmercury, which is highly toxic," said Cooke.

"All of these results confirm long-standing questions about the existence and magnitude pre-industrial mercury pollution, and have implications for our understanding of how mining and metallurgy evolved in the Andes," said Cooke.

Source: University of Alberta ([news](#) : [web](#))

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