Metals and Metalloids in Corn Detected with the Inductively Coupled Plasma-Mass Spectrometer

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Downstream riverside communities in the Four Corners Region face a potential threat from metals and metalloids from abandoned mines located in southwestern Colorado. In 2015, the Gold King Mine (GKM), located in Silverton, Colorado, spilled three million gallons of mine waste water into the Animas River. The Animas River is a tributary to the San Juan River in New Mexico and the Navajo Nation. Accumulated wastes from the abandoned mine containing toxic metals and metalloids spilled into rivers used for irrigation. Long term exposure to metals and metalloids such as uranium (U), cadmium (Cd), lead (Pb), and arsenic (As) can have adverse effect on development of the human body, especially the cognitive development of children. Three years after the 2015 Gold King Mine spill, a study of corn grown along a section of the San Juan River was investigated to determine concentration levels of contaminants from the spill. Zea Mays (Naada´a´) samples and control were collected and analyzed. Concentration levels in corn samples were determined for U, Cd, Pb, and As by the inductively coupled-plasma mass spectrometer. The mean concentration for U, Cd, and Pb were 0.38479 ppb, 5.0564 ppb, and 3.9061 ppb, respectively.

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