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Inorganic elements of Tap and River Water in the Watarase, Tone and Edo River System

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Abstract:

In order to understand the behaviors of inorganic elements at the confluence of the river water and water supply process, the Watarase, Tone, and Edo River System was studied in regard to inorganic contamination. This river system starts from the base of the Ashio copper mine and ends at Tokyo Bay. Along the rivers, there are 14 local municipalities in Gunma, Saitama, Ibaragi and Chiba Prefectures, as well as Tokyo. This area is in the center of the Kanto Plain and includes the main source of water pollution from human activities. Moreover, the water of the river system is the source water for human activities in the Kanto area. We analyzed some inorganic elements to clarify water environmental status and outline the water environment problems in the research area. Water samples from 18 river sites and 42 water faucets at public facilities from the Watarase, Tone, and Edo basins which include 14 local municipalities were collected, and the degree of contamination was analyzed. Inorganic elements were analyzed by an inductively coupled plasma atomic emission spectrometer (ICP) and inductively coupled plasma mass spectrometer (ICP-MS). In river water, the concentrations of inorganic elements showed characteristic changes for each element as functions of location. As and Cu were detected in river water near the base of the Ashio copper mine. In tap water, we detected some samples containing inorganic elements exceeding the limits recommended by Japan Drinking Water Quality Standards. The current findings suggest that present water filtration plant procedures are not

sufficient to remove certain inorganic elements from source water. Moreover, it is possible that the water works may have caused inorganic contaminations. These results may be important in the understanding of distribution patterns of inorganic elements.

Key words: [tap water](#), [river water](#), [inorganic elements](#), [water quality](#), [inductively coupled plasma atomic emission spectrometer \(ICP\)](#), [inductively coupled plasma mass spectrometer \(ICP-MS\)](#)



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