

Possibility of man-made ore deposit originated from acid hot spring

Noriyoshi Tsuchiya^{1*}, Hironobu Okada¹, Yasumasa Ogawa¹, Takahiro Watanabe¹, Ryoichi Yamada¹

¹Graduate School of Environmental Studies, Tohoku University

Tamagawa hot spring in Akita Prefecture is one of representative acid hot spring in Japan. Main hot spring is Obuki (sometimes Obuke in local pronunciation) of which pH is 1.2 and 9000L/min discharge. Tamagawa hot spring contains much amount of rare metal and rare earth elements, and Tamagawa hot water is neutralized in the plant which is constructed in the downstream of accommodation facilities.

Tamagawa hot water flows down to Shibukuro-gawa River, and then conflues with Tama-gawa River.

Two dams, Tamagawa Dam (Hosen?ko Lake) and Yoroihata Dam (Shusen-ko Lake), were constructed in Tama-gawa River, and Tama-gawa River flows down to Tazawa-ko Lake and surrounding area.

Strong acid water and metal elements in the river water were prevented to flow to downstream by Tamagawa Dam and Yoroihata Dam. In other words, sediments by the Dam could contain certain amount of metal elements as a man-made ore deposits. In this presentation, I will show precipitation behaviors of rare and rare earth elements and describe a possibility of rare metal resources.

Ogawa et al., 2012, The role of hydrous ferric oxide precipitation in the fractionation of arsenic, gallium, and indium during the neutralization of acidic hot spring water by river water in the Tama River watershed, Japan. [Geochimica Cosmochimica Acta, 86, (2012), 367-383]

Kajiwara et al., (2011), Experimental study on sorption and fractionation behaviors of rare metals (In, Ga) and toxic elements (As, Pb) in acidic river. [Shigenchishitsu 61 (3), (2011), 167-180] (in Japanese with English abstract)

Keywords: rare metal elements, rare earth elements, man-made ore deposit, acid hot spring