

## Source of iodine in the groundwater of Hokkaido inferred by ratios of halogens.

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In Horonobe Research Institute for the Subsurface Environment (H-RISE), we promote a research relating Subsurface Cultivation Gasification (SCG), as a practical biomethane production technology (Aramaki et al., 2015). As part of the field science, we revealed that high concentrations of iodine (I) and dissolved methane coexist in water sampled from sedimentary rock of the Neogene and Quaternary in northern Hokkaido. This coexistence is confirmed in water-dissolved natural gas mining fields of Japan. Iodine concentration mechanism is considered that I accumulated to sea sediment with organic matter and then released to porewater from decomposition of organic matter by diagenesis. However, the uniform opinion regarding the organic matter source and the age has not yet been described in previous studies.

In this study, we analyzed I, bromine (Br) and chlorine (Cl) in high concentration I groundwater (> 1 mg/L) corrected from hot springs and borehole in Hokkaido to investigate the I concentration mechanism. Their groundwater samples were grouped into two assemblages by elemental enrichment patterns; one of them has higher I/Cl and Br/Cl ratios than those of sea water (group-1), and the other is concentrated only I compare to sea water (group-2). As the result of calculating I/Br ratio except for influence of sea and meteoric water to identify source of I, the I/Br ratio of group-1 and -2 shows comparable in those of sea surface sediment and sea plants, respectively. In the future, iodine source is discussed in the more detail by comparing the I/Br ratio between groundwater and the surrounding sedimentary rock.

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