

Genesis of Kashio brine: slab-derived fluid

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In this study, we show the results obtained by investigation of a very saline spring named Kashio brine, central Japan and discuss its genesis and cause of chemical and isotopic features. The brine water is spouting out through the cracks of metamorphic rocks close to Median Tectonic Line (MTL) at 700m asl. The Cl concentration of water is greater than that of the seawater with ¹⁸O-shifted isotopic composition. The brine is thought to originate from slab-derived fluid with the chemical and isotopic composition of water like the Arima hot spring, in spite of its low temperature and CO₂-less features. The cause of this chemical character might be explained by a reaction with ultramafic rocks existed close to Kashio area which causes high pH condition to deposit all the CO₂ as CaCO₃. The low temperature may be interpreted by the low upwelling rate because of the low ³He/⁴He ratio (lower than 2Ra) due to the addition of crustal ⁴He. The amount of NaCl is finally supplied to the river and is estimated to be 2000kg/day.

Keywords: Kashio brine, isotopic ratio, flow rate, slab-derived fluid