

## Isotopic characteristics of acid springs in Shunomata river basin in Mt. Chokai volcano

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There are some rivers that have low pH and deposition of Iron oxides on the east side of Mt. Chokai volcano. Shunomata river basin has some limonite ore deposits on the river bed of tributaries (EL: approximately 900m). These ore deposits are considered to have made by acid springs that are characterized by low pH (about 3 to 5) and relatively high temperature (about 20 to 25 degree Celsius). Also, previous studies pointed out that pH of the acid springs have decreased after a volcanic activity of Mt. Chokai in 1974. However, there are quite few studies on the origin and groundwater quality evolution process of the acid springs. Therefore, this study aims to clarify these points. We will show the results of measurements of major dissolved ions and environmental isotopes.

Temperature and pH of the acid springs showed 15.5 to 19.5 degree Celsius and 2.8 to 3.0, respectively. As for major dissolved ions, groundwater quality was characterized by high concentrations of SO<sub>4</sub><sup>2-</sup> and Cl (117 to 181 mg/L and 66 to 106 mg/L). Comparing these results with that of "Detsubo" spring that is located on the north side of Mt. Chokai volcano and is famous for low temperature (about 7 degree Celsius) and low pH (about 4.5), groundwater quality was largely different. Stable isotopic ratios of oxygen and hydrogen were about -11.5 per-mil and -68 to -69 per-mil, respectively. Elevation of recharge area of the acid springs was estimated more than 1,600 masl.

The results of this study suggest that there are some groundwater quality evolution systems of acid springs in Mt. Chokai volcano.

Keywords: acid springs, environmental isotopes, limonite ore deposits, Mt. Chokai Volcano