

Geochemical behavior of trace elements in the ground water at the foot of Mt. Fuji, Central Japan

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The trace elements in natural water samples such as ground water, spring, river and lake water from the Kofu basin and the foot of Mt. Fuji in the southern Fossa Magna, central Japan, was determined by neutron activation analysis(NAA), inductively coupled plasma mass spectrometry(ICP-MS) and colorimetry using molybdenum blue reaction. We found distinct differences in both vanadium and phosphorus concentrations in the water samples between the foot of Mt. Fuji and the Kofu basin. The difference was essentially explained by geological and geochemical characteristics in the area examined.

To determine trace vanadium in natural water and tap water samples collected in a lot of locations in Central Japan, preconcentrational neutron activation analysis(NAA) was investigated by us(Sakai et al., 1997). The analytical results of these samples show that the vanadium contents in natural water range widely: vanadium concentration is higher in the eastern location samples such as around Mt. Fuji, Mt. Akagi and Mt. Yoneyama area than in the western area of Central Japan. Especially, the tap water collected from the locations surrounding Mt. Fuji contains vanadium of much higher concentration. This regional difference in the vanadium concentration in water might be explained by vanadium in geological rocks and sediments in the area the water sample was collected. It has been known that the basaltic geology around Mt. Fuji originated from eruptive materials containing vanadium in a higher level.

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Further, we discussed the utilization trace vanadium as well as phosphorus concentrations to the hydrographic studies of the natural waters in the various locations at the foot of Mt. Fuji. The concentration values of both vanadium and phosphorus of the spring water were in a relatively narrow range. The analytical data of the five lakes at the foot of Mt. Fuji show slightly less homogeneous distribution pattern, compared with those of the spring and ground waters. The informations of both trace vanadium and phosphorus concentrations were useful as sensitive indicator to trace the migration of natural water and elucidate the origin of the lakes water.