

## Natural Occurring Radioactive Materials in Filters of Drinking Water Plants

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Groundwater has been used to produce drinking water through filtering processes in water treatment facilities. Although natural occurring radioactive materials (NORMs) in groundwater may be accumulated to the filters, there were no studies due to relatively low concentrations of NORMs in groundwater used for drinking water. The aim of this study is to determine the potential accumulation of NORMs to filters in the drinking water facilities.

Thirteen drinking water plants that are located in Korea were investigated. Surface radioactivity dose was measured for each filter housing on site, and the groundwater, treated water, and used filters were sampled to analyze the NORMs. The concentrations of uranium, radon and radium in the groundwater samples were quite low. For example, all of the measured uranium concentrations were below the WHO guideline level of 30ug/L. However, the surface radioactivity dose sharply increased in the pre-filters of four drinking water plants (e.g., micro- and activated carbon-filters). The radioactivity of Pb-210 and Th-228 in the pre-filters were greater up to ~20 times than the Korean regulation level of 1 Bq/g. These results showed that the accumulation of NORMs to filters occurs, even though the NORM concentrations were low in the groundwater. Therefore, the filters need to be properly managed during the manufacturing processes in the drinking water facilities or after use.