

# Determination of uranium isotopes in various kinds of waters for nuclear regulation support using Inductively Coupled Plasma Mass Spectrometry

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## รายละเอียดสรุป

The analysis of  $^{235}\text{U}$  and  $^{238}\text{U}$  isotopes in three water types was studied using inductively coupled plasma mass spectrometry (ICP-MS). The waters from drinking water, radioactive waste, and surface water were collected and stabilized using concentrated  $\text{HNO}_3$  before measurement. The method validation was performed by spiking uranium isotopic standards in different concentrations for each kind of sample. The results of drinking water and radioactive waste were agreed to the percent recovery within the range of 80-110%. However, the recovery values obtained for most samples from the surface water were out of the recovery acceptable range. Trace elements of each sample were investigated, which were Cr, Mn, Fe, Cu, Zn, As, Se, Cd, Ba, and Pb. The concentrations of elements in surface water were found highest when compared with other samples. To determine high contaminated water, interference needs to be removed by using a column separation technique before measurement. This method can be used for the analysis of the uranium isotopes in a low impurities sample for supporting the nuclear regulation which is safety, security, and safeguards.