

Title : Determination of Iron Concentration in Water Sources from SSC Oil company by Titration Method

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ABSTRACT

The determination of iron concentration in water that passes through wastewater treatment systems and water sources within factories is crucial, as iron is a heavy metal that affects both aquatic ecosystems and human health. This study aimed to determine the concentration of total iron (Fe) in water sourced from SSC Oil company. Water samples were collected from three locations: after chemical coagulation, after complete treatment, and groundwater around the factory. The analysis was conducted using the titration method following the Thai Industrial Standard TIS 2391 – 2551, where total iron was titrated with a potassium dichromate solution. Each sample was tested 11 times. The test results showed that the average iron concentrations in % (w/v) were 0.52, 0.22, and 0.13, respectively, with variance coefficients of 8.48, 10.59, and 18.54, respectively. When comparing the results with Atomic Absorption Spectrometry (AAS) and using the z-score, the values for the chemical coagulation water, the fully treated water, and the groundwater were 11.79, 9.42 and 5.36, respectively. The findings showed significant differences, likely due to the lower accuracy of the titration method, which is more suitable for analyzing iron in samples with medium to high concentrations, or potential interference from ions or other chemicals reacting with the reagent.