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Studies on Waste Waters

Akiko FURUHASHI*

In recent years, pollution of water and air in the cities, in proportion to the increase of population and the development of modern industries, has become one of the large social problems. 1) Approaches to the problem was made in this thesis, by (I) the study of the quantity of the sulphurous ion contained both in water and in air, and (II) that of the removal of the nitrogen from the organic waste water. 2) To determine sulfurous ions in water, rosalinine method by which sulfurous ions were colored by adding formaldehyde and a mixture of *p*-rosaniline hydrochloride and hydrochloric acid was applied and the absorption at $560\text{ m}\mu$ was measured by a spectrophotometer. But other method was tried to investigate because of the temperature dependence of the reaction and the interferences by some ions in the samples.

Mercury (II) which forms a complex with sulfite ions was tentatively used as the reagent and absorptions at 227 and $285\text{ m}\mu$ were measured for the determinations. The determination was successfully made by this reagent and Beer's law was obeyed up to $4000\ \mu\text{g SO}_3^{2-}/50\text{ ml.}$ without temperature and time dependences under some conditions.

Determination of sulfur dioxide in air samples was tried by the application of the same method and satisfactory results were obtained.

Organic waste waters produce ammonia which forms hexamine by adding formaldehyde. This reaction was applied, in this research, to remove nitrogen compounds from the waste water, and synthesis of hexamine was tried by the reactions of $\text{NH}_3 + \text{HCHO}$ and $(\text{NH}_4)_2\text{SO}_4 + \text{HCHO}$. Also, detections of amino acids were made by paper chromatography.

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