

CHAPTER I

INTRODUCTION

In recent years, there has been a great deal of concern about the environmental and biological effects of heavy metal pollution. In order to evaluate the effects of this particular kind of pollution it is necessary to measure the levels of these pollutants in air, in the fresh water, and in the salt water systems. Water samples are among the most important materials to be tested during investigation of environmental pollution; because liquid effluent from numerous industrial processes and municipal waste treatment plants are discharged into rivers, lakes, and oceans. Accurate and precise data on trace element concentration in such water origins is essential for pollution control. This is especially important here in this country, where water from rivers is still used for potable.

Atomic absorption spectrophotometry has been widely accepted as an excellent technique for the determination of metals, since it is very selective and quite sensitive. Studies to improve the sensitivity of the atomic absorption method, to concentrate the interested metal ions from dilute solution and to separate the metal ions from interferences, are necessary for the determination of trace constituents.

The purpose of this study was to find a quantitative method for the determination of some toxic trace elements in fresh water samples. Low concentration of these metals in

natural waters is very difficult to analyse directly because of the limited sensitivity of the existing instrument as well as interferences by the presence of other elements. Under these circumstances the elements in the sample must first be concentrated. The present investigation involves a concentration step which can be affected by chelation on a chromatographic column containing a support coated with dithizone. The elements which are now present in chelate forms can be eluted from column with appropriate reagents and subjected to measurement by atomic absorption. Some typical results on the concentration of some trace elements in the water along the Chao Phya River are reported.