Abstract. *Ipomoea aquatica* is commonly used as a vegetable and pig food in Thailand. The present study shows that the leaves and floating stems of this plant collected near a caustic soda factory in Thailand had accumulated between 0.75 to 1.26 ppm (average 0.95 ppm) Hg in the leaves and 0.28 to 0.68 ppm (average 0.43 ppm) Hg in the floating stems. Leaves and floating stems from unpolluted areas had Hg contents between 0.01 to 0.17 ppm and 0.01 to 0.06 ppm, respectively. The contaminated *I. aquatica* in the study area represents an additional source of Hg, since fish from the same area are also polluted with Hg. This constitutes a serious risk to public health.

1. Introduction

A drastic elevation of Hg content in fish collected near a recently established caustic soda factory, of Thai Asashi Caustic Soda Co. Ltd. (TACSCO), in Thailand, has been measured (Suckcharoen et al., 1978). 0.32 to 3.6 ppm Hg was measured in the flesh of *Ophicephalus striatus* (Bloch), in contrast to 0.07 ppm Hg which is the mean baseline Hg concentration of fish in Thailand. There is good cause for concern because fish is the main source of protein in the Thai diet, and large scale foreign industry is rapidly being introduced into Thailand (Suckcharoen et al., 1978).

Eating of contaminated fish has been the main route of Hg into man in the widespread Japanese Hg catastrophes in Minamata and Niigata (Tsubaki and Irukayama, 1977) as well as in Finland, Sweden, and Canada, in cases where dangerous amounts of Hg have accumulated in man (Nuorteva et al., 1975; D’Itri and D’Itri, 1977; Harada et al., 1976, 1977). Use of seed dressed with organic Hg as food has also been catastrophic (D’Itri and D’Itri, 1977). It is known that mushrooms as well as some other vegetable in the vicinity of a Hg mine in Idrija may, in some instances, be an important source of Hg for man (Bryne and Kosta, 1970; Quinche, 1976; Stijve and Besson, 1976) but green plants generally have such a low Hg content that they are of minor importance in this respect.

In the Hg polluted TACSCO area, *Ipomoea aquatica* (Forsk) (Convolvulaceae), is abundant. The leaves and stems of this plant make a delicious vegetable and are a ready source of pig food. *I. aquatica* is cultivated in South China, Malaysia, and Thailand (Oostroom and Hoogland, 1953; Usher, 1974).
An investigation of the Hg content of leaves and floating stems of *I. aquatica* in the polluted TACSCO area and in two control areas was made.

2. Material and Methods

During March and April, 1978, samples of leaves and floating stems of *I. aquatica* were collected by hand, from several localities along one side of a watercourse in the vicinity of TACSCO factory in Samutprakarn Province. Samples were also collected from an industrial area near Dah Yang Chemical Industry Co. Ltd. which is situated in the same province but at some distance from TACSCO. Control samples were collected from an unpolluted area about 25 km north of Bangkok in Bangkhen District. The samples were washed, air dried, and mailed to Finland in polythene bags.

Before being processed for analysis, the samples were oven dried at 40°C. Each sample, consisting of 6 to 8 leaves or stems, was separately ground and digested in a mixture of nitric acid, sulfuric acid, and potassium persulfate solution using the equipment described by Kivalo *et al.* (1974). Each sample took about 1 h to be digested. Digests were analyzed with a Perkin-Elmer Coleman Mercury Analyzer MAS-50.

3. Results and Discussion

Figures 1 and 2 show the results of the analyses. As shown in Figure 1, the Hg contents in the leaves from the TACSCO area varied between 0.75 and 1.26 ppm (average 0.95 ppm), whereas those of the unpolluted area varied between 0.01 and 0.07 ppm (average 0.04 ppm). The Hg contents measured near the Dah Yang chemical factory were not elevated. The mean Hg content from the TACSCO area was thus about 14 to 24 times higher than those of the control areas. The Hg contents in *I. aquatica* from the control areas represent the main background levels; usually ranging from 0.001 to 0.09 ppm (Rissanen and Miettinen, 1972; OECD, 1974).

The Hg contents of the floating stems of *I. aquatica* in the TACSCO area was less than the leaves and varied between 0.28 to 0.68 ppm (average 0.43 ppm) whereas those from the Dah Yang chemical factory varied between 0.01 to 0.06 ppm (average 0.04 ppm) (Figure 2). Thus the mean Hg content of the TACSCO area was about 11 times higher than in the Dah Yang chemical factory area.

Mercury pesticides used in rice cultivation are known to have some effects on the degree of background Hg load of Japanese rice (Tomizawa *et al.*, 1966; Furutani and Osajima, 1967); and in Sweden it is known that seed dressing of cereals has caused a small elevation in the Hg content of hens' eggs (Löfroth, 1970). However, it is exceptional for green plants to have a Hg content at risk to public health. This is the case with *I. aquatica* in the TACSCO area; although it is not known whether the