

CHAPTER 4

CONCLUSION

The hydride generation coupled with atomic absorption spectrophotometry (HG-AAS) technique is shown to be suitable for analysis of arsenic in environmental samples, the technique is not so complicated and gives a low detection limit, high precision and no matrix interference.

In this study, it is concluded that soil in Village No. 2, 12 and 13 are high contaminated with arsenic. Village 1 which has been previously considered as a risk area, is not different from low risk area (Village 8, 9, 11 and 14). Fourteen out of fifteen soil samples from Village 2, 12 and 13 contained arsenic level higher than the average toxicity level of 40 mg kg⁻¹ (Wauchop, 1983; Lioa *et al.*, 2005).

The average concentration of arsenic in soil samples from Villages 1, 2, 8, 9, 11, 12, 13 and 14 were 12.7 ± 8.40, 107 ± 61.5, 5.65 ± 1.40, 1.83 ± 1.39, 1.83 ± 1.39, 66.9 ± 27.0, 186 ± 161 and 8.34 ± 3.37 µg g⁻¹ dry weight, respectively, the median were 11.2, 60.0, 5.07, 1.06, 9.09, 36.0, 88.2 and 7.81, respectively.

According to the result, *Ocimum* sp. (Sweet Basil-โหระพา) contained obviously high arsenic concentration, both in high and low risk area. *Areca* sp. (Betel nut-หมาก), *Musa* sp. (Banana-กล้วย), and *Capcicum* sp. (Chilli-พริก) contained arsenic less than 0.001 and 0.036 µg g⁻¹ dry weight for samples were analysed with FIAS 100-AAAnalyst 800 and HG-Perkin Elmer Model 5000, respectively. It is clear that the fruits are accumulating less arsenic than root and leaves. It might be one of the reasons why there is no clear correlation between soil arsenic and arsenic in plant tissues.

The works of O' Neill (1995) and Huang (1994) concluded there is no relationship between arsenic concentrations in soil and plants growing in the same area. However, the results in this study shows argument with that, there is a relationship between arsenic accumulated in plant tissue and contaminated arsenic in soil (Figure 3 - 1 2 a n d 3 - 1 7) .

The highest bioconcentration factor (BCF) value was found in *Ipomoea* sp. (Water morning glory -ผักบุ้ง). The risk of consuming plants growing in the area is found to follow the order: Village No. 13>1>9>2≅14>8>11