Case study of phytoremediation in Thailand

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In Thailand, there are some problems of soil and groundwater contamination, however, few remediation works have been done yet mainly due to financial problem. For the prevention of soil and groundwater pollution in Thailand, more economical and more effective method using its biologically high activity must be developed.

This study aims to proceed the joint research work about the remediation technologies of contaminated soil and groundwater suitable for Southeast Asian region. To reduce the environmental risk of soil and groundwater pollution, the most important and most effective method is to find out and to remove the hot spot, which is the most polluted portion, with the detailed and well planned site survey. Recently, phytoremediation technology which uses green plants and their purification ability with detailed monitoring is also performed, because positive remediation of the contaminated groundwater is recently recognized to consume enormous time and fund. In this study, phytoremediation technology using specific Thai plants was investigated at Pak Chong, Nakornrachasrima, Thailand. The site was contaminated by mainly leaked oil from drum cans. These are the research results of fiscal year 2007;

1) A total 82 kinds of plants were confirmed from the plant species survey at the site.

2) From the site survey including surface gas monitoring, contaminants analysis in soil, trace contaminants were found from 7 points and subsurface soil was investigated from GL-3 m to GL-4m at the points. Oil content in the soil was below the standard of Thailand at all the sampled points, but exceeded the soil contamination standard of Japan at several points.

3) A vegetation test was started at the site in December, 2007. Plants like horse tamarind (Kratin Thai), acacia mangium, napierglass, Guinea glass, sunflower, physic nuts, and vetiverglass were planted at the specific field (10m x 40m) made at the site.

4) Soil analysis of the microorganism species was carried out for investigating microbial activity enhancement by phytoremediation or bioremediation. The number of microorganism at the vegetated plots is increasing in comparison with the unvegetated plot or bioremediation plot. Also, analyzing microorganism group in the soil from the site confirmed that there are few group of microorganism from the soil at the site.