Cleanup Case Study of Waste Printed Circuit Boards on Illegal Dumping Sites

周志彥,張清榮,Alex Wang,Pei-Yao Wu,Chung-pao Wu
Construction Management
College of Architecture and Design
cjchang@chu.edu.tw

Abstract

This paper study was commenced to treat fatal contamination at the Er-Jen River, supplied water for agricultural irrigation, aquaculture and industrial in Kaohsiung and Tainan Area, when the Sixth River Management of Water Resources Agency (WRA) developed the project to build flood embankment. The fatal contamination was throw into the discard by illegal manufacturer which discarded the wastage of printed circuit boards, toxic heavy metal contained sludge, and waste aluminum slag. The treatment project was conducted by Industrial Technology Research Institute (ITRI) on preliminary tests, cleanup planning, and process supervision to ensure contamination removal, flood protection, and landscape improvement. The accumulative volume cleaned and screened on this site reached 45,159 cubic meters, whereas 378.25 tons of waste printed circuit boards, 12,833 tons of toxic heavy metal contained sludge, and 31,000 tons of general industrial wastages. The waste printed circuit boards through stripping/acid washing and screening, there are 334.653 tons valuable (including 0.143 tons of copper and 334.51 tons of wire casting materials) from the recycle extract and 43.597 tons of wastes that were not valuable for reutilize. Toxicity characteristic leaching procedure (TCLP) tests were conducted on the site after cleanup to verify the treatment work successful, because the rate of contamination removal was greater than 90%.

Keyword：site cleanup, printed circuit board, heavy metal contamination