

Katesuda Sukkrom 2009: Impact Assessment of Product from Using Wastes as Alternative Fuels and Raw Materials in Cement Processing. Master of Science (Environmental Technology and Management), Major Field: Environmental Technology and Management, Department of Environmental Science. Thesis Advisor: Associate Professor Patana Anurakpongsatorn, D.Tech.Sc. 89 pages.

The amount of eight heavy metals (As, Cd, Cr, Cu, Ni, Pb, V and Zn) in raw material, clinker and cement were investigated using acid digestion method and analyzed by using Inductively Coupled Plasma Spectroscopy. The concentrations of all heavy metals were lower in cement than clinker due to the dilute effect brought by gypsum and limestone added in cement processing. The mass balance of heavy metals in cement processing was apparently indicated that the loss of Cd, Pb and Zn was higher than 90%. The leaching test of heavy metal from cement followed the Ministry of Industry method (sewage and unused material removal) shown that the concentrations of As, Cr and Pb were exceeded the limit specified by the Ministry of Industry. However, the leaching test from cement followed the Toxicity Characteristic Leaching Procedure (TCLP) shown that only As was exceeded the limit specified by US.EPA. The sum of exposure cancer risk for worker by using 6.91 % alternative raw materials and fuels. As shown a high risk value. The cancer risk of As from cement was $1.13E-03$, which was over the threshold value ($1.00E-06$ to $1.00E-04$). For this is a significant risk, that is, 11 cancers per 10000 workers.

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Thesis Advisor's signature

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