

Abstract submittal

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Title and abstract

Acid neutralizing capacity (ANC) and leaching test scheme for short and long term behaviour of granular waste

The behaviour of heavy metal leaching from some granular waste, such as municipal solid waste incineration residues, their chemical treated ash, contaminated soils, coal fly ash, electric furnace dust and saw dust of preservative treated wood, have to be checked before landfill in order to prevent environmental pollution. Although various leaching test methods are proposed, the universal method are not determined yet. In this paper, a leaching test scheme composed of two-stage serial batch test for short and long term leaching behaviour are proposed.

In first, Japanese standard leaching test (JLT-13), pH dependent test and column test were performed for MSWI residues and factors of determining metal leaching behaviour were clarified. pH dependent test showed that the leaching quantity from wastes were controlled by a final pH of the leachate. Column test gave the leachate of the initial stages in the landfill. The leachate pH was controlled by the waste characteristics. Furthermore, ionic strength of the leachate rose because soluble salts such as Na, Ca, Cl leached out smoothly. It will cause an increasing of metal release.

Leaching test of which leachant is distilled water and small L/S , for example, JLT-13 in Japan or CEN test in EU, which is becoming an European standard leaching test, are effective for short term leaching behaviour evaluated in the conservative side. On the other hand, the waste pH decrease with time by CO₂ in the air or acid rain and lower the leachate pH in the long term. In order to know the final pH of the waste after landfill, ANC (acid neutralizing capacity) of the waste are focused on, as a pH controlling factor of the granular waste materials. Granular wastes were titrated in the availability test, and they were classified based on the ANC and initial pH of the waste. Because ANC of the materials are various, the final pH and metal leaching behaviour are expected to be different.

Finally, leaching test scheme for short and long term assessment are proposed. The scheme is composed of two stage serial batch tests. The first step is a single batch test of which leachant is distilled water, L/S = 10 for 6 hours for short term behaviour. The second step is a single batch test whose leachant is an acid for long term behaviour. This scheme is based on present Japanese official leaching test or CEN Test, in the 1st step. Information about long term leaching behaviour can be given from second step.