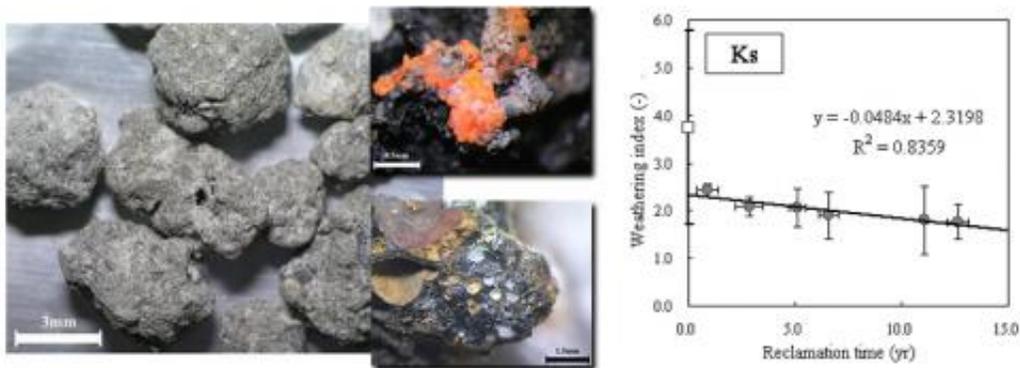


Analysis of weathering of solid waste incineration ash evaluated by indices for natural rock

May 28 2013



Waste incineration bottom ash and weathering index applicability.

Incineration treatment of municipal solid waste generates inorganic ash. The question arises as to whether waste incineration ash is converted to natural soil after it is disposed in landfill sites? And importantly, if so, how long would take?

Although waste incineration ash is weathered physically in a landfill, it still not known how its chemical and mineralogical properties are affected.

To resolve these issues, Tokyo Tech's Fumitake Takahashi and Takayuki

Shimaoka at Kyushu University investigated the geochemical conversion of waste incineration ash during early and late weathering stages, and then the impact of weathering on metal immobilization. The researchers propose that one approach to investigate the weathering of waste incineration ash is by using mineralogical weathering indices for natural rocks.

Fresh and landfilled (weathered) waste incineration ash were collected and their [elemental composition](#) and metal leachability analyzed. Ten weathering indices (WPI, R, WIP, V, CIA, CIW, PIA, STI, Wm, and Ks) were compared with weathering time, leaching pH, and metal leaching concentrations. All the results were statistically analyzed according to heterogeneity of the ash samples.

Welch's t-test accepted at 0.2% of significance level that all weathering indices could distinguish fresh and landfilled MSWI bottom ash. In particular, 4 weathering indices (WPI, WIP, Wm, and Ks) had a strong correlation with weathering time and alkali element leaching concentrations.

These weathering indices are good indicators to assess weathering stages of [waste incineration](#) ash and expect necessary time to reach stable [weathering](#) phase.

More information: Takahashi, F. and Shimaoka, T. The Weathering of Municipal Solid Waste Incineration Bottom Ash Evaluated By Some Weathering Indices For Natural Rock, *Waste Management* 32, 2294–2305 (2012). [DOI: 10.1016/j.wasman.2012.06.009](https://doi.org/10.1016/j.wasman.2012.06.009)

Provided by Tokyo Institute of Technology

Citation: Analysis of weathering of solid waste incineration ash evaluated by indices for natural rock (2013, May 28) retrieved 27 April 2024 from <https://phys.org/news/2013-05-analysis-weathering-solid-incineration-ash.html>

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