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Advanced Ceramic Methods for the Stabilization and Recycling of Incinerator Fly Ash

Objectives

To design new rock-like materials that re-use and stabilize the heavy metals found in the fly-ash residue produced from the incineration of municipal solid waste and hazardous waste. To produce building products, (such as roofing tiles) using these new materials and determine how well they resist the leaching of toxins.

Background

Fly ash, which collects in the flues of incinerator smoke stacks, is classified as a hazardous material because of the toxic heavy metals it contains. Therefore disposing of it is difficult and expensive, and the technology available for recovering it is of limited viability.

Statement of Work

- Develop a range of synthetic rock-like materials capable of accommodating various toxic substances
- Study their synthesis, crystal structure and microstructure
- Determine the leaching behaviour of the new materials
- Develop secondary products, such as roofing tiles, by using extrusion technologies.

Expected Outcomes

Assessment of the suitability of incinerator fly ash for the manufacture of secondary products, with a view to facilitating the recycling of incinerator residue and reducing CO₂ emissions.

Partners

Agency of Science, Technology and Research of Singapore (A*Star), the Institute for Environmental Science and Engineering (IESE) and NRC's Institute for Chemical Processes and Environmental Technology (ICPET)

Start/Expected Completion Dates

This project began in 2003 and will be completed in 2006.

Contact

Building Envelope and Structure Program: 613-993-1596;
BES.ESB@nrc-cnrc.gc.ca

For more information, see http://irc.nrc-cnrc.gc.ca/bes/cmst/flyash_e.html

Factsheet 17, September 2006



Rectangular extruded cement blocks