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## **Effects of Lignite Ashes on Acid Buffering and Metal Emissions of flooded MSW Landfills**

The aim of the study was to describe the effects of lignite ashes (ashes from domestic heating as well as fly ashes from power stations) on the acid buffering behaviour and the metal emissions from MSW landfills which are flooded with acid mine water.

The following investigations were made on fresh and on several years dumped lignite ashes:

- Sieving,
- Analyses on solid samples (TC, TOC, sulphur, metals Ca, Mg, Al, Fe, Pb, Zn),
- X-ray diffraction and thermoanalyses on the crystalline phases of the samples,
- pHstat elution tests for determination of the ANC and for description of the release of metals at low pH values.

The ANC of lignite ashes is very high (up to 7500 meq/kg DM). It depends mainly on the content of Calcium compounds (Calcit, Ca-Al-silicates, exchangeable  $\text{Ca}^{2+}$ ). On the basis of X-ray diffractions, significant differences between the mineralogical composition of lignite ashes and incineration ashes could be determined.

Lignite ashes create a strong acid buffering in MSW landfills. Therefore low pH values caused by acid mine water will safely be prevented in a flooded landfill.

The investigation of metal emissions from flooded MSW landfills showed that only easily soluble compounds (Calcium and Magnesium salts) will be released to an increased extend. The strongly pH and/or redox dependent release of Al, Fe, Zn and Pb will not be markably increased because the pH in the landfill will not decrease and because a reducing environment is expected to be stable under conditions of flooding.