

Development of a prediction model for the assessment of the middle and long term
emission behaviour of inorganic wastes

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Existing leaching and extraction tests in Austria and the European Union describe the emission behaviour of wastes in an unaltered and unweathered state. But they do not describe, how the wastes will behave in middle (after 50 years, when the technical barrier may be leaking) and in long term after natural weathering, and how great the impact will be on drinking water of future generations, due to the changing emission rates. Therefore existing and modified test methods have to be evaluated, to be able to see to what extent they reflect natural leaching behaviour of longterm weathered wastes.

In our project, leachates originating from landfills with inorganic, polluted and weathered wastes are compared to the results of a combination of artificial weathering methods, leaching tests and rated influencing factors (infiltration,...). The investigated materials include bottom ashes and ashes of MSWI, hazardous waste slags, steelslags, solidification products and natural gravel containing ore. The leachates of the weathered materials are collected and specified. Corresponding fresh materials are artificially aged, leached and the results in combination with infiltration are then compared to the leachates of the weathered materials. This method will then allow the assessment of the stability, the transfer factors (waste environment) and thus the impact on drinking water of future generations.

The preliminary data show a conformity in the heavy metal-contents of the leachate of artificial weathered materials compared to the leachate of landfills containing the natural weathered material. Regarding the salts, there are differences in the contents due to the different liquid/solid-ratios in the landfill and in the test. Furthermore the pH and the conductivity of the landfill leachates show no dependence on the changes of the infiltration. In combination with the leachate quantity this indicates that in our landfills preferable leachate paths do not exist.

The results of these investigations, especially the development of the testing-methods, and a comparison with the natural leachates and the prediction model will be presented.