

## An interpretation of resistivity monitoring data obtained in Geumsan landfill site

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Significant increases in number of landfill in South Korea can generate serious environmental problems such as soil or ground water pollution, due to deterioration of the facilities. Monitoring landfill sites can mitigate the problems by detecting environmental contaminations before widely spreading. For the detection of leachate leakage, this study employed electrical resistivity (ER) survey among several possible geophysical exploration methods such as induced polarization survey, electromagnetic (EM) survey and so on.

In our target area, Geumsan Landfill located in the Chungcheongnam-do, South Korea, the first dumping of garbage like household waste has been made before installing a leachate treatment facility, while the second landfill has been made after the installation. Leachate from the landfill was confirmed through an analysis on the conductivity of groundwater measured in wells located nearby the landfill. Geophysical surveys have been performed to further investigate the pollution area. First, EM surveys were conducted to roughly define the size of the polluted region about the target area and determine configuration of ER survey. Based on the configuration, ER surveys have been done four times during about one month around the rainy season; the first two surveys were before the rainy season, while the others after.

This study interprets ER monitoring data to define and monitor moving route of the leachate. For the interpretation of the ER monitoring data, we make time-lapse (TL) resistivity inversion (4D inversion) to analyse the distribution of leachate, together with employing active time constraint. We further took consideration of geological features of the target site in an effort to enhance interpretation results, together with groundwater level and drilling analysis data under the landfill.

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