

2nd 5-Day Course in **APPLIED GEOPHYSICS in ENVIRONMENTAL ENGINEERING**

presented by
Riga Technical University and Geophysik GGD mbH

INTRODUCTION

Waste disposal sites are an absolutely necessary part of the infrastructure of an industrial society. Suitable new sites must be found for the disposal of the waste. It is often very difficult to obtain political approval, and this is possible only if state-of-the-art methods are used to prove that the subsurface of a waste disposal site can function as a barrier, preventing the spreading of pollutants into the environment.

Knowledge and experience concerning the disposal of the waste in an ecologically innocuous way have been acquired during the past decades. On the basis of this knowledge, numerous abandoned waste sites must now be regarded as hazardous. Therefore, precautionary measures to protect the environment and remedial action to repair the damages of the past have high priority.

For studying the geological barrier, a detailed geoscientific and interdisciplinary site characterization is required. The investigation methods must be adapted to the geological and hydrogeological conditions at the site. Not only the structures below the landfill, but also the surrounding area have to be examined. Among Remote Sensing, Geology, Hydrogeology and Geochemistry, **GEOPHYSICS** plays an important role in the investigations of waste disposal sites and contaminated areas based on a multi-barrier concept.

This course will introduce different geophysical methods which are applicable solely or in combination, to solve environmental problems. The mathematical fundamentals will be explained shortly for each method as it is necessary for an understanding of the results. The usual survey practice, the applied processing flow, the achievable accuracy and the geological interpretation of the geophysical results and its presentation will be discussed. Several aspects of the required personnel and technical resources as well as of measures for quality assurances will be considered. Case histories of geophysical investigations in environmental engineering and exercises to establish the knowledge gained will complement this course.

WHO SHOULD ATTEND

This course is intended for project managers, engineers, geologists and geophysicists who are involved in the design and construction of new waste disposal sites as well as in the evaluation of abandoned waste sites and who want to know more about the possible geophysical contributions in this process. At the end of the course the participants should be able to decide which geophysical methods are suitable for solving specific geological, hydrogeological or geotechnical questions and to assess the obtained geophysical results and their geological interpretation. A basic mathematical background and a physical understanding are necessary.

METHODS

Geophysics provides the distribution of physical parameters of the subsurface by surveys at the earth's surface without destroying soil formations. Geophysical methods are applied to determine a spatial model of the underground, to locate fault zones or to investigate the regional groundwater system. They offer possibilities to characterize the disposal site body, to detect contamination paths or to derive lithological parameters.

- DC resistivity
- Electromagnetics
- Magnetics
- Seismics
- Geo-Radar
- Gravity

OUTLINE

- Principle of the method
- Mathematical fundamentals
- Instruments
- Survey practice
- Processing and interpretation
- Economics, survey crew, equipment and time scheduling
- Quality assurance
- Examples and Exercises

COURSE INFORMATION

Location:	Riga Technical University
Date:	February 13-17, 2006
Course Fee:	free for Students of Riga Technical University; 100 EUR for other participants
Certificate:	10 EUR
Language:	English
Lecturer:	Dipl.-Geophys. Walter Olgemann Dipl.-Geophys. Dr. Tobias Karp

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