

RISK ASSESSMENT EXECUTION MODERN LANDFILL STRUCTURES IN FINLAND

Hannu Aurinko
Laatuinsinöörit Oy
Finland

Abstract

The Structural Risk Assessing (SRA) method has been developed and presented in Finland, based on the inadequate results of landfill risk assessment. The SRA method helps to define which risk factors have been identified in the designing phase and how their impacts have been taken into account. The SRA method has been used in two landfills during the environmental permit process. The first case was innovative surface structure and the other one was hazardous waste bottom structure.

The premise of the innovative surface structure risk assessment process was to find a solution for light weight structure that is fulfilling the environmental protection demands and is cost-effective structure. The surface structure should be possible to open as e.g. landfill mining purpose. Life-cycle expectancy was dated over 50 years. The cost-efficiency of the chosen structure was 14 % more affordability per hectare compared with Government recommendation. The cost-efficiency will increase if the structure will be opened in the future, because the structures are thinner and easier to excavate.

The hazardous waste landfill bottom structure life-cycle expectancy was dated over 50 years. In the landfill structure analysis should be taken into account the leachate management and in leakage situations the leachate content, human delineated factors and waste prospects in the risk assessing. The cost-efficiency of the structure was 43 % more affordability per hectare compared with the structures have been typically used in hazardous waste landfills. The most significant effect on the total cost-efficiency was possible to use by-products as a part of the structure.

The risk assessment by the SRA method gives a relatively wide range of information to landfill management. Landfill mining or pyrolysis could be commonly used technics already in the near future. Therefore, landfills should take apart of the risk assessment process as the material source.

Keywords

Landfill; Contaminant transport; Geological barrier; Environmental protection; EC Landfill Directive; Structural Risk Analysing method.