

# DECOVALEX: An International Collaborative Research Project on Radioactive Waste Disposal

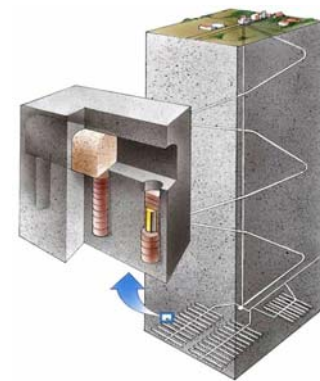
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## Abstract:

The creation of huge quantities of high-level, long-lived radioactive waste is the most formidable problem facing the nuclear power industry today in the world. However, achieving safe storage of radioactive wastes so that they will not endanger biosphere environment is a great challenge. With supports and participation of national radioactive waste management agencies and/or regulatory bodies from USA, Canada, Japan, Korea, China, Finland, Sweden, Germany, France, Spain, UK and Czech, an international collaborative research project, DECOVALEX, was initiated in 1992 and has continued up to today. The primary objective of this project is to evaluate if the nuclear waste can be stored safely in a geological repository of a multi-barrier system.

The figure shows a typical concept of final disposal repository of multi-barrier system. The repository will consist of a series of horizontal tunnels excavated about 500m below the ground surface, connected to the surface facilities by shafts and ramps. A large number of vertical holes will then be bored at the floors of the tunnels as the deposition holes storing the cast iron-copper canisters (coloured as yellow) that contain the waste (spent fuel in Sweden). The canisters then will be surrounded by a ring of engineered clay (bentonite, coloured red) of high density, low permeability and high thermal conductivity, in the deposition hole. The tunnel will then be backfilled by a mixture of sands and bentonite. The canisters, bentonite rings and the backfills serve as the engineered barriers that will be surrounded by host rocks (granite in Sweden, coloured as gray), called the geological barrier. This multi-barrier system, with carefully selected site conditions, are designed to reduce the eventual transport of radioactive nuclides, from the canisters, so that their radiation intensity will become harmless when they finally reached the boundary of biosphere over adequately long period of time.



This talk provides an overview of the major findings through the DECOVALEX project and their implications on the nuclear power industry and public health.

**About the speaker:** Dr. Lanru Jing is a senior researcher at the Royal Institute of Technology, Stockholm, Sweden. He has served as the Technical Secretary of the international project DECOVALEX since 1992, and has authored a number of books and book chapters and more than 130 international scientific publications, and served as editorial board member of 4 international journals.