

THE BIG PICTURE: Underground Nuclear Waste Disposal

According to the International Atomic Energy Commission, deep disposal in stable geological formations is the only sustainable way to safely manage spent fuel and high-level waste (HLW) from nuclear power reactors. No permanent geological repository has yet been built, but some countries have found a location for a future repository. Others are researching the option...

BELGIUM: Central waste storage at Mol-Dessel. Underground laboratory (HADES) established 1984 in Boom clay at Mol in the country's north, where some experiments have been monitored for two decades. Construction of repository to begin about 2035.



Courtesy: SCK.CEN

CANADA: Repository site search under way since 2009. The C\$16 billion to C\$24 billion project is planned for use after 2025.



Courtesy: Swedish Nuclear Fuel and Waste Mgt. Co.

CHINA: Central used fuel storage at LanZhou. Repository site selection to be completed by 2020. Underground research laboratory planned for 2020, disposal by 2050.

FINLAND: Underground research laboratory Onkalo under construction. Repository near Olkiluoto begins construction this year, to open in 2020.



Courtesy: Grimsel Test Site

FRANCE: Has underground rock laboratories in clay and granite. Parliamentary confirmation in 2006 of deep geological disposal. Containers to be retrievable and policy "reversible." Bure clay deposit is likely repository site to be licensed 2015, operating by 2025.

HUNGARY: Bataapati National Radioactive Waste Repository construction began Oct. 2008. Upon completion, it will provide storage for approximately 70,000 cubic meters of low-level (LL) and intermediate-level (IL) radioactive waste from the Nuclear Power Generating Station of Paks.



Courtesy: Hungary Public Ltd. Co. for Radioactive Waste Mgt.

INDIA: Research being conducted on deep geological disposal.

JAPAN: Underground labs under construction at Mizunami in crystalline



Courtesy: Japan Atomic Energy Agency

rock and at Horonobe in sedimentary formations. Site selection for deep geological repository under way. Operation planned for 2035 with option to retrieve containers.

RUSSIA: World Nuclear Association says underground laboratory in granite or gneiss in Krasnoyarsk region, to open 2015, may evolve into a repository. Sites for final repository under investigation on Kola peninsula.

SOUTH KOREA: Waste program confirmed in 1998. Central interim storage planned starting in 2016.

SPAIN: Research on deep geological disposal is ongoing.

SWEDEN: Central used fuel storage facility, CLAB, in operation since 1985. Underground research laboratory at Aspo for HLW repository. Osthrammar site selected for permanent repository (volunteered location).

SWITZERLAND: Central LLW and ILW waste storage sites operating since 1993. Underground research laboratory for HLW repository at Grimsel since 1983. Deep repository by 2020; containers to be retrievable.

UK: LLW repository in operation since 1959. HLW from reprocessing stored at Sellafield. Repository location, per community agreement, to be determined by new Nuclear Decommissioning Authority subsidiary.

U.S.: In June, the latest Blue Ribbon Commission urged the formation of a new entity that could quickly develop one or more permanent deep geological nuclear waste disposal facilities.