

FACT SHEET **HOST ROCK**

► DOUBLE PROTECTION FOR SAFETY

The containers for the deep geological storage of radioactive waste, as well as the other technical barriers in a deep geological repository, are designed to provide protection for many thousands of years. The waste material also has to remain securely sealed for an even longer period of time. The Nuclear Energy Act stipulates that radioactive waste has to be disposed of so that the long-term safety of human beings and the environment is assured. This will be the function of the host rock underground. It acts as a natural barrier and secures the long-term containment of the radioactivity until it has decayed to a non-hazardous level.

► PROPERTIES OF THE HOST ROCK

An ideal host rock should be able to combine and retain radioactive material as well as chemotoxic substances, and thus protect human beings and the environment over the long term. It should also possess favourable chemical and physical properties, prevent the circulation of water and gases and be capable of repairing itself if fissures occur. These properties are particularly prevalent in clay-rich rock formations. A host rock that is suitable for deep geological storage also has to have remained unaffected by tectonic disturbances during the course of the earth's history. It should also be widespread in all directions, as uniform as possible and readily explorable with the aid of geological studies, including boreholes and seismic measurements. Furthermore, the host rock must be located at a depth that is favourable for the construction of a deep geological repository.



Clay is a potential host rock for the deep geological storage of radioactive waste.

► THE RIGHT HOST ROCK FOR THE RIGHT TYPE OF WASTE

The demonstrations of feasibility provided by Nagra (National Cooperative for the Disposal of Radioactive Waste) confirm the presence of suitable host rock formations in Switzerland, and have been accepted by the Federal Council. For the site selection procedure as defined in the Sectoral Plan for Deep Geological Repositories, criteria were specified for the assessment of host rock properties in terms of safety and structural suitability. At the end of stage 1 of the sectoral plan, it was ascertained that various host rocks would be suitable for deep geological repositories. For high-level radioactive waste, however, only opalinus clay meets the specified host rock criteria in the proposed site regions. For low and intermediate level radioactive waste, other host rock formations were found to be suitable as well («Braune Dogger», Effinger Member, Helvetic marls and opalinus clay).

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Federal Department of the Environment, Transport, Energy and Communications
DETEC — **Swiss Federal Office of Energy SFOE**, Disposal of Radioactive
Waste section, Mühlestrasse 4, CH-3063 Ittigen — Postal address: 3003 Bern
Phone +41 (58) 462 56 11 — Fax +41 (58) 463 25 00
sachplan@bfe.admin.ch — www.radioaktiveabfaelle.ch

IMAGES

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