



SITING, DESIGN
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GEOLOGICAL ENVIRONMENTS FOR DEEP DISPOSAL OF INTERMEDIATE LEVEL WASTES IN THE UNITED KINGDOM

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Abstract

GEOLOGICAL ENVIRONMENTS FOR DEEP DISPOSAL OF INTERMEDIATE LEVEL WASTES IN THE UNITED KINGDOM.

By 2000 the United Kingdom will have produced about 40 000 m³ of intermediate level wastes which, because of their content of long lived radionuclides, will be assigned to a deep geological disposal repository, be it on land or offshore. In the paper the authors develop a novel concept of hydrogeological environments for deep disposal which departs from earlier guidelines for high level waste repository site selection by placing increased emphasis on the regional groundwater regime in the vicinity of the potential host formation, rather than simply considering the properties of the host rock itself. This concept has led to the definition of five types of deep environment thought to be most suitable for disposal, and which are considered to be applicable to geological conditions throughout most of northern and central Europe. The authors develop the rationale for the choice of these environments and define those areas of the United Kingdom where they occur. These areas will be assessed in more detail, with a view to producing a short list of sites for thorough investigation and intercomparison as potential repositories.

1. INTRODUCTION

By the end of the century the United Kingdom will have produced about 40 000 m³ of conditioned intermediate level wastes, containing sufficient quantities of long lived radionuclides to destine them for deep, rather than near surface, disposal [1]. One of the principal options being considered for their disposal is burial in a deep repository on land, or beneath the sea, making use of tunnel access from the land. The main alternative is deep burial beneath the sea-bed using an offshore access point such as a platform structure. The wastes comprise fuel cladding materials, sludges, resins and concentrates, structural materials and plutonium contaminated materials [2]. The conditioning envisaged for the

