

COMMISSION
OF THE
EUROPEAN COMMUNITIES

DIRECTORATE-GENERAL
FOR SCIENCE, RESEARCH
AND DEVELOPMENT
JOINT RESEARCH CENTRE

To: King Stablen

STATUS OF CEC R&D PROGRAMME
ON
MANAGEMENT AND STORAGE OF RADIOACTIVE WASTE
(shared-cost action)

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by
B. HAIJTINK

1. INTRODUCTION

At the third European Community Conference on Radioactive Waste Management and Disposal, held in Luxemburg on Sept. 17-21, 1990, the results of the third CEC programme (1985-1989) were presented. This Conference was attended by more than 400 participants coming from 25 countries.

In the meantime, the fourth five-year programme (1990-1994), adopted by the Council of Ministers in December 1989, has been launched. This programme consists of the following five tasks:

- Studies of management systems
- Radioactive waste treatment
- Characterisation and qualification of waste forms
- Radioactive waste disposal
- Safety assessment

Moreover, the Commission will participate in pilot tests at underground facilities at Asse (FRG), Mol (B) and at still to be selected sites in France and the United Kingdom. The total budget available for Community participation amounts to 79.6 Mio ECU for the five-year period.

Following the usual procedure, a call for research proposals was published in the Official Journal of the European Communities on 7 March 1990, with 30 May 1990 as deadline for introducing research proposals. Over 300 proposals have been received, of which a large number were joint multinational proposals, for a total Community participation sought of about 170 Mio ECU. With the assistance of national independent experts, the Commission has selected a number of research projects on which contract negotiations are being started. Below, a brief summary is given of the research projects concerning geological disposal, safety assessment and pilot tests in underground facilities.

9010150035 901031
PDR WASTE
WM-1 PDC

Rue de la Loi 200 • B-1049 Brussels - Belgium

Telephone direct line 23

telephone exchange 235 11 11 - Telex COMEU B 21877 - Telegraphic address COMEUR Brussels

00039

MA2/8

*2/12.2
WM-1
NHD11*

2. RESEARCH ON GEOLOGICAL DISPOSAL

2.1. Characterisation of geological formations and sites

The international benchmark exercise on the rheology of clay, INTERCLAY, started under the previous programme, will be continued and extended. Some limited research will be continued on aspects of groundwater flow through fractured rock and on the further application of soil gas analysis techniques.

Moreover, some studies will be performed on climate changes and their influence on the safety of geological disposal sites.

2.2. Repository design

Under this topic a rather large emphasis will be put on studies and experiments on aspects concerning possible gas pressure build-up in repositories, and dissipation of gas through host rocks. Furthermore, studies on sealing of boreholes in salt and fractured rock will be continued.

2.3. Migration of radionuclides through the geosphere

Research under this topic will be mainly concentrated on international projects already started in the previous programmes, in the framework of the MIRAGE project. They include:

- Studies on the role of colloids and organic matters (COCO)
- Migration experiments in clay and fractured media
- Natural analogues (Oklo, El Berrocal)
- Geochemical modelling (CHEMVAL)

2.4. Modelling and management of uncertainties and heterogeneous systems

Under this topic, studies will be performed on methodologies for modelling of radionuclides transport in the presence of uncertainties on data (e.g. fuzzy sets) and for non-homogeneous systems.

3. SAFETY ASSESSMENT

The coordinated project PAGIS (Performance Assessment of Geological Isolation Systems) and PACOMA (Performance Assessment of Containment for Medium-level or Alpha-bearing Waste), started during the 1985-1989 programme, has been completed.

The results of the PAGIS project have been presented at the PAGIS Information Day held in Madrid on 30 June 1989. The proceedings are available in four languages: English, French, German and Spanish (ref. EUR 12676).

Activities still to be undertaken will mainly deal with sensitivity studies and performance assessment of geological disposal of spent fuel in clay.

4. PILOT TESTS IN UNDERGROUND FACILITIES

Under this heading, the Commission is participating in large tests in underground facilities which are open to Community joint activities. The activities already started in the previous programme in the Asse salt mine (FRG) and in the Boom clay layer beneath Mol (B), will be continued and extended.

With respect to the Asse mine (FRG), the research projects include:

- Test disposal for high level waste (HAW project)
- Test disposal for medium level waste, including spent fuel from HTR (MAW project)
- Active handling experiment with neutron sources (AHE project)
- In-situ investigation of the long-term sealing system as a component of a dam construction (DAM project)

Large cooperation could be established between companies and organisations from the Federal Republic of Germany, the Netherlands, France and Spain.

With respect to the underground facility at Mol (B), the research activities include:

- CERBERUS (Control Experiment with Radiation for the Belgian Repository for Underground Storage)
- PRACLAY (Preliminary demonstration of feasibility of HLW disposal in clay)
- CACTUS (Hydro-thermo-mechanical test in clay)

Here, projects are performed by close cooperation between organisations from Belgium, France and the United Kingdom.