



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 17.03.1999
COM(1999) 114 final

COMMUNICATION FROM THE COMMISSION
TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

**HISTORICAL LIABILITIES RESULTING FROM NUCLEAR
ACTIVITIES**

**CARRIED OUT AT THE JRC UNDER
THE EURATOM TREATY**

**DECOMMISSIONING OF OBSOLETE NUCLEAR INSTALLATIONS
AND WASTE MANAGEMENT**

Reasons for the Action programme on decommissioning and waste management

The Euratom Treaty, as signed in 1957, states that the task of the European Atomic Energy Community is to contribute to the speedy establishment and growth of nuclear industries by creating the requisite conditions. The creation of a joint nuclear research centre with establishments in the different Member States was considered to be one of these conditions. Article 8 of the Treaty assigns the Commission the task of creating and managing this centre.

In application of this Article, Site agreements were signed during the period 1960-62 between the Community, Germany, Belgium, Italy and the Netherlands. In the two latter cases national nuclear installations were transferred to the Community. An infrastructure geared to nuclear development and comprising new installations was put in place at the other four sites within a very short space of time.

Some of these installations are still in use today. Others have been stopped, in some instances more than 20 years ago, and have mostly become obsolete. Kept in a state of safe conservation, this has allowed installation cooling, a strategy adopted in numerous Member States. However, it is now accepted that this "abeyance" strategy is in fact very costly and that faster decommissioning would make for better management of sites and waste as well as of available resources.

For several years now the rules governing the conditions under which decommissioning operations must be performed and the rules covering waste management have changed enormously at both a national and Community level. On the last subject, for example, the "Fourth report on the present situation and prospects for radioactive waste management in the European Union"¹ presents these changes over the past five years.

In this new context the Community must now take on the management of the weight of the past in nuclear activities undertaken on behalf of the JRC in order to enable it to accomplish its task.

The European Commission therefore plans to take a comprehensive global approach to the decommissioning of obsolete installations and the management of waste generated since the 1960s and implement an Action programme.

Furthermore, nuclear installations currently in use could be shut down during the period scheduled for the implementation of this Action programme. Decommissioning of these installations will also have to be taken into account, although they are not covered in the programme.

¹ COM(1998) 799 final, 11.01.1999.

The ultimate objective of these activities is to decommission up to level 3 as set out in the recommendations of the International Atomic Energy Agency (IAEA), namely to enable re-use of the land and buildings for non-nuclear purposes.

Context

The Action programme described below forms part of the broader context of the management of nuclear installations made available to the JRC or built in the JRC's establishments.

- A first detailed estimate of the resources needed for waste management and dismantling at all the JRC's installations was informally communicated to the Council at its meeting on 22 December 1998. The total budget is in the order of 450 M€. These costs are unavoidable but are long-term (until at least 2025 according to the lifespan of certain installations), and may be classified as follows: It is as follows:
- With regard to installations already stopped, the historical liability of former nuclear activities carried out by the JRC under the Euratom Treaty for shut down installations includes: a) The modernisation of the waste management installations with a view to dismantling shut down installations and reconditioning existing waste (around 50 M€); b) The dismantling of shut down installations, including the treatment and final storage of the waste generated by these operations (180 M€).

These installations and waste result from activities undertaken during the Sixties which were not strictly of a research nature. They were intended to develop a competitive European nuclear industry, independent of the United States. It is thus proposed that their financing should come from outside the Framework Programme. An initial forecast of future expenditure to be spread over fifteen years is detailed in Annex 1.

- With regard to installations still used for research needs, a preliminary estimate of the costs of future dismantling operations of installations still in use is put at around 220 M€, the funding of which should be discussed in the context of future R&D framework programmes.

Since the financial and accounting rules of the Community administration make the approach difficult, no budgetary provision was made to allow for the dismantling of installations and management of waste until its final storage. Moreover, it has not been possible to internalise the real costs of managing the JRC's installations.

This is applicable for both past activities and shut down installations as well as for most current activities.

It is only in recent years that the JRC has radically changed its policy, while keeping within the legal framework. On the one hand, it has voluntarily directed certain sums arising from savings made elsewhere to the management of waste from activities in

progress. Also the JRC has, wherever possible, incorporated this dimension into the costs of services for which its installations are used.

A similar situation is encountered in almost all the Member States that have only recently begun to internalise costs.

The HFR reactor at Petten is the best example: for many years it sold radio-elements at marginal cost as well as irradiation services at minimum cost. The Community research programme on thermonuclear fusion and a number of shared-cost projects have benefited enormously from these advantages. Some ten years ago the HFR took advantage of the special status of its programme to make provisions for waste management while four years ago a provision was added for decommissioning along with invoicing of its products and services at real cost.

Furthermore, in recent years the rules governing the safety conditions under which obsolete plants must be maintained, those concerning waste management and those under which decommissioning operations must be performed have all changed enormously at both a national and Community level. Under the Fourth Framework Programme, the JRC was therefore obliged to dedicate 8 M€ to the surveillance (monitoring) of shut down installations and of stored waste. A much greater sum is foreseen under the Fifth Framework Programme. To adhere to the latest safety standards of competent national authorities, the Commission must clearly show the cost of compliance in specific JRC establishments and their surveillance. The Council has, in fine, agreed to allocate a budget of 21 M€ to these activities.

The Action Programme referred to in this Communication concerns installations already shut down and waste management and cover a first 4 years period (1999-2002). The budget necessary for this period is 25,4 M€. It corresponds to the first phase of a decommissioning programme which will be spread over 15 years and for which the budget deemed necessary is estimated at 230 M€ (an indicative breakdown of expenditures over this period is given in Annexe 1).

These expenditures are not justified by reasons of urgency or safety but by the desire for sound management. They could be delayed if that were to be the decision, but:

- these are expenses that cannot be avoided;
- the longer we wait the higher the expenses will be;
- while we wait surveillance costs continue to mount and will require an ever increasing fraction of the annual research budget;
- waiting too long could create problems of non-compliance with national regulations which continue to evolve.

The question of the weight of the past now arises in very different techno-economic terms than before: how to cope with the unavoidable constraints arising from the past? The Action programme presented below sets out to answer this question.

Action programme

I. General outline

A long-term Action programme is envisaged by the Commission over a period that, according to current estimates, should not exceed 15 years. The programme concerns all the establishments of the JRC where nuclear activities have been or are still being undertaken. It can be broken down into three parts:

- preparation of the infrastructure and facilities needed for waste management;
- management of waste resulting from activities undertaken at the JRC since 1960 on behalf of Euratom;
- decommissioning of obsolete installations.

Before embarking on any operation that will produce new waste or manage existing waste, it is essential to have the infrastructure and equipment needed to handle, sort, decontaminate, convert, condition and store solid wastes or liquid effluents. Some of this infrastructure already exists but needs to be modernised and increased in capacity. Other infrastructure must be built.

The installations to be decommissioned consist of shut down reactors, laboratories, assorted facilities, etc. They must first be decontaminated and their access modified to make decommissioning possible. In particular, areas for interim storage of components must be created and internal handling equipment installed.

Decommissioning as such and certain aspects related to waste management can only be handled by specialist companies. Nevertheless, the JRC must remain the responsible authority in these activities because of the Community's legal responsibility.

Furthermore, only the JRC has the precise knowledge of the situation that will enable it to lend effective support to outside companies, especially through the provision, in line with national laws, of internal infrastructure and radiation protection services.

II. Activities to be undertaken under the Action programme

1) Preparation of infrastructure and facilities

This aspect of the Action programme mainly concerns the site at Ispra where most of the obsolete installations and waste are to be found. In the other JRC establishments the corresponding operations will be performed in close cooperation with the national bodies.

The installations available at Ispra were designed in a different age and in a different context. They cannot meet the requirements of the Action programme. Furthermore, international, Community and national recommendations and regulations have changed enormously, meaning that the said installations need to be adapted to the new requirements. The measures to be taken are as follows:

- Modernisation of the installations to decontaminate components resulting from dismantling.
- Improvement in the waste cementing plant in order to immobilise solid wastes.
- Assembly of a compacting plant to reduce the volume of waste to be stored.
- Installation of a plant to solidify liquid wastes.
- Modernisation and establishment of intermediate conditioned-waste stores.
- Reorganisation of the waste management areas and buildings.

2) Management of waste from the past

The conditions of waste management and the requirements of the safety authorities on the storage sites have also changed appreciably since the 1970s. Waste must now be conditioned so that it can eventually be stored in the final (national) depositories once these facilities are available.

The measures to be taken are as follows:

- waste produced in the past must be characterised, sorted and conditioned (compacting and putting in drums, cementing, etc.) according to its category so satisfy provisional storage conditions and permit the rapid dispatch of waste to the national depositories when possible;
- irradiated fuels from the ESSOR reactor (Ispra) must be prepared for their return to the USA and, if necessary, storage in special containers.

3) Decommissioning of obsolete installations

This is the main part of the programme and involves the following:

a. Preparation of installations for decommissioning.

In accordance with the IAEA recommendations and national and Community regulations on the protection of workers, all decommissioning and dismantling operations require preliminary and preparatory work. This should identify and limit the radiation risks inherent in these operations. In this instance the work is as follows:

- Elimination of all fissile materials, special materials and waste still present in the installations.

- Decontamination of installations and modification of access points for decommissioning equipment and personnel.
- Installation of handling systems for dismantled components.
- Construction of intermediate stores for new waste.

b. Management of waste generated by dismantling

The chopping, removal and scarification of shut down installations or laboratory components form the longest part of the work. The main installations concerned are the Ispra 1 and ESSOR reactors, the "hot" laboratories and the old waste treatment and storage plants in Ispra. The IRMM in Geel must reorganise and decontaminate a number of buildings, including the nuclear chemistry building, and dismantle certain components. The dismantling of a group of prefabricated laboratories (steel caissons) and certain other equipment is envisaged by the ITU in Karlsruhe.

The new, highly varied waste and materials generated by this dismantling work will be classified and decontaminated as far as possible. Materials that remain radioactive and are defined as waste will be conditioned as a function of its activity, initially for provisional storage on site and then for final storage as a function of national waste management and safety rules. The speed and costs of these dismantling measures will depend on the quality and efficiency of the waste treatment plants described in 1 above.

4) Uncertainties due to the absence of final storage sites

A number of uncertainties weigh heavily on this Action programme, in particular the absence in some Member States or at Community level of final depositories or even precise regulations.

This situation is described in detail in the Fourth report on radioactive waste management, as quoted above.²

The situation has started to develop in the Netherlands with the granting of licences for the COVRA long-term storage centre. In other Member States, however, detailed legislation is still in the process of being drafted.

None the less, knowledge of dismantling and waste management techniques and harmonisation of national approaches within the Community has improved appreciably over the past 15 years due to the measures undertaken in the 2nd, 3rd and 4th Framework Programmes and the subsequent Community action plans on waste management.

The broad outlines are thus in place and a financial evaluation can be made based on the best possible scenarios although it must be treated with caution on some

² COM(1998) 799 final, 11.01.1999

points. The absence of regulations will complicate the selection of final options for waste conditioning while the cost of final storage is uncertain, but surely high. Finally, the lack of experience on an industrial scale in decommissioning nuclear installations will prompt engineering firms and companies doing dismantling activities to take precautions against the vagaries of the work.

III. The JRC as the "awarding authority" for the Action programme

Most of the work described above will be carried out by specialist companies. Nevertheless, technical back-up from the JRC will be essential.

First of all, it must be stressed that the legal responsibility for implementing the Action programme lies with the Community. It is up to the Commission, therefore, to take the necessary steps to ensure that this responsibility is met in full:

- in each of the Member States concerned, the national safety authority requires nuclear support, surveillance and radiation protection on site to be organised in accordance with precise rules which lay down, in particular, the responsibilities for carrying out the work. Although undertaken in the establishments of the JRC, the activities scheduled in this Action programme must also meet these requirements, in accordance with Article 195 of the Euratom Treaty;
- JRC's technicians know the installations and their history. They alone have knowledge of the waste and their aid is indispensable for guiding decommissioning teams and managing individual decommissioning projects;
- at Ispra, the management of waste from the past and waste generated from decommissioning is undertaken with a view to conditioning and temporarily storing in the JRC's installations and facilities. These installations can only be operated and run by JRC technicians. Finally, pending the availability of final storage centres, waste will be stored on the site and hence under the responsibility of the JRC.

Consequently, this Action programme will be supervised by the JRC that will make its experience and the personnel required available, and will be assisted in this task by a committee of independent experts from the Member States.

Implementation of the Action programme

I. Legal aspects

Under Article 8 of the Euratom Treaty it is incumbent upon the Commission to assume the responsibilities arising out of the creation of the JRC that are assigned to it by the said article.

The Commission therefore plans to take the necessary steps to provide for the decommissioning and dismantling of the JRC's obsolete installations and for

management of the waste generated in the past. To make for complete transparency, the Commission wishes, by way of this communication, to inform the European Parliament and the Council of its intentions and hopes to receive their support for these measures.

To this end, the Commission proposes to take subsequent decisions that will be adapted according to the progress of the Action programme.

A first decision would be for the period 1999-2002. A detailed description of the part of the Action programme covering this period, a provisional timetable and a provisional breakdown by major task are given in Annex II.

II. Financing of the Action programme

Given the rigour which will be applied to Column 3 (Internal policies) in the financial perspectives 2000-2006, the Commission does not foresee additional resources. It intends to cover the expenditure for these activities by transferring credits from budgetary lines that would have had difficulty in spending their full allocation by year end. These credits could come from subsection B6 (Research and development) with a "reception" line created in subsection B4 (Energy, control of nuclear safety, environment). This new line would thus appear annually in the projections for the Commission's proposed budget with a "token entry" (p.m.). During the year, it would receive available credits from the Budgetary authority via the mechanism outlined above. The financing of this Action Programme will therefore be assured outside the R&D Framework Programme.

Such an approach presents certain constraints, notably in its implementation. The Commission proposes this solution in order to be able to start immediately, under the constraints of Column 3, a dismantling programme of its obsolete nuclear installations.

For the longer term, the Commission intends to start a dialogue with the European Parliament and the Council in order to examine possible solutions to finance the dismantling of the nuclear installations of the Joint Research Centre over a period which is currently estimated to be 25 years.

Annex I

INDICATIVE ESTIMATE OF THE ACTION PLAN FORESEEN TO COVER THE OVERALL "HISTORICAL LIABILITY"

The following table aims to give a first indication of the breakdown of the financing necessary to manage the "historical liability" of the JRC, namely the dismantling of the shut-down installations and the management of the waste resulting from past activities as well as the dismantling.

1999	2000	2001	2002	2003	2004	2005	2006
3.3	12.5	9.1	7.5	14.6	15	26	14

2007	2008	2009	2010	2011	2012	2013	2014
16	16	12	18	22	21	12	11

Total: 230 M€

The indicated amounts include all costs, that is, in addition to the specific credits for contracts with specialist outside firms, an evaluation of the personnel needs which will be covered by the successive budgets of the JRC and the estimated cost of the final disposal in the national installation of the host Member States. The implementation of this disposal will require particular efforts which are foreseen in 2005 (initial investment) and then during the period 2011-2014. The indicated amounts are obviously subject to an uncertainty that can be estimated at an average of 20%.

Annex II

ACTIVITIES TO BE IMPLEMENTED UNDER THE ACTION PLAN

I. Preparation of infrastructure and facilities

This aspect of the Action programme mainly concerns the site at Ispra where most of the obsolete installations and waste are to be found. In the other JRC establishments the corresponding operations will be carried out in close cooperation with the national bodies.

The installations available at Ispra were designed in a different age and in a different context. They cannot meet the requirements of the action programme. Furthermore, international, Community and national recommendations and regulations have changed enormously, meaning that the said installations need to be adapted to the new requirements. The measures to be taken are as follows:

1. Modernisation of the installations to decontaminate components resulting from dismantling. The current decontamination installation situated in Area 40 needs to be modernised and fitted with ultrasound tanks for rapid and effective cleaning of components. A pressurised jet decontamination plant also has to be installed. This equipment is indispensable for decontamination of the large quantity of components (up to 200 kg) that will result from the operations to decommission the site's obsolete installations.
2. Improvement in the waste cementing plant. This plant, which is designed to solidify the waste, must be modernised to increase the reliability and level of production. A hydraulic press must be added to this plant for the conditioning in barrels of certain compressible waste.
3. Assembly of a compacting plant in Area 40 to reduce the volume of waste to be stored in view of the large quantity of waste generated by decommissioning operations. Given the cost of final depository storage, the volume of conditioned waste must be reduced to a minimum.
4. Installation in Area 40 of a solid waste conditioning plant for waste not managed by the cementing plant for reasons of size or radioactive characteristics.
5. Installation in Area 40 of a plant for solidifying liquid wastes.
6. Refurbishment of a waste transit magazine shop near Area 40 to temporarily hold declassified waste prior to its dispatch off-site in agreement with the safety authority.
7. Establishment of an intermediate conditioned-waste store: 20 000 m³ of conditioned waste will have to be stored on the JRC site pending its transfer to a final depository. This store will be constructed on the basis of modular systems to spread the investment over a period of time and adjusted to needs. It must be

fitted with all the mechanical handling equipment and basic infrastructure to enable the safe handling of the containerised conditioned waste.

8. Reorganisation and modernisation of the buildings in the waste management area to make for proper management and surveillance of that area.

II. Management of waste from the past

The conditions of waste management and the requirements of the safety authorities on the storage sites have also changed appreciably since the 1970s. Waste must now be prepared so that it can eventually be stored in the final depositories once these facilities are available.

The measures to be taken are as follows:

1. Re-characterisation of waste that has been in sheltered store at Ispra from many years: the available information of the waste drum's content does not allow the complete characterisation of the waste in accordance with today's rules. This long re-characterisation operation of a large quantity of waste will be followed by sorting, reclassification (if possible) and, finally, by conditioning according to category (compacting, drumming, cementation, decontamination).
2. Reconditioning for final storage of waste stored in 6150 bituminised barrels of 200 litres each stored in trenches in Area 40.
3. Reconditioning for final storage of waste stored in wells: there are 15 wells each 10 m deep containing a mixture of activated but not contaminated matter immobilised in a cement matrix.
4. Reconditioning for final storage of experimental fuel elements stored in seven wells made leak-proof by a stainless steel shell.
5. Conditioning of varied wastes from past activities pending final conditioning: highly radioactive liquid wastes, contaminated sodium, unused nuclear fuel residues.
6. Conditioning of irradiated fuels, in particular from the ESSOR reactor, for their return to the USA, and re-consignment to the USDOE as per existing agreement.
7. Conditioning of fuels not sent to the USA in special containers (CASTOR type) for provisional storage.

III. Decommissioning of obsolete installations and management of waste generated by decommissioning

Several projects and subprojects make up this essential part of the programme, implementation, as scheduled, depending on the availability of installations modernised beforehand (cf. § A).

Some projects in this important phase will not be completed by 2006 and will have to be continued beyond that date.

a. Preparation of installations for decommissioning.

1. Elimination of all fissile materials and special materials still present in the installations: heavy water, new fuel assemblies and unused fissile materials present in certain JRC establishments (ESSOR reactor at Ispra and IRMM laboratories in Geel).
2. Decontamination of installations for smooth waste process circulation and modification of access points for decommissioning equipment and personnel. Installation of lifting and handling systems for decommissioned components. Construction of intermediate stores for new waste.

b. Reactors at the Ispra site.

The chopping, removal and scarification of shut down installations or laboratory components form the longest part of the work, which concerns the Ispra 1 and ESSOR reactors.

1. Ispra 1. This reactor, which became operational in 1959, was shut down in 1973. It has already been partly prepared for dismantling and will be dismantled in two phases covering stages 1, 2 and 3 of the IAEA classification. The work will take eight years but cannot begin before 2001.
2. ESSOR. This prototype reactor was in operation for 15 years. It has been shut down since 1983. In addition to the reactor itself, this complex includes two groups of hot cells. Dismantling of this complex to make for reuse of the buildings will be organised in three stages. This will mean eliminating all of the materials still present and relocating the laboratories used in R&D on the control of fissile materials (PERLA laboratory). Dismantling as such will not begin until 2005-2006 and could take eight years.

c. Obsolete nuclear laboratories and other installations at the Ispra site.

1. Radiochemistry laboratory (RCHL). 30 % of the area of this laboratory of 1300 m² is still used. Most of the installation has been prepared for dismantling but cannot be completed until it is shut down. The installation is scheduled for dismantling from 2003 to 2005.
2. Old liquid effluent treatment plant. This plant, covering an area of 1440 m², and contains the liquid waste treatment circuits, a store for this waste and an incinerator. Dismantling will not be possible until the new STEL plant, Area 40, comes on stream. The preliminary work should begin in the second half of 2000 and decommissioning completed in the year 2004.

3. FARO/KROTOS. This set of facilities used in reactor safety activities, serious accidents project, should be shut down at the end of 1999. The depleted uranium will be removed from FARO in the year 2000, but the facilities will not be dismantled until the period 2007-2013.

4. Hot cells for examining the fuel. This complex of hot cells, covering an area of 1000 m², was used for 14 years and has been closed since 1992. In the year 2000 the installation will be emptied of the waste still stored in one of the cells and kept under surveillance before its scheduled dismantling in the period between 2006 and 2010.

d. Dismantling of components at the Karlsruhe site.

At Karlsruhe the site has to be cleared after the dismantling of a group of old prefabricated laboratories and obsolete glove boxes. This operation will employ national procedures and should begin in 2000.

e. Dismantling of components at the Geel site.

The current nuclear chemistry building at Geel must be reorganised and decontaminated, as will the building containing the van de Graaff accelerator.

The highly varied waste generated by this dismantling work will be classified and decontaminated as far as possible. Waste that remains radioactive will be conditioned as a function of its activity, initially for provisional storage on site and, in the long run, for final storage as a function of national waste management and safety rules.

IV. Indicative breakdown and time table of expenditure³

in MioEuro

Ventilation		1999	2000	2001	2002	TOTAL
<i>Preparation of the installations</i>		1.5	1.8	1.6	2	6.9
<i>Management of waste from the past</i>		0.8	1.3	1.2	0.6	3.9
Dismantling	Reactors at Ispra	-	-	2.4	2.4	4.8
	Labs Ispra	-	0.9	1.2	-	2.1
	Other sites	-	6.3	0.7	0.7	7.7
TOTAL		2.3	10.3	7.1	5.7	25.4

³ The amounts indicated do not include the personnel costs of the JRC which are covered by the JRC budget.

4. LEGAL BASIS

4.1 Situation of the heading with regard to the legal basis requirement

No request for a legal basis is necessary.

4.2 Title and reference

Autonomous action pursuant to Article 8 of the Euratom Treaty.

5. DESCRIPTION OF OPERATION AND GROUNDS

5.1 Need for Community intervention and objectives pursued

To create an action programme to reduce and eliminate historical liabilities resulting from nuclear activities carried out at the JRC for the Community. These are mainly activities which were carried out when a joint nuclear research centre was first created with the aim of establishing a European nuclear industry, in other words engineering and prototyping tasks. These activities bear little relation to the R&D activities contained in the specific programme of the JRC now in progress.

The programme must be rapidly introduced and carried out over a maximum period of 15 years for reasons of cost effectiveness and because of changes to safety standards. The measure complements the section "Decommissioning and dismantling of nuclear installations, waste management" in the JRC's specific programme for R&D, which covers expenditure on the staff making preparations for the dismantling of nuclear installations, nuclear safety and waste management and the urgent investment needed to ensure compliance with the new safety standards in the host countries.

5.2 Activities envisaged and budgetary arrangements

The activities envisaged will cover the following areas:

- Preparation of the installations
- Management of waste from past activities
- Decommissioning of reactors at Ispra
- Decommissioning of laboratories at Ispra
- Decommissioning on other sites

In view of the current proposal not to include appropriations under the heading during the annual request made in the preliminary draft budget (given the very small margin available and the pressure on nearly all

Community policies), the heading is to be funded by external transfer at the end of each financial year, mainly from any research appropriations which become available.

This situation will impose very strict constraints with regard to implementation and the JRC will have to issue invitations to tender during the first half of each financial year without being sure of having the necessary funds. There will then be a very short period of time during which it will know the exact volume of funding made available and can consult the CCPC and finalise the files.

6. FINANCIAL IMPACT

6.1 Specific objectives (for the entire planning period)

Commitment appropriations in million euros to the third decimal point

Breakdown	1999	2000	2001	2002	TOTAL	
<i>Preparation of installations</i>	1.5	1.8	1.6	2	6.9	
<i>Management of past waste</i>	0,8	1,3	1,2	0,6	3,9	
	Ispra reactor	-	-	2.4	2.4	4.8
	Ispra labs	-	0.9	1.2	-	2.1
	Other sites	-	6.3	0.7	0.7	7.7
TOTAL	2.3	10.3	7.1	5.7	25.4	

6.2. Administrative and technical operational expenditure included in Part B (for the entire planning period)

This budget heading will cover only specific appropriations; the administrative and technical operational expenditure will be covered by the existing funding of the Joint Research Centre.

6.3. Calculation of costs for each measure envisaged in Part B (for the entire planning period)

The costs are based on an estimate by the JRC technical departments concerned, an external study carried out by a consortium of specialised firms and the experience of other nuclear centres in this field.

7. MONITORING AND EVALUATION

7.1. Monitoring system

The various operations will be monitored by the JRC's nuclear activities coordination unit with the assistance of an *ad hoc* group consisting of independent experts from the Member States.

7.2. Evaluation arrangements and periods

The budget heading will not have appropriations available to it until these have been transferred by the budgetary authority. The budgetary authority will therefore be given information about the progress of the projects each time a new request for funds is made. Articles 37 and 195 of the Euratom Treaty will apply. The projects will be carried out in accordance with the recommendations of the competent national authorities.

The latter authorities will be involved in particular in approving the procedures and technical solutions proposed (this being an additional factor which will hamper rapid implementation at the end of the financial year).

8. FRAUD PREVENTION MEASURES

There will be a large number of administrative and financial controls at all stages when the contracts are awarded and implemented. The files concerned will be referred to the Consultative Committee on Purchases and Contracts following the publication of invitations to tender in the Official Journal and the selection of tenders. These files will be submitted to the Legal Service and Financial Control for screening purposes.

9. LIST OF ACTIVITIES RELATED TO THE IMPLEMENTATION OF THE BUDGET HEADING

Environment and nuclear safety.

ISSN 0254-1475

COM(1999) 114 final

DOCUMENTS

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12 14 15 11

Catalogue number : CB-CO-99-221-EN-C

Office for Official Publications of the European Communities
L-2985 Luxembourg