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COMMISSION OF THE EUROPEAN COMMUNITIES

COM(78) 15 final

Brussels, 26 January 1978

Proposal
for a
COUNCIL DECISION

adopting a European Economic Community concerted
action in the field of analysis of organic micro-
pollutants in water

(submitted to the Council by the Commission)

COM(78) 15 final

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1) Introduction

The scope of the present proposal for a concerted action in the field of "Analysis of Organic Micropollutants in Water" is to co-ordinate the relevant research on hand or planned in this field in the Member States in the spirit of the Council resolution of 14 January 1974 on an initial outline programme of the European Communities in the field of science and technology. The association of interested European Non-Member States is envisaged. The Commission intends to introduce the relevant research executed in the Joint Research Centre in the concerted action.

This project is closely linked to the 2nd Environmental Research Programme adopted by the Council in its decision of 15 March 1976. It is a further development and extension of research carried out within COST Project 64b "Analysis of Organic Micropollutants in Water", 1972-1975.

The results of this research will provide important information on the impact of human activities on the aquatic environment, and necessary tools for the surveillance of the quality of the environment.

The proposed research is in direct relationship with the Community's Action Programme on the Environment, laid down in the Council resolution of 17 May 1977, in particular to Title II, Chapter 2 "Preventing and reducing the pollution of fresh and sea water".

The main aims of the programme are the following:

- development and assessment of equipment and methods for the detection and quantitative determination of organic micropollutants in water at low concentrations,
- elaboration and collection of data on the characteristics of such pollutants (e.g. chromatographic data, mass spectra) necessary as reference for the identification of unknown pollutants,
- collection of information on polluting substances which have actually been identified in various waters (inventory of pollutants).

For the elaboration of this proposal the recommendations given by the Management Committee of COST Project 64b were duly taken into account. The proposal was comprehensively discussed by the Advisory Committee on Programme Management for Environmental Research. Its opinion is given in Annex 1.

2) Definition of the Problem

As a consequence of industrial activities and of the use of a large number of chemicals for crop protection and for various purposes, huge amounts of organic substances, are released into the environment. A substantial fraction of them ends up in the hydrosphere. In the report "A comprehensive list of polluting substances which have been identified in various fresh waters, effluent discharges, aquatic animals and plants, and bottom sediments" (Doc. EUCO/MDU/73/76), established within the framework of COST Project 64b, more than 1.200 different substances are recorded. It is assumed that this is only a small fraction of the whole.

Many of these compounds have been proved to be toxic to humans and animal life (e.g., a number of carcinogenic compounds have been identified) or have serious ecological consequences. It is necessary to evaluate the potential risks to man from intake via drinking water or the food chain. It has been shown that part of these compounds are not or only partially removed during the processing of drinking water; there is evidence that some of them are converted to more toxic derivatives during chlorination or ozonization of drinking water.

An essential condition for the assessment of the hazards to man and the environment is a consolidated knowledge on the presence and concentrations of these compounds in the aqueous environment. Reliable analytical methods for their determination have to be available.

The low concentrations and the great variety of compounds in the samples present considerable problems for their separation, detection and quantitative determination; at present, chromatographic methods, in combination with adequate detection devices, thus sophisticated and expensive equipment, offer the best possibilities to solve these problems.

The analytical methods have to be complemented by procedures for sampling and sample preparation.

3) State of Knowledge and Results of COST Project 64b

COST Project 64b "Analysis of Organic Micropollutants in Water" was executed from November 1972 until the end of 1975. The Project was based on an agreement concluded between the governments of the Federal Republic of Germany, France, Ireland, Italy, Netherlands, United Kingdom, Denmark, Spain, Yugoslavia, Norway, Portugal and Switzerland. 25 national research projects, including research executed in the Joint Research Centre of the European Communities, were coordinated.

The essential results are presented in the final report of the Management Committee (Doc. EUCO/MDU/74/76).

COST Project 64b followed essentially 6 research lines:

- 1) In the field of sampling and sample treatment methods for separating organic substances from water and pre-treating the extracts, so that they are in a form suitable for presentation to equipment for separation and detection, were developed and evaluated.
- 2) The aims of the project with regard to separation and detection techniques were essentially the evaluation of the performance of chromatographic equipment and of separation and detection methods by means of circular analysis tests. Training courses for advanced methods have been successfully organised.
- 3) By means of a circular analysis programme, the available equipment for coupling gas chromatographics and mass spectrometers has been tested in operational conditions, and improved coupling devices have been developed.
- 4) Liquid chromatography is a comparatively new technique offering possibilities for the determination of non-volatile compounds. Special procedures for water analysis were developed and evaluated and equipment was tested.
- 5) Within the activities aimed at the acquisition of reference data a hard copy collection of more than 1000 mass spectra of pollutants in standardized form has been established; an extension of this collection to chromatographic data has been started.
- 6) A software for processing mass spectroscopic and chromatographic data by means of computers has been designed and a library of spectra has been generated within the framework of the project.

Besides this work on methodology, great effort has been dedicated to the dissemination of results on water pollution measurements obtained within the framework of the project. In this sense, a comprehensive list of pollutants, which have been identified in the aquatic environment, together with information on concentrations, analytical methods and origin of the samples was established (Doc. EUCO/MDU/40/74).

It can be stated that COST Project 64b has contributed significantly to the knowledge at present available which permits, in principle, the identification of volatile organic compounds in water and other materials. These methods need evaluation and refinement with regard to their routine application.

A suitable methodology for detection, identification and quantitative determination of non-volatile, polar compounds has still to be developed.

There is an urgent need for the acquisition, evaluation and compilation of reference data.

4) Content of the Programme

Taking into account the state of knowledge outlined above and the suitability of certain types of research projects for inclusion in a concerted action, the following programme has been established:

As far as the overall subject is concerned, i.e. the multidetection techniques for the analysis of organic micropollutants in water, the new project should be an extension of COST Project 64b without major modifications of the scope. As far as this is compatible with the main lines, the scope may be extended to the analysis of micropollutants in other media (air, soil) avoiding, however, an excessive dispersion of efforts. Emphasis will be given to organising interlaboratory comparison tests of methods already in the early state of their development, and of equipment.

Every effort will be made to ensure an efficient dissemination of knowledge, stressing the aspects of application of the results of research, and provisions will be made to disseminate the information on identified pollutants to those bodies which are in charge of evaluating their effects on man and the environment.

In detail, the following items should be covered as comprehensively as possible within the framework of the new programme:

1. Sampling and sample treatment
 - 1.1. Development and improvement of methods for the quantitative extraction of organic compounds from water samples, for the selective isolation of classes of organic pollutants, and for the physical and chemical treatment of such samples (e.g. concentration procedures, prefractionation methods, preparation of derivatives from certain substances in order to increase their volatility), including the organisation of interlaboratory comparison tests for such methods and evaluation of the stability of samples under different storage conditions.
 - 1.2. Development of sampling methods for seston, sediments, aquatic organisms, etc. and of procedures for further treatment of these samples (extraction of pollutants, etc.).
2. Gas chromatographic analysis

Evaluation of the efficiency of different types of separation techniques as a function of substance classes to be analysed, of the performances of detection systems with emphasis on specific detectors, including the organisation of interlaboratory comparison tests for gas chromatographic equipment.
3. Coupling of gas chromatographs with mass spectrometers

Evaluation of the performances of equipment (coupling devices, etc.) including output systems (multiple ion detection, mass-fragmentography, etc.).

Optimization of resolution and sensitivity considering the substance classes to be analysed, including the organisation of interlaboratory comparison tests for qualitative and quantitative analysis.

4. Separation techniques other than gas chromatography
 - 4.1. Further development of methods for the application of liquid chromatography in water analysis, i.e. for the analysis of polar compounds, and the evaluation of available equipment, tests and evaluation of solid phases, solvent mixtures, etc., use of liquid chromatography for sample pre-fractionation and purification before application of other separation techniques, including the organisation of interlaboratory comparison tests.
 - 4.2. Development and improvement of detection devices, i.e. of universally applicable detectors, and comparison of their performances, and of equipment for the coupling of liquid chromatography equipment to mass spectrometers.
 - 4.3. Other separation techniques which might prove suitable for water analysis (e.g. certain aspects of thin layer chromatography).
5. Processing and collection of chromatographic and spectroscopic data
 - 5.1. Edition of hard-copy mass spectra collections and chromatographic data sheets including references to other spectroscopic data, together with adequate indexing for manual retrieval.
 - 5.2. Continuation of the build-up of the computerized spectrum library including necessary information on separation and detection characteristics; introduction of links to substance-orientated data banks (e.g. ECDIN).
6. Collection and dissemination of data on organic micropollutants in water.
 - 6.1. Continuation of the build-up of an inventory of identified water pollutants with the aid of computers; periodical publication of updated inventories.
 - 6.2. Collection, interpretation and publication of information on conversion and degradation pathways of organic water pollutants, and other relevant information resulting from the programme, with particular emphasis on the effects of water treatment on organic water pollutants.

The Member Countries will introduce in the concerted action the relevant research on hand or planned, and they endeavour to explore the possibilities of launching new projects in order to fill gaps likely to be identified. The Commission will introduce the relevant research executed by its Joint Research Centre in the concerted action.

In Annex A to Annex II (Decision of the Council) a table indicating the initial participation of the different countries in the different research topics is given. It is anticipated that further projects will be included as progressive co-ordination in this field evolves.

A number of European Non-Member States have already shown a strong interest to be associated to the Community Concerted Action within the framework of an agreement between the Community and these states.

5) Duration

A duration of 4 years is proposed for this concerted action.

6) Implementation of the programme

The project is implemented as a "concerted action". It is closely linked to the Environmental Research Programme of the European Communities (Indirect Action). The Member States will subject all on-going or planned government-sponsored research projects covered by the programme to a coordination within the framework of the concerted action and inform the other participating countries on results, planning, etc.

A Concerted Action Committee will be established, in which the Member States and associated Non-Member States and the Commission are represented by a delegate, who may be assisted by experts. The terms of reference of this Committee are given in Annex B to Annex II.

The Commission will in agreement with this Committee appoint a project leader who will assist the Commission in the coordination.

The competence of the Advisory Committee on Programme Management for Environmental Research covers also the implementation of this programme; this committee is, in particular, duly qualified for giving this research its proper place within the overall environmental research programme of the European Communities.

7) Financial Volume and Staff

The financial volume of the national research to be introduced by the Member States in the concerted action is estimated at eight million EUA(1) for a 4-year period. This estimate is based on the contributions to COST Project 64b.

(1) Amounts expressed in European Unites of Account, which are applicable as of 1978 and the value of which is different from that of the "old" unit of account.

The cost of co-ordination, charged to the Community budget, is estimated at 600.000 EUA(1) for the 4-year period. These costs include salaries for secretarial and scientific staff(2) involved in the co-ordination, expenses for experts, for organising meetings and symposia and for publications. This estimate includes also expenses for the development of computer programs, which may have to be commissioned to specialized institutions, and for the maintenance of data bases.

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- (1) Amounts expressed in European Units of Account, which are applicable as of 1978 and the value of which is different from that of the "old" unit of account.
- (2) The allocation of 1A and 1C to this concerted action is requested. It is intended to pool this staff with such allocated to other concerted actions in the field of environmental research approved or proposed, in view of an optimum efficiency of the overall co-ordination of European research.

Annex I

Opinion
of the Advisory Committee for Programme Management
in Environmental Research on the Commission proposal
for a concerted action in the field of
Analysis of Organic Micropollutants in water

The Advisory Committee for Programme Management in Environmental Research examined comprehensively during its meeting of 28th June 1977 the Commission's proposal for a concerted action in the field of Analysis of Organic Micropollutants in Water and its relation to the programmes of direct and indirect action.

The Committee agreed unanimously that the proposal meets the research needs in the Community, and that the scientific and technical content is sound.

The Committee recommended that in implementing this programme emphasis be given to a speedy dissemination of knowledge and to a careful evaluation of the results with regard to their practical application.

The Committee agreed that the concerted action fits well into the overall European research effort of direct and indirect action. It would contribute to the broader co-ordination of environmental research with which the ACPM is concerned. The successful collaboration with European non-member states during COST-project 64b should continue, and great importance should therefore be given to their association to the concerted action.

The Committee stressed that adequate financial means and staff be allocated to this programme in order to ensure an efficient co-ordination to which it was hoped JRC would contribute.

Annex IICOUNCIL DECISION

adopting a European Economic Community
concerted action in the field of
Analysis of Organic Micropollutants in Water

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 235 thereof,

Having regard to the proposal from the Commission,

Having regard to the Opinion of the European Parliament

Whereas by virtue of Article 2 of the Treaty the Community has been assigned the task of promoting throughout the Community a harmonious development of economic activities, a continuous and balanced expansion and an accelerated raising of the standard of living;

Whereas in the declaration of 22 November 1973 (1) the Council approved the principles and objectives of a Community environmental policy and the general description of the actions to be undertaken at Community level; whereas in the Resolution of 17 May 1977 (2) the Council approved the continuation and implementation of a Community policy and action programme on the environment;

Whereas in its Decision 76/311/EEC (3) the Council adopted an environmental research programme;

Whereas in its Decision 77/488/EEC/EURATOM (4) the Council adopted a research programme for the Joint Research Centre;

- (1) OJ N° C 112, 20.12.1973, p. 1
(2) OJ N° C 139, 13. 6.1977, p. 1
(3) OJ N° L 74, 20. 3.1976, p.36
(4) OJ N° L 200, 8. 8.1977, p. 4

Whereas in its Resolution of 14 January 1974 on an initial outline programme of the European Communities in the field of science and technology (1), the Council stressed that an appropriate approach should be adopted towards the whole range of available ways and means, including concerted actions, and that whenever it proves desirable that third countries, particularly European ones, should be associated in these projects, steps should be taken to make this possible;

Whereas, in its Resolution of 14 January 1974 on in particular the co-ordination of national policies in the field of science and technology (2), the Council entrusted the Community Institutions with the task of gradually ensuring such co-ordination, aided by the Scientific and Technical Research Committee (CREST);

Whereas a research project on the Analysis of Organic Micropollutants in Water, carried out under an Agreement signed 23 November 1971 in the framework of European Co-operation in the field of Scientific and Technical Research (COST) (COST Project 64b), produced very encouraging results;

Whereas a concerted Community research project in the field of Analysis of Organic Micropollutants in Water, continuing and extending COST Project 64b, will contribute effectively to the achievement of the above-mentioned aims, in particular with regard to the reduction of environmental pollution;

Whereas the Member States intend, as part of the rules and procedures applicable to their national programmes, to carry out the research described in Annex A, and are prepared to integrate such research into a process of co-ordination at Community level over a period of four years;

Whereas the execution of such research as described in Annex A will require financial contributions of about eight million European units of account from the Member States and from the Community;

Whereas the Treaty does not provide the specific powers necessary for this purpose;

Whereas the Scientific and Technical Research Committee (CREST) has given its opinion on the Commission proposal,

(1) OJ No C 7, 29.1.1974, p. 6

(2) OJ No C 7, 29.1.1974, p. 2

HAS DECIDED AS FOLLOWS:

Article 1

The Community shall carry out over a period of four years a concerted action in the field of Analysis of Organic Micropollutants in Water (hereinafter referred to as "the action").

The action shall consist in the co-ordination at Community level of the research described in Annex A and forming part of the national research programmes of the Member States and of the research programme of the Community.

Article 2

The Commission shall be responsible for the co-ordination.

Article 3

The financial contribution by the Community to such co-ordination is evaluated at 600.000 European Units of Account, the European Unit of Account being defined in accordance with the financial regulations in force.

A staff of two shall be assigned to the coordination of the action.

Article 4

To assist in carrying out the action, a Concerted Action Committee on the Analysis of Organic Micropollutants in Water, hereinafter referred to as "the Committee", is hereby established.

A project leader shall be appointed by the Commission in agreement with the Committee. The project leader shall, in particular, assist the Commission in its co-ordination.

The terms of reference and the composition of the Committee are laid down in Annex B. The Committee shall draw up its rules of procedure. Its secretariat shall be provided by the Commission.

Article 5

- (a) In accordance with a procedure to be adopted by the Commission in agreement with the Committee, the Member States participating in the action and the Community shall exchange regularly all useful information concerning the carrying out of the research covered by the action. The participating Member States shall provide the Commission with all information relevant for the co-ordination purposes. They shall also endeavour to provide the Commission with information on similar research planned or carried out by bodies for which they are not responsible. Any information shall be treated as confidential if so requested by the Member State which provides it.
- (b) The Commission shall prepare yearly progress reports on the basis of the information supplied, and shall forward them to the Member States and the European Parliament.
- (c) At the end of the co-ordination period, the Commission, in agreement with the Committee, shall forward to the Member States and the European Parliament a general report on the carrying out and the results of the co-ordination action. The Commission shall publish this report six months after it has been forwarded to the Member States, unless a Member State objects. In this case the report shall be distributed, at their request, solely to the institutions and undertakings whose research or production activities justify access to the knowledge resulting from the performance of the research covered by the project. The Commission may make arrangements to ensure that the report remains confidential and is not passed on to third parties.

Article 6

1. In accordance with Article 228 of the Treaty, the Community may conclude agreements with other States involved in European Co-operation in the field of Scientific and Technical Research (COST) with a view to extending the co-ordination which is the subject of this Decision to research undertaken in those States.
2. The Commission is hereby authorized to negotiate the agreements referred to in paragraph 1.

Article 7

This Decision shall be published in the Official Journal of the European Communities. It shall take effect on the day of its publication.

Done at Brussels,
For the Council
The President

Annex B to Annex IITERMS OF REFERENCE AND COMPOSITION OF THE CONCERTED ACTION COMMITTEEANALYSIS OF ORGANIC MICROPOLLUTANTS IN WATER

1. The Committee shall:
 - 1.1. contribute to the optimum execution of the programme by giving its opinion on all of its aspects;
 - 1.2. evaluate the results and draw conclusions as to their application;
 - 1.3. be responsible for the exchange of information referred to in Article 5(a);
 - 1.4. keep abreast of national research being done in the fields covered by the project, and more especially of scientific and technical developments likely to affect the execution of the concerted action;
 - 1.5. suggest guidelines to the project leader.
 2. The Committee's reports and opinions shall be forwarded to the Commission and the Member States participating in the project. The Commission shall forward these opinions to CREST
 3. The Committee shall be composed of the persons responsible for co-ordinating the national contributions to the programme, one delegate of the Commission responsible for its contribution, and the project leader. Each member may be accompanied by experts.
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FINANCIAL DATA

1. BUDGET CHAPTER : 3371

2. HEADING OF THE BUDGET TITLE :

Implementation of concerted action projects on the analysis of organic micropollutants in water.

3. JURIDICAL BASIS : Art. 235

4. DESCRIPTION, OBJECTIVES AND JUSTIFICATION OF ACTION

4.1. Description :

Coordination of the most important research work, in progress or planned in the Member States, in the field of the analysis of micropollutants in water. The association of European non-member States is also likely.

4.2. Objectives :

Development and extension of research work performed under COST Project 64b (1972-75).

4.3. Justification :

The proposed research is in line with the Second Environmental Research Programme (Council Decision of 15 March 1976). It has a direct bearing on the Council Resolution of 14 January 1974 and on the Communities' Action Programme on the Environment, especially Chapter 2 of Title II of the Council Resolution of 17 May 1977.

5. TOTAL FINANCIAL INCIDENCE OF ACTION DURING THE TERM ENVISAGED
(in EUA)

5.0. Funded :

- on Community budget	600.000
- by national administrations	} 8.000.000
- by other sectors at national level	

TOTAL 8.600.000 EUA

5.0.0. Multiannual term

COMMITMENT

in EUA

	1978	1979	1980	1981
Staff	86.000	93.000	100.000	107.000
Manag.	14.000	27.000	30.000	33.000
Contracts	25.000	45.000	30.000	10.000
TOTAL	125.000	165.000	160.000	150.000

PAYMENT

	1978	1979	1980	1981
Staff	86.000	93.000	100.000	107.000
Manag.	14.000	27.000	30.000	33.000
Contracts	25.000	45.000	30.000	10.000
TOTAL	125.000	165.000	160.000	150.000

5.0.1. Evaluation method

a) Staff expenditure

The staff needs for this programme are estimated at:

- 1 category A staff
- ~~category B staff~~
- 1 category C staff

In addition to staff number estimates, the evaluation take account of the data of the Council Decision of 21.12.1976, on the adaptation of salary of European Community staff and applicable correction coefficients adding to it - on a hypothetical basis - possible needs originating from the general evolution of prices in the Community.

The rates adopted are those used for the calculation of the three-year forecast 1978/1980. The evaluation of expenditure increases up to 1981 has been made on the basis of the following indices : 108: 1979 , 116: 1980 , 124: 1981 .

b) Contracts expenditures

In view of the nature of the subject and the qualification of the contractors, a uniform method of the evaluation can not be established.

Incidence on the funds :

- Community income tax on staff
- Functionaries contribution for retirement fund

5. FUNDING ACTION

6.0.

6.1.

6.2.

6.3. Funds to be included in future(s) budget(s)