

COMMISSION OF THE EUROPEAN COMMUNITIES

REF. PAGE 17

COM(75) 351 final /2

Brussels, 24 September 1975

PROPOSAL FOR MULTIANNUAL RESEARCH AND
DEVELOPMENT PROGRAMME OF THE EUROPEAN
ECONOMIC COMMUNITY

FOR

REFERENCE MATERIALS AND METHODS

(COMMUNITY BUREAU OF REFERENCE - BCR) (1976-1978)

(indirect action)

(presented by the Commission to the Council)

Whereas the Treaty establishing the European Economic Community made no provision for the powers required for these purposes;

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

HAS ADOPTED THIS DECISION:

ARTICLE 1

European Economic Community research programme to be carried out by the Community Bureau of Reference (BCR) in the field of Reference Materials and Methods, as set out in the Annex to this Decision is hereby adopted for a period of three years beginning on 1 January 1976. The Annex shall form an integral part of this Decision.

ARTICLE 2

The ceiling of expenditure, commitment and staff necessary for the implementation of this programme shall be 3.9 million units of account and nine staff, the unit of account being defined in Article 10 of the Financial Regulation of 25 April 1973¹ applicable to the general budget of the European Communities.

ARTICLE 3

The Commission shall be responsible for the implementation of this programme. She will be assisted in this task by the Advisory Committee on Programme Management created by the Council resolution of 19 November 1973. The Commission submits each year to the Council a report concerning the execution of the programme.

ARTICLE 4

The information resulting from the execution of the parts of the programme set out in the Annex shall be disseminated in accordance with Council regulation (EEC) nr 2380/74 of 17 September 1974, adopting provisions for the dissemination of information relating to research programme for the European Economic Community².

¹ OJ Nr L 116 of 1 May 1973, p. 41

² OJ Nr L 255 of 20 September 1974

COMMISSION OF THE EUROPEAN COMMUNITIES

NEW PAGE 13

APPLIES TO THE ENGLISH

VERSION ONLY

COM(75) 352 final/3

Brussels, 30 September 1975

PROPOSAL FOR MULTIANNUAL RESEARCH AND
DEVELOPMENT PROGRAMME OF THE EUROPEAN
ECONOMIC COMMUNITY

FOR

REFERENCE MATERIALS AND METHODS
(COMMUNITY BUREAU OF REFERENCE - BCR) (1976-1978)
(indirect action)

(presented by the Commission to the Council)

The direct programme of the JRC consists of two types of work:

- technical support for the secretariat of the BCR
- laboratory work.

This laboratory work is set in the frame of the work discussed and recommended by the national experts who collaborate in the European system. It may concern the BCR participation in the work executed under contract by the national laboratories or it may be a question of research work peculiar to the JRC, to which national laboratories not necessarily participate.

3. Direct Action of JRC (Petten) ⁷ (1973)

Within the context of the new proposals connected with the revision of the pluri-annual research and education programme of the JRC, and with new activities for the establishment of Petten, a proposal for extending the direct action "Standards and Reference Substances" (Certified Reference Materials), at present only undertaken at Ispra, to the establishment of Petten, may be found.

This programme remains in the general framework of the activities undertaken by the laboratories that participate in the BCR.

4. Indirect Action (1976-1978)

Changes in terminology

General changes

With regard to the evolution of the terminology in this field, it has been decided to replace as soon as possible the term "Reference Substances" by "Reference Materials", in all parts of the texts where this term has been used in an generic sense and where it does not represent a specific substance.

COMMISSION OF THE EUROPEAN COMMUNITIES

COM(75) 352 final

Brussels, 15 July 1975

PROPOSAL FOR MULTIANNUAL RESEARCH AND
DEVELOPMENT PROGRAMME OF THE EUROPEAN
ECONOMIC COMMUNITY

FOR

REFERENCE MATERIALS AND METHODS
(COMMUNITY BUREAU OF REFERENCE - BCR) (1976-1978)
(indirect action)

(presented by the Commission to the Council)



4. PROPOSAL FOR THE RESEARCH PROGRAMME REFERENCE MATERIALS AND METHODS (Community Bureau of Reference - BCR) 1976-1978

INDIRECT ACTION

Table of contents

	<u>Page</u>
1. Introduction	2
2. Programme 1973 - 1975	4
2.1 Activities	4
2.2 Definition programmes	5
2.3 Results	5
3. Programme 1976 - 1978	6
3.1 Activities	6
3.2 Duration	10
3.3 Personnel	10
3.4 Credits	10
3.5 Financial planning	11
3.6 Terminology	12
4. Advice of the Advisory Committee on Programme Management	15
5. Proposal of Council Decision and Annex	16
6. Annex	18

I. INTRODUCTION

In the frame of the Scientific and Technological Policy Programme of the Commission^I work is being undertaken in connection with public, scientific and technological services for the member countries.

The Community Bureau of Reference (BCR)² constitutes one of the actions in this field.

The programme is concerned with the multitude of problems encountered with measurement methods and instruments and their calibration with reference materials (RMs). The determination of intrinsic properties of materials, as executed on all levels of the commercial, industrial and scientific processes, has to be done in such a way that the results of the measurements find their place in a homogenous and coherent system. This is the basic idea justifying and necessitating the existence and use of reference materials.

In the course of the last years a close cooperation of all concerned parties in their member countries has developed in the field of reference materials and methods.

Already today all current and future work in various technical sectors is being jointly planned and executed. The herewith created and further to be developed system of cooperation became only possible because of the work of the Advisory Committee on Programme Management (ACPM) and the central secretariat in the framework of the indirect action "reference substances and methods" (Community Bureau of Reference). The activities of these two parties of the BCR are thus internationally leading towards the complete coordination of the work within the member countries and goes therefore already today much further than the simple execution of isolated direct or indirect research programmes.

^I (Bulletin of the European Communities Supplement I4/73 page I8) and O.J. C/7 of 29 January 1974 p. 2

² Terminology, see 3.6, page 12

All national activities are being continuously harmonized with each other and wherever necessary completed by direct or indirect actions of the Community.

The herewith created cooperation allows the rationalization of a great number of national activities and their completion or stimulation by a limited number of joint activities.

In general it can be said that this programme does support, group, dovetail and supplement the efforts of member countries in this field.

The BCR is thus englobing a large number of sectorial activities for which it serves as a frame.

The structure of the BCR consists of an Advisory Committee on Programme Management (ACPM), a central secretariat and a multitude of participating laboratories.

The means needed for the development and upkeep of this European cooperative system, as well as those needed for complementary research contracts, are provided for in the frame of the indirect action programme.

The central secretariat of BCR which is responsible for all indirect activities, is for a very great part of its technical expertise relying on support given to it by the Joint Research Center (JRC) in addition to its laboratory work related to the programme of direct action. The JRC plays thus an important part in all BCR activities.

The BCR programmes are based on these general ideas and the funds are allocated in function of the development and the needs identified in the numerous sectors of activity.

The Council is asked to approve the draft decision concerning the pluriannual research programme (Reference Materials and Methods - Community Bureau of Reference - BCR).

2. THE BCR RESEARCH PROGRAMME 1973 - 1975

The first BCR research programme was decided on 18 June 1973³ for a period of three years, starting on 1 January 1973.

The objective shall include²:

- a) the activities of a Secretariat;
- b) - identification of materials;
 - inventory and definition of requirements for new certified reference substances (CRS);
 - technical specification of CRS;
 - perfecting and preparation of CRS;
 - arrangements for comparative surveys;
 - European certification of technical characteristics of CRS;
 - approval of laboratories.

The ACPM - BCR met a first time in January 1974 and continued the work prepared by the Advisory Group BCR in earlier years.

The work can be divided into three main sections:

2.1. Listing and definition of requirements and activities

In close cooperation with the national representatives in ACPM;

² Terminology see 3.6, page 12

³ OJ Nr L 189 of 11 July 1973, p. 41

the whole field of measurements and calibration is constantly reviewed. Existing and new programmes in the field are discussed and joint actions are recommended accordingly.

So as to receive expert advice on the various specialities covered by BCR, the Commission, with the help of ACPM - BCR, set up more than 30 "ad hoc" working groups.

In addition to this, various circuits for exchanging information on the BCR programmes and national needs are being set up. General and specific inquiries are being continued.

All these activities have revealed an increasing interest in the work of BCR, and this part of the work under the programme has proved to be very important.

2.2. Definition of short, medium and long term programmes in the various specialised sectors

This has led in numerous sectors, sub-sectors and specialities to the formulation of short, medium and long term programmes. Quite a number of new sectors had to be newly opened. There are still certain sectors largely unexplored. This work will have to be continued and intensified and will lead to a jointly planned and coordinated development of the quality of measurement in the member countries.

2.3. Organisation of inter-laboratory comparisons, development and assay of CRMs

Wherever urgent needs and possibilities were identified, practical action was prepared and taken. The number and in particular the volume of such actions is still below the estimates made when the programme was conceived.

The time lag caused by setting up the already-mentioned ad hoc structures proved to be greater than expected. It is possible that this will change during 1975 as the movement gathers momentum.

Another observed fact was that industry was prepared in a number of cases to carry the whole of the cost entailed to it by cooperation with CBR.

All actions taken are part of a coordinated plan for future work.

By the end of 1974, 81 contracts had been placed with a total of 41 laboratories from the member countries for a total of 221,000 u.a.

About 30 specific actions with an estimated volume of 800,000 u. a. were under discussion at the beginning of 1975.

3. THE BCR RESEARCH PROGRAMME 1976 - 1978

3.I. Activities

The second programme is based on the assumption of continuous activities in the previously opened sectors and the gradual addition of activities in newly added ones. The overall means needed for all the previously opened sectors together, is of the same magnitude as during the first programme. Provision of means for the newly-to-be-added sectors leads in 1976 to an increase of the overall budget. The exact allocation of funds to the various sectors and specialities will always depend on the actual needs and proposals from member countries and will have to be decided case by case on the basis of recommendations from ACPM - BCR.

The means provided for will allow:

- a) continuation and slow expansion of work in the following sectors:
- ferrous metallurgy,
 - non-ferrous metallurgy,
 - inorganic chemistry,
 - physical and technological properties,
 - organic chemistry (analysis, plastics and rubbers, petroleum and related products),
 - clinical chemistry,
 - environmental analysis.
- b) start of work in new sectors like e.g.
- food products,
 - cosmetic products,
 - pharmaceutical products.

Predicted undertakings until the end of 1975, as well as the sectors and their subdivisions are detailed in table 2 which shows the forecastings per speciality for 1976-1978.

These forecastings are hypothetical ones and depend on the first available information. The final allocation of funds will be made on the base of the recommendation of the ACPM who will judge the value and the priorities to be attributed to each individual proposal.

The first hypotheses are based on the individual importance of the requests presented by the various groups of specialists and the engagements of 1974-1975.

The proposals do not take into account the increase in the cost of research but a slight increase in the total volume of means is foreseen in relation to an extension of the activities to new specialities and sectors.

No eventual increase in cost of research nor any addition of unforeseen requests from new sectors are provided for under the present hypothesis.

TABLE 2

Sectors	Specialities	Foreseen expenditures (end of 1975)	Forecastings 1976/1978	Forecastings 1976/1978 subtotal by sect
Ferrous	Steel & pig iron	(1)		
	Coke	30.000	125.000	
	Coal	20.000		
	Minerals	(1)		125.000
Non Ferrous	Zinc	(1)		
	Lead	(1)	200.000	
	Tin	(1)		
	Copper	(1)	100.000	
	Aluminium	(2)	60.000	
	Nickel	(2)	60.000	
	Gas in NF metal	130.000	100.000	520.000
Inorganic	Pure acids	20.000	100.000	
	Ceramics	30.000	60.000	
	Rocks	25.000	50.000	
	Fertilizers	(2)	50.000	
	Cement	(2)	50.000	310.000
Physical and Technological Properties	Viscosity	2.500	55.000	
	Calorimetry	(2)	55.000	
	Temperature	(2)	55.000	
	Hardness	(2)	55.000	
	Resilience	28.000	40.000	
	Standard defects	86.000	55.000	
	Thermal conductivity	72.000	75.000	
	Reflectometry	(2)	40.000	
	Magnetism	(2)	60.000	
	Tribology	52.000	50.000	
	Creep	(2)	40.000	
	Particulate materials	(2)	60.000	
	Electrical conductivity	45.000	50.000	
	Vacuum	20.000	50.000	740.000
Organic	Analysis	(2)	100.000	
	Plastics and rubbers	(2)	250.000	
	Petroleum products	(2)	250.000	600.000

Sectors	Specialities	Foreseen expenditures (end of 1975)	Forecastings 1976/1978	Forecastings 1976/1978 subtotal by sector
Clinical Chemistry	Drug interferences	15.000	30.000	
	Reference materials and methods	(2)	138.000	
	Sampling and stability	(2)	100.000	268.000
Environment	Particulate dust	(2)	30.000	
	Others	(2)	50.000	80.000
Feeding		(2)	100.000	100.000
Cosmetics		(2)	100.000	100.000
Pharmaceutical Products		(2)	100.000	100.000
T O T A L				2.943.000

Notes : (1) National industries that co-operate to the production of "RMs" bear for the time being, most of their expenses. This situation could change if we encounter difficult technical problems forecasted for 1976-1978.

(2) New activity

3.2 Duration

The programme is proposed for the duration of three years starting with 1 January 1976.

It was estimated necessary to propose a second pilote phase of three years similar to the first one (1973-1975). It is only after this period that one should be able to judge the utility, the size and the form of a definitive Community Bureau of Reference. It is of the outmost importance for the conception and execution of this programme to dispose of this period.

3.3 Personnel

A reinforcement of the BCR secretariat is very urgently needed, a fact which has also several times been stressed by ACFM - BCR.

It is proposed to add one A, one B and one C tot the existing personnel (three A, one B, two C).

3.4 Credits

The operational credits requested for the period 1975-1978⁴ are 2.943.000.- u.A. (see 3.5).

The credits for personnel are calculated on the basis of the existing 6 plus 3 additional persons (one A, one B, one C) and amount to 957.000.- u.a.

The total ceiling of expenditure, including cost of meetings and travelling, for 3 years is 3.900.000.- u.a.

⁴

Calculation based on research cost in 1975.

10/13/75 - E
10/13/75 - I

BCR

3.5 FINANCIAL PLANNING

in units of account

Nature of credits	Commitments approbation opened in the frame of the triannual programme decided on 18. 6. 1973 (I)					Provisions of commitments approbation connected with the present new proposal of programme			
	1973	1974	1975	Total 1973/1975	1976	1977	1978	Total 1976/1978	
Operational expenses under contracts, etc.	(2)	1.009.921	598.074	1.607.995	840.000	973.000	1.130.000	2.943.000	
Expenses for staff and participation in the expenses for infrastructure	(3)	126.567	156.600	292.005	276.000	317.000	364.000	957.000	
T o t a l	8.838	1.136.498	754.674	1.900.000	1.116.000	1.290.000	1.494.000	3.900.000	

(1) See financial planning in chapter 3.5I "Substances and Reference Methods" of budget 1975

(0.J. L54 of 28. 2. 1975, p. 423).

(2) Beginning of the activities after final approval of rectification budget n° 3/73 only, that is to say

after 21. 9. 1973.

(3) Uncompleted staff

3.6 Note concerning the Terminology employed

When setting up the propositions for pluri-annual research programmes in 1973 and in 1975, the following denomination have been employed for the indirect action and the direct action.

1. Indirect Action (1973)

REFERENCE SUBSTANCES AND METHODS
(Community Bureau of Reference) ⁵

The first line showed the general scope of the activity of the programme (Community Bureau of Reference) meant that the programme was to lead in the future to a proper structure.

2. Direct Action of JRC (Ispra) (1973)

STANDARDS AND REFERENCE SUBSTANCES
(Certified Reference Materials) ⁶

This title has been chosen to make a distinction between this research programme and the action of general co-operation aimed at by indirect action.

The adding of "Certified Reference Materials", in brackets, has been introduced by request of the national delegations during the debates about the programmes, in order to specify the context of this direct action.

by Report of the Ad Hoc Committee on Research and Development

and advisory Committee on the Community Programme (CJRC) in 1973. The Committee on the Centre and the programme was established in 1973. The general structure is: a central office for the direct action, with branches in the various countries. The programme is described in the report (CJRC/74).

⁵ O.J. L/189 of 11.7.1973, p. 41

⁶ O.J. L/153 of 9.6.1973, p. 9, and L 189 of 11.7.1973, p. 32

with regard to the working field intended for indirect action. The direct programme of the JRC consists of two types of work:

- technical support for the secretariat of the BCR
- laboratory work.

This laboratory work is set in the frame of the work discussed and recommended by the national experts who collaborate in the European system. It may concern the BCR participation in the work executed under contract by the national laboratories or it may be a question of research work peculiar to the JRC, to which national laboratories not necessarily participate.

3. Direct Action of JRC (Petten)⁷ (1975)

Within the context of the new proposals connected with the revision of the pluri-annual research and education programme of the JRC, and with new activities for the establishment of Petten, a proposal for extending the direct action "Standards and Reference Substances" (Certified Reference Materials), at present only undertaken at Ispra, to the establishment of Petten, may be found.

This programme remains in the general framework of the activities undertaken by the laboratories that participate in the BCR.

4. Indirect Action (1976-1978)

Changes in terminology

General changes

With regard to the evolution of the terminology in this field, it has been decided to replace as soon as possible the term "Reference Substances" by "Reference Materials", in all parts of the texts where this term has been used in an generic sense and where it does not represent a specific substance.

Thus within the new texts proposing the new indirect Action, the substitution of the term "Reference Substance" by "Reference Materials" may be noted.

Specific changes

The following changes were necessary in the various languages because of the evolution of terminology in these languages:

Deutsch

1. "die Kennzeichnung der Materialien" wird "Charakterisierung von Materialien";
2. "die Bestandsaufnahme und Definition des Bedarfs an neuen zertifizierten Referenzsubstanzen (ZRS)" wird "Erfassung und Definition des Bedarfs an neuen zertifizierten Referenzmaterialien (ZRM)";
3. "die vergleichende Untersuchung der Ergebnisse" wird "Durchführung von Laboratoriums-Vergleichmessungen";
4. "die Zulassung der Laboratorien" wird "Anerkennung von Laboratorien".

English

1. "identification of materials" becomes "characterisation of materials";
2. "arrangements for comparative surveys" becomes "organisation of inter-laboratory comparisons".

Nederlands

1. "het instellen van een secretariaat" wordt "de activiteiten van een secretariaat";
2. "vaststellen en omschrijven van behoeften aan nieuwe gecertificeerde referentiestoffen (CRS)" wordt "inventaris en definitie van behoeften aan nieuwe gecertificeerde referentiematerialien (CRM)";
3. "ontwikkelen en testen van CRS" wordt "perfectionering en bereiding van CRM";
4. "waarborging van technische kenmerken van CRS" wordt "Europese certificatie van technische kenmerken van CRM".

4. ADVICE OF THE ADVISORY COMMITTEE ON PROGRAMME MANAGEMENT

The Advisory Committee on Programme Management (ACPM-BCR) has been consulted on the means and the programmes proposed and has given the following favourable advice on this programme (BCR/121/74):

- The ACPM approves the general framework and the technical content outlined in the first draft of the future tri-annual research programme (1976-1978) of the indirect action "Reference Materials and Methods (Community Bureau of Reference)" as presented to the Committee by the BCR secretariat at the meeting of 23 October 1974.
- In view of the increasing interest in and importance of the indirect action, the ACPM considers that the global budget which the BCR secretariat provided is necessary for the execution of this action.
- To enable the present work to be extended during 1976 in to the new sectors envisaged, the ACPM considers an increase in the credits for 1976 fully justified.

5. PROPOSAL FOR COUNCIL DECISION

ADOPTING A RESEARCH PROGRAMME FOR THE EUROPEAN ECONOMIC COMMUNITY IN THE FIELD OF REFERENCE MATERIALS AND METHODS (COMMUNITY BUREAU OF REFERENCE)

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, pursuant to Article 3 (a) and (h) of the Treaty establishing the European Economic Community, the activities of the Community shall include especially the elimination, as between Member States, of quantitative restrictions on the import and export of goods and of all other measures having equivalent effect, together with the approximation of the laws of the Member States to the extent required for proper functioning of the common market;

Whereas the research projects which are the subject of this Decision therefore appear necessary in order to achieve certain Community objectives in the functioning of the common market;

Whereas the Treaty establishing the European Economic Community made no provision for the powers required for these purposes;

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

HAS ADOPTED THIS DECISION:

ARTICLE 1

A European Economic Community research programme to be carried out by the Community Bureau of Reference (BCR) in the field of Reference Materials and Methods, as set out in the Annex to this Decision is hereby adopted for a period of three years beginning on 1 January 1976. The Annex shall form an integral part of this Decision.

ARTICLE 2

The ceiling of expenditure, commitment and staff necessary for the implementation of this programme shall be 3.9 million units of account and nine staff, the unit of account being defined in Article 10 of the Financial Regulation of 25 April 1973¹ applicable to the general budget of the European Communities.

ARTICLE 3

The Commission shall be responsible for the implementation of this programme. She will be assisted in this task by the Advisory Committee on Programme Management created by the Council resolution of 19 November 1973. The Commission submits each year to the Council a report concerning the execution of the programme.

ARTICLE 4

The information resulting from the execution of the parts of the programme set out in the Annex shall be disseminated in accordance with Council regulation (EEC) nr 2350/74 of 17 September 1974, adopting provisions for the dissemination of information relating to research programme for the European Economic Community².

¹ OJ Nr L 116 of 1 May 1973, p. 41

² OJ Nr L 255 of 20 September 1974

ANNEX

INDIRECT ACTION

Reference Materials and Methods
(Community Bureau of Reference)

JOINT PROGRAMME

A maximum of 3.9 million units of account and a staff of nine shall be allocated to this objective.

The aim of the Community programme shall be to strengthen, coordinate, harmonise and supplement national efforts in the field of reference materials and methods of measurement.

The objective shall include:

- a) the activities of a Secretariat;
- b) - characterisation of materials;
 - inventory and definition of requirements for new certified reference materials (CRM);
 - technical specification of CRM;
 - perfecting and preparation of CRM;
 - organisation of inter-laboratory comparisons;
 - European certification of technical characteristics of CRM;
 - approval of laboratories.

Surveys and laboratory work shall be carried out under contract.

~~ANNEX~~
6. ANNEX

Activities of the Community Bureau of Reference (BCR)

Brief summary of achievements to date

Purpose and aims

Our present-day society and economy are quantified to a very large extent, and almost every human activity is measured and expressed in numerical terms. This has long been so in commerce, business, industry and science, and there is therefore a long tradition of measurement in these fields, where optimum standardization and coordination very soon proved to be absolutely essential - one need only mention the need for the introduction of the decimal system, and the internationally-recognized metre, kilogram, etc. Every problem faced by man in connection with the protection of the environment; the functional safety of industry in general, and of the nuclear industry in particular; the threatened raw-material supplies (in which the energy crisis is also included); and the world's economic crisis in some way require the accurate collection of data by means of measurement. Therefore in developing methods of measuring the characteristics of materials and systems, optimum coordination and cooperation must be sought just as much as in pure R & D work in these fields, and the provision and use of common reference materials and methods in addition to standards and the statutory system of weights and measures takes on considerable importance. In particular, reference materials make it possible to test the functioning and accuracy of measuring methods and instruments and to ensure that valid comparisons may be made between results obtained in different laboratories, or even different countries.

The aims of the Community Bureau of Reference are therefore (a) the general coordination and standardization of all work in this field and (b) the planned use of the resources available for R & D, so that the work is as effective as possible and - in many cases - so that it may point the way for the future.

The Bureau of Reference already serves as a coordination centre for all relevant work being carried out at Community or national level within the Member States, and this role is considered extremely necessary and useful by all those involved.

Development work has begun here within a framework of a large number of fairly small projects, and an overall idea for a Community R & D policy may already be seen developing in this field.

General coordination and cooperation

During the period 1974-75 the interest of all the national and private centres concerned and their desire to cooperate in the very diverse and technical work carried out by the BCR became steadily more apparent, and at the present time all the major national research centres in the Member States are closely involved in the work programme of the Bureau of Reference, in many different fields. Only a few of these centres, which have a particularly fine tradition, need be given special mention here, i.e. the Physikalisch-Technische Bundesanstalt and the Bundesanstalt für Materialprüfung in Germany and the National Physical Laboratory in the United Kingdom. The existing national planning centres for this type of work are represented either on the Advisory Committee on Programme Management or on its subcommittees, and a large number of industrial undertakings support this work on coordination by sending qualified specialists. The above-mentioned technical diversity, which was after all inevitable since every conceivable specialist area is to be covered, involved the setting-up at Community level as well as at national level of a whole network of laboratories and specialists cooperating with each other.

Between 250 and 300 technical advisers at present work for the Bureau of Reference, planning and coordinating the work of the specialist groups, of which there are about 45 in operation.

In other words, according to their particular interests and technological potential, the industries and countries involved feel justified in allocating from time to time between 10 and 15 to 50 valuable specialists per country for this work. The flexibility of this ad hoc system also guarantees that at any time the work may be adapted to suit changing needs and the demands of the economy.

Practical work of the Community Bureau of Reference

A number of practical examples should show the kind of problems which have served as models in recent years when work was being chosen for the BCR. Rather than taking branches of industry or specialized technical fields as a point of departure an attempt has been made to situate the work within a framework which is of a more general interest.

The following areas were chosen for this purpose:

Economic appeal; safety matters; environmental protection; raw materials and energy supply; public health.

As with many complex technical questions it is impossible to categorize the work rigidly in one area or another - indeed, extensive interconnection between the different areas is often a measure of the work's importance. Therefore the work has only been classified subjectively here, in terms of main points of interest. This list is in no way comprehensive, and is intended merely to provide a general illustration of some of the types of work undertaken.

Economic appeal

The iron and steel industry has a long tradition and a great deal of experience in the use of reference materials (RM) and reference methods. Each stage of production is continually monitored by means of complicated automatic measuring techniques. Very often

this can only be done with reference materials which are recognized by the entire industrial world. The principal manufactures of reference materials in the Community are the "Verein Deutscher Eisenhüttenleute", the "Institut de Recherches de la Sidérurgie Française (Irsid)" and British Analysed Samples Ltd. These and many other European iron and steel manufacturers cooperate with the BCR in long-established EGSC Working parties. Since there is this strong tradition and an important economic incentive, all the work currently being done on iron and steel samples by the industry for the BCR programme is free of charge. At present four new reference materials for metallurgical coke have been developed by the BCR and are shortly to be put on the market.

- In the non-ferrous sector reference samples produced by the national industries have existed for some time. On the other hand, there are practically no raw material samples available (e.g., ore). This is where the BCR has stepped in and, in cooperation with the industries concerned, has prepared zinc, lead, copper and tin concentrates for use as reference materials (RM). Seven such samples are now available.

Following on the investigations which were started some years ago by the Eurisotp Office, the BCR has produced seven samples for use in determining the oxygen content of non-ferrous metals and five others are being developed.

- Measurements involving materials which will be required in the future for the rapid transmission of information (electrical conductivity at high frequencies, etc.) are used in the preparation of RM's, an area in which 6 European laboratories are collaborating.
- Machine corrosion and wear is checked by measurement in lubricating oils. A number of oil companies interested in collaboration have proposed that RM's be prepared and about 10 laboratories in the Member Countries will be cooperating in this work.

Safety matters

- (i) Cracks and defects in workpieces can be measured and identified e.g., large nuclear reactor vessels, high pressure chemical plant etc by using ultrasonic and eddy current techniques.

In order to facilitate the calibration of the sensing heads of specific instruments, reference defects are built into the materials and investigated on a comparative basis by six laboratories.

- (ii) The measurements of technical characteristics e.g., tensile and fracture strength of structural materials is carried out for all components which are built into machines and structures. Rapid and inexpensive monitoring of the equipment used for this purpose can be achieved with reference materials (RM). The BCR is already undertaking a comparison of measurements from various European laboratories with the aid of hundreds of control samples.

- (iii) The measurement of the explosion characteristics of substances, oil and their derivative products is a problem which is being worked on throughout the world. In this connection the BCR is collaborating with European Standards Committees on the question of using RM's for flash point measurement.

Environmental protection

- (i) Analysis of oils from a wider range of sources is important if the origin of contamination is to be identified. A number of national and industrial laboratories are working with the BCR in this field in order to produce RM's to calibrate all manner of analytical equipment.
- (ii) The measurement of lead and other poisonous metals wherever they occur i.e., in petrol, dust, foodstuffs, in the ground in raw materials and in human beings etc., is now being carried out everywhere.

There is however still much confusion over methods of measurement and reference materials. Again and again the BCR has been asked about the production of RM's and the competent working parties are in the process of defining the necessary reference materials.

- (iii) Plastics used as packaging material for foodstuffs. The measurement of contamination with toxic products is an extremely difficult problem and truly quantitative and comparative measurements are very difficult to achieve. Here again the BCR has been asked to establish RM's and preparatory work has already begun.

Raw materials and energy supply

- (i) Measurement of the heat losses from building materials. Five European laboratories are working under the auspices of the BCR on the production and surveying of construction materials, namely glass, plastics and rubber with the aim of calibrating the corresponding methods of measurement.
- (ii) The measurement of frictional losses in machines is still in its infancy but is of great importance both for energy conservation and as far as safety questions are concerned. A start has been made on producing reference materials for the reliable calibration of six different material combinations which are important for the industry and are shortly to be used by 5 to 10 European laboratories for comparative measurement purposes.
- (iii) Analysis of ores and geological rock samples. Public and private research institutes for the earth sciences and raw materials in the Member Countries have expressed an urgent need for reference materials in this field and work has already begun on producing those RM's which are most urgently required.

Public health

(*) Medicine

The accuracy and comparability of clinical analysis still leaves very much to be desired. In this context great efforts have been made at both national and international levels. This is vitally important for the health and proper treatment of patients; even the economic consequences of incorrect analysis and treatment can be very extensive. The companies in the Member Countries who have been working together under the auspices of the "International Federation for Clinical Chemistry" have already carried out a whole series of practical projects in collaboration with the BCR and new proposals to improve the situation are already being discussed by the BCR. One of the most important problems is the production of new reference materials and this work is being carried out in close collaboration with the World Health Organization in Geneva.

- Pharmaceutical products

In 1973-74 the BCR carried out a far-reaching survey among pharmaceutical industries and examining laboratories on the basis of a recommendation and with backing from those in charge of pharmaceutical departments in the various health ministries of the Member States.

The report, which has now been published, contains the following statistics:

- (i) Of the 20 largest firms in this sector 10 reacted favourably to our inquiries.
Of the 100 largest firms in this sector 49 reacted favourably to our inquiries.
- (ii) Over 50% of all the replies stated that the existing RM's were inadequate.

- (iii) An even higher percentage (65%) wished to take part in projects coordinated by the Commission i.e., even 15% of those who are satisfied with the situation wished to cooperate.
- (iv) Nearly 1 000 different reference materials are used by the laboratories.
- (v) 230 RM's are not available, are nevertheless needed and would have to be manufactured again.

This report is to be discussed by the pharmaceutical authorities in the Member Countries and it is expected that working proposals will be submitted to the BCR.