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State of the environment:

First report

This is the first report, in a regular series, on the state of the Community environment and is in direct response to the first 'Programme of Action of the European Communities on the Environment', approved by the Council of the European Communities on 22 November 1973.

In this first report the Commission has concentrated more on the implementation of the EEC Action Programme over the last three years rather than the detailed situations in the individual Member States.

The report is concerned with the overall view. It begins with the presentation of a brief summary of the EEC Action Programme; it goes on to discuss the detailed implementation of that programme in each of the main areas, namely (a), pollution control, (b), actions to improve the environment and (c), international actions. The report does not seek to cover all aspects of the work carried out during this period. There are many studies and working groups, for example whose efforts are only now coming to fruition and from which conclusions still have to be drawn. Most of this work is not described. Instead the report concentrates primarily on activities which have already led or are about to lead, to concrete proposals by the Commission to the Council, in the form of draft directives, decisions or recommendations.

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Foreword by Roy Jenkins, President of the Commission of the European Communities

The Programme of Action of the European Communities on the Environment, which was approved by the Council of the European Communities on 22 November 1973, states that the Commission will 'publish regular reports on the state of the Community environment'. This is the first such report.

In its widest sense, of course, the term 'report on the state of the Community environment' must include not only policies adopted and actions undertaken at the Community level but also at the level of the individual Member States. In practice, in this first report, the Commission has found it more practicable to concentrate on the implementation of the EEC Action Programme on the Environment itself. By describing the evolution of work under this Programme over the last two and a half years since it was adopted, we believe that it is possible both to achieve an understanding of developments in a new and important field of Community policy and, at least to some extent, to present a synoptic view of the current 'state of play' in the different Member States.

This report is, therefore, selective rather than exhaustive. It does not set out to give a detailed factual and statistical presentation of environmental questions in each Member State. Even if this had been our intention, it would have been difficult to achieve. Often the factual and statistical material simply does not exist; if it does exist in one State, it is often not presented in a form which can readily be compared with material originating in another Member State. In these early days of environmental policy, there are many discrepancies both in the selection of priorities at Member State level and also in the way in which these subjects are treated.

This said, it is clear that developments in the Community cannot be divorced from developments in the Member States themselves. A Community initiative may often be taken in response to initiatives proposed by one or other Member State. Here the Information Agreement of 5 March 1973, which provides for the

Commission to be informed of environmental measures proposed by the Member States, has been of particular importance. Or again, it may be necessary for the Community, in the interest of avoiding distortions of trade and competition, to seek to harmonize differing national legislations in the field of environment. Here too, the Community policy can be seen as a response to, or a reflexion of, national policies. Finally, there are certain environmental policies and programmes (as will be described in this report) which are now being developed virtually *ab initio* at the Community level. Where this is the case, the description of the evolution and implementation of a Community policy on the particular topic in question will itself be a description of Member States' actions in this area. Member States may of course go beyond the provisions of the Community policy and evolve their own idiosyncratic approach to certain questions. And this is, of course, perfectly right. There is room for a diversity of approach in environmental policy, as for most other Community policies. Nevertheless, the essential structure of the policy will have been defined at Community level.

It may be possible, indeed we hope it will be possible, in subsequent reports to prepare detailed accounts of the different fields, e.g. air, water, noise, waste, planning, conservation etc. including material on a country-by-country basis. The information base to permit this is now being developed and statistical comparability is slowly being achieved.

This first report, however, is concerned with the overall view. It begins by presenting a brief summary of the Community's Action Programme on the Environment. It goes on to discuss the detailed implementation of that programme in each of the main areas, namely (a) pollution control, (b) actions to improve the environment and (c) international actions. The report does not seek to cover all aspects of the work done over the last two and a half years. There are many studies and working groups, for example, whose efforts are only now coming to fruition and from which conclusions have still to be drawn. Most of this work is not described. Instead the report concentrates primarily on activities which have already led or are about to lead, to concrete proposals by the Commission to the Council, in the form of draft directives, decisions or recommendations.

This being so, the emphasis of this first report, at least in terms of the number of pages devoted to the subject, has inevitably been on the problems of pollution and nuisances. This emphasis will certainly change in subsequent reports as the numerous proposals which are now in preparation dealing with the wider aspects of the environment programme are adopted by the Commission and transmitted to the Council.

It is clear that the Community has not been able to achieve all that was hoped when the Council approved the Action Programme on the Environment in November 1973. In some cases, the Commission has failed to respect deadlines, in other cases the Council itself has been tardy in adopting those proposals. There are many documents which even now lie on the table of the Council, awaiting

approval. There have been many problems, sometimes practical and technical, sometimes political, on both sides of Rue Charlemagne. Yet, taking this Report as a whole, it is the Commission's view that something has indeed been achieved over these last two and a half years of the Environment Programme. The dimensions of the new policy are emerging more clearly. What matters now is to build on the successes of the programme, to complete it where it needs to be completed and to pursue this work over the next several years with ever-increasing determination.

The first environment programme (Summary and highlights)

The environment programme which the Council adopted in November 1973 represented a new step for the Community of nine and, indeed, a new step for Europe. The Heads of State or Government, who met in Paris in October 1972, had determined to give the Community a 'human face'. They had sensed the vast public interest in pollution, environment and the 'quality of life' and they called for a detailed programme of action to be presented to the Council of Ministers before 31 July 1973.

The first environment programme was divided into three parts.

The *first* dealt with the reduction of Pollution and Nuisances. The Council approved a programme of work which covered:

(a) *The determination of criteria*

The Council asked the Commission to try to establish the dose/effect relationship for certain pollutants in certain media. How much lead in the air, for example, is harmful to human health? How much sulphur dioxide? How much mercury or cadmium can be tolerated in water? The Council stressed that it was not just a question of determining the direct effects of pollutants on man but also of looking at the effects of pollutants on the milieu, including animal and plant life, which might also have indirect effects on health.

Among the pollutants to which first priority should be given were lead and its compounds, sulphur compounds, nitrogen oxides, carbon monoxides and various inorganic micropollutants such as mercury, cadmium, zinc, arsenic and cyanide. The Commission taking into account work already being undertaken by WHO and other bodies, would make proposals to the Council before 31 December 1974.

(b) *The fixing of quality objectives*

The Council asked the Commission to try to establish what quality of air should we seek in Europe. What quality of water? What differentiation should be al-

lowed in these objectives, according to either use or geography? The basic philosophy is that Western European man, as he moves freely from country to country within the framework of the Common Market, has a right to expect broadly similar environmental conditions at least as far as his own health is concerned. Moreover the economic development which should result from setting up and progress of the Common Market should lead to an improvement in living conditions and not a deterioration. Ministers agreed that the Community should seek to define common quality objectives, recognizing the different uses to which a particular milieu might be put. The Commission was asked to put forward proposals for sweet surface waters and sea-waters before the end of 1974, followed by quality objectives for air, noise, underground water and lakes.

(c) *The fixing of norms*

The Council agreed that provisional norms should be established for certain pollutants where there are specially urgent reasons. The list included lead, mercury, cadmium, organo-chlorine compounds and certain toxic chemical substances present in water destined for human consumption. Norms for water were to be fixed as soon as possible before 31 December 1974.

(d) *The monitoring of essential data*

The Commission was asked to organize and develop technical exchanges between regional and national monitoring and pollution control networks and to help relate the European monitoring system, when this was established, to the worldwide Earthwatch system envisaged by the United Nations.

(e) *Products*

The Council recognized that the need, within a common market, to harmonize product specifications could have important environmental consequences.

Existing Council directives on motor vehicle noise limits and exhaust gases would be modified so that new measures could come into force before 1 October 1974. Other proposals, to be sent to the Council before 31 December 1974, would include directives on lead levels in petrol, lead in cooking vessels, sulphur content of fuel-oils, the toxicity of detergents, PCB's in electrical apparatus, the composition of paints and varnishes and organo-mercury compounds.

At the same time the Commission was to put in hand a series of studies on the environmental problems caused by particular products, such as those designed to treat vegetable or animal products or those containing heavy metals. It would explore the possibility of introducing an environmental 'Good Housekeeping' label.

(f) *Industry*

The Council agreed to a series of actions within the industrial sector. It recognized that the Community's competition policy could be jeopardized if widely different controls were imposed upon industry from one country to another. It decided that the Community should study pollution problems arising in specific sectors of industry; the technical means of reducing pollution within those sectors; and the economic and social cost of the measures envisaged. Industries singled out for early attention were the pulp and paper industry, the iron and steel industry and industries engaged in the manufacture of titanium dioxide, which gives rise to the problem of 'red mud'. The Commission was required to make proposals to the Council before 1 July 1974, as far as the pulp and paper industry was concerned and before 31 December 1974 for iron and steel and titanium dioxide. Proposals were to be presented to the Council before 31 December 1975 in the case of other industries including petrochemical and food industries. The possibilities of 'recycling' were not to be ignored.

As far as energy was concerned, the Council asked the Commission to present proposals—based on a preliminary report on SO₂, NO_x and thermal pollution problems in the energy industry—before 31 July 1974. The Council noted the close link between the actions to be taken under this sector of the programme and those to be taken under the 'product' section, e.g. in the case of the sulphur content of heavy fuel oils.

(g) *Waste*

Another part of the programme dealt with the problems posed by waste. Here too there are obvious links with 'products' (e.g. in the case of packaging) and with the industrial section. Anti-pollution action within specific industries might help to reduce the amount of industrial waste. Progress with recycling techniques might reduce the amount of virgin material needed and thus the generation of mineral and mining waste. But the Council recognized that there will remain wastes, often of a toxic or radioactive nature, which have to be disposed of. The Commission was asked to pay special attention to substances which, under the Oslo Convention, may no longer be dumped at sea, and which therefore have to be handled on land.

The Commission was to make proposals to the Council before 31 December 1974. The Council stated that systems for handling, on a European basis, ever-growing quantities of nuclear waste would merit special attention.

(h) *The pollution of the sea*

The Council recognized that the Commission would make appropriate proposals for Community action in the case of sea-pollution caused by transport and navi-

gation; by dumping; and by the exploitation of the sea-bottom. As far as sea-pollution originating on land is concerned, the Council noted the fact that the Commission would be putting forward a proposal for Community participation in the conference on this subject which was to be held in Paris in September 1973 at the invitation of the French Government.

(i) *The Rhine*

The Council agreed that the Commission should participate as an observer in the plenary sessions of the International Commission for the Protection of the Rhine against Pollution. The programme stated that 'The Council and the Commission intend to keep a close watch on the development of pollution in the Rhine'.

For all these actions, the Council agreed on:

- (a) the fundamental principle of 'polluter pays'. The Commission was to submit proposals to the Council for the common application of this principle, including possible exceptions, before 31 December 1973, and
- (b) a programme of research, closely related to the various sections of the programme
- (c) a programme for the dissemination of knowledge relating to environment protection, including environmental education.

The *second* part of the environment programme covered actions to improve the environment. The Council recognized that it was an essential task of the Community to improve living and working conditions. This goes beyond the fight against pollution, to touch on several other aspects of Community policy, e.g. agricultural, social and regional policy.

Certain specific actions were proposed:

(a) *Protection of the natural environment*

The Council undertook to adopt before 1 October 1973, the directive on farming in backward areas which the Commission sent it on 21 February 1973. Another directive, on aids to forestry, was to be presented to the Council. Studies were to be made of the quality of foodstuffs from the point of view of consumer protection. As regards the protection of birds and other species of animal, and in particular as regards the mass destruction of migratory birds and song-birds, the Commission was to make propositions to the Council as a matter of urgency and in any case before 31 December 1974.

(b) *Problems posed by the scarcity of natural resources*

In the first instance, the Commission was to study the resource situation in the Community for certain key minerals and for water. It was also to address itself to some of the basic questions raised in the 'Limits to growth' report: namely how far is continued growth compatible with protection of the environment, both from a global point of view and from that of the Community?

(c) *Urbanization and land use planning*

Special attention would be given to the problems inherent in the creation of a Megalopolis of North-West Europe, extending over the territory of six Member States. These problems together with those of city centres, and of coastline management in Western Europe would be examined by an expert group to be set up before the end of 1973.

(d) *Improvement of the working environment*

Propositions in this field were to be made by the Commission, taking into account the Community's social programme.

(e) *The creation of a European Foundation for the conditions of work and life*

This idea, which responded to the suggestion made by President Pompidou at the Paris Conference, would be developed into the form of a concrete proposition before the end of 1973.

(f) *Environmental education and training*

Amongst other things, the Council asked the Commission to undertake the preparation of an 'environmental manual' for use in schools—especially primary schools.

The *third* part of the environment programme dealt with Community action or common action by Member States within International Organizations. The Council recognized that the environment programme would add a new dimension to the Community's work. This programme had to be carried out in close collaboration with international organizations, such as the World Health Organization, the OECD, IMCO and the United Nations Environment Programme. The Council restated the principle, already recognized by the Summit Conference, that Member States should act in concert with these international organizations and, where appropriate, that they should develop Community initiatives.

Part I

Prevention of pollution and nuisances



Chapter 1

Water

1. Quality objectives

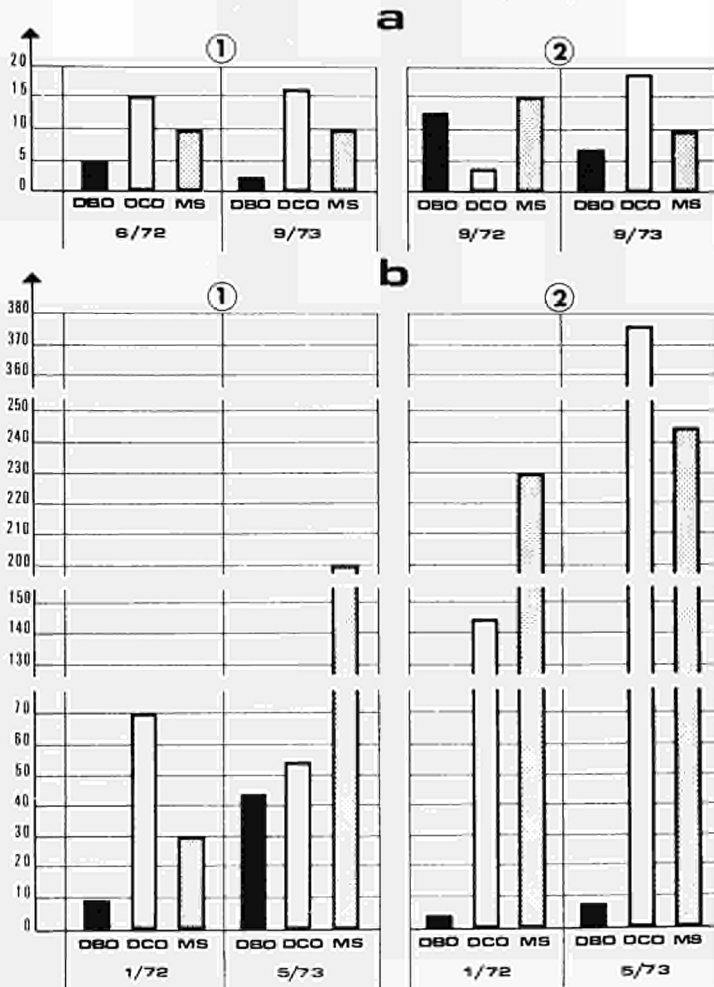
The Action Programme of the Environment of 22 November 1973 emphasized the need to establish quality objectives at the Community level. 'Quality objectives' were defined by the Council as a 'set of requirements which must be fulfilled at a given time, now or in the future, by a given environment or particular part thereof'. The Council referred to three sorts of requirements: those related to health, ecology and social life.

To protect human health against pollution and nuisances and to ensure that health requirements were met, the Council stated that it would be necessary to set maximum limits for the concentration of pollutants and nuisances in the environment and in products in the light of human health criteria. In setting these maximum limits, the Council stated that it would be necessary to take account of a 'basic protection level' where man or another target was not exposed to any unacceptable risk and a 'no-effect level' where no identifiable effect would be caused to the target.

As far as ecology was concerned, the Council stated that it would be necessary to safeguard the natural environment, especially animal and plant life, against the numerous aggressions to which it is subject and to preserve natural resources. To ensure that ecological requirements are met, it might be necessary to take other needs into account which are based on criteria applicable to the species or the ecological systems in question. Here again it would be necessary to consider the basic protection level and the zero-effect level.

As far as social life was concerned, the Council recognized the need to set quality objectives at a level which would make it possible to restore, preserve and improve the quality of human life. Social requirements constituted an additional factor supporting and making more rigorous the health and ecological requirements.

River pollution in Belgium 1972-1973



Pollution in mg/liter

1. Meuse: Left side of the French frontier

2. Escaut: Right side of the Dutch frontier

DBO: Biochemical Oxygen Demand

DCO: Chemical Oxygen Demand

MS: Suspended Matter

Source: Belgian National Environment Programme, Research and Development.

Water; Sea project, Mathematical Model; 3rd Annual report; Water pollution inventory, compiled by P. Herman and J. Bouquiaux.

This is the context in which the Commission submitted to the Council its first proposal for a Council directive on quality objectives. The draft directive concerned the quality required of surface water intended for the abstraction of drinking water in the Member States.

The directive responded above all to the first of the requirements mentioned above, namely the health requirements. Private-sector requirements for potable water within the EEC countries were assessed at an average of 100 litres per person per day. The needs of the public utilities were proportional to the populations of towns and cities and could exceed 500 litres per person per day in cities with more than a million inhabitants. Water supplies were most frequently abstracted from ground water and surface water (lakes, water courses and artificial reservoirs). Generally speaking, purification was necessary particularly in the case of river water, which was very often polluted by effluents of various origins. These effluents might contain pollutants in different concentrations, whose toxicity and harmfulness also differed.

The Commission's proposal included a detailed definition of the pollution levels which were not to be exceeded if health requirements were to be fulfilled. It laid down standard methods of treatment for transforming surface water of various categories into drinking water.

At the time the directive was proposed, no provisions of the same scope and technicality existed in the national laws of the Member States. Belgium was the only country with legislation governing water quality, but this covered far fewer parameters than the draft directive and contained no provisions on water treatment like those in the directive. Under the provisions of the 'information agreement' adopted by the representatives of the Governments of the Member States meeting within the Council on 5 March 1973, the French Government had sent to the Commission a draft decree which set out, in implementation of the law of 16 December 1964, a table of technical specifications, together with the physical, chemical, biological and bacteriological characteristics of surface water intended for the abstraction of drinking water.

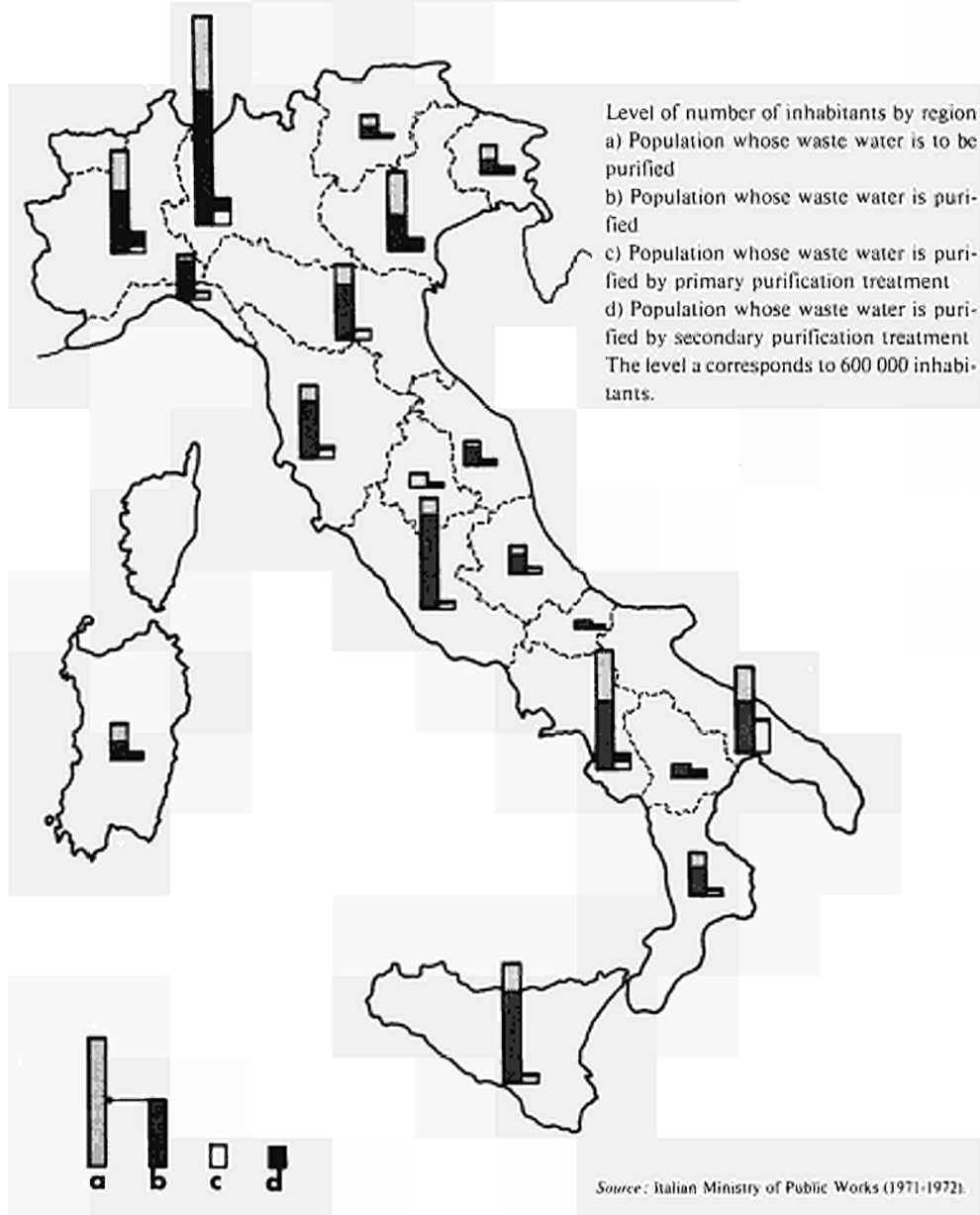
The Council adopted the draft directive on 16 June 1975. Member States were required to take all necessary measures to ensure that surface water conformed to the values laid down in the directive. They were further required to apply the directive without distinction both to national waters and to waters crossing their frontiers.

Though health requirements were, as noted above, a primary motivation for the directive, the ecological and social aspects were not ignored. Three categories of surface water were under normal circumstances permitted to be used for the abstraction of drinking water. These were referred to as categories A1, A2 and A3. Member States undertook to draw up a systematic plan of action, including a time-table for the improvement of surface water and especially that falling within



Private-sector requirements for potable water within the EEC countries are assessed at an average of 100 litres per person per day.

The purification of domestic waste water in Italy



category A3. In this context, considerable improvements were to be achieved under the national programme over the next ten years. The Commission was to carry out a thorough examination of these plans, including the time-tables and would, if necessary, submit appropriate proposals to the Council. It may be seen therefore that the directive, as adopted by the Council, concerns more than health requirements. It is a tool which may be used to achieve gradual but significant improvements in the quality of surface waters, wherever these are used for the abstraction of drinking water. Because the directive applies equally to water crossing the frontiers of Member States, it must be seen as an important instrument for dealing with certain problems of transfrontier pollution.

The directive provided that in exceptional circumstances water which did not correspond to the categories laid down in the directive might be utilized for the abstraction of drinking water on the condition that suitable processes—including blending—were used to bring the quality characteristics of the water up to the level of the quality standards for drinking water. The Commission was to be notified of the grounds for such exceptions, as soon as possible, in the case of existing installations, and in advance, in the case of new installations. Notification of such exceptions was to be made on the basis of a water resources management plan within the area concerned. The Commission would examine the grounds in detail and, when necessary, would submit appropriate proposals to the Council.

The Action Programme recognized the need to establish at a Community level a common methodology for determining the quality objectives based on the sets of reference parameters. Including measuring methods for determining pollution trends in the environment in question. In this first directive the frequency of sampling and the analysis of each parameter, together with the methods of measurement was to be defined by the competent national authorities pending the development of a Community policy on the matter. The Commission is at the present time in the final stages of preparing such a Community policy, dealing with the frequency of sampling and analysis and methods of measurement.

Definition of the standard methods of treatment for transforming surface water of categories A1, A2 and A3 into drinking water

Category A1

Simple physical treatment and disinfection, e.g. rapid filtration and disinfection.

Category A2

Normal physical treatment, chemical treatment and disinfection, e.g. pre-chlorination, coagulation, flocculation, decantation, filtration, disinfection (final chlorination).

Category A3

Intensive physical and chemical treatment, extended treatment and disinfection e.g. chlorination to break-point, coagulation, flocculation, decantation, filtration, adsorption (activated carbon), disinfection (ozone, final chlorination).

The Council directive concerning the quality required of surface water intended for the abstraction of drinking water in the Member States has implications which go far beyond those of health and ecology. The Action Programme of the Environment, in the Chapter which deals with 'Environment problems caused by the depletion of certain natural resources' stresses the need to study, *inter alia*, the medium and long-term availability of water supplies within the Community against increases in consumption and use, in particular, by (a) an analysis of the Communities' water resources, including their quality (b) an analysis of future water requirements for industrial, domestic and agricultural purposes, including medium and long-term and (c) a comparative analysis of management and planning techniques. Questions of water supply are inextricably linked with water quality. The constant amelioration of water quality foreseen in this directive must be considered an important step towards ensuring increased supplies of *usable* water.

Member States were given two years from the date of the notification of the directive to bring into force the laws, regulations and administrative provisions needed in order for them to comply with the directive.

In February 1975 the Commission sent to the Council a second proposed directive dealing with water quality objectives. This directive related to the quality of bathing water. The directive was adopted by the Council on 8 December 1975.

In sending the proposed directive to the Council, the Commission recognized that for many years public authorities had been concerned about the part played by bathing water, particularly when polluted by sewage water, in the transmission of infectious diseases. This was not merely a matter of national concern; it was also of Community interest. Water pollution, whether of the sea or rivers, frequently had international implications. It might affect the interests of more than one Member State, either because the pollution itself moved across national frontiers or because people from several Member States, especially tourists, might suffer from the effects of such pollution in the localities which they visited or frequented.

The Commission's aim in sending the directive was not purely one of satisfying public health requirements. There was a growing body of public opinion in the Member States which believed that the quality of bathing water should satisfy other criteria besides those of public health, such as amenity, aesthetic attractiveness and the improvement of the quality of the environment in general. The aim of the directive was to ensure that Member States established in accordance with certain procedures, a set of numerical values which corresponded to parameters

Characteristics of surface water intended for the abstraction of drinking water

	Parameters	A1 G	A1 I	A2 G	A2 I	A3 G	A3 I	
1	pH	6.5 to 8.5		5.5 to 9		5.5 to 9		
2	Coloration (after simple filtration)	mg/l Pt scale	10	20 (O)	50	100 (O)	50	200 (O)
3	Total suspended solids	mg/l SS	25					
4	Temperature	°C	22	25 (O)	22	25 (O)	22	25 (O)
5	Conductivity	$\mu\text{s}/\text{cm}^{-1}$ at 20°C	1 000		1 000		1 000	
6	Odour	(dilution factor at 25 °C)	3		10		20	
7*	Nitrates	mg/l NO ₃	25	50 (O)		50 (O)		50 (O)
8†	Fluorides	mg/l F	0.7 to 1	1.5	0.7 to 1.7		0.7 to 1.7	
9	Total extractable organic chlorine	mg/l Cl						
10*	Dissolved iron	mg/l Fe	0.1	0.3	1	2	1	
11*	Manganese	mg/l Mn	0.05		0.1		1	
12	Copper	mg/l Cu	0.02	0.05 (O)	0.05		1	
13	Zinc	mg/l Zn	0.5	3	1	5	1	5
14	Boron	mg/l B	1		1		1	
15	Beryllium	mg/l Be						
16	Cobalt	mg/l Co						
17	Nickel	mg/l Ni						
18	Vanadium	mg/l V						
19	Arsenic	mg/l As	0.01	0.05		0.05	0.05	0.1
20	Cadmium	mg/l Cd	0.001	0.005	0.001	0.005	0.001	0.005
21	Total chromium	mg/l Cr		0.05		0.05		0.05
22	Lead	mg/l Pb		0.05		0.05		0.05
23	Selenium	mg/l Se		0.01		0.01		0.01
24	Mercury	mg/l Hg	0.0005	0.001	0.0005	0.001	0.0005	0.001
25	Barium	mg/l Ba		0.1		1		1
26	Cyanide	mg/l Cn		0.05		0.05		0.05

27	Sulphates	mg/l SO ₄	150	250	150	250 (G)	150	250 (G)
28	Chlorides	mg/l Cl	200		200		200	
29	Surfactants (reacting with methyl blue)	mg/l (laurylsulphate)	0.2		0.2		0.5	
30*	Phosphates	mg/l P ₂ O ₅	0.4		0.7		0.7	
31	Phenols (phenol index) paranitraniline 4 aminoantipyrine	mg/l C ₆ H ₅ OH		0.001	0.001	0.005	0.01	0.1
32	Dissolved or emulsified hydrocarbons (after extraction by petroleum ether)	mg/l		0.05		0.2	0.5	1
33	Polycyclic aromatic hydrocarbons	mg/l		0.0002		0.0002		0.001
34	Total pesticides (parathion, BHC, dieldrin)	mg/l		0.001		0.0025		0.005
35*	Chemical oxygen demand (COD)	mg/l O ₂					30	
36*	Dissolved oxygen saturation rate	% O ₂	≥ 70		≥ 50		≥ 30	
37*	Biochemical oxygen demand (BOD ₅) (at 20 °C without nitrification)	mg/l O ₂	≤ 3		≤ 5		≤ 7	
38	Nitrogen by Kjeldahl method (except NO ₃)	mg/l N	1		2		3	
39	Ammonia	mg/l NH ₄	0.05		1	1.5	2	4 (G)
40	Substances extractable with chloroform	mg/l SEC	0.1		0.2		0.5	
41	Total organic carbon	mg/l C						
42	Residual organic carbon after flocculation and membrane filtration (5 µ) TOC)	mg/ C						
43	Total coliforms 37 °C	/100 ml	50		5 000		50 000	
44	Faecal coliforms	/100 ml	20		2 000		20 000	
45	Faecal streptococci	/100 ml	20		1 000		10 000	
46	Salmonella		Not present in 5 000 ml		Not present in 1 000 ml			

I = mandatory.

G = guide.

O = exceptional climatic or geographical conditions.

* = see Article 8 (d).

¹ The values given are upper limits set in relation to the mean annual temperature (high and low).

² This parameter has been included to satisfy the ecological requirements of certain types of environment.

in the directive laying down the minimum quality required of bathing water. The parameters in question were both micro-biological and physico-chemical. Certain other substances regarded as indications of pollution were also covered.

An examination of the legal position in the Member States revealed that no provisions of the same scope and the same degree of technicality as those contained in the draft directive already existed in the national legislations.

In the Netherlands, guiding principles of a general nature for the evaluation of bathing water quality (in lakes and the sea) were laid down in 1952 by an *ad hoc* committee of the TNO (Organization for Applied Scientific Research). In its report the TNO Committee recommended quality criteria for swimming pool water and for surface water intended for recreational activities (e.g. swimming, paddling, diving and other activities in which there was direct and prolonged contact with water).

A second report on quality requirements for bathing water (Gezondheidsgraad, Interim Rapport inzake de eisen, welke met het oog op de gezondheid van de mens aan oppervlaktewater dienen te worden gesteld. Rijswijk 25 June 1973) had been prepared by the Netherlands Health Council. This report recommended classification of bathing places in three grades, based on the results of local inspection and chemical and bacteriological water analysis.

In Denmark, the draft law on the Protection of the Environment of 13 June 1973 provided that the Ministry of the Environment might lay down a regulation on hygienic conditions for bathing water and beaches. (Chapter 2, Section 4 expresses the obligations of Municipal Councils to control the quality of bathing water.)

In Ireland the Foreshore Act of 1933 provided that no person might leave in the tidal area (i.e. below high water mark) or throw into the sea adjacent to that area any article, whole or broken which could cause injury to a person bathing or paddling there. The prohibition extended to any substance, solid or liquid, which could be injurious to such persons. Without the consent of the Minister of Transport and Power, nobody might dump material on a foreshore or seashore or at any place from which it would be blown, washed or moved by other natural causes to a seashore.

In Italy, fecal coliform limits only were specified for sea bathing water. This specification was contained in a circular from the Ministry of Health addressed to the Provincial Health Inspectorate (No 400.5/79DAC 67 of 1 June 1971).

In the United Kingdom bathing was regulated by the provisions of the Water Act 1973, Chapter 37. This Act provided that each Water Authority should take any appropriate measures to ensure that the use of the water and the beach was in conformity with recreational use. To this end every Water Authority must take all equitable and practicable measures.

In France, sea-water bathing was governed by a bye-law based on the law of

16 December 1964. This bye-law prohibited the dumping into the sea of materials of any kind which might be harmful to the public health, fauna, flora and the development of tourism. As far as fresh-water bathing was concerned, the French Government had, under the 'Information agreement' of 5 March 1973, sent to the Commission a draft order which set out, in implementation the Law of 16 December 1964, tables with the physical, chemical and micro-biological characteristics of freshwater which was to be used for bathing.

It may be seen therefore, that the Council directive of 8 December 1975 concerning the quality of bathing water was a considerable advance when compared to the existing situations in the Member States. Member States agreed to take all necessary measures to ensure that, within 10 years following the notification of the directive, the quality of bathing water would conform to the limit values set in the directive. A sampling procedure was established and the minimum frequency of sampling laid down. Member States agreed to submit a comprehensive report to the Commission on their bathing water and on its most significant characteristics. With the consent of the Member State concerned, the Commission would publish the information obtained.

Given existing levels of pollution around the coast of Europe, the undertaking by Member States to obtain the quality objectives for bathing water laid down in the directive within 10 years is an impressive one. If the quality of water is to be brought up to, and maintained at the desired level, substantial investments in purifiers and diffusers will be necessary. Commenting on the directive, the European Parliament stated that the use of diffusers did not solve the problem of pollution at the source, but merely carried it further away from the shore, without eliminating it completely. The Parliament was of the view that since the seas natural purifying capacity was limited, this remedy was only effective if the diffusers' lead-off pipes were sufficiently long. The Parliament was of the view that Community funds should possibly be provided for the purchase by local communities of diffusers and purifiers. (OJ C 128 of 9.6.1975, page 13).

The Action Programme on the Environment called for the establishment of quality objectives not only for surface water intended for the abstraction of drinking water and for bathing but also for farming, pisciculture and industry, recreation, and aquatic life in general.

On 26 July 1976 the Commission forwarded to the Council a proposal for a Council Directive on the quality requirements for water capable of supporting freshwater fish, see p. 36. The Commission noted that degradation in the quality of water due to the discharge of pollutants has adverse effects on certain fish populations, particularly the reduction in the overall number of certain species or even, in some cases, the disappearance of some of these species.

In order to protect fishing interests and ensure that fresh water is protected against pollution, the European Communities' action programme on the

Council Directive of 8 December 1975

Quality requirements for bathing water

	Parameters	G	I	Minimum sampling frequency	Method of analysis and inspection
Microbiological:					
1	Total coliforms /100 ml	500	10 000	Fortnightly (1)	Fermentation in multiple tubes. subculturing of the positive tubes on a confirmation medium. Count according to MPN (most probable number) or membrane filtration and culture on an appropriate medium such as Tergitol lactose agar, endo agar, 0.4% Teepol broth, subculturing and identification of the suspect colonies. In the case of 1 and 2, the incubation temperature is variable according to whether total or faecal coliforms are being investigated.
2	Faecal coliforms /100 ml	100	2 000	Fortnightly (1)	
3	Faecal streptococci /100 ml	100	—	(2)	Litsky method. Count according to MPN (most probable number) or filtration on membrane. Culture on an appropriate medium.
4	Salmonella /1 litre	—	0	(2)	Concentration by membrane filtration. Inoculation on a standard medium. Enrichment—subculturing on isolating agar—identification.
5	Enteroviruses PFU/10 litres	—	0	(2)	Concentrating by filtration, flocculation or centrifuging and confirmation.
Physico-chemical:					
6	pH	—	6 to 9 (0)	(2)	Electrometry with calibration at pH 7 and 9.
7	Colour	—	No abnormal change in colour (0)	Fortnightly (1)	Visual inspection or photometry with standards on the Pt.Co scale.
		—	—	(2)	
8	Mineral oils mg/litre	—	No film visible on the surface of the water and no odour	Fortnightly (1)	Visual and olfactory inspection or extraction using an adequate volume and weighing the dry residue.
		≤0.3	—	(2)	
9	Surface-active substances reacting with methylene blue mg/litre (lauryl-sulfate)	—	No lasting foam	Fortnightly (1)	Visual inspection or absorption spectrophotometry with methylene blue.
		≤0.3	—	(2)	
10	Phenols (phenol indices) mg/litre C ₆ H ₅ OH	—	No specific odour	Fortnightly (1)	Verification of the absence of specific odour due to phenol or absorption spectrophotometry 4-aminoantipyrine (4 AAP) method.
		≤0.005	≤0.05	(2)	
11	Transparency m	2	1 (0)	Fortnightly (1)	Secchi's disc.
12	Dissolved oxygen % saturation O ₂	80 to 120	—	(2)	Winkler's method or electrometric method (oxygen meter).

Quality requirements for bathing water (cont'd)

	Parameters	G	I	Minimum sampling frequency	Method of analysis and inspection
13	Tarry residues and floating materials such as wood, plastic articles, bottles, containers of glass, plastic, rubber or any other substance. Waste or splinters	Absence		Fortnightly (1)	Visual inspection.
14	Ammonia mg/litre NH ₄			(3)	Absorption spectrophotometry, Nessler's method, or indophenol blue method.
15	Nitrogen Kjeldahl mg/litre N Other substances regarded as indications of pollution			(3)	Kjeldahl method.
16	Pesticides mg/litre (parathion, HCH, dieldrin)			(2)	Extraction with appropriate solvents and chromatographic determination
17	Heavy metals such as: — arsenic mg/litre AS — cadmium Cd — chrom VI Cr VI — lead PB — mercury Hg			(2)	} Atomic absorption possibly preceded by extraction
18	Cyanides mg/litre Cn			(2)	
19	Nitrates and phosphates mg/litre NO ₃ PO ₄			(2)	Absorption spectrophotometry using a specific reagent

G = guide.

I = mandatory.

(0) Provision exists for exceeding the limits in the event of exceptional geographical or meteorological conditions.

(1) When a sampling taken in previous years produced results which are appreciably better than those in this Annex and when no new factor likely to lower the quality of the water has appeared, the competent authorities may reduce the sampling frequency by a factor of 2.

(2) Concentration to be checked by the competent authorities when an inspection in the bathing area shows that the substance may be present or that the quality of the water has deteriorated.

(3) These parameters must be checked by the competent authorities when there is a tendency towards the eutrophication of the water.

environment stipulates that Community measures must provide for the definition of quality objectives for waters and in particular the establishment of a number of reference parameters and limit values in respect of the various uses and functions of water, with special reference to waters capable of supporting freshwater fish.

The quality objectives contained in this Directive aim at allowing fish belonging to indigenous species presenting a natural diversity or fish belonging to species whose presence is considered desirable for water management to live in favourable conditions. When laying down parameters and numerical values for determining water quality as much attention as possible has been paid to the effects

**Proposal for a Council directive on the quality requirements for waters
capable of supporting freshwater fish**

General observation:

The values shown in the table for each parameter correspond to situations in which levels of the other parameters, whether or not considered in this Annex, are favourable, which implies, in particular, that the concentrations of harmful substances are zero or very low.

Parameter	Salmonid waters		Cyprinid waters		Methods of analysis or inspection	Minimum sampling and measuring frequency	Observations
	G	I	G	I			
<p>1. Temperature 0 °C</p> <p>— during the warm season</p> <p>— during the cold season</p>		(*) ≤ 20 (0)		(*) ≤ 20 (0)	Thermometry	<p>— quarterly</p> <p>— weekly if thermal discharge is suspected</p>	Too rapid an increase in temperature must be avoided so that fish reproduction is not affected
<p>(*) The temperature shown apply to waters in areas directly subject to the effect of thermal discharges. When natural water temperature does not exceed the I values, increases of 1.5 °C in salmonid waters and 3 °C in cyprinid waters are permissible in the thermal discharges mixing zones and are applicable in all seasons.</p>							
2. Dissolved oxygen mg/l O ₂	50% ≥ 9 100% ≥ 7	50% ≥ 9 95% ≥ 7 100% ≥ 5	50% ≥ 8 100% ≥ 5	50% ≥ 7 95% ≥ 5 100% ≥ 3	Electrochemical method	<p>Monthly 24-hour variation with at least one sample an hour</p>	<p>In order to take account of seasonal variations in oxygen content, the levels to be adhered to are expressed as minimum concentrations fixed for 50%, 95% and 100% of the samples examined in the course of one year (cumulative frequency).</p> <p>I values: The periods during which the dissolved oxygen concentration is lower than 7 mg/l (salmonid waters) or 5 mg/l (cyprinid waters) must be short enough not to harm the fish.</p>
3. pH	pH	6-9 (0) (*)		6-9 (0) (*)	Electrometry	<p>— quarterly</p> <p>— weekly if chemical discharge is suspected</p>	
<p>(*) Artificial pH variations with respect to the 'natural' values must not exceed ±0.5 of a pH unit in limits falling between 6.0 and 9.0 provided that these variations do not increase the harmfulness of other substances present in the water.</p>							

4. Suspended solids mg/l	≤25 (0)		≤25 (0)		Filtration through a 0.45 porous membrane or centrifugation; drying at 105°C and weighing		The values shown are average concentrations and do not apply to suspended solids with harmful chemical properties. Floods are liable to cause particularly high concentrations.
5. DBO, mg/l O ₂	≤3		≤6		Determination of O ₂ by the Winkler method before and after five-day incubation in complete darkness at 20° ± 1°C		
6. Phosphates mg/l PO ₄	≤0.2		≤0.4		Absorption spectrophotometry after reduction of the phospholybdc complex		
7. Nitrates mg/l NO ₃	≤3		≤6		Absorption spectrophotometry, with or without prior reduction of the nitrates into nitrites		
8. Nitrite mg/l NO ₂	≤0.05		≤0.5		Absorption spectrophotometry		
9. Total ammonium mg/l NH ₄	≤0.04	≤1	≤0.2	≤1	Absorption spectrophotometry using indophenol blue	monthly	
10 Phenolic compounds mg/l C ₆ H ₅ OH		≤0.005 (0) (*)		≤0.005 (0) (*)	Absorption spectrophotometry: — method using parani- traniline, — method using 4-amino antipyrine	Twice a month	The levels shown take account of the presence of chlorophenols. The levels may be exceeded if free chlorine is not present
11. Petroleum hydrocarbons		(*)		(*)	Visual and by taste	Twice a month	

(*) Higher contents can be permitted where there are high natural contents. The difference compared with the natural values must be less than 0.005 mg/l. Phenolic compounds must not be present in such concentrations that they adversely affect fish flavour.

(*) Petroleum products must not be present in the water such quantities that they:
— form a visible film on the surface of the water or form coatings on the beds of watercourses and lakes,
— impart a detectable 'hydrocarbon' taste to fish,
— produce harmful effects in fish.

**Proposal for a Council directive on the quality requirements for waters
capable of supporting freshwater fish (cont'd)**

Parameter	Salmonid waters		Cyprinid waters		Methods of analysis or inspection	Minimum sampling and measuring frequency	Observations
	G	I	G	I			
12. Non-ionized ammonium mg/l NH ₃		≤ 0.005		≤ 0.025	Nessler method associated with pH determination	Twice a month	
13. Non-ionized chlorine mg/l HOCl		≤ 0.004		≤ 0.004	Palin method	Twice a month	
14. Zinc mg/l Zn water hardness (mg/l CaCO ₃)					Atomic absorption	Twice a month	The concentration limits corresponding to the water hardness values lying between 10 and 500 mg/l CaCO ₃ are to be calculated by interpolation. For hardness levels lower than 10 mg/l CaCO ₃ , the calculation of the concentration limits by extrapolation does not give reliable results
10		≤ 0.03		≤ 0.3			
50		≤ 0.2		≤ 0.7			
100		≤ 0.3		≤ 1.0			
500		≤ 0.5		≤ 2.0			

15. *Other harmful substances (I-value applicable to salmonid and cyprinid waters).*

(a) Non-persistent substances

The concentration of non-persistent substances, the half-life of which is less than 96 hours or which do not have cumulative effects, must not exceed 0.1 of the lethal concentration threshold anywhere or at any time. Moreover, the average concentration of such substances in 24 hours must not exceed 0.05 of the lethal concentration threshold.

(b) Persistent substances

The concentration of substances which are persistent or have cumulative effects must be such that it does not produce unwanted bio-accumulations: for some substances, this concentration must not exceed 0.05 of the lethal concentration threshold anywhere or at any time. Moreover, the average concentration of these substances in 24 hours must not exceed 0.01 of the lethal concentration threshold. For other highly persistent substances, the 'application factor' (the factor by which the values of the lethal concentration threshold must be multiplied to obtain the safe concentration) must be determined from case to case. Thus the concentration of cadmium for instance may not exceed 0.002 of the lethal concentration threshold anywhere or at any time.

Examples of substances which are persistent or which have cumulative effects are:

- organohalogen compounds,
- organophosphorus compounds,
- organostannic compounds,
- carcinogenic substances,
- mercury,
- cadmium.

Minimum sampling and measurement frequency: twice a month.

16. *Mixtures of harmful substances (I-value applicable to salmonid and cyprinid waters).*

Substances having synergic or antagonistic effects must be discounted in the calculation below. Only the case of harmful substances having additive effects is considered here.

If

A_5, B_5, \dots, Z_5 represent the concentrations of the different mixed substances and

A_a, B_a, \dots, Z_a represent the permissible concentrations (*) of the different substances when they are present singly, the concentrations of the different harmful substances in the mixture are considered to be permissible when:

$$\frac{A_5}{A_a} + \frac{B_5}{B_a} + \dots + \frac{Z_5}{Z_a} \leq 1$$

Any fractions such as $\frac{X_5}{X_a}$ which are less than 0.2 should be eliminated from the sum of fractions given above.

Minimum control frequency: monthly.

(*) For certain parameters these concentrations are defined in the Annex; they should be laid down from case to case for the other parameters that are not specifically mentioned.



Italy:
Dead fish in the polluted river Reno at Casalecchio, near Bologna.
On 26 July 1976 the Commission forwarded to the Council a proposal for a Directive on the quality requirements for water capable of supporting freshwater fish.

of each parameter not only for the survival of fish at different stages in their life cycle but also for their growth, reproduction and performance and for other components of the aquatic ecosystem which may provide them with shelter or food.

These quality objectives are not incompatible with the water quality requirements for commercial or recreational fishing.

To allow for differences in the fish sensitivity to harmful substances, the waters capable of supporting them have been divided into two categories namely salmonid waters and cyprinid waters.

For the purposes of this proposal:

- Salmonid waters are waters which support or are capable of supporting fish belonging to species such as salmon, trout, grayling, coregonidae.
- Cyprinid waters are waters which support or are capable of supporting the cyprinidae or other species which normally share the same habitat as the latter, such as pike, perch and eels.

This proposal for a Directive considers only those problems concerning the quality requirements for waters intended to support the life of freshwater fish. It does not relate to health or consumer protection which is covered by other Community or national provisions.

The Commission is also preparing a Directive on water for the breeding of shell fish (conchyliculture).

2. Standards

It is worth noting that the two directives concerning water quality objectives which have been so far adopted by the Council, namely the directive on the quality of surface water intended for the abstraction of drinking water and the directive on the quality of bathing water, in some respects include the setting of 'environmental quality standards'. By environmental quality standards is meant standards which, with legally binding force, prescribe the levels of pollution or nuisance not to be exceeded in a given environment or part thereof (see Annex 1, Environmental protection terminology, of OJ C 112 of 20.12.1973, page 49). Both the surface water directive and the bathing water directive have certain parameters which are mandatory or 'imperative' in effect, i.e. they *must not* be exceeded if the terms of the directive are to be met. Other parameters are presented as guidelines or recommended values and, in the case of both these directives, Member States have undertaken to endeavour to respect them as such. (Article 3.3 in both directives).

Another directive, which was proposed by the Commission on 22 July 1975 and which seeks to establish both mandatory and guideline values is that which re-

lates to the quality of water for human consumption. The directive aims to fix levels of toxicity and noxiousness in the quality of water supplied for human consumption with reference to the most up-to-date scientific knowledge in this field. A study of existing legislation on this subject in the Member States revealed that drinking water standards, although they were similar, did not have the same degree of precision or the same clarity of definition in the different countries of the Community. Some provisions were purely based on the European standards of the World Health Organization; others on a more or less comprehensive system of national legislation. The directive as proposed laid down the Maximum Admissible Concentrations in respect of certain parameters and the Minimum Required Concentrations in respect of certain other parameters. It also laid down Guide Level values giving the concentration in water of a given substance which should ideally not be exceeded. The directive also provided that Member States should take all necessary steps to ensure the regular monitoring to the quality of water intended for human consumption.

As proposed, the directive would authorize Member States to depart from the terms of the directive in order to take account of certain specific situations.

The directive on the required quality of drinking water in the Member States was the subject of the Parliament's resolution.

3. Control of discharges

(a) *Dangerous substances*

The Action Programme established that detailed study should be given to all the possible methods, including the setting of standards for discharges, which might be necessary to achieve and maintain quality objectives 'now and in the future'. The Council stated that priority should be given to the control of freshwater pollution by toxic, persistent and bio-accumable substances, such as those listed in Annex 1 to the Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft, signed at Oslo on 15 February 1972 and Annex 1 of the Convention on the Dumping of Wastes at Sea signed at London on 13 November 1972.

On 21 October 1974 the Commission submitted to the Council a proposal for a Council decision on the reduction of pollution caused by certain dangerous substances discharged into the aquatic environment of the Community. After lengthy consideration in the Environment Group, the draft decision was first considered by Ministers on 16 October 1975. The area covered by the draft decision was the whole of the aquatic environment of the Community, that is to say inland rivers and lakes, coastal waters, and territorial seas. Within those waters Member States were asked to eliminate the pollution resulting from the discharge

of 'black list' substances. The black list proposed by the Commission included mercury and cadmium; organohalogen, organophosphorous and organostannic compounds, carcinogenic substances and persistent oils.

The Commission proposed a mechanism whereby concrete steps might be taken towards fulfilling this obligation to 'eliminate' pollution from the discharge 'black list' substances. These steps included:

- (1) the definition on a Community basis of certain maximum 'limit values', which are to be fixed in the light of the toxicity, permanence and bioaccumulative character of the substances under consideration taking into account the best technical means available for the elimination of such substances from a discharge and
- (2) the obligation of the competent authorities in Member States not to exceed these Community 'limit values' whenever they give 'consent' to a discharge. (A system of prior 'consent' to any discharge was a fundamental aspect of this decision).

There was also included in the proposed decision a 'grey list' of substances which includes various dangerous metals and metalloids, such as arsenic, lead, uranium etc., biocides and their derivatives, cyanides and fluorides etc. In respect of the 'grey list' substances, Member States would undertake to lay down individual emission standards whenever they give 'consent' to, or authorize, a discharge. That individual emission standard must itself take into account relevant water quality objectives, including of course water quality objectives established on a Community basis.

Member States would be obliged to elaborate pollution-reduction programmes for 'greylist' substances and to transmit them to the Commission. The Commission would in turn undertake a regular 'comparison' of these programmes, in conjunction with the Member States, so as to ensure steady and rapid progress towards attaining the stated objective of a 'severe reduction' of pollution.

After a long and sometimes heated debate the Ministers failed to agree on this proposal. The essential problem was that the British, who favoured an approach to water pollution problems based on the setting of environmental quality objectives, were not prepared to accept a system which sought to regulate pollution by discharges of 'black list' substances purely by means of emission standards.

The Commission was given the task of working out a proposal involving a compromise between the emission standards approach favoured the majority and the quality objective argument maintained by the UK.

The Commission's proposal was that the Council would lay down quality objectives for the substances covered by the proposal as well as emission standards. The latter would apply except where Member States could prove to the Commission on the basis of an agreed monitoring procedure that the quality objectives

were being met and maintained. If quality objectives could not be met or established then the emission standards would come into force.

On 8 December 1975, the Ministers agreed to seek a solution along these lines.

The directive on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community was finally adopted by the Council on 4 May 1976.

At that meeting the delegations of Belgium, Denmark, the Federal Republic of Germany, France, Ireland, Italy, Luxembourg and the Netherlands reaffirmed the opinion already expressed by their representatives at the Council meetings on 16 October and 8 December 1975 that measures against the pollution of water caused by the discharge of substances on the 'black list' could be most effectively carried out by establishing and applying Community limit values which the national emission standards must not exceed. They stated that they would apply the directive with this in mind.

The Council and the Commission stated that the Community intended to achieve by stages the elimination of discharges of dangerous substances in the families and the groups of substances on the 'black list', taking into account the results of examinations of each of these substances by experts and the technical means available. The Commission stated that the concept of 'the best technical means available' took into account the economic availability of those means.

The directive also established certain rules relating to the discharge of dangerous substances to ground water. These rules were to be of a temporary nature pending the submission by the Commission to the Council of a proposal on ground water. The Commission considered that such a proposal could be submitted within 9 months.

The Commission, assisted as appropriate by national experts, has now embarked on a programme of work to ensure the rapid implementation of the Council's decision. The Commission has chosen the following substances from the 'black list' for priority action: mercury, cadmium, aldrin, dieldrin and endrin.

Council Directive of 4 May 1976 on Pollution caused by Certain Dangerous Substances discharged into the Aquatic Environment

List I of families and groups of substances

List I contains certain individual substances which belong to the following families and groups of substances, selected mainly on the basis of their toxicity, persistence and bioaccumulation, with the exception of those which are biologically harmless or which are rapidly converted into substances which are biologically harmless:

1. organohalogen compounds and substances which may form such compounds in the aquatic environment.
2. organophosphorus compounds,
3. organotin compounds,
4. substances in respect of which it has been proved that they possess carcinogenic properties in or via the aquatic environment,¹
5. mercury and its compounds,
6. cadmium and its compounds,
7. persistent mineral oils and hydrocarbons of petroleum origin,
and for the purposes of implementing Articles 2, 8, 9 and 14 of this Directive:
8. persistent synthetic substances which may float, remain in suspension or sink and which may interfere with any use of the waters.

List II of families and groups of substances

List II contains:

- substances belonging to the families and groups of substances in List I for which the limit values referred to in Article 6 of the Directive have not been determined,
- certain individual substances and categories of substances belonging to the families and groups of substances listed below.

and which have a deleterious effect on the aquatic environment, which can, however, be confined to a given area and which depend on the characteristics and location of the water into which they are discharged.

Families and groups of substances referred to in the second indent

1. The following metalloids and metals and their compounds:

1. zinc	6. selenium	11. tin	16. vanadium
2. copper	7. arsenic	12. barium	17. cobalt
3. nickel	8. antimony	13. beryllium	18. thalium
4. chromium	9. molybdenum	14. boron	19. tellurium
5. lead	10. titanium	15. uranium	20. silver
2. Biocides and their derivatives not appearing in List I.
3. Substances which have a deleterious effect on the taste and/or smell of the products for human consumption derived from the aquatic environment, and compounds liable to give rise to such substances in water.
4. Toxic or persistent organic compounds of silicon, and substances which may give rise to such compounds in water, excluding those which are biologically harmless or are rapidly converted in water into harmless substances.
5. Inorganic compounds of phosphorus and elemental phosphorus.
6. Non persistent mineral oils and hydrocarbons of petroleum origin.
7. Cyanides, fluorides.
8. Substances which have an adverse effect on the oxygen balance, particularly: ammonia, nitrites.

¹ Where certain substances in List II are carcinogenic, they are included in category 4 of this list.

With regard to the discharge of waste water into the open sea by means of pipelines, Member States undertake to lay down requirements which shall be not less stringent than those imposed by this Directive.

(b) Industrial sectors

The Action Programme stated that protection of the environment required that particular attention be paid to industrial activities in which the manufacturing processes entailed the introduction of pollutants or nuisances into the environment. It was appropriate therefore:

- to endeavour to work out technical or other measures which could reduce, eliminate or prevent the pollutant emissions or nuisances stemming from each of the polluting industries,
- to study ways and means of implementing these measures, particularly as regards their phasing, account being taken of existing circumstances, the state of the art and the economic, financial and social consequences of the measures planned.

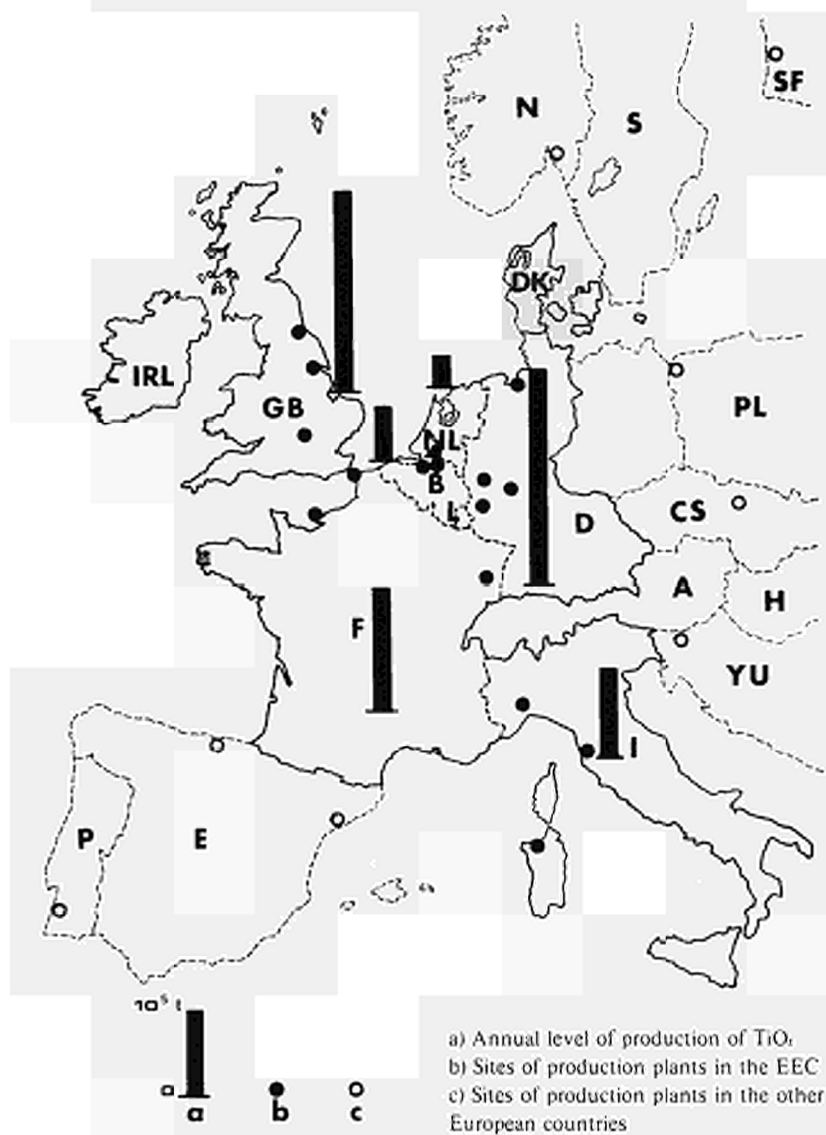
The pulp sector of the *paper and pulp industry* was to be looked at as a matter of priority, due to the potentially highly polluting nature of the manufacturing processes used.

On 14 January 1975 the Commission submitted to the Council a Technical Report on Pollution of Water by the Pulp Manufacturing Industry in the EEC. This report showed that pulp mill effluent could contain appreciable quantities of suspended solids, could severely deplete the oxygen content of the receiving water course, could contain toxic substances and could discolour and cause foaming in the receiving water course. Whether or not this potential to pollute was realised, however, would depend on:

- the type of pulp producing process employed;
- the volume and type of discharge;
- the environmental characteristics of the receiving medium;
- the extent to which Member States had established legislation controlling the discharge of waste.

In terms of BOD 5 and suspended solids, the units most commonly used to define water pollution from pulp mills, the worst pollution problems were likely to arise in the sulphite pulping process; for a sulphite mill with standard 1970 technology (not taking into account the effects of external control measures) the effluent could have a pollution load of 450 kg per tonne BOD 5 and 60 kg per tonne suspended solids. Such a pollution load could be seen to be substantial when

Installations producing titanium dioxide in Western Europe



Source: Commission of the European Communities (1974).

compared to the kraft process of pulping, in which recovery of liquor often takes place. In the latter case the pollution loads could be as low as 40 kg per tonne BOD 5 and 10 kg per tonne suspended solids.

The report showed that to date few Member countries applied specific legislation to the discharge of pulp mill effluent. In Belgium, environmental quality standards specifically applicable to this industry had been drawn up and in France, an agreement, namely the *Contrat de Branche* between the (then) Ministry of Culture and Environment and the French Confederation of Paper, Board and Cellulose Industries was signed in June 1972. Germany was proposing to levy charges on the release of noxious effluents. Most other countries employed 'guidelines' which were part of the general environmental legislation.

The report noted that there were numerous technologies available for reducing the pollution load of pulp mill effluent. They could take the form of internal measures, i.e. measures which reduce pollution at source by modifying the manufacturing process, or external measures, i.e. treatment of effluents discharged during and after the manufacture of pulp. While these technologies could remove over 95% of the effluent's oxygen demand and suspended solids content, their installation would require industry to incur extra costs. For some sulphite and semi-chemical mills in particular, the establishment of certain of these technologies could involve substantial costs which would be cause for significant concern.

At the same time as it submitted its Technical Report, the Commission also presented to the Council a proposal for a Council directive on the reduction of water pollution caused by wood pulp mills in the Member States.

In preparing this directive, the Commission was guided by the general principles defined in the Communities 'Programme of Action on the Environment', which stressed in particular that 'the best environmental policy consists in preventing the creation of pollution or nuisances at source, rather than subsequently trying to counteract their effects', and also that; 'major aspects of environmental policy in individual countries must no longer be planned and implemented in isolation. On the basis of a common long term concept, national programmes in these fields should be coordinated, and national policies harmonized within the Community.' In the Commission's view coordination and harmonization of policies in the case of the pulp industry must initially mean the establishment of certain minimum effluent emission limits, which were technically feasible and economically realistic and which would represent an important first step in the protection of the environment. In its directive the Commission therefore proposed the adoption, on a Community basis, of minimum emission standards for the pulp industry, according to the type of manufacturing process employed.

To allow the assimilative capacity of the receiving waters, where this exists, to be nevertheless taken into account—as well as appropriate water quality criteria

and local social and economic conditions—a certain measure of flexibility in applying the proposed standards was provided for. This would enable national and local authorities to work out programmes of discharge reduction, if necessary on a case by case basis.

The emission standards proposed were considered to be reasonable for mills discharging into inland waters from the environmental, as well as economic and technical view point. However, it was recognized that the assimilative capacity of tidal waters could be substantially different from those of rivers, and furthermore, that the parameters which determine the effects of effluent discharge into such waters might not be the same as in the case of rivers. It was therefore proposed that those existing mills whose discharge into tidal waters caused no appreciable damage to the environment, might be exempt from compliance with the discharge norms laid down in the directive. Such exemptions were to be temporary.

The Commission recognized that the application of the proposed discharge norms might in some cases cause undesirable economic problems and necessitate certain special aids. It referred in this connexion to a communication it had made to the Member States on this subject on 4 November 1974.

In its resolution (OJ C 111 of 25.5.1975, page 30) embodying the Opinion of the European Parliament on the Commission's proposed directive, the Parliament shared the Commission's view that certain derogations might be permitted for a limited period, provided that they did not result in an appreciable deterioration in the quality of the water which received the discharge; at the same time the European Parliament urged the Commission to exercise strict control over these derogations. The Parliament also urged the Commission to take into account, when applying the 'polluter pays' principle, the possible economic and social consequences especially for small or old undertakings; and it asked the Commission to submit to the Council as soon as possible a communication on support for wood pulp mills. It also requested the Commission to begin, at an early date, a Community-wide study on research and development in the fields of techniques to reduce pollution caused by wood pulp mills.

The Commission's proposal for a Council directive on the reduction of water pollution caused by wood pulp mills in the Member States is still under consideration in the Environment Working Group of the Council.

Another industrial sector which the Action Programme of the Environment indicated should be studied as a matter of priority was the manufacture of *titanium dioxide*. On 14 July 1975 the Commission presented a technical report to the Council on pollution caused by the titanium dioxide industry. The report noted that the production capacity of the titanium dioxide factories in the nine countries of the European Community was 840 000 tonnes per year (TPA). This represented 39% of world capacity (2 175 000 TPA) and was divided up as follows:

741 000 TPA (88%) for the sulphate process

99 000 TPA (12%) for the chloride process.

The vast majority of factories manufacturing titanium dioxide dumped their waste at sea or in estuaries, relying on the buffer effect of the sea to neutralize the acid part of the waste and on the capacity of the oxygen present to convert

Reduction of water pollution caused by Wood Pulp Mills

Type of process		A	B ¹
	BOD ₅ kg/t ²	Suspended solids kg/t ²	Suspended solids kg/t ²
<i>Sulphate (Kraft)</i>			
Raw	5	2.5	10
Bleached	9	10	20
<i>Sulphite</i>			
With elimination or reutilization of cooking liqueurs	45	12.5	50
Without elimination or reutilization of cooking liqueurs	80	15	85
<i>Semi-chemical</i>			
Production capacity > 150 tonnes/day	8	5	5
Production capacity ≤ 150 tonnes/day	60	13	60
<i>Mechanical</i>	5	5	5

¹ Biological treatment by aerated lagoon.

² The BOD₅ and suspended solids content may also be measured in terms of concentration (e.g. mg per litre of effluent), but in this case, the water consumption per tonne of pulp manufactured must also be measured, so that the pollution load can finally be expressed in kg/tonne of pulp.

Plant size in the pulp industry 1972

Country	Less than 5 000 ton- nes p.a.	5 000-10 000 tonnes p.a.	10 000-25 000 tonnes p.a.	25 000-50 000 tonnes p.a.	50 -100 000 tonnes p.a.	over 100 000 tonnes p.a.	Total
Belgium/Lux.	1	1	1	2	—	2	7
Denmark	—	1	3	—	1	—	5
Germany	17	8	10	8	9	3	55
France	14	3	6	10	8	6	47
Ireland	—	—	1	—	—	—	1
Italy ¹	33	10	18	5	6	3	75
Netherlands	4	1	5	4	—	1	16
UK	—	—	2	2	2	1	7
Community	69	24	47	31	26	16	213

¹ Number of enterprises.

Source: European Confederation of the Pulp, Paper and Board Industries (CEPAC).

the ferrous-sulphate to ferric-sulphate, the other waste (various oxides of heavy metals) sinking naturally to the sea-bed.

Factories discharging into the Channel or the North Sea accounted for 727 000 TPA (87%) and factories discharging into the Mediterranean accounted for 50 000 TPA (6%). Two factories (63 000 TPA or 7%) treated their waste on land.

The report noted that the demand for titanium dioxide on the European market was increasing and that the producers hoped to double their capacity in ten years, either by extending existing factories or by setting up new ones. The process generally used in Europe was the 'sulphate process'.

To obtain TiO_2 from the commonest source (ilmenite and slag) these have to be treated with sulphuric acid. Obtaining one tonne of TiO_2 involved 2.6 tonnes of waste, which consisted mainly of sulphuric acid and iron sulphate. Assuming that authorization were given for dumping at sea, and also assuming that production were doubled, marine pollution from this waste would be almost bound to double in turn.

The report noted that a whole series of ecological pollution monitoring campaigns had been carried out in the actual discharge areas; these campaigns had been sponsored by the national authorities or sometimes by the manufacturers themselves. In the Commission's view, it was clear from an analysis of the results of this monitoring that waste from the TiO_2 industry was potentially or actually harmful. The adverse effects on the marine environment were due above all to acidity, the presence of ferrous sulphate and probably other metals (heavy metals).

The effects in question could take the following various forms, depending on the method and place of dumping;

- (1) reduced oxygenation and pH of the water and increased concentration of Fe and heavy metals;
- (2) (a) temporary shortage of the zooplankton biomass and inducement of effects leading to a deterioration of the morphological structure of its components;
(b) repulsion and loss of some species of fish;
(c) reduction of the biomass, production and specific diversity of benthic and/or nectobenthic biocenoses in the discharge area. In more severe all animal life may disappear.
- (3) change in the colour, transparency and turbidity of the water and temporary reduction of photosyntheses, of the phytoplankton and of primary production, particularly in the case of surface dumping. The seabed becomes covered with iron oxides and the oxides of other metals where the dumping is carried out in estuaries and in shallow water;
- (4) on the other hand, there is no evidence of any toxic effects on man from the consumption of species of fish caught in the discharge areas.

The report contained an inventory of the waste from the production of TiO_2 , these wastes were classified into four major categories corresponding to the waste products discharged by factories at different stages of production. These categories were:

- (i) insoluble matter after filtration
- (ii) 'copperas' (ferrous sulphate)
- (iii) strong acids
- (iv) weak acids or weak liquors.

The report concluded that it would seem fair to suggest that industries in this sector, should, within reasonable time limits; (a) store on land the insoluble matter after filtration; (b) make certain reductions in the total pollution.

In the light of these findings the Commission submitted to the Council a proposal for a Council directive on waste from the titanium dioxide industry. The aim of this directive was gradually to reduce and then to eliminate pollution of the sea by waste from the titanium dioxide industry.

There were three aspects to the proposed directive, namely:

- (i) prior authorization
- (ii) ecological control of the environment
- (iii) measures which were to be taken to reduce and eliminate pollution and nuisances.

The proposed directive provides that the competent authority of the State in whose territory the industrial establishment is located shall only grant an authorization for dumping at sea or discharge into estuaries if: there is no adverse effect on boating, fishing, leisure activities, ore extraction, desalination, fish and shell fish breeding, on regions of special scientific value and on other legitimate uses of the sea; and no other means of destruction or disposal exists.

The proposed directive provides that irrespective of the method and extent of treatment of effluent which is to be discharged, any discharge into a maritime area or into an estuary shall be accompanied by a systematic follow up on the general ecology of the environment. The follow up should include in particular: (a) an ecological inventory of the current state of the area affected by the releases and (b) sampling species of molluscs, crustaceans, fish and plankton organisms.

Discharge operations should be suspended if:

- (a) an examination of the general ecology of the area revealed a marked deterioration of that ecology;
- (b) tests for toxicity induced by the accumulation of metals in food chains indicated hazard to human health; and

(c) the results for the tests for acute toxicity were at variance with certain values set out in the directive.

The directive envisaged a staged transition period to allow industry to adapt from the present situation to one where there was almost total elimination of dumping at sea. In the Commission's proposal;

- as from 1 January 1978, new industrial establishments would have to reduce the pollution they caused to 30% of the total untreated pollution, and as from 1 January 1985 to 5% thereof;
- existing industrial establishments would have to effect a reduction to 70% as from 1 January 1978, 30% as from 1 January 1981 and 5% as from 1 January 1985.

In the Commission's view, these percentage reductions were based on perfectly feasible techniques.

The European Parliament, in its resolution (OJ C 28 of 9.2.1976, page 16) asked the Commission to investigate the possibility of reducing the transitional period from 10 to 8 years since the overall level of marine pollution called for speedy action by the Member States. It also urged the Commission to reformulate the authorization procedure in such a way that the Commission should itself take the final decision on the coordination and supervision of the discharge of waste and ensure that the characteristics of the various water courses, lakes and seas into which the waste is discharged is harmonogeneous in all Member States.

As regards any aid that might be provided, the European Parliament advocated the granting of loans instead of subsidies.

Several Member States have already passed laws on—among other things—the disposal of waste from the titanium dioxide industry.

The German Law of 7 June 1972 on waste disposal requires both local authorities and private individuals to use special plants for the treatment, storage and disposal of solid waste.

Likewise, the French Law of 1917 on industrial establishments which are dangerous, insanitary or carry on noisy or noxious trades applies to the titanium dioxide manufacturers by virtue of the fact that they process mineral ores using, among other things, sulphuric acid which can cause adverse changes in water (of No 295 in the nomenclature to this law). The Order issued by the Préfet pursuant to the abovementioned law authorizing the setting-up of industrial establishments are subject to conditions which govern, among other things, the discharge of effluent into water courses.

A new draft law makes these conditions even stricter and stipulates that any authorization granted must take account of the dangers or drawbacks which the industrial establishment in question may present as regards nature and the envi-

ronment and must lay down installation and operating conditions concerning, in particular, the purification and disposal of effluent, wastes and residues.

In Italy, it is the Fishing Code (Law 963 of 1965) which applies to discharges at sea.

In the other Member States, general laws on the protection of water, air and soil apply.

The Commission's proposal for a directive based on Article 100 of the EEC Treaty, which is still under discussion in the Environment Working Group of the Council, sets out to harmonize these laws and thus create a coherent set of provisions which can apply in all Member States.

(c) *Thermal discharges*

The Commission's preliminary report on the problems of pollution and nuisances originating from energy production placed a special emphasis on the problem of thermal discharges. The report noted that concern over the environmental effects of the discharge of heat into natural bodies of water was steadily mounting. An increase in the natural temperature of lakes and streams was reported to affect the growth rate and, in some cases, the species of aquatic flora and fauna. Evidence indicated that at some locations certain forms of aquatic life had benefited by increased water temperatures and that this water, used in irrigation, could help promote plant growth. In general however, the ecological effects of increased temperature were considered detrimental, and opposition to increasing water temperatures was growing.

The report noted that the solubility of oxygen in water decreased continuously as temperature went up. On the other hand, the oxygen demand for the biological degradation processes of organic pollutants carried within the water increased with temperature, because these processes were generally accelerated by higher temperatures. Thus, discharge of heat into rivers, raising the water temperature well above its natural level, was detrimental and might endanger this natural resource and aquatic life, especially if the body was already heavily polluted by organic and inorganic matter.

The report noted that power plants constituted the most important source of thermal discharges. In the light of present technology this situation was not likely to change much within the next decade, whereas electricity production would certainly continue to grow at a similar rate as in the past decade, i.e. a doubling of the production in about 10 years. The growth rates of later decades till to the end of this century were open to speculation but they were unlikely to fall below 5%.

Growth of electric power production and thermal discharges within EC Member States

Hypothesis I

Year	1970	1975	1980	1985	1990	1995	2000
Total gross production (TWh)(*)	855	1 200	1 680	2 350	3 200	4 225	5 400
Yearly mean growth rate (%) within 5 year period	7.0	7.0	6.9	6.4	5.7	5.0	
Gross production from thermal plants (TWh)	731.6	1 066	1 534	2 194	3 032	4 045	5 210
Total thermal discharges (TWh)	1 024	1 533	2 267	3 384	4 815	6 624	8 769

Hypothesis II

Year	1970	1975	1980	1985	1990	1995	2000
Total gross production (TWh)	855	1 230	1 800	2 800	5 100	9 000	14 000
Yearly mean growth rate (%) within 5 year period	7.5	7.9	9.2	12.7	12.0	9.2	
Gross production from thermal plants (TWh)	731.6	1 095	1 650	2 630	4 910	8 800	13 800
Total thermal discharges (TWh)	1 024	1 579	2 460	4 217	8 583	16 053	25 184

(*) TWh = 10⁹ megawatthours (= 860 000 000 000 kcal).

Hypothesis 1 assumes that demand for electricity will continue to grow, until to the end of this century, at the same rate as the last 25 years; however, with a progressive tendency to a saturation.

Hypothesis 2 assumes that the cost increases of liquid fuels and the short supply of these fuels may continue for some years and will initiate a progressive change in the structure of energy demand within the 3 main sectors of electricity consumption: industry, domestic sector and transport, leading to a sharp increase in electricity demand.

As a consequence the total quantity of heat discharged directly into the environment by power plants might increase by at least a factor of 8 in the year 2000 as compared to the situation in 1970, even if—for the individual plant—it might be lowered by improved technology and other uses of waste heat.

Already within this decade in most Member States the cooling capacity of inland surface waters would be exhausted if the open cycle cooling technique mainly used hitherto was not substituted by the introduction, on a large scale, of wet cooling towers.

However, with increasing unit size of power plants and with a trend to installing multiple units at a given site limits to the generalized use of wet cooling towers were imposed by the large quantities of water evaporated in the towers (effect on the microclimate) and by the water withdrawn from the rivers. If for instance the total evaporation from wet towers were limited to 2% of the average annual flow of European rivers, and to 10% of the flow in periods of low water co-

inciding with high electricity production, it would not be possible to evacuate more than 5 000 TWh (TWh = 10^6 Megawatthours (= 860 000 000 000 Kcal)) of waste heat per year by these wet towers. Under this hypothesis some of the EEC Member States would be confronted from the nineties on with the need to look for other methods of evacuation of waste heat from electric power production.

The report suggested that this situation could be tackled in different ways, each of them presenting problems with regard to environmental protection, to the rational use of natural resources, to the economy of energy production, transportation and use to the development of regional activities:

- by the installation of power plants equipped with dry cooling towers where the waste heat was discharged directly to the atmosphere;
- by the location of new multiple unit power plants at the sea shores where eventually a cheap open cooling circuit could be used;
- by the decentralization of power production in smaller plants which were equipped with dry cooling towers and the devices required for compliance with emission limits set for air pollutants, which were located near to large urban areas, and which might use the waste heat for district heating and other purposes.

The report concluded that at the present stage of knowledge a thorough investigation of the problem related to thermal discharges must be undertaken. The studies must be directed towards:

- the establishment of plans with regard to the thermal discharges which could be directed to rivers, and especially to coastal waters, without damaging the ecosystems;
- an increased development of dry cooling towers through appropriate measures such as R & D contracts, exchange of information and experience.

In parallel to these studies guidelines should be elaborated facilitating the siting of new power plants at carefully chosen places in consideration of the requirements of environmental protection.

These guidelines should take into account not only environmental and economic considerations but also give thought to the most efficient use of natural resources in terms of energy consumption, land use and water use.

In its resolution of 3 March 1975 on energy and the environment the Council took note of the Commission's preliminary report on the problems of pollution and nuisances relating to energy production and, where thermal discharges are concerned, called on the Commission to submit proposals on policies to be followed by the Communities and Member States on the following matter:

1. collation of existing data on the effects of thermal discharges on the environment and further study in this field;

2. exchange of information at Community level on planning the siting of new power plants, taking into account pollution and nuisance hazards;
3. the need, wherever environmental protection so requires, to equip new power stations with cooling towers and to improve as rapidly as possible the design and technology of dry cooling towers, so as to diminish the disadvantages which the latter still present with regard to certain aspects of the environment;
4. utilization of waste heat.

Progress achieved in implementation of these points is described in the section of this report headed Energy and the Environment.

4. Monitoring

Under the heading 'Exchange of Information between the surveillance and monitoring networks' the Action Programme on the Environment specifies that the aims and content of Community action are:

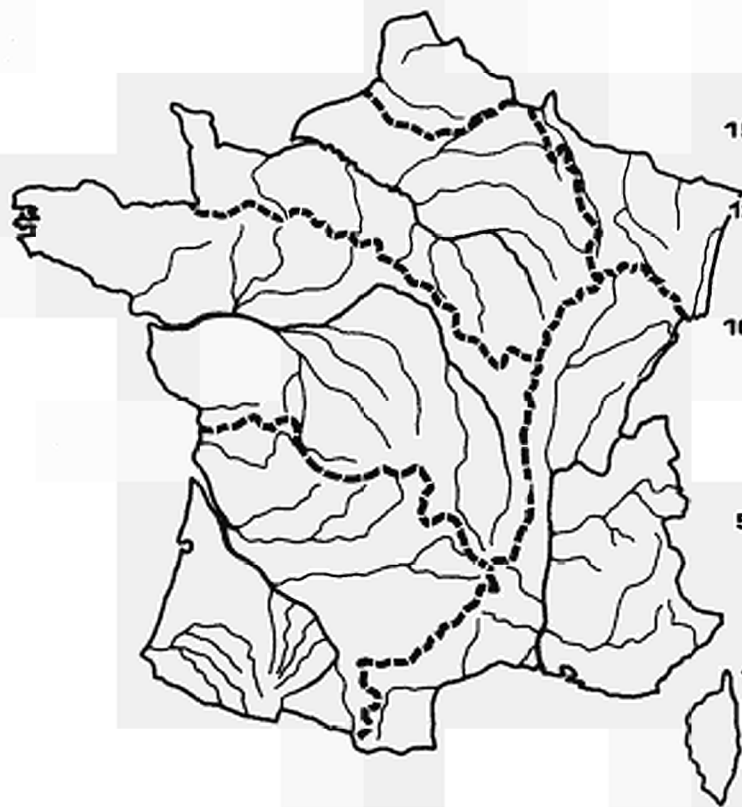
- to organize and develop technical exchanges between the regional and national pollution surveillance and monitoring networks and to adopt all appropriate measures to improve the efficiency, accuracy and comparative value of the devices already set up.
- to investigate, when appropriate, the desirability of setting up a system of exchanges of information on the data collected by the networks and in such cases to entrust to the Commission the analysis, for the purpose of interpretation on a Community basis, of the data collected by the national networks.
- to facilitate the inclusion of the existing networks in the Community into the framework of the global monitoring system contemplated by the United Nations.

On 1 April 1976 the Commission submitted to the Council a proposal for a Council Decision establishing a uniform procedure for the exchange of information on the quality of surface fresh water in the Community. The Commission was assisted in the preparation of the technical aspects of the decision by a group of national experts. The group, which met 5 times, provided information on the existing sampling stations, the parameters measured and the rivers monitored in the Member States. It advised the Commission on the list of parameters to be taken into consideration at Community level and on the criteria to be adopted for the selection of sampling or measuring stations along the principle national and international rivers.

The sampling or measuring stations, which it is proposed should form part of a Community network, were chosen on the basis of certain criteria, the most important of which were that the stations were:

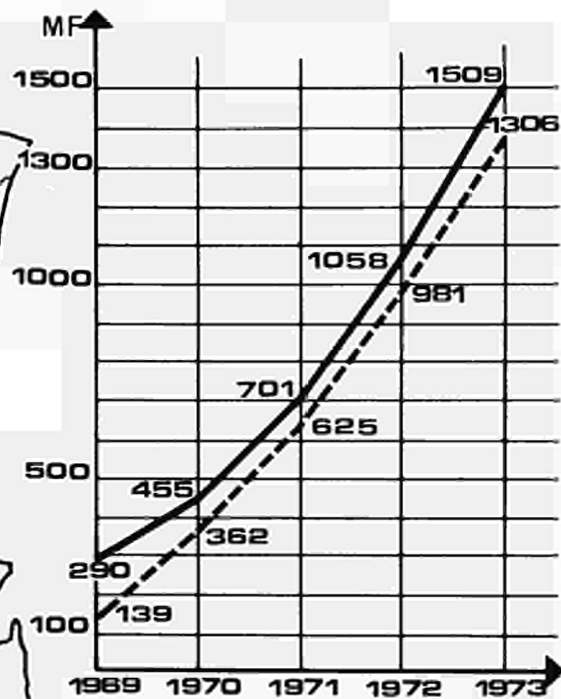
River authorities in France

Limit of the areas of the 6 authorities



— Money allocated
 - - - Money spent

Financial activity



- in existence and already providing information periodically;
- at points which fairly represented the conditions in the vicinity and were not subject to the direct and immediate effect of a pollution source;
- capable of assessing all the parameters considered;
- in general, not more than 100 km apart on the principal rivers, excluding tributaries;
- upstream of confluences and not below the tidal limit.

The Commission's proposal recognized that in a second stage more rivers could be added to the list in the light of experience and depending on whether new sampling or measuring stations had been set up.

The proposal also set out a list of parameters on which information was to be exchanged. The parameters selected cover the physical, chemical and microbiological properties of the water. Parameters for radio-activity were excluded from the proposal, since they are to be measured under the provisions in force in the Member States, in compliance with the basic standards set out in the Euratom Treaty.

If a meaningful comparison is to be made between the data at Community level, the information transmitted must include not only the numerical data on the parameters but also a description of the measuring methods used, of the sampling procedures, e.g. depth at which samples are taken, distance from the bank etc., and of sample preservation methods. The draft decision provides that each Member State is to designate a central agency responsible on its national territory for collecting and transmitting data to the Commission, and for receiving via the Commission the data from the other Member States. The list of central agencies is set out in an Annex to the decision. The Commission will draw up and publish an annual consolidated report based on the information sent in by each central agency.

5. Products which pollute water

The Action Programme on the Environment required the Commission to make investigations into the problems raised by the presence of particularly active pollutants in, amongst other things, products for the treatment of plants and animals and cleaning and conditioning agents. The Programme stated that investigations should be concerned with the harmfulness, design and composition of these products, the technical possibilities of modifying their composition or of finding substitutes for them, the precautions to be taken in using them, etc. and the economic implications of the various measures under consideration.

Parameters in respect of which information is to be exchanged

Modes of expression and significant figures for the parametric data

Parameter	How expressed	Significant figures	
		Before the decimal point	After the decimal point
Physical			
Instantaneous rate of flow	m ³ /sec	xxx	
Temperature	°C	xx	x
pH	pH	xx	x
Conductivity	μS cm ⁻¹ at 20°C	(< 100) xx (≥ 100) xxx	
Chemical			
Chlorides	Cl mg/l	(< 100) xx (≥ 100) xxx	
Nitrates	NO ³ mg/l	xxx	xx
Ammonia	NH ₄ mg/l	xxx	xx
Dissolved O ₂ (instantaneous)	O ₂ mg/l	xx	x
BOD ₅	O ₂ mg/l	xxx	x
COD	O ₂ mg/l	xxx	x
Total phosphate	P mg/l	xx	xx
Surfactants reacting to methylene blue	Sodium lauryl sulphate eq. mg/l	xx	xx
Substance extractable with chloroform	mg/l S.E.C.	xxx	xx
Dissolved cadmium	Cd mg/l	x	xxxx
Microbiological			
Fecal coliforms	/100 ml	xxxxxx	
Total coliforms ¹	/100 ml	xxxxxx	
Fecal streptococci ¹	/100 ml	xxxxxx	
Salmonella ¹	/1 l		

¹ The data relating to total coliforms, fecal streptococci and salmonella are exchanged between the networks if they are measured by the sampling stations.

(a) Fertilizers

The Commission's preliminary studies have shown that problems of pollutants brought into surface and ground water through agricultural practices have begun to rank alongside the better known problems of pollution due to industrial and domestic wastes.

The application of commercial fertilizers has increased dramatically in recent years, and there is much public speculation that fertilizers are contaminating drinking water and causing nutrient build up in water bodies with the consequences of undesirable growth of algae and other aquatic plants.

The question of whether increasing usage of fertilizers is contributing significantly to eutrophication and to potential health hazards is currently the basis of considerable controversy, and there is a general lack of sound scientific data on this subject. Systematic observation and research are needed to determine the extent of nutrient losses and to assess more specifically the conditions under which such losses might be serious. It is possible, however, that the use of fertilizers in certain localized areas and situations that are particularly vulnerable to leaching and runoff and erosion may result in nitrate and phosphate entering natural waters in undesirable quantities.

Until the role of fertilizers is well identified, as a result of scientific research, it may be advisable to impose regulations and corrective measures on the rate, time and method of fertilizer application, especially in the problem areas. There should be also a re-ordering of priorities in the fertilizer industry to produce materials which are less harmful to the environment, with particular reference to slow-released nitrogen fertilizers and nitrification inhibitors.

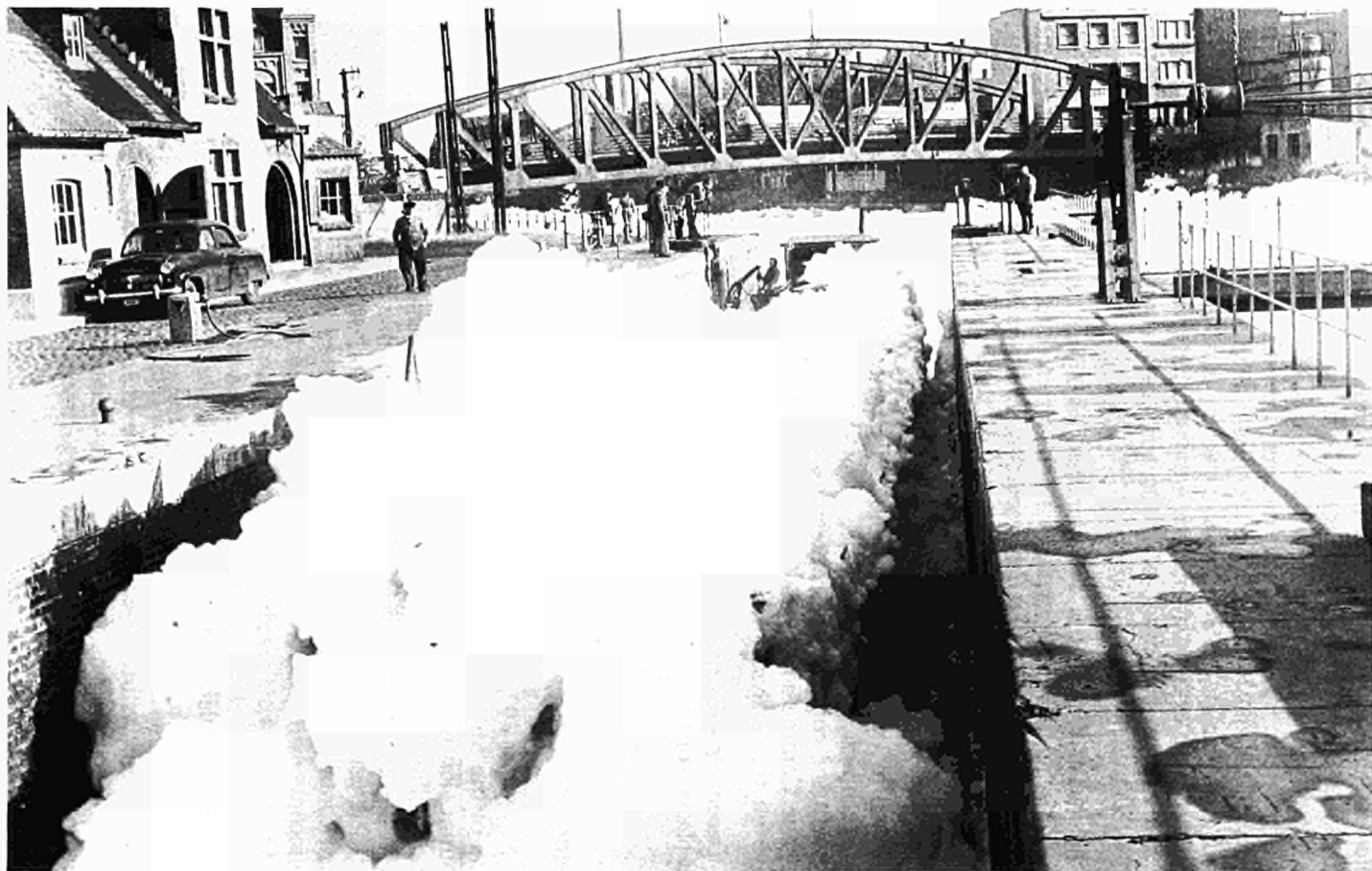
The Council in the framework of the Programme for Industrial Policy Elimination of Technical Barriers to Trade, adopted on 18 December 1975 a Directive dealing with the composition, packaging and labelling of the inorganic solid fertilizers. The Commission is now in the final stages of preparing a Commission Directive on the analysis of these fertilizers for their nutrient elements.

On 15 December 1975 the Commission presented a further proposal of directive on the placing on the market of ammonium nitrate fertilizer.

(b) *Detergents*

On 22 November 1973 the Council adopted a directive on the approximation of the laws of the Member States relating to detergents. In proposing the directive the Commission had noted that the increasing use of detergents was one of the causes of pollution of the natural environment in general and the pollution of waters in particular. More specifically it had noted that one of the pollutant effects of detergents on waters, namely the formation of foam in large quantities, restricted contact between water and air and rendered oxygenation difficult. This caused inconvenience to navigation; it also impaired the photosynthesis necessary to the life of aquatic flora, exercised an unfavourable influence on the various stages and processes for the purification of waste waters, caused damage to waste water purification plants and constituted an indirect micro-biological risk due to the possible transference of bacteria and viruses.

The Commission further noted that the laws in force in the Member States for incurring the biodegradability of surfactants differed from one Member State to another and this resulted in a hindrance to trade.



France:
A river barge is completely buried under a layer of foam as it passes through a lock of the river Lys. (1971 photograph).

Under the Council directive of 22 November 1973, Member States must prohibit the placing on the market and the use of detergents where the average level of biodegradability of the surfactants contained therein is less than 90% for the anionic, cationic, non-ionic and ampholytic categories.

A further Council directive of the same date also established test procedures by which Member States should ascertain whether or not a detergent complied with the requirements laid down. If a Member State decided to prohibit a detergent, it had immediately to inform the Member State from which the product came and the Commission, stating the reasons for its decision and details of the tests undertaken. The directive provided for a mechanism of arbitration in the event of a dispute.

A further directive, relating to methods of testing the biodegradability of non-ionic surfactants, is now being prepared by the Commission and will shortly be submitted to the Council.

6. Dumping of wastes at sea

In adopting the Action Programme on the Environment the Council noted that of all the different forms of pollution, marine pollution constituted one of the most dangerous, because of the effects it has on the fundamental biological and ecological balances governing life on our planet. The danger was even greater on account of the level of pollution which had already been reached, the diversity of pollution sources and the difficulty of ensuring that any measures adopted are complied with.

The Council stated that the sea is an essential source of products and proteins, which are extremely valuable in a world which is becoming increasingly over-populated. In addition, the sea plays a vital role in maintaining natural ecological balance by supplying a large proportion of the oxygen upon which life depends. The sea and coastal areas are also of tremendous importance for recreation and leisure.

The Council noted that the pollution of the sea affected the whole Community, both because of the essential role played by the sea in the preservation and development of species and on account of the importance of sea transport for the harmonious economic development of the Community.

The Action Programme broke down the marine pollution into four main sources:

- discharge of effluents from land;
- deliberate dumping of waste at sea;
- exploitation of marine and sub-marine resources, especially exploitation of the sea-bed;
- sea transport and navigation.

The measures for reducing land-based marine pollution have been discussed above in the context of the Council directive of 4 May 1976. Concerning the reduction of pollution caused by certain dangerous substances discharged into the aquatic environment of the Community reference should also be made to Part 3, International Actions, where the Community's role in the context of the Paris Convention for the Prevention of Marine Pollution arising from Land-Based Sources is described.

On 8 January 1976 the Commission submitted to the Council a proposal for a Council directive concerning the dumping of wastes at sea. The Programme of Action pointed out that two major international agreements were designed to protect the marine environment from pollution resulting from dumping at wastes at sea:

- (a) the Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft, concerning the areas of the North-East Atlantic, the North Sea and their dependant Seas, which was signed at Oslo on 15 February 1972 and entered into force on 7 April 1974 (Oslo Convention);
- (b) the Convention on the Dumping of Wastes at Sea, concerning all the Seas in the world, which was signed at London on 13 November 1972 and entered into force on 31 August 1975 (London Convention).

Mention must also be made of the fact that, in the context of the United Nations Environment Programme (UNEP), the countries bordering the Mediterranean adopted in Barcelona in February 1976 a framework agreement on the protection of the Mediterranean environment. One of the related protocols concerned the prevention of the pollution of the Mediterranean Sea by dumping from ships and aircraft.

Similarly, in Helsinki on 22 March 1974, the Baltic states, namely: Denmark, Finland, The German Democratic Republic, The Federal Republic of Germany, The Polish People's Republic, Sweden and The Union of Soviet Socialist Republics adopted a Convention on the Protection of the Marine Environment of the Baltic Sea Area, which included amongst other things provisions for the control of sea pollution from the dumping of wastes.

The Council recognized, in adopting the Programme of Action, that the application of international agreements in this field would necessitate the implementation within the Community of legislation and rules which would have to be harmonized so as to avoid creating distortions in trade and the distribution of investments. The Council pointed out that it would be necessary to aim in particular at the application of a uniform system of licensing in the Community and to harmonize the legislation and rules concerning the dumping of substances not included in the international agreements and, if necessary, to put forward Community proposals amending the list of substances set out in the agreements.

Mention must also be made of the fact that, in the context of the Council de-



An oil-soaked waterfowl swims through spilled fuel oil after two tankers collided spilling 800 000 gallons into the water. The Council requested the Commission to submit to it as soon as possible, and in the light of existing international conventions in this field, proposals for rules on pollution and dumping from ships.

cision on the reduction of pollution caused by the discharge of certain dangerous substances into Community waters, the Council made a specific declaration requesting the Commission to submit to it as soon as possible, and in the light of existing international conventions in this field, proposals for rules on pollution, *inter alia* in territorial waters, by operational discharges from ships and dumping from ships.

The Commission's proposal, which is presently under discussion in the working groups of the Council, is intended to define a common field of action within which rules on dumping are to be applied. The notion of 'dumping' is defined and obligations are imposed on Member States to take appropriate measures to prevent and abate pollution of the sea thus caused.

The Directive draws a distinction between three categories of waste; particularly harmful substances, the dumping of which is always prohibited (Annex I) and other harmful waste and matters, whose discharge into the sea will require the granting of a special permit by the competent national authorities (Annex II).

It also lays down that dumping of all other wastes will require a prior general permit from the competent authorities.

Mention must be made of the fact that the lists of harmful substances as set out in the present proposal, are also to be found in the Annexes to the Barcelona Protocol which, being the latest of the abovementioned international agreements, takes into account the results of the most advanced research in this field. The lists therefore are somewhat different from those of the Conventions of Oslo and London which in addition are different from each other.

The criteria to be taken into account when issuing both special and general permits are laid down in Annex III and a common model for the application for permits and for the issue of licenses is set up in Annex IV.

In order to achieve a certain degree of flexibility in the application of this Directive, Member States are given the power to derogate from its provisions when circumstances of a particularly grave nature require it.

The Commission will have an active part to play in the implementation of this Directive. It will examine records of permits granted by the competent national authorities, consider the efficacy of the measures adopted by Member States and the need for any other provision.

The Community's role with regard to the Oslo, London, Baltic and Mediterranean Conventions, is described in Part 3 of this report.

Chapter II

Air

1. Pollution by sulphur dioxide

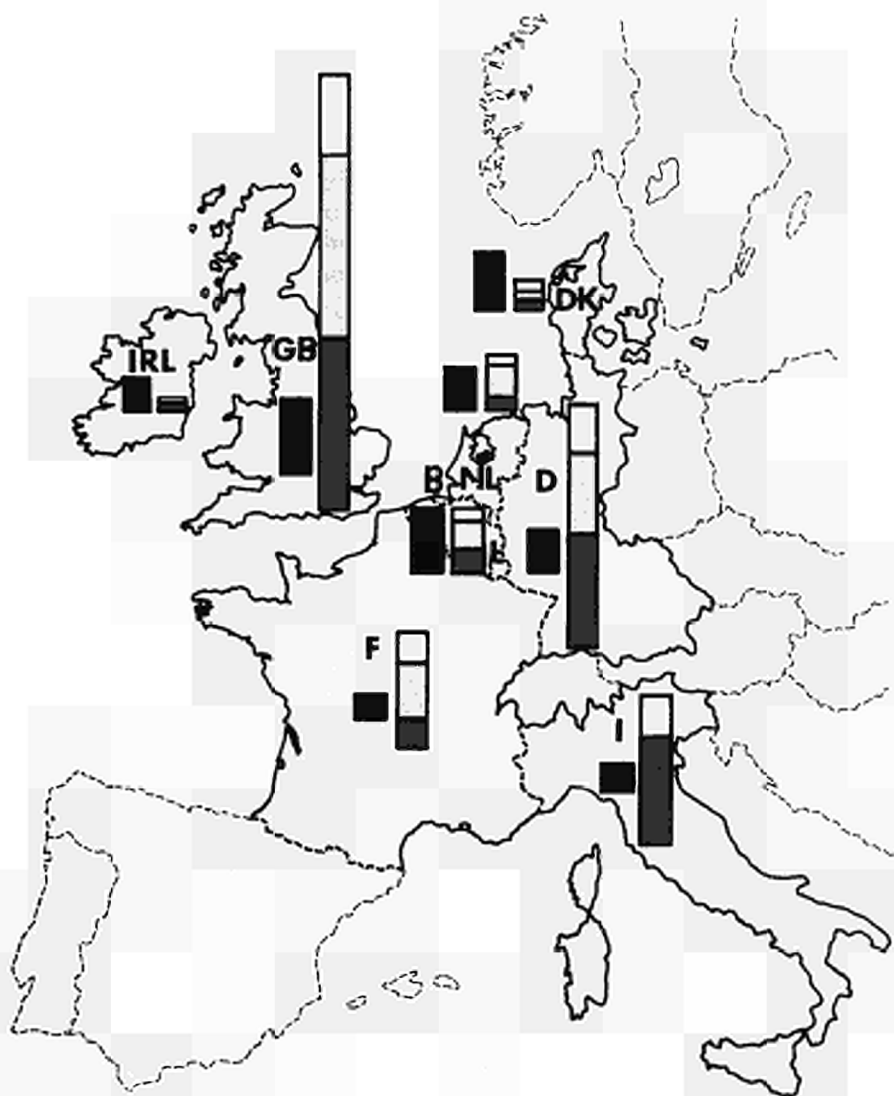
(a) Criteria and air quality standards

Part II, Title I, Chapter 1 of the Communities Environment Programme dealt with the objective evaluation of risks to human health and the environment from pollution. Priority was given to so called 'first category' pollutants, which were chosen on the grounds both of their toxicity and of the current state of knowledge of their significance in the health and ecological fields. The Programme states that, 'in the light of this objective evaluation, it will be possible, without having resort to arbitrary values, to set limits to the presence of these pollutants in the environment and determine quality values for products in terms of standards designed to protect human health and the environment'. Sulphur dioxide and suspended particulate matter in the atmosphere were considered as first category pollutants for which action was required because of their toxicity, synergistic effects and the current state of knowledge regarding their significance for public health.

On 19 February 1976 the Commission submitted to the Council a proposal for a Council resolution concerning the determination of criteria for sulphur dioxide and suspended particulate matter in urban atmospheres. In the Commission's view the two pollutants were among those substances for which an objective evaluation of the scientific data available could be carried out with the certainty necessary for the development of criteria for the public health point of view. (In the terminology of the Communities Environment Protection Programme 'criterion' signifies the relationship between the exposure of the target to pollution or nuisance, and the risk and/or the magnitude of the adverse or undesirable effect resulting from the exposure in given circumstances).

The criteria proposed by the Commission as establishing the relationships between given exposures and observable effects on man for sulphur dioxide and suspended particulate matter were as follows:

Air pollution from sulphur dioxide (SO₂) in the EEC



1 Emission, (t.p. inhabitant), by country
 2 Annual emission by country, (in 000 tonnes of SO₂)

Division according to source

- a. Domestic heating
- b. Industry
- c. Electricity generating plants

N.B. Data for Italy under b and c are given as one total.

Source: OECD.

**Health protection standards for sulphur dioxide and suspended particulates
in urban atmospheres**

Sulphur dioxide

Reference period	Maximum concentrations	Associated concentrations of suspended particulates
Year	Median of daily means 80 $\mu\text{g}/\text{m}^3$	Annual medial of daily means > 40 $\mu\text{g}/\text{m}^3$
Year	Median of daily means 120 $\mu\text{g}/\text{m}^3$	Annual medial of daily means < 40 $\mu\text{g}/\text{m}^3$
Winter (October to March)	Median of daily means 130 $\mu\text{g}/\text{m}^3$	Winter median of daily means > 60 $\mu\text{g}/\text{m}^3$
Winter (October to March)	Median of daily means 180 $\mu\text{g}/\text{m}^3$	Winter median of daily means < 60 $\mu\text{g}/\text{m}^3$
24 hours	Arithmetic mean 250 $\mu\text{g}/\text{m}^3$	Arithmetic mean of concentration over 24 hours > 100 $\mu\text{g}/\text{m}^3$
24 hours	Arithmetic mean 350 $\mu\text{g}/\text{m}^3$	Arithmetic mean of concentration over 24 hours < 100 $\mu\text{g}/\text{m}^3$

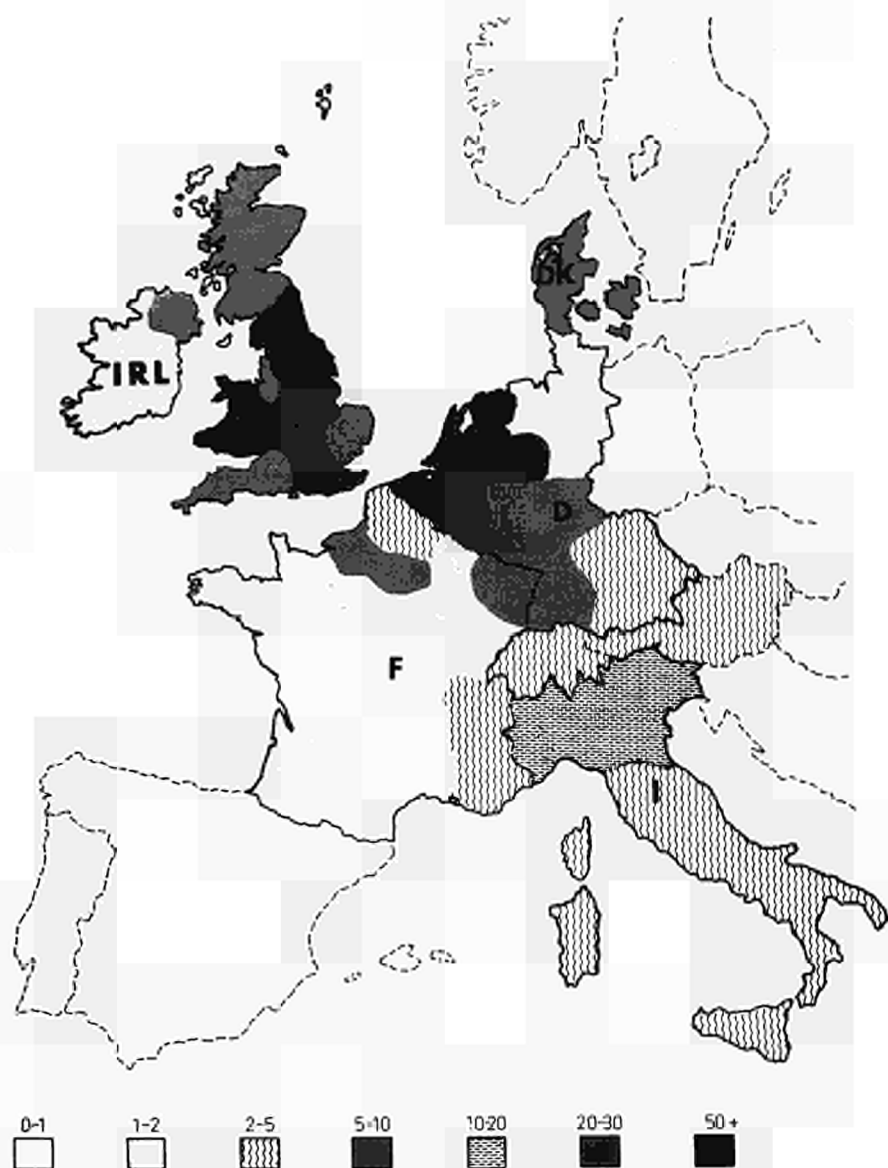
Suspended particulates

Reference period	Maximum concentrations
Year	Median of daily means 80 $\mu\text{g}/\text{m}^3$
Winter (October to March)	Median of daily means 130 $\mu\text{g}/\text{m}^3$
24 hours	Arithmetic mean 250 $\mu\text{g}/\text{m}^3$

1. When sulphur dioxide and suspended particulate matter (determined as 'black smoke')¹ exceed simultaneously a mean value of 500 $\mu\text{g}/\text{m}^3$ for several days, excess mortality and increase in the number of hospitalizations are observed among aged persons, having in particular severe cardiovascular and respiratory symptoms.

¹ Based on the standardized method put forward by the OECD Working Group on methods for the measurement of air pollution, 1964.

Local density of sulphur dioxide (SO₂) air pollution



SO₂ expressed as t.p.Km³

Source: 'Ecologist' 1973.

2. When sulphur dioxide and suspended particulate matter exceed simultaneously concentrations of $250 \mu\text{g}/\text{m}^3$ for several days a subjective exacerbation is much less pronounced when only sulphur dioxide exceeds these levels.
3. For levels slightly lower than $250 \mu\text{g}/\text{m}^3$ (daily concentrations) for sulphur dioxide and suspended particulate matter there are indications that sensitive persons exhibit temporary changes in their pulmonary respiratory functions.
4. When sulphur dioxide and suspended particulate matter exceed simultaneously $100 \mu\text{g}/\text{m}^3$ as long term averages respiratory symptoms in the form of increased infection of the lower respiratory tract and decrease in the maximum expiratory flow rates are observed in children.

On the basis of these criteria, the Commission also proposed a Council directive concerning health protection standards for sulphur dioxide and suspended particulate matter in urban atmospheres.

The directive defines the meaning of air quality standards for sulphur dioxide and suspended particulates and prescribes the levels which must not be exceeded.

It requires the Member States to take the necessary measures to ensure compliance with the air quality standards. It provides for exceptions, which are clearly defined, to the implementation of this directive during a transition period ending in 1987 in order to allow the Member States time to take all the measures required.

The Member States may always impose more severe air quality standards and anticipate the deadlines laid down provided that these standards are not an obstacle to the proper functioning of the Common Market. The directive further lays down the procedure by which the Member States are to inform the Commission of existing pollution levels and also of proposed measures to reduce these levels.

This procedure is largely based on the Council Decision of 24 June 1975 establishing a common procedure for the exchange of information between the surveillance and monitoring networks based on data relating to atmospheric pollution caused by certain sulphur compounds and suspended particulates.

In the case of regions not covered by the above common procedure for the exchange of information, the Commission is to be informed only of levels exceeding the standards.

It is emphasized that the implementation of this directive must not lead to a deterioration of air quality in the 'clean' regions; as far as possible, compliance with the standards must be achieved by reducing emissions and not by wider dispersal of pollutants in the environment.

Finally the directive lays down reference methods for analysis of the pollutants with which this Directive is concerned, but at the same time allows the Member States the option of using equivalent methods and requires the Commission to help Member States to demonstrate that such methods are equivalent.

A detailed study of the laws, regulations and administrative provisions in force in the Member States has shown that no air quality standards, as envisaged in this Directive, exist for the two pollutants in question in any Member State.

The Commission's proposal for a Council resolution concerning the determination of criteria, and for a Council directive concerning health protection standards, for sulphur dioxide and for suspended particulate matter in urban atmospheres are still under discussion in the Environment Working Group of the Council.

(b) *Monitoring*

As far as air surveillance and monitoring networks are concerned, a first step was taken when on 24 June 1975 the Council adopted a decision establishing a common procedure for the exchange of information between the surveillance and monitoring networks based on data relating to atmospheric pollution caused by sulphur compounds and suspended particulates.

Member States had six months after the adoption of the decision to select from existing or planned sampling or monitoring stations those which are to supply the data for the exchange of information. The selection of sampling or monitoring station was to be based mainly on geographic and demographic parameters (urban and rural areas, size of cities, residential or predominantly industrial zones) and on pollution levels (maximum, average and minimum).

The decision provided that the daily average concentrations of certain sulphur compounds and suspended particulates should be transmitted monthly to the Commission and that an annual report, to include different types of data evaluation, should be prepared by the Commission, in consultation with national experts, on the basis of this data and of further information deemed appropriate by Member States and made available to the Commission.

The Commission undertook, on the basis of current studies on the comparability of the measurement methods, to submit proposals at the earliest opportunity on the harmonization of these methods so that the data obtained by the various stations referred to in the decision might be directly compared.

Subsequent consultations between the Commission and Member States have permitted the:

- clarification and provision of a uniform interpretation for the parameters defined in the Decision and thus assisted the Member States to choose in a homogeneous way the participating stations;
- clarification of the structure of the network;
- discussion of the problems existing at the national level for the transmission of data;
- examination of the possible further uses which can be made of this network.

At the present stage the information provided by Member States will provide input into a network composed of four parts:

- high impact areas;
- open country situations;
- pilot cities, and
- comparison stations.

(c) Reducing pollution at source

In a report submitted to the Council on 3 April 1974 on the problems of pollution and nuisances originating from energy production the Commission stated that SO₂ emissions from stationary combustion sources were likely to pass from 14 million tonnes in 1968 to some 21 million tonnes in 1980 for the nine Member States of the Community. Though there were certain gaps in the information Member States were able to give on the expected repartition in 1980 between solid, liquid and gaseous fuels, existing data indicated that more than 50 % of total consumption of stationary combustion sources in 1980 might be accounted for by liquid fuels and another 20 % at least by gas. Taking into account the sulphur content of the three types of fuel, it followed that the combustion of oil would constitute the major source of SO₂ in 1980, as far as stationary combustion sources were concerned.

(i) Gas-oil

The report noted, that within large urban areas SO₂ ground level concentrations were known to be strongly dependent upon the amount of emissions at low level (e.g. above all those originating in domestic heating and from small commercial installations fueled mainly with gas oil). Within the past decade the consumption of gas oils for domestic heating purposes had increased very sharply, replacing coal. This trend was likely to continue in the near future although at somewhat smaller growth rates (because of the higher costs of oil products, the competition of natural gas and of heating by electricity).

In 1971 SO₂ emission from the combustion of gas oil were estimated at a maximum of about 1.2 million tonnes within the EEC Member States. The Commission noted that in the absence of any control measures they might, on a maximum hypothesis, rise to nearly 1.6 million tonnes in 1980 and worsen the situation in already highly polluted areas.

On 2 May 1973 the Netherlands Government forwarded to the Commission a draft decree dealing mainly with the fixing and gradual reduction of the sulphur content of fuels.

On 18 June 1973 the French Government informed the Commission of proposed measures for the gradual reduction of the sulphur content of gas oils.

On 5 July 1973 the Italian Government forwarded to the Commission a draft decree amending Law No 615 of 13 July 1966 on measures to combat atmospheric pollution. The main aim of the provisions in question was to determine the areas to be designated as protected zones and to ensure the gradual reduction of the sulphur content in gas oils.

The Government of the Federal Republic of Germany informed the Commission by letter of 18 October 1973 of draft legislation introducing a progressive limitation on the sulphur content of light fuels and diesel motor fuels.

In the light of these notifications, it became evident to the Commission that differences existed not only in respect of the provision on the limitation on the maximum sulphur content, but also in the actual structure of the laws and the solutions adopted to reduce noxious emissions due to the various categories of fuels. The oil industry was being compelled to adjust its production in order to comply with the different provisions in force in the various countries which it supplied.

The Commission therefore prepared, and submitted to the Council, a proposal for a directive on the approximation of the laws of the Member States relating to the sulphur content of certain liquid fuels.

The aim of the directive was to lay down Community requirements for the limitation of the sulphur content of gas oils which would have the effect of ensuring a marked reduction in atmospheric pollution caused by sulphur compounds resulting from gas oil combustion.

Having regard to the sulphur content of gas oils, only two grades of such oil would be permitted on the Community domestic market as from 1 October 1976.

With a view to ensuring, over the years to come and in spite of a sharp and continuing increase in consumption, the attainment of the objectives (reduction in the existing level of pollution, or in certain areas, maintenance of existing levels where these were deemed acceptable), successive reductions in sulphur content were envisaged for the two grades of gas oil.

As from 1 October 1976 the maximum basic type sulphur content would be restricted to 0.5% and would subsequently be reduced to 0.3%, commencing 1 October 1980.

As from 1 October 1976 the maximum content for sulphur of the second type (type B) would be limited to 0.8% and this figure, in turn, would be reduced to 0.5% as from 1 October 1980.

Thus, on and after this last mentioned date, there would be two grades of gas

oil on the market with a maximum sulphur content of 0.3 % and 0.5 % respectively.

In the Commission's view it seemed advisable in the present situation to leave to the Member States the task of defining the low atmospheric pollution regions and also any region where the contribution made by gas oils to atmospheric pollution was low (in these regions it will be possible to use type B gas oil).

This possibility offered a certain flexibility, particularly in the Member States which had industrial regions where competitive conditions were not favourable, but where the question of air pollution was not a pre-eminent consideration.

The Commission believed that the obligation of Member States to notify it of the criteria which they had established for determining these regions, constituted a serious curb to the excessive use of this type of gas oil.

Nevertheless, the Commission would re-examine the appropriate provisions of the directive in the light of progress accomplished in defining criteria for the harmful properties of pollutants and targets for air quality. It would also consider new data for the levels of sulphur dioxide and, if necessary, put forward appropriate proposals before 1 October 1980.

This meant that the Commission would be able to verify if the choice of criteria, and of their application, insured a protection of the environment in these regions compatible with the Commission's programme on the subject.

In addition, so as not to impede the national programmes aimed at reducing atmospheric pollution caused by sulphur compounds, Member States would be able to bring forward the proposed dates for the reduction of the maximum sulphur content of gas oils and for the introduction of the directive.

In presenting this proposal, the Commission recognized that the production of gas oils conforming to the proposed restrictions, particularly to those foreseen for 1980, would henceforth necessitate a very large quantity of crude oil being treated in de-sulphurizing plants, which would call for supplementary investment to increase the capacity of these plants. To absorb this and the resultant higher production costs would call for an increase in the price of gas oil. It was difficult to establish, in the present state of the oil sector, precise estimates of the increase in costs, but the percentage was likely to be less than 5 % if the trend towards considerably higher crude oil prices continued up to the date of application of the proposed measures.

The increase in the amount of crude oil to be treated similarly would lead to a greater consumption of energy by the de-sulphurizing plants, thereby increasing their need for crude oil. In this regard also, little data were available, but the estimates were indicative of a value less than 0.5 %.

The Commission was however, of the opinion that the forecast increases, both

of the price of gas oil and of the use of crude oil, were largely justified by the basic aims of the proposed directive.

The Council adopted the Commission's proposal with certain modification on 24 November 1975.

The Council agreed that should environmental requirements of the state of de-sulphurizing technology change appreciably or should the economic situation in the Community as regards the supply of crude oil change substantially, the Commission, might on its own initiative or at the request of a Member State, propose amendments to the sulphur content relating to the period beginning 1 October 1980. The Council might decide on such amendments by a qualified majority not later than 1 October 1977.

The Council also agreed that if because of a sudden change in crude oil supplies, changes should occur in the sulphur content of the oil such as to jeopardize supplies to consumers in view of the shortage of available de-sulphurization capacity, a Member State might allow onto its territory gas oils which did not conform to the specifications laid down. It should forthwith notify the Commission, which should, after consulting the other Member States, decide within three months on the duration and details of the derogation.

The Council recognized that the second stage of the programme for reducing the sulphur content of gas oil raised particular technical and economic problems for Ireland and therefore granted Ireland a five year exemption before it passed on to the second stage.

(ii) Residual fuel oil

Stationary combustion installations, like boilers, furnaces, incinerators, torches etc., are estimated to create between 70 and 90 % of total SO₂ and particulate emissions. After considering the availability of different types of crude, the Commission calculated in the above mentioned report on the problems of pollution and nuisances originating from energy production that SO₂ emissions from the combustion of residual fuel oils were likely to increase markedly from 5.4 million tonnes (1971) to more than 17 million tonnes (1980) if no abatement measures were taken. In the light of these numbers, the Commission concluded that all means suited to abate SO₂ emissions from installations burning residual fuel oils (mainly large stationary ones) deserved special attention.

The European Parliament in its resolution on the Commission's preliminary report, approved this orientation, while considering that the de-sulphurization of fuels should be a first priority. The Council, in its resolution of 3 March 1975 on energy and environment specifically invited the Commission to submit proposals for regulations on the sulphur content and use of heavy fuel oils.

On 19 December 1975, the Commission submitted to the Council a proposal for a Council directive relating to the use of fuel oils with the aim of decreasing sulphurous emissions.

In submitting this proposal, the Commission noted that some Member States had already taken or had proposed legislative provisions for the type of fuel oil to be used in certain regions or within certain installations, or for a limitation of sulphur content of such fuels, or for a limitation of emissions with a view to protect public health against dangerous concentrations of sulphur dioxide, suspended particulate matter and other pollutants in the ambient air.

The Commission received on 2 May 1973 a communication from the Netherlands Government relating to a draft administrative instrument for a generalized limitation of sulphur in fuels. This provision did not enter into force at the time being due to the oil supply crisis, but it was put into effect finally in November 1974. Under this administrative measure it is forbidden to use for combustion purposes liquid, solid or gaseous fuels with a sulphur content exceeding certain levels. The maximum sulphur content is fixed e.g. at 2.9 % for all heavy fuel oils, to be decreased to 2.7 % by July 1975 and to 2.5 % by July 1976; for gas oil the limit is set at 0.7 % to be decreased by December 1975 at 0.5 %.

In France zones of special protection against air pollution can be created on the basis of the law concerning the fight against air pollution and odours of 2 August 1961, and of the regulations of 17 September 1963.

On this legal basis already in 1964 in Paris *intra muros* two zones of special protection had been created where the only type of fuel oil permitted must be of low sulphur quality. Moreover, the large power stations situated around Paris are required to switch over to low sulphur fuel oil during unfavourable meteorological conditions.

Recently two zones of special protection had been created in the region of Lille-Roubaix-Tourcoing and in the region of Lyon-Villeurbanne.

In Denmark, a law came into force beginning of 1975 prohibiting the use for heating purposes of fuel oils containing more than 2.5 % of sulphur.

In Belgium, under the terms of the regulation of 26 July 1971, 5 zones of special protection were created for: Brussels, Antwerp, Charleroi, Gent, Liège. In these zones the sulphur content of solid and liquid fuels of whatsoever quality and type is limited to 1 %.

In the Federal Republic of Germany the Federal law for the protection against emissions of March 1974 (Bundes-Immissionsschutzgesetz) empowers the Federal Government to regulate the composition of fuels with respect to air polluting compounds, so as to regulate the quantity of emissions admitted for all installations subject to licensing; it requires the governments of the Länder to set up

control zones where the air pollution is to be monitored and to establish plans for improvement of the situation.

In pursuance to this law regulations had been issued, e.g. the revised 'Technical Instruction Air' (TA-Luft) of August 1974 setting emission limitations, mainly with respect to sulphur dioxide and suspended particulate matter, for a large number of installations subject to licensing; the same regulation limits the short term as well as the long term concentration of sulphur dioxide, suspended particulate matter and some other pollutants in the ambient air.

Two regulations came into force in October 1974, one setting a general limitation to the sulphur content of gas oil, the other limiting the emission of particulate matter, soot, oil and other pollutants from domestic furnaces. Another regulation was proposed giving the basis for establishing an air monitoring system in particularly polluted regions.

Under the terms of the law No 615 of July 1966 all industrial installations in Italy were required to take the necessary technical measures to keep air pollution as low as technically feasible. The territory was divided into two control zones A and B comprising the larger agglomeration and the big cities, in which limitations to emissions or to the use of certain types or qualities of fuels are set. A draft revision of this law introduced a third zone C for the most polluted large cities and restricted the use of certain types and qualities of fuels within the three zones. The sulphur content of fuel oils to be burned within the zones was limited at different levels according to the type of installation.

In the United Kingdom no general legal limitation existed for the sulphur content of fuels to be used, except for the City of London area where only fuels with 1 %S maximum were admitted. The Protection of the Environment Act 1974 entitled the Secretary of State to impose by regulations limits on the sulphur content of any liquid petroleum product produced in a refinery which is used in furnaces or railway locomotive engines.

The Clean Air Acts of 1956 and 1968 contained regulations to prevent the emissions of smoke, grit and dust from all industrial and domestic chimneys and provided for the establishment of smoke control areas. The Alkali Act 1906 and the Alkali and Works Order 1966 and 1971 required classified industries to limit as much as practicable the emission of gases, smoke, grit and dust.

The Commission was of the view that this large variety of approaches on the national level to the problems of sulphur pollution abatement could, if taken in an uncoordinated way, substantially influence the competitive situation of the installations concerned and lead to the creation of new technical barriers to trade. They might moreover cause disparities in the minimum protection of the population against air pollution from sulphur dioxide and suspended particulate matter. For these reasons, and in the light of the specific requests by the Council mentioned above, the Commission considered it necessary to provide for a Com-

munity approach to the problem of decreasing sulphurous emissions from the combustion of fuel oils.

Under the directive, Member States would be obliged to create zones of special protection if the level of air pollution by sulphur dioxide and by suspended particulate matter measured during the three preceding years in these regions have exceeded values specified in the directive. The pollutant concentrations are in line with the air quality standards for sulphur dioxide and suspended particulate matter in the urban atmosphere laid down in the proposed Council directive of 19 February 1976.

All combustion installations situated within these zones of special protection would be required to burn from one October 1978 on, only low sulphur fuel oil or equivalent fuel, unless they are specifically exempted under the directive. Low sulphur fuel oil put onto the Community market under this name is limited to 2% by weight from 1 June 1978. A further decrease of the sulphur content to 1% by weight is provided from 1 June 1983.

Under certain meteorological conditions combustion installations situated outside the zones of special protection may contribute significantly to the ground level pollutant concentration inside the zones. The proposed directive therefore required that such combustion installations located outside the zones of special protection but contributing significantly to the ground level concentration inside the zones switch over temporarily to low polluting fuels. The directive defines which contribution is to be considered as significant leaving to Member States the possibility to set more stringent requirements.

Since the protection of the population against high concentrations of sulphur dioxide and suspended particulate matter is not only required inside the zones of special protection but also outside, a general obligation is stipulated for all large combustion installations situated outside the zones of special protection to use temporarily low sulphur fuel oil or an equivalent fuel during episodes of high concentrations of sulphur dioxide and suspended particulate matter occurring within the area of influence of these installations. The competent national authorities are required to define the extent of the areas of influence.

In its proposal, the Commission recognizes that it is desirable to encourage the development and the introduction of processes (e.g. fuel gas desulphurization, fluid bed combustion, fuel gasification) allowing for a decrease of sulphur emissions by eliminating sulphur at the installation itself during or after combustion. Such processes could constitute interesting and perhaps less costly alternatives to a desulphurization programme carried out at the refinery level.

The Commission also recognizes that, in certain industrial processes which use fuel oils for heating purposes during production, large fraction of the sulphur dioxide generated at combustion of the fuel is not emitted but retained chemically in the products (e.g. cement fabrication).

The directive therefore exempts installations making use of such processes from the obligation to burn low sulphur fuel, provided that resulting level of sulphur dioxide emissions is not higher than that which is reached by burning low sulphur fuel oil.

The directive also recognizes that an important number of large combustion installations, e.g. power plants, are actually equipped with high stacks which, although not eliminating the sulphur dioxide emitted, assure a dispersion of the emissions at greater altitude and over a large area mainly in down wind direction. The ground level concentrations of sulphur dioxide and other emitted pollutants are considerably decreased in the vicinity of such plants. Nevertheless, under abnormal meteorological and particular topographical conditions the emitted pollutants may fall back to the ground at short distance from the installation and may then constitute a threat to public health and to the environment. The directive provides for certain exemptions for such installations provided that they are controlled by a monitoring network and that they are also equipped with an adequate reserve of low sulphur fuel-oil or an equivalent fuel.

Exempted installations would, however, be required to use temporarily only low sulphur fuel oil or an equivalent fuel in cases of episodes of high concentration of sulphur dioxide and suspended particulate matter occurring within the zones of special protection. Furthermore, the directive would oblige Member States to take all necessary measures assuring that the operation of the exempted installations does not give rise to pollution outside the zones or to transfrontier pollution.

The directive provides for the Commission to be informed of decisions taken by Member States to create zones of special protection and of any other parameters taken into consideration in their decisions.

The Commission's proposal for the Council directive relating to the use of fuel oils with the aim of decreasing sulphurous emissions is still under consideration in the Working Group of the Council.

On 14 April 1975, the Council adopted a directive concerning the restriction of the use of petroleum products in power stations. The directive provided that the construction of new power stations which will use oil fuels exclusively or mainly as well as the conversion of existing power stations to burn such fuels exclusively or mainly should be subject to prior authorization by the authorities of the Member States responsible for these power stations.

The directive provides that authorization may be granted only in the following cases:

- if the power station has a capacity of less than 10 MWe or is intended exclusively for the production of peak or reserve energy;



Italy:
Thick black smoke belches from the stacks of a large factory in the Genoa area, thus adding to the air pollution problem.

- if the petroleum products are used solely to ignite and to maintain the combustion of other products and if their total energy contribution remains small;
- if the petroleum fuel is a residual product that cannot be more efficiently employed for other purposes;
- if supplies of other fuels cannot be ensured or if their use cannot be considered for economic, technical or safety reasons;
- *if special reasons relating to the protection of the environment necessitate the use of petroleum products in a power station.*

Before granting authorization the authorities of the Member State concerned are to determine whether it is advisable, with a view to security of fuel supply, to equip the power station for dual-firing, allowing the use of coal as a substitute fuel.

On 13 February 1975, the Council adopted a directive on the restriction of the use of natural gas in power stations.

The directive provided that the conclusion of new contracts for the supply of natural gas to power stations, the extension of contracts upon expiry and the construction of new power stations using natural gas must be subject to prior authorization by the authorities of the Member States responsible for the power stations concerned.

Authorization for contracts providing for uninterruptible deliveries may only be granted:

- if the use of natural gas in a power station proves necessary for technical reasons;
- if the natural gas is intended for use in a power station having a capacity of less than 10 MWe or is intended exclusively for the production of peak or reserve energy;
- if the gas is used solely to ignite and to maintain combustion of other products and if its total energy contribution remains small or
- *if special reasons relating to the protection of the environment necessitate the use of natural gas in a power station.*

2. Pollution by lead

(a) Criteria and quality standards

Under the Action Programme of 22 November 1973, lead and its compounds were considered as pollutants for top priority consideration. On 16 April 1975 the Commission presented certain information on the toxic effects of lead on man taking account of industrial medical experience, cases of accidental and chronic

lead poisoning and of extrapolations from animal experiments. A detailed technical report containing this information was drawn up at the Commission's investigation and was examined by a group of consultants.

On the basis of this work the Commission formulated proposed criteria, some of which might be used to protect populations against the hazards of lead.

The Commission was of the opinion that it might be stated that:

- (a) effects on the central nervous system in adults can appear at blood levels higher than $80 \mu\text{g}/100 \text{ ml}$.
- (b) effects on the central nervous system in children (hyper-activity, mental retardation) do not appear at blood lead levels lower than $50\text{-}60 \mu\text{g}/100 \text{ ml}$.
- (c) effects on the peripheral nervous system (slowing of nerve impulses) begin to be detected at blood lead levels over $40\text{-}50 \mu\text{g}/100 \text{ ml}$.

These three types of effects fall within the field of pathology and cannot be considered in dealing with attempts to protect the population. The following are biochemical effects for which quasi-quantitative dose-effect ratios can be established.

(A) Excretion of delta-aminolevulinic acid in the urine (ALAU)

The relationships have been calculated primarily on the basis of available data on workers, usually obtained by the Mauzerall and Granick method. Two levels of excretion are considered:

- 5 mg ALA/Litre of urine, the maximum normally found in individuals who are not exposed occupationally;
- 10 mg ALA/Litre of urine, the limit generally considered acceptable for workers.

At blood lead levels of only $30 \mu\text{g}/100 \text{ ml}$, an extremely low percentage of individuals may excrete 5 mg ALA/litre of urine.

At blood lead levels of $35 \mu\text{g}/100 \text{ ml}$ we begin to find ALA excretions of 10 mg/litre of urine.

(B) Decrease in the reduced glutathione level (GSH)

Very recent data have made it possible to calculate relationships for GSH values below 58 and 70 mg/100 ml of erythrocytes.

At blood lead levels of $30 \mu\text{g}/100 \text{ ml}$, 10 % of subjects have GSH values lower than 58 mg/100 ml. Whilst 60 % of subjects have GSH values lower than 70 mg/100 ml.

(C) Reduction of Na⁺-K⁺-ATPase activity

From a recent publication the relationship between Na⁺-K⁺-ATPase and blood lead levels has been established for an activity corresponding to 40 μmol P/hr/mg tyrosine. Inhibition of Na⁺-K⁺-ATPase affects 30 % of subjects with blood lead levels of 20 μg/100 ml and 50 % of subjects with blood lead levels of 30 μg/100 ml.

(D) Increase in the IX protoporphyrin content of the erythrocytes (PPE)

The relationships have been calculated from the few data available in the literature which combine PPE and blood lead levels. Those for male adults are different from those for female adults and children.

At blood lead levels of 20 μg/100 ml, nearly 10 % of children and women show an increase in protoporphyrin content whilst at blood lead levels of 30 μg/100 ml this figure is 20 % for children, 50 % for women and 10 % for men.

(E) ALAD activity

The relationships have been calculated on the basis of available data on adult workers and children.

The original enzyme activity values have been converted into the units used in the European Standardized Method.

50 units (μmol ALA used per ml of red corpuscles per minute) correspond to the maximum values generally found in a population.

At blood lead levels of 20 μg/100 ml, a 40 % inhibition of ALAD activity in relation to the 50 units may be found in 10 % of adults and up to 50 % of children, whilst 70 % inhibition is not found at these blood lead levels.

At blood lead levels of 30 μg/100 ml a 40 % inhibition of ALAD activity may be found in 50 % of adults and up to 80 % of children, whilst 70 % inhibition is found in less than 10 % of children and adults.

Inhibition of ALAD activity in children begins at blood lead levels close to 10 μg/100 ml.

In the Commission's view the effects on man of a non-specific exposure to lead might be assessed from the dose absorbed by the individual, as expressed by the blood lead level or enzyme activity.

The Commission therefore proposed the use of these indicators to organize screening of a population group exposed to the risk of lead poisoning, based on the following principles:

- (a) one or more representative population groups should be defined, taking into account of the risks of exposure to lead and excluding occupational exposure;
- (b) for 50 % of the individuals in the population under consideration, the blood lead level should not exceed $20 \mu\text{g}/\%$ or ALAD activity in the blood should not be less than 35 units; these values correspond to a blood lead level with non-detectable effects and the absence of any major change in the most sensitive bioanalytical factor (ALAD);
- (c) for 90 % of the individuals in the population, the blood lead level should not exceed $30 \mu\text{g}/\%$ or ALAD activity in the blood should not be less than 25 units; these values, even taking account of individual variations, produce no biochemical changes which might have unacceptable effects on the health of children or adults;
- (d) for all individuals in the population group considered the blood lead level should not exceed $35 \mu\text{g}/\%$ or ALAD activity in the blood should not be less than 20 units.

The values in b, c and d above were biological guide levels which must be respected. In regions where any one of these levels is exceeded, the competent authorities should investigate and find the sources responsible for the abnormal exposure, and take the appropriate measures to reduce this exposure as much as possible. Furthermore, in the Commission's view the use of biochemical indicators facilitates the detection of abnormal exposures of accidental nature at the level of the individual, allowing the competent authorities to take appropriate measures.

The following table lists the biological guide levels:

Percentage of population group considered	Blood lead level $\mu\text{g Pb}/100 \text{ ml}$	or	ALAD activity ¹ in the blood units/l
50	< 30		> 35
90	< 30		> 25
100	< 35		> 20

¹ Measured using the European Standardized Method.

The Commission's proposal was embodied in the form of a draft Council directive on biological standards for lead and on screening of the population for lead.

In the Commission's view, it has been shown that lead may have a specific effect on the lungs if fairly large quantities of lead are inhaled. Metabolic studies and epidemiological surveys have also shown that it is possible to establish a relationship between the amount of lead inhaled and the increase in blood lead level.

Since atmospheric pollution by lead is more easily controlled than lead pollution from other sources, it would appear desirable to limit as much as possible the contribution of inhaled lead to the total blood lead level and to set a maximum contribution of $5 \mu\text{g Pb}/100 \text{ ml}$ of blood, even in cases where the blood lead levels are distinctly lower than the values proposed above. Thus the amount of lead inhaled would be reduced to about 25-30 % of the total blood lead.

In view of the relationships indicated previously between an increase in the blood lead level and the atmospheric lead level, this restriction corresponds to atmospheric concentrations of $2.5\text{-}5 \mu\text{g}/\text{m}^3$ *over long periods of time*.

In order to take account of the specific effects on the lungs, maximum exposure values *over short periods of time* should also be considered. With a reliability factor of about 10 in relation to the effects currently observed in animals, levels below $10\text{-}15 \mu\text{g Pb}/\text{m}^3$ of air should be envisaged.

The Commission has therefore proposed another directive whose purpose is to establish air quality standards for lead to be respected by Member States in order to protect their populations' health from the effects of atmospheric pollution by lead outside the place of work.

For the purpose of this directive air quality standards means the maximum atmospheric concentrations of lead at which lead has no specific effect on the lungs and which ensure that the contribution of atmospheric lead to the total body burden may be kept down to less than one quarter.

The air quality standards proposed were the following:

- (a) an annual mean level of not more than 2 micrograms Pb/m^3 in urban residential areas and areas exposed to sources of atmospheric lead other than motor vehicle traffic;
- (b) a monthly median level of not more than 8 micrograms Pb/m^3 in areas particularly exposed to motor vehicle traffic.

Member States are to take the necessary measures to ensure that these standards are respected by 1980; such measures may in no event lead to an increase in atmospheric lead in low-concentration areas or an increase in the concentration of other atmospheric pollutants.

The directive proposes certain monitoring procedures for measuring the level of atmospheric lead pollution.

Atmospheric lead concentrations in urban zones of the Community are moni-

tored systematically and continuously at approximately 41 points in both residential and heavy traffic areas.

Efforts at Community level to harmonize the location of sites has made it possible to compare the monitoring results.

From the Community report for the period 1 April 1971–31 March 1972 (Doc. No EUR 4982) and a study on the comparability of sampling and analysis methods it is apparent that:

- almost all the monitoring operations concern total lead (mineral and organic);
- particle size is not measured;
- no systematic monitoring is carried out indoors;
- for each of the usual sampling methods—high volume sampling (HVS) or low volume sampling (LVS)—the average findings obtained over fairly long periods are comparable, even if individual measurements vary.

The Table which follows gives an overall picture of the levels measured over the period 1 April 1971–31 March 1972. Measurements obtained after 31 March 1972 are as yet incomplete, but confirm the figures shown in the table.

The Commission's proposals on biological standards for lead and on screening of the population for lead, and on air quality standards for lead are still under discussion in the Environment Working Group of the Council.

**Synopsis of observations and general conclusions for the period
1 April 1971 – 31 March 1972**

Location	Continuous measurements	Rush-hour measurements
<i>Non urban</i>	monthly averages < 0.5 $\mu\text{g}/\text{m}^3$ daily maxima < 1 $\mu\text{g}/\text{m}^3$	—
<i>Small towns</i>		
Residential areas	monthly averages < 1 $\mu\text{g}/\text{m}^3$ daily maxima < 2 $\mu\text{g}/\text{m}^3$	—
Heavy traffic areas	—	monthly averages < 3 $\mu\text{g}/\text{m}^3$ daily maxima < 8 $\mu\text{g}/\text{m}^3$
<i>Metropolitan zones</i>		
Residential areas	monthly averages < 2 $\mu\text{g}/\text{m}^3$ daily maxima 8 $\mu\text{g}/\text{m}^3$	monthly averages < 4 $\mu\text{g}/\text{m}^3$
Heavy-traffic areas	monthly averages 6.5 $\mu\text{g}/\text{m}^3$ daily maxima 10 $\mu\text{g}/\text{m}^3$	monthly averages < 10 $\mu\text{g}/\text{m}^3$ daily maxima 20 $\mu\text{g}/\text{m}^3$

(b) Problem of lead in petrol

The lead emissions from motor vehicles constitute a large part of the total quantity of this element in the atmosphere, in particular in the atmosphere of our big cities. Early in the 1970's, it became apparent to the Commission that the differences between the laws, regulations or administrative measures in the EEC Member States on the limitation of the lead content of petrol for motor vehicles threatened to create obstacles to the free movement both of fuels and motor vehicles within the Community. The following table summarizes the regulations already in force or in the course of preparation at that time in certain countries.

Country	Lead Content (g/l)		Date into force	Remarks
	present	future		
Belgium	0.84	—	already applies	recommended limit
France	0.64	— 0.55 0.45	already applies 1.1.1974 1.1.1976	limit laid down by regulation proposed regulation proposed regulation
Italy	0.64 0.4	— —	already applies already applies	limit laid down by regulation content which can be relaxed or which can be relieved
Netherlands	0.84	—	already applies	recommended limit
FR Germany	0.40	— 0.15	already applies 1.1.1976	limit laid down by regulation limit laid down by regulation
United Kingdom	0.84	— 0.64 0.55 0.45	already applies 1.1.1973 1.1.1974 1.1.1976	recommended limit proposed recommendations proposed recommendations proposed recommendations
Switzerland	0.57) prem 0.54) reg.		already applies	limit laid down by regulation
USA	1.12	— 0.53 ¹ 0.45 ¹ 0.40 ¹ 0.33 ¹	already applies 1.1.1975 1.1.1976 1.1.1977 1.1.1978	recommended limit proposed regulation proposed regulation proposed regulation proposed regulation

¹ Maximum permissible value for the arithmetic mean of the lead contents ex refinery over a three monthly period.

These differing regulations not only caused the user trouble when travelling in the Member States but also increased his expenses, since the oil and motor industries were obliged specially to produce and export products which complied with the different regulations of individual countries. This problem was particularly acute in the motor industries, where profitability depended on large production runs.

In the Commission's view it would be regrettable if the new market of 260 million consumers created by the accession of the United Kingdom, Ireland and Denmark were once again to be partitioned, this time because of the technical regulations in force in this field.

After a detailed study of all aspects of the problem, the Commission came to the view that action should be taken to harmonize these divergent rules.

Community measures designed to reduce the lead in fuels should, however, observe certain economic imperatives, as the European Parliament indicated in its Resolution of 6 July 1972. They should also ensure that this reduction, especially if imposed relatively quickly, did not cause the oil industry to modify the composition of petrols, in order to maintain the required quality, in such a way as to increase the emissions of other pollutants to a level harmful to public health.

For these reasons, the Commission on 5 December 1973 submitted to the Council a proposal for a Council directive concerning the approximation of the laws of the Member States relating to the composition of petrol.

This directive, as an initial stage, provided for a reduction of the lead content of all qualities of petrol to 0.4 g/l as from 1 January 1976. This reduction represented a considerable step forward for the Community as a whole, having regard to the laws at present in force in certain Member States. The proposed limits were also in line with the abovementioned resolution of the European Parliament.

The Commission also considered it appropriate to fix, as a guide, a limiting value of 0.15 g/l as from 1 January 1978 for regular-quality petrol, mainly as a pointer for the longer term policy in the oil industry in deciding future petrol blends.

In view of the present regulations on this matter in the Member States, the Commission considered that it should not provide intermediate stages for reaching the final values stipulated in this Directive. It intended to allow Member States to take the measures most appropriate to their individual situation for complying with the values and time-limits laid down in the Directive.

If, at a future date, amendments to Directive 220 of 20 March 1970 on the approximation of the laws of the Member States on the limitation of the emission of unburnt carbon monoxide and hydrocarbons from spark ignition engines were to result in limits which necessitated the use of catalytic after-burner devices or introduced limits on the emission of oxides of nitrogen which also required this kind of device, and if these devices could function with only a lead-free petrol or one with a very low lead content, the Commission would take the measures required to adapt this directive according to the procedures laid down.

The limits now proposed represented in the Commission's view, a first important and realistic step in the present circumstances under the Community's action programme.

The Commission considered that within a few years and at the latest before the end of 1979 it would have available enough basic data of a scientific, technical and economic nature to propose an overall solution to the problem of lead in petrol.

To this end it would examine the following aspects in collaboration with Member States and interested bodies and with the aid of surveys in progress, or planned, which have been initiated with other organizations, and it would make a biennial report to the Council on:

- the effect of this directive in the first instance on air pollution, on motor design and chiefly on vehicles already in circulation as well as on petrol production in order that any special difficulties which could arise in simple refineries can be identified;
- progress attained in the development of systems for the lowering of gaseous emission from motor vehicles, of techniques of propulsion and of methods of production of low pollution fuels;
- the evaluation of concentration of different pollutants in the atmosphere of European cities and the effect on public health.

The draft directive also provided that the reduction of lead content should not be such as to lead to any modification in the composition of the petrol which was likely to increase significantly the quantities of other pollutants currently emitted in the exhaust gas. At the very least, the composition of the petrol should be such as to conform with the limits stipulated in Directive No 220/70 of 20 March 1970.

To this end, the Member States should take all steps necessary to ensure that measurements were made in respect of pollutants emitted in the exhaust gas. The data thus obtained should be communicated to the Commission.

The Economic and Social Committee prepared its Opinion on the proposed directive at its 121st Plenary Session, held in Brussels on 26 and 27 June 1974. By 62 votes to 2 with 8 abstentions, the Economic and Social Committee approved the proposal for a directive. The Committee considered that, although the danger from lead in the atmosphere was not proven the suspicion that it was harmful was so strong that all possible precautions should be taken to lower the concentration of lead in the atmosphere. The Committee was satisfied that the oil and automobile industries considered that problems of refinery adjustment or car engine re-design etc. were not technically insuperable at the levels which were currently proposed.

The Committee hoped that research on the subject of lead traps would continue vigorously. However, in the Committee's view, lead traps were not yet sufficiently developed to substitute for reduction of the lead content to the levels proposed by the Commission.

The European Parliament adopted a resolution embodying the Opinion of the European Parliament on the Commission's proposal (OJ C 280 of 8.12.1975).

The Parliament suggested that the date of entry into force for the reduction in the level of the lead content of petrol should be 1 January 1977, rather than 1 January 1976. It was unable to approve the proposal for a directive so long as it provided for the reduction in a second stage, from 1 January 1978, of the lead content of regular petrol to 0.15 grammes per litre. The Parliament asked the Commission instead to submit by 1 January 1979, in the framework of a general report, a supplementary proposal for a directive which would take into account experience gained and the latest findings;

The Parliament again advocated the principle of prevention which requires a limitation of the lead content of motor vehicle exhaust gases since it could at present be proved scientifically that the ever-increasing concentrations of lead in the atmosphere of European cities was not prejudicial to public health.

The Parliament agreed with the Commission that in the interests of prompt and effective protection of the environment, the Member States should be permitted to prescribe a reduction of the lead content of petrol at an earlier date than that laid down in the proposed directive, provided this was not prejudicial to the common market.

The Parliament called on the Commission to lay down in its proposal for a directive that Member States might prescribe greater reductions of the lead content of petrol than provided for in the directive if:

- specific public health requirements made this an urgent necessity, and
- the smooth functioning of the common market was in no way prejudiced thereby.

The Parliament expected the Commission to submit a proposal for a directive limiting nitrogen compounds in motor vehicle exhaust gases, since petrol contained other harmful substances apart from lead and called on the Commission to begin an investigation to establish whether and under what conditions use could be made of improved filtration systems to eliminate the lead content from motor vehicle exhaust gases.

3. Carbon monoxide

(a) *Criteria and quality standards*

Carbon monoxide in air was chosen as one of the pollutants for priority investigation on the grounds both of its toxicity and of the current state of knowledge of its significance in the health field.

Meetings of national experts and a colloquium have been held to discuss and to critically analyse the available bibliography on the adverse or undesirable effects of the exposure of man to carbon monoxide. The results of this work are in general given in 'Health Effects of Carbon Monoxide Environmental Pollution'.

The Commission has also taken into account the work performed at national and international level. In particular it has considered the report of the WHO Expert Committee as it relates to carbon monoxide in the Technical Report Series No 506 'Air Quality Criteria and Guides for Urban Air Pollutants'.

A survey of the measured levels of carbon monoxide present in urban air of the Member States of the European Community has been made for the years 1971 and 1972. The results of this survey (rapporteurs P. Chovin and L. Truffert) are reported in the abovementioned Proceedings of the colloquium.

In the light of this work the Commission is preparing a Proposal for a Council Resolution concerning the determination of health criteria for carbon monoxide.

The following relationships between given exposures and observable effects were selected:

- from levels below 10 % carboxyhemoglobin (COHb) saturation, since these appear to be significant in relation to ambient air pollution by carbon monoxide;
 - for man as they relate to epidemiological and experimental studies;
 - from experimental studies in animals which can be utilized to extrapolate to man.
1. Symptomatic effects have been observed at levels above 2.5 % COHb on patients suffering from obliterative vascular disease i.e. agina pectoris and intermittent claudication.
 2. Possible effects have been observed at levels above 2.5 % COHb on psychophysiological and psychomotor functions of normal individuals.
 3. Effects have been observed at levels above 4.0 % COHb on the cardiovascular system of the central nervous system.
 4. Persistent effects have been observed at levels above 10 % COHb on the arterial system of animals from prolonged exposure.

(b) *Reducing pollution at source*

The principle source of pollution by carbon monoxide derives from the incomplete combustion of organic substances used as fuel, mainly due to vehicles powered by internal combustion engines.

Certain actions have already been taken on a Community basis to reduce air pollution by gases by positive-ignition engines of motor vehicles.

The first Council directive on this subject was adopted on 20 March 1970.

The original Commission proposal took into account the fact that a regulation of 14 October 1968 amending the Strassenverkehrs-Zulassungs-Ordnung had been published in Germany in the Bundesgesetzblatt Part 1 of 18 October 1968 and that that regulation contained provisions on measures to be taken against air pollution by positive-ignition engines of motor vehicles which would enter into force on 1 October 1970.

The Commission's original proposal also took into account the fact that a regulation of 31 March 1969 on the 'Composition of exhaust gases emitted from petrol engines of motor vehicles' had been published in France in the *Journal Officiel* of 17 May 1969 and that the regulation was to be applicable from 1 September 1971 to type-approved vehicles with a new type of engine; and from 1 September 1972 to vehicles put into service for the time. Finally, as far as the technical requirements were concerned, the Commission's proposal was based on those elaborated by the UN Economic Commission for Europe (ECE) in its regulation No 15 (Uniform provisions concerning the approval of vehicles equipped with a positive-ignition engine with regard to the emission of gaseous pollutants by the engine), annexed to the Agreement of 20 March 1958 concerning the adoption of uniform conditions of approval and reciprocal recognition of approval for motor vehicle equipment and parts. In the Commission's view, to use the work of ECE in this way could not be anything except an additional advantage for the industry of the (then 6) countries of the Community since a large number of states were represented in ECE.

The field of application of the Commission's proposed directive was as large as possible. It applied to any vehicle with a positive-ignition engine intended for use on the road, with or without body work, having at least four wheels, a permissible maximum weight of at least 400 kg and a maximum designed speed equal to exceeding 50 km/h, with the exception of agricultural tractors and machinery and public works vehicles.

The date envisaged for the application of the Community provisions was the date envisaged for the entry into force of the first national dispositions (i.e. the German law) liable to create barriers to intra-Community trade. In the directive proposed by the Commission and adopted by the Council on 20 March 1970 specifications were laid down for three types of test.

Type 1 test was designed to verify the average emissions of gaseous pollutants in a congested urban area after a cold start. The directive states that the mass of carbon monoxide and the mass of the hydrocarbons obtained in the test must be less, for a vehicle of given reference weight, than the amount shown in the following table:

Reference weight	Mass of carbon monoxide per test in g	Mass of hydrocarbons per test in g
RW ≤ 750	100	8.0
750 < RW ≤ 850	109	8.4
850 < RW ≤ 1 020	117	8.7
1 020 < RW ≤ 1 250	134	9.4
1 250 < RW ≤ 1 470	152	10.1
1 470 < RW ≤ 1 700	169	10.8
1 700 < RW ≤ 1 930	186	11.4
1 930 < RW ≤ 2 150	203	12.1
2 150 < RW	220	12.8

Type 2 test was designed to test carbon monoxide emission at idling speed. Here the directive stated that carbon monoxide content by volume of the exhaust gases emitted with the engine at idling speed must not exceed 4.5 % (.32122).

Type 3 test was designed to verify the emission of crank-case gases. The mass of the hydrocarbons contained in the crank-case gases which are not recycled by the engine was to be less than 0.15 % of the mass of the fuel consumed by the engine.

In order to give the Community industry the necessary time to adapt itself, the effective date for the application of the type 1 test was put at 1 October 1971.

On 22 February 1974 the Commission submitted to the Council a proposal for a Council directive adapting to technical progress the Council directive of 20 March 1970. In the Commission's view, the application of the provisions of the Council directive of 20 March 1970 had already led to an important reduction of emissions of carbon monoxide and unburnt hydrocarbons from these vehicles within the Community. However, this effect had, in some measure, been offset by the constant growth in the vehicle population, with the result that in the Commission's view, it was necessary to increase the severity of the provisions of this directive.

During this time, the findings of the Working Group of experts 'Air Pollution due to motor vehicles—Technical Aspects' had shown that the intervening technical progress made in the construction of engines allowed for the further reduction, in the short term, of the admissible limits of emissions. Based on these findings, the Commission formulated a proposal for a directive modifying the above mentioned directive. This proposal essentially provided for a 20 % reduction in the limits relating to carbon monoxide, and a 15 % reduction in those relating to unburnt hydrocarbons. In addition, the regulations concerning the test relating to emissions of carbon monoxide at idling speeds had been modified at all the possible settings of the carburetters. The Commission felt that together these modifications would, when applied, represent a new and important reduction in air pollution from motor vehicles and an important contribution to the improvement of the urban environment.

Conforming to the provisions of Articles 11, 12 and 13 of the Council directive of 6 February 1970, concerning 'the type-approval of motor vehicles and their trailers' and to Article 5 of the Council directive of 1 March 1970, concerning 'the measures to be taken against air pollution by exhaust gases from spark ignition engines of motor vehicles', the Commission asked for, on 10 October 1973, the opinion of the 'Motor Vehicles' Committee for adaptation to technical progress on the draft of the above mentioned directive.

The technical content of this draft was approved by the Committee, but, due to a difference of opinion as regards the date of application of the various provisions of Article 2, particularly that which concerned the modifications of the test relating to emissions at idling speeds, the Committee did not find the majority required to give a favourable opinion on the draft. In accordance with the procedure laid down in Article 13 paragraph 3(b) of the above mentioned Council directive of 6 February 1970, the Commission therefore submitted to the Council without delay a proposal relating to the measures to be taken.

On 28 May 1974 the Council adopted a directive adapting to technical progress Council directive No 70/222/EEC of 20 March 1970.

Besides simplifying some of the provisions of the directive of 20 March 1970 so as to facilitate performance of the tests by the competent authorities and besides introducing certain amendments to the administrative procedure for the type-approval of a motor vehicle as regards the emission of pollutants, the new directive prescribed further reductions in the admissible level of emissions. These are set out in the table below:

Reference weight	Mass of carbon monoxide per test in g L ₁	Mass of hydrocarbons per test in g L ₁
RW ≤ 750	80	6.8
750 < RW ≤ 850	87	7.1
850 < RW ≤ 1 020	94	7.4
1 020 < RW ≤ 1 250	107	8.0
1 250 < RW ≤ 1 470	122	8.6
1 470 < RW ≤ 1 700	135	9.2
1 700 < RW ≤ 1 930	149	9.7
1 930 < RW ≤ 2 150	162	10.3
2 150 < RW	176	10.9

4. Smoke

On 2 August 1972 the Council adopted a directive on the approximation of the laws of the Member States relating to the measures to be taken against the emission of pollutants from diesel engines for use in vehicles. This directive specifies that the emission of pollutants by the vehicle type submitted for approval shall be measured by the two methods described in the directive, relating respectively

to tests at steady speeds and tests under free acceleration and that the emission of pollutants, shall not exceed certain limits. These limits concern, amongst other things, the opacity of the exhaust gases produced by the engine.

On 8 December 1975 the Commission submitted to the Council a proposal for a similar Council directive on the approximation of the laws of the Member States relating to the measures to be taken against the emission of pollutants from diesel engines for use in wheeled agricultural or forestry tractors. This proposal is still under discussion in the Council.

5. Nitrogen oxides (NO_x)

(a) Preliminary Report of 3 April 1974

Nitrogen oxides were amongst the substances chosen for priority investigation under the first Action Programme on the Environment. In its preliminary report on the problem of pollution and nuisances originating from energy production the Commission gave a summary statement regarding the effects of nitrogen oxides on the environment. It was known that without the presence of nitrogen oxides in the atmosphere no photo-oxidation of hydrocarbons would occur and the development of photochemical oxidants would be much reduced. Sufficiently reduced levels of either NO_x or hydrocarbons alone in the air tended to alleviate the formation of photochemical oxidants, but the exact relationships were extremely complex and not yet well understood.

Studies had shown that nitrogen dioxide may be associated with increased incidences of respiratory infections in children, with damage to vegetation and with corrosion of electronic components.

The report cited a review made by the Commission with a group of national experts, of the NO, NO₂ and NO_x ground level measurements carried out in 1971/1972 in Member States. Until now relatively few efforts had been made to measure these pollutants systematically. Furthermore, due to the variations in concentration with the exact siting and to the incompatibility of a number of analytical techniques, no comparison between the few results available could be made, and numerical indications of concentration ranges would not be significant.

Efforts were currently being made at the Community level to develop criteria for the siting of sampling stations and for the harmonization of the analytical methods.

In the few instances where trend analyses were available, upward trends seemed to be observed, showing the need to develop rapidly a harmonized set of stations within the European Community, generating concentration results upon which decisions could be made.

Nitrogen oxides were formed mainly during high-temperature combustion of fossil fuels in fixed as well as in mobile installations. Recent estimates indicated that the emission levels would increase at about the same rate as fuel consumption, since there were no adequate control techniques now applied on a large scale for these compounds.

Emission factors (weight of NO_x formed per unit weight of fuel consumed) varied considerably, not only with type of fuel and type of combustion unit, but also between apparently identical units burning the same fuel. Quoted emission factors could therefore only be average or typical values, and considerable variation was to be expected, depending on the mode of operation. This was particularly true of mobile sources, where engine load conditions were constantly changing.

A study had been completed under contract for the Commission's services aiming at an assessment of nitrogen oxide emissions from energy production within the EC Member States for the period 1970 until 1985, together with the possible abatement techniques and associated costs, taking into consideration existing studies and energy consumption forecasts.

Starting from weighted emission factors together with estimated fuel consumption in various sectors, it was concluded that the total NO_x emissions in 1970 within the EC Member States amounted to approximately 7.6 mill. tonnes. On the basis of the predicted fuel growth pattern used in the study, and assuming no controls, the total NO_x emissions were expected to rise to around 13 mill. tonnes in 1985.

Analysis by sector of fuel use showed that in 1970 general industry accounted for one third of the emissions, but transportation was the fastest growing sector and was expected to take over one third of total NO_x emissions in 1985. Thus emissions from transport would double from 2.2 mill. tonnes in 1970 to 4.5 mill. tonnes in 1985, by which time it could replace industry as the largest source of nitrogen oxides.

NO_x emissions: Sector breakdown 1970 to 1985 (mean values)

Sector	1970		1980		1985	
	Mill. Tonnes NO _x	%	Mill. Tonnes NO _x	%	Mill. Tonnes NO _x	%
Electricity generation	2.1	28	3.1	28	3.5	27
Domestic	0.8	10	1.1	10	1.2	9
Industry	2.5	33	3.3	30	3.8	29
Transportation	2.2	29	3.6	32	4.5	35
TOTAL	7.6	100	11.1	100	13.0	100

The report noted that no statutory controls of NO_x emissions were as yet practised either from stationary or mobile sources within the EC Member States. The control technology of NO_x emissions was in its infancy, and much proving of techniques under real-life conditions remained to be done.

For stationary sources, modification of combustion conditions or furnace design appeared to hold most promise, and a reduction in NO_x emissions of 50 % seemed feasible with current technology, as applied to gas fired plants. Coal fired plants presented problems where control of fuel/air ratio is called for. By using catalysts greater reduction (to about 75 %) was theoretically possible but a successful technique remained to be developed. No reliable figures existed on the costs of such control measures.

For mobile sources exhaust gas recirculation was already practised on automobiles in the USA reducing NO_x emissions by 50 % as compared to 1971 level. Further reduction could be achieved by catalytic means but a successful practical device has not yet been produced.

The original US limit of 0.4 g NO_x/mile set for 1976 will probably only be achieved in a conventional engine (if at all) by the use of some form of catalytic conversion of the NO_x, most likely reduction to nitrogen. However, a satisfactory catalytic converter had yet to be developed; the problems to be solved included damage by inadvertent overheating, mechanical erosion, poisoning of catalyst from fuel additions such as lead (in fact a lead free gasoline would be required), and last but not least a penalty on fuel consumption and increased costs. Fuel consumption was estimated to have risen by 3 to 12 % in the US to meet the current limit of 3.1 g NO_x/mile over uncontrolled engines.

The report noted that an increased introduction of other than conventional types of internal combustion engines, with lower NO_x emission levels, might constitute alternative solutions to exhaust gas treatment devices. Nevertheless, these engines also presented problems in terms of CO- and HC emissions and of increased fuel consumption.

The ultimate answer to NO_x (and other pollution from mobile sources) might be to change the propulsion unit entirely—perhaps to an electric drive or to fuel cells—but at the present state of knowledge, with a penalty to overall fuel usage efficiency.

(b) Council resolution of 3 March 1975 on energy and the environment

In its resolution of 3 March 1975 on energy and the environment, the Council took note of the Commission's preliminary report on the problems of pollution and nuisances relating to energy production and invited the Commission to submit proposals on policies to be followed by the Community and the Member States including, where nitrogen oxides were concerned, proposals for:

1. intensification of research relating to the effects of nitrogen oxides on man and the environment;
2. the development of methods for taking appropriate measures;
3. implementation of preventive measures to reduce sources of pollution by oxides of nitrogen pending advances in our knowledge of this field.

(c) Criteria

The Commission is now preparing a proposal for a Council Resolution concerning the determination of health criteria for nitrogen dioxide, since it is considered to be the most significant nitrogen oxides as concerns human health. The other oxides do not occur in appreciable quantities (N_2O_3 , N_2O_4 , N_2O_5 , etc) or are considered sufficiently non toxic in the levels currently found in ambient air (NO , N_2O).

The draft proposal would establish the following relationships between given exposures and observable effects.

1 — Studies in man

Epidemiological studies

- A — An annual average concentration of 0.08-0.15 ppm ($150\text{-}282 \mu\text{g}/\text{m}^3$) was associated with adverse health effects in schoolchildren.
- B — 2-3 hour daily peak concentrations of 0.15-0.50 ppm ($282\text{-}940 \mu\text{g}/\text{m}^3$) over one year were associated with lung function impairment in schoolchildren.

Experimental studies

Short term exposure (15-20 minutes) of 1.5-5.0 ppm pure nitrogen dioxide produced effects on cardiopulmonary function.

2 — Studies in animals

Experimental studies

- A — Rabbits exposed for 4 hours per day for 6 days to 0.25 ppm ($470 \mu\text{g}/\text{m}^3$) showed irreversible structural changes in lung collagen.
- B — Animals acutely or chronically exposed to 0.5 ppm ($940 \mu\text{g}/\text{m}^3$) showed enhanced susceptibility of the respiratory tract to bacterial infection. Mice exposed for 3-12 months to 0.5 ppm developed pre-emphysematous lesions.

Guinea pigs exposed for 4 hours/day for 7-14 days to 0.5 ppm showed consistently higher levels of urinary albumens, α & β globulins, and gamma globulins. Rats exposed to 0.5 ppm showed a statistically significant decrease of p.o₂ in the brain tissue.

- C — Rabbits exposed for 1 hour to 1 ppm (1.9 mg/m³) showed a configuration change in collagen and elastin. Rats previously exposed for 4 hours to 1 ppm showed evidence of peroxidation of lipids from the lungs.
- D — Rats continuously exposed for 3 days to 2 ppm (3.8 mg/m³) had alterations in the terminal bronchiolar epithelium.
- E — Rat lung tissue acutely exposed to 5 ppm (9 mg/m³) showed mast cell degeneration. Rats acutely and chronically exposed to 5 ppm showed decreased swimming performance. Guinea pigs chronically exposed over several months to 5 ppm seemed to show induced immunobiological response. Rats exposed long-term to 5 ppm showed an increased serum cholesterol level.

(d) Reducing pollution at source

A proposal for the adaptation to technical progress of Council directive 70/220/EEC has been considered by the Committee for Adaptation to Technical Progress. This proposal envisages the introduction of limits for the emission of nitrogen oxides. In this connexion it is to be noted that the Committee on Public Health and the Environment of the European Parliament has expressed its opinion (report of the Committee of Public Health and the Environment on the Commission's preliminary report on the problems of pollutions and nuisances originating from energy production, Doc. 320/74) that it is possible for certain standards on NO_x emissions from motor vehicles to come into force quickly and has urged the Commission to take steps on this matter.

The proposal states that the mass of nitrogen oxides expressed as NO₂ equivalent must be less, for a vehicle of given reference weight, than the amount shown in the table below:

Reference weight	Mass of nitrogen oxides expressed as NO ₂ equivalent (per test in g)
< RW ≤ 750	10
750 < RW ≤ 850	10
850 < RW ≤ 1 020	10
1 020 < RW ≤ 1 250	12
1 250 < RW ≤ 1 470	14
1 470 < RW ≤ 1 700	14.5
1 700 < RW ≤ 1 930	15
1 930 < RW ≤ 2 150	15.5
2 150 RW	16

Chapter III

Energy and the environment

1. Nuclear energy

On 5 June 1974 the Commission presented to the Council a communication called 'Towards a new energy policy strategy for the Community'. The document stated that a reasonable aim for the end of the century would seem to be an energy supply structure relying mainly on two components. One component was gas which, obtained from a variety of primary sources (natural gas produced in the Community or imported from non-member countries, oil or solid fumes transformed into synthesis gas) could cover nearly 30 % of energy consumption, mainly for heating buildings and for industrial processes with particularly demanding conditions (high temperature processes, metal processing, synthesis). The other main component was *nuclear energy* which, the Commission believed, was clearly the best solution for the large-scale production of heat either for electricity generation or for industrial uses. This was because of its ready availability, adaptability, and ease of transport and storage and the fact that it safeguarded the environment. For these reasons—bearing in mind the small relative part played by fuel costs in the total costs—nuclear energy could potentially offer a high degree of security of supply, even if the Community itself only had limited resources of uranium ore. More than for the most of the other energy sources, a policy of diversifying sources of supply, and establishing stable relationships with the producing countries could rapidly reinforce that security.

Of course, the development of nuclear energy would have its difficulties, but none seemed insurmountable, provided that the necessary action was taken quickly enough and pursued resolutely (technology, environment, sites, waste products, financial capacity for investment, industrial capacity, the training of qualified manpower).

The Commission estimated that at least 50 % of total energy requirements around the year 2000 could be covered from this source, and that by the mid-1980's, 50 % of electricity production could be nuclear-based.

This latter figure represented an installed capacity of at least 200 GWe in 1985,

to which could be added the production of process steam, which in 1985 could be equivalent to an annual oil consumption of about 25 million tonnes.

In order to attain this nuclear production objective three main problems must be solved:

- (i) that of the capacity of the Community industries to build the required power stations in the time required;
- (ii) that of ensuring that the development of nuclear energy does not harm either public health or the environment;
- (iii) that of the supply of nuclear fuels to power plants.

As far as public health and the environment was concerned, the communication noted that the Commission had sent to the Council of Ministers in February 1974 a document on the promotion of the use of nuclear energy, which listed with a precise timetable, all the measures which the Commission intended to take or pursue in this field, including the following:

- the forward analysis of the potential radiological implications of nuclear construction programmes over a period of 25 years, together with the adaptation of basic standards of health protection to the advance of knowledge in this field;
- the transport of radioactive materials;
- the recording and storage of radioactive wastes;
- the safety of nuclear installations.

On 17 September 1974 the Council adopted a resolution concerning a new energy policy strategy for the Community.

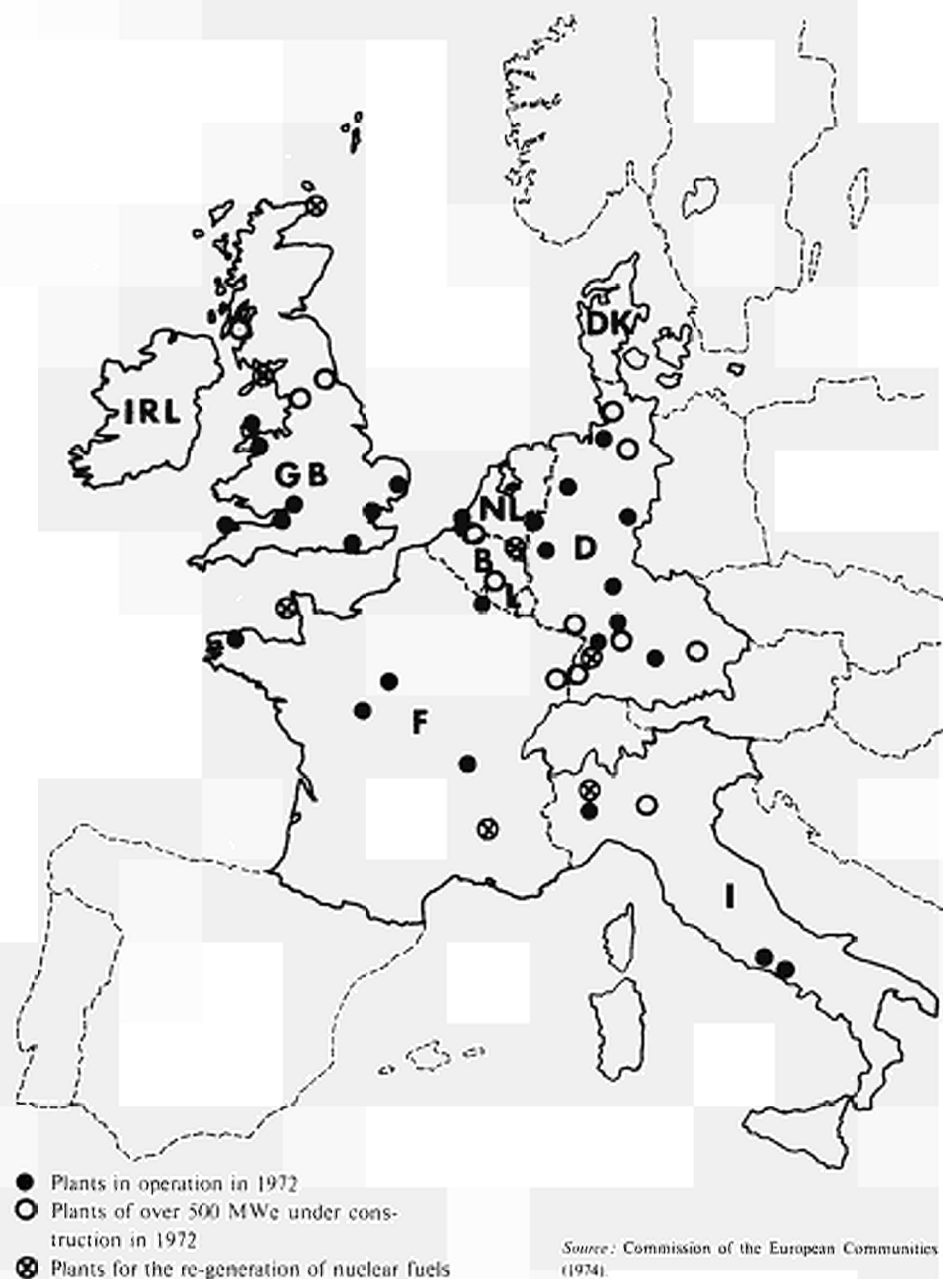
As regards energy demand, the Council adopted the guideline of reducing the rate of growth of internal consumption by measures for using energy rationally and economically without jeopardizing social and economic growth objectives.

As regards energy supply, the Council adopted the guideline of improving security, under the most satisfactory economic conditions possible, by means of the following:

- development of nuclear power production,¹
- the hydrocarbon and solid fuel resources in the Community,
- diversified and reliable external supplies,
- a research and technological development effort ensuring the required development of the various energy sources.

¹ Reference to the reservation expressed by the Danish and Netherlands delegations with regard to this indent was made in the Council minutes.

Sites of principal nuclear electricity generating plants in the EEC



The Council stated that consideration should be given to problems of environmental protection in particular by respecting the guidelines laid down in the relevant national or Community programmes, in the spheres of both production and consumption of energy.

On 17 December 1974 the Council adopted a resolution concerning Community Energy Policy Objectives for 1985.

This resolution approved the general objective of reducing Community dependence on imported energy to 50% and if possible to 40% by 1985 (63% in 1973). The Council noted the Commission's opinion that the more ambitious objective of 40% could in fact be obtained. The Council noted that, in this event, the Community supply pattern should be as follows by 1985:

Total primary energy requirements in %¹

	For the record		1985 Objectives (figures rounded off)	
	1973 Estimates	1985 Initial forecasts ²	50% dependence	40% dependence
Solid fuels	22.6	10	17	17
Oil	61.4	64	49	41
Natural gas	11.6	15	18	23
Hydro-electric and geothermic power	3	2	3	3
Nuclear energy	1.4	9	13	16
Total requirements	100	100	100	100

¹ Internal consumption + exports + bunkers.

² Source: 'Prospects of primary energy demand in the Community (1975-1980-1986)' supplemented by an additional estimate made in January 1973 for the new Member States.

The Council decided further to pursue the specific objective of reducing the rate of growth of energy consumption for the Community as a whole in order to achieve by 1985 a level 15% lower than the January 1973 estimates, and to alter the pattern of energy consumption by progressively increasing the use of reliable energy sources and relying more and more on electricity as nuclear energy in particular is developed. In this latter connexion, the Council decided on the objective of providing nuclear energy stations with an installed capacity of at least 160 GWe and, if possible, of 200 GWe by 1985. (There was a Dutch reservation on this point).

In its resolution of 3 March 1975 on energy and the environment the Council noted that in the near future nuclear energy would join conventional sources as one of the main sources of energy supply and that by its special nature it required constant supervision of its possible effects and reinforcement of environmental protection projects and research.

The Council considered that the Communities and the Member States should study the special problems associated with the development of atomic energy, and particularly the dangers of radiation, and the problems of reactor safety, thermal discharge, radioactive waste, and the re-processing of atomic fuels.

The following pages summarize the work of the Community in these various fields. Because of the Euratom Treaty itself has laid upon the Commission the task of protecting man against the risks inherent in the use of nuclear energy, many of the activities covered here antedate the adoption by the Council of the Action Programme on the Environment in November 1973. However, with the new impetus given to this work by the adoption of the Environment Programme, it seemed sensible to use the occasion of this report to give a comprehensive picture, i.e. both past actions under the Euratom Treaty and present actions which are, as it were, inspired by a wider mandate.

A — *Health protection*

The Commission conducts a major programme of research on radiation protection; it lays down radiation protection standards; it undertakes the study and prevention of contamination due to waste from nuclear installations; and it organizes the monitoring of background radioactivity levels.

(a) The Community programme of radiation protection research

It is only possible to prevent danger from radiation and to eliminate or attenuate the harmful effects if scientific research can determine the direct or indirect links between nuclear energy and human health, and between the radiation dose received and the possible effect on the organism. Virtually since the inception of the Community, the Commission has been organizing extensive research on a European scale into radiation protection. Since 1960 the six—and later the nine—Member States of the Community have all helped to draft and implement this programme.

This research into radiation protection has resulted in the establishment of 'permissible' radiation levels for workers and the general public, with a wide safety margin. More has been learnt about how radiation affects living matter, so that today practitioners are better able to treat injuries in the event of an accident.

It is perhaps worthwhile to quote some examples of Community action in this field:

- (i) Epidemiological studies, with the Commission's assistance, of groups of patients treated by radioisotopes have provided valuable information on how the effects of irradiation vary according to age and the dose received.
- (ii) Extensive interdisciplinary research—encompassing human biology, ecology, soil science, agronomic science, dietetics, and so on—in the widely varying natural regions of the Community has provided greater insight into the transfer and concentration of radionuclides in the food chain. The summary report compiled from these results is probably unique in the world.
- (iii) Various activities have caused formerly accepted theories on the toxicology of certain ingested radioactive elements, notably plutonium, transuranic elements and cerium, to be revised completely. These elements affect the metabolism in different ways and with different toxicological effects, depending on the precise way in which they were ingested. The results of these projects mean that nuclear workers now enjoy considerably more safety.
- (iv) The treatment of serious irradiation liable to occur in nuclear accidents has been the subject of joint cooperative study by several European institutes. Its main aspects—hematology and immunology—have been investigated in a series of research projects which have led to marked improvements in the treatment of such cases.
- (v) Studies on the primary effects of radiation on living matter and work on microdosimetry have been made in Europe with the help of the Commission. The initial and local stages, which are critical in the deterioration process triggered off by ionizing radiation, are of primary importance as they condition the nature of these events, which are precisely those which give rise to the radiological damage.

With the prospect of increased use of nuclear energy, two chapters of the Community programme on radiation protection are especially important. The first concerns radiotoxicology, and particularly long-lived radionuclides like plutonium. The second is directly concerned with environmental protection and deals with research into the ecological effects of radiation, i.e. the joint study of the absorption of radioactive elements and associated pollutants into the various constituent parts of the environment and the effect of heating water on the behaviour of radionuclides in the marine environment.

A Community project planned for the next few years is the establishment of parameters for an overall assessment of the exposure of the general public to radiation. Another is the development of ecological models for pollution, and its effect on health, in international rivers like the Rhine, the Meuse, the Scheldt and the Moselle, as well as in the coastal waters of the North Sea, the Atlantic and the Mediterranean. In addition, DNA lesions due to radiation will be analysed,

along with the repair system, to define the role, the mode of action and the requirements of the various repair mechanisms which are triggered off in an irradiated cell. The data, when collated and finally adjusted on micro-organisms and animal cells, may later on prove extrapolable and contribute to the safeguarding of human cells.

(b) Community radiation protection standards

Under the Euratom Treaty, the Commission is responsible for working out radiation protection standards. These standards are determined in the light of the results of the Community research programme and are discussed with Community experts. On a proposal from the Commission, they are published as Community directives with mandatory force. The Member States are not allowed to exceed the maximum irradiation levels laid down for workers and the general public. Both groups are therefore protected against the risks of irradiation from any source or in any form.

There are also Community standards to define the monitoring and surveillance procedures which have to be carried out both inside and outside nuclear plants to protect both the public and the environment.

These standards are obviously reviewed from time to time as scientific knowledge develops.

The Commission, however, not only draws up these standards but ensures that they are incorporated into the laws of the Member States. It also organizes regular discussions on radiation protection with doctors, physicists and ecologists and with representatives of both sides of industry and nuclear plant managers to inform them of the standards adopted and how they will be applied in practice. There is continuous contact between the Commission and the various occupational and social groups affected by the problems of nuclear safety. The Commission prepares and circulates on a wide scale manuals on specific problems like surveillance around nuclear sites or the development of techniques to measure doses of irradiation absorbed by individuals.

(c) Radioactive discharges from nuclear facilities

The government of any Member State in which the setting-up of a facility involving the disposal of radioactive waste is being planned must inform the European Commission accordingly. The Commission has six months to ascertain whether there is a risk of radioactive contamination. It is then up to the national governments to decide whether to authorize or prohibit the proposed facility in the light of the Commission's opinion.

As it is automatically consulted on any nuclear installation projects in the Community, the Commission staff were able to assess the amount of radioactive discharges from nuclear power plants in the Community between 1969 and 1972. From this assessment it emerged that, generally speaking, radioactive discharge from nuclear power plants imparts doses which are only 1 % below the limits set by the Community basic standards for the general public. In other words, between 1969 and 1972, radioactivity from nuclear power plants in the Community was estimated at less than half the natural radioactivity.

B — *Protection of the environment*

A nuclear facility can affect the environment not only through its radioactive effluents (and it has already been shown how the European Community monitors these effects very strictly) but also, and particularly, through its thermal discharges, the radioactive waste it produces and the problems involved in decommissioning a plant once it has ceased to operate. In these areas too, the Commission is coordinating activity within the Nine, particularly under the Community programme on protection of the environment.

(a) Thermal discharge

While all electric power stations give off heat, thermal generating stations discharge the most heat to the atmosphere. A conventional power station, burning fossil fuel (coal or fuel oil), releases over 60 % of the total combustion energy into the water or the air. This percentage reaches about 67% in nuclear power stations, even the most recent concepts. Thus a 1000 MWe nuclear power station cooled by the total-loss system gives off 40-50 cubic metres of water per second approximately 10°C above its normal temperature.

This heating of water courses, lakes or coastal waters used to cool power stations is liable to disturb the ecological balance of the water systems, even if the cooling water is 'cleaned' before disposal to avoid risks of pollution of the natural environment by the products used to prevent damage to the piping systems through which the water flows.

So as not to overheat waterways, nuclear plant constructors have developed various processes for circulating the cooling water to offset the disadvantages of the conventional total-loss cooling system, where water passed through the condenser once only before being discharged to the environment.

Two systems are used at present: the partial-loss circuit, where the cooling water—which is heated while being passed through the condenser—is conveyed to a cooling tower, where it is brought into contact with the air by sprinkling, thus

transferring its heat to the atmosphere (wet tower); and the no-loss system, where the cooling water passes through a closed system between the condenser and the tower, where the heat is directly transferred from the water to the air through an arrangement of pipes in the tower (dry tower).

Although these cooling towers reduce the heat of the cooling water considerably, they do not by any means adorn the landscape—a 1000 MWe nuclear plant covering about 7 ha would need two towers each about 140 m high. The wet towers also evaporate off huge quantities of make-up water: about 1.1 m³ per second in a 1000 MWe plant and the resultant plume of smoke can affect the microclimate by causing local fog to form and reducing the amount of sunlight. Dry cooling towers, on the other hand, although they do not give rise to the make-up water consumption problems, are far larger than wet cooling towers (and therefore more expensive) and reduce the total output of the electric power station quite considerably. Furthermore, their technological development is still in its infancy.

In the light of the Council's resolution of 3 March 1975 on energy and the environment the Commission set up a small group of Community experts to study the problems of cooling towers both from a technological point of view and with a view to putting the hot water discharged by power plants to use in agriculture, horticulture or fish-rearing.

Community experts are also working towards giving the national authorities of the Member States—who have the final responsibility in these matters—guidance on choosing sites for plant construction and the appropriate cooling systems.

More needs to be known about the effects of thermal discharge on the environment before the European Commission can lay down criteria (i.e. in respect of dose/effect relationships) and then propose standards for thermal waste discharge at Community level. A study made for the Commission has already shown fairly accurately the effects of heating on the various characteristics of water (oxygen content, stratification, and so on) on marine ecosystems (flora and fauna) and on the toxicity of certain pollutants.

However, comparative studies of areas in the Mediterranean with similar ecological systems but different temperatures (13°C on the one hand and 23°C on the other) have so far not revealed any startling changes in marine ecosystems.

This work is still going on with the object of gaining a better grip of the problems of thermal discharge which beset the planned development of several nuclear facilities within the Community.

(b) Radioactive waste

The production of radioactive waste obviously continues to increase as the nuclear industry develops. What can be done with this waste, especially if it is highly

radioactive with a lifetime which may in some cases extend to hundreds of thousands of years? Isolate and destroy it. But how?

Every undertaking and every country which has a nuclear facility is concerned and is seeking solutions to a problem which obviously affects the public interest. There is a clear need to pool efforts throughout Europe, particularly as the industries which process irradiated fuel are the main producers of radioactive waste and their activities transcend national frontiers considerably.

The European Community is therefore conducting a number of projects in this field, both under contracts with various laboratories in the Community and in its own Research Centre (at Ispra, Italy). The basic aim, within the framework of an overall programme, amounting to nearly 40 million units of account over a 5 year period, is to assess the different methods of processing and storing radioactive waste and to develop a global strategy for waste management. (Council Decision of 26 June 1975 adopting a programme on the management and storage of radioactive waste 75/406/Euratom, OJ L 178 of 9.7.1975, pages 28 and 29).

There are studies on reducing the volume of waste, how best to immobilize liquid waste to avoid the risk of leakage; how to separate long-lived emitters from other radioactive waste; how to burn off waste in the facility; what materials to use for containing waste; and the long-term stability of waste encased in vitreous matrices.

The Community programme is also investigating the storage of waste in artificial structures and the disposal of waste in geological formations. It even goes so far as to consider the construction of experimental storage sites.

The Community programme is also examining the legal, administrative and financial framework for the storage and disposal of radioactive waste in the European Community. Problems which cannot be solved under the laws as they stand at present will have to be examined and the necessary additional framework drawn up. Community projects are obviously very closely coordinated with work carried out at national level.

(c) The decommissioning of nuclear power stations

Inevitably every nuclear power station will cease to operate some time or other. What happens then?

Plants which have already been taken out of service or which have been studied from this standpoint have so far either been only experimental installations or belonged to abandoned concepts. Information on the decommissioning of large commercial installations which is planned under the present nuclear electricity programmes, on the other hand, is theoretical and very incomplete. Although

these plants should not in the normal course be taken out of service for several decades, the problems involved should be examined without delay.

The Commission has therefore undertaken a study on large LWR power stations (900-1300 MWe) at the end of their normal working life. These power stations form the bulk of the present nuclear programmes and are already sufficiently standardized for them to be the subject of general study. There are several different ways of decommissioning them and it is important to assess the safety of each method and, accordingly, the system of supervision which will have to be laid down:

- (i) The plant could be left in such a condition that it could be entered safely, without dismantling the equipment maintaining the leaktightness of the containment.
- (ii) The superstructure could be demolished, leaving the foundations and other concrete underground structures in place. The site could then be applied only to limited uses, but the concrete bunkers could be employed for the storage of radioactive components.
- (iii) The plant could be demolished completely, including the foundations, and the land freely used for any other purpose.

After studying the advantages and disadvantages of each of these methods, the Commission will be in a position to put forward proposals urging nuclear power station constructors to bear in mind, right from the design stage, the future decommissioning of their plants.

C — Nuclear plant safety

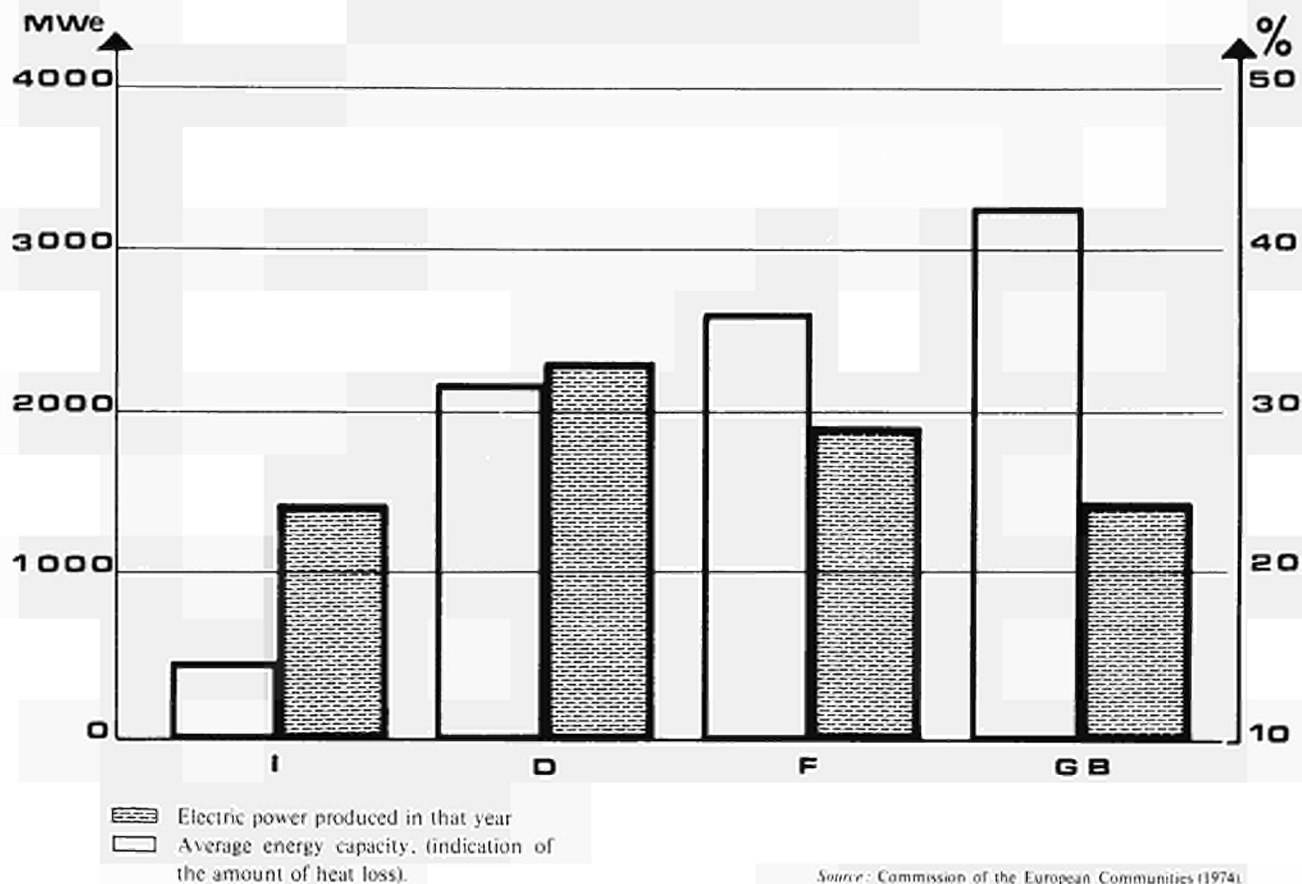
With the development of nuclear energy, not only do man and the environment have to be protected against radiation, but the installations themselves have to be completely reliable from the safety angle. Strict standards, stricter than in most other industries, are applied to allow for any eventuality, however remote: earthquakes, explosions in a nearby chemical factory, aircraft crashes and even exceptional events such as war, political unrest or attempted sabotage could upset the proper functioning of the plant.

The national authorities and the operators and constructors of nuclear installations are naturally very conscious of these needs and make every effort to meet them. They work within the scope of laws and administrative procedures specific to each country, which are subject to constant change.

The European Commission, for its part, is proceeding along two main lines of action in the field of safety.

First of all, of course, it is harmonizing the techniques employed in the Member States for standardizing the equipment used and coordinating the research performed in Community laboratories with the aim of improving existing technol-

Characteristics of operation of nuclear electricity plants, 1972



Source: Commission of the European Communities (1974).

ogies in the field of nuclear reactor safety. In addition, reciprocal information is supplied on the approval legislation and administrative procedures in force in the various Community countries. A preliminary report on the present state of these laws and procedures was published at the beginning of 1975.

Secondly, the Commission uses, in the Community Research Centre at Ispra (in Italy), large-scale technological installations to make a thorough-going analysis of possible accidents and their causes and to develop detection methods to prevent failures of essential reactor components (material or structural).

The Commission also gives technical support to nuclear plants operators and makes its knowhow and advice available to help them to improve plant safety.

Here too, all Community projects are coordinated with national efforts by a Committee made up of representatives of the Commission and of Member States. There are in addition Community working parties on the various reactor types, whose members are drawn from the Commission, the responsible national authorities and representatives of the plant constructors and operators.

As light-water reactors predominate within the Community, the Commission has updated all the research programmes in progress; it has further had a classification compiled which will make for a systematic and faster exchange of information on programmes under way or planned within the Community. This system should also facilitate exchanges of information with the United States or Japan.

In the cases of fast reactors, which are still at the prototype stage, a list of safety research and development projects has been drawn up, along with a list of typical accidents.

D — *Transporting radioactive materials*

The quantity of irradiated fuels transported doubles every two years; it may well be up to 800 tonnes by 1980 and 20 000 tonnes by the end of the century. Understandably, the Commission is making every effort to ensure the best possible safety and transport conditions in spite of the massive increase in the carriage of radioactive materials. There are several problems involved: precautions must be taken against radiation during routine transit; the risk of serious accidents, however small, involving fissible or radioactive materials must be avoided at all costs; and lastly, precautions must be taken against deliberate acts of sabotage or theft.

The Commission has made a joint study of these problems with the responsible national authorities, the International Atomic Energy Agency (IAEA) and the United Nations Economic Commission for Europe.

The IAEA, which operates within the framework of the United Nations and to which all Member States belong, has drawn up strict regulations on packaging,

which forms the basis of safety during transport. Packaging is therefore designed to minimize the risk of dangerous radiation under normal conditions of carriage and the possibility of leakage even in a serious accident. Packaging should also reduce the risk of a criticality incident, i.e., a spontaneous chain reaction. Thus it is clear that a simple 'lead cask' (a container for irradiated fuels) can weigh up to 100 tonnes and cost 250 000 units of account (1 u.a. = US \$1.3) and it can take up to four years to design and manufacture.

But there are other safety problems involved in transporting radioactive material in the Community, especially if traffic increases as expected. The Commission has therefore recently taken a number of measures, the aims of which are to:

- (i) solve economic and safety problems caused by the large increase in traffic;
- (ii) harmonize approval procedures and transport formalities;
- (iii) provide services capable of coping with a simple mechanical failure or a serious nuclear incident during air, sea, rail or road transport;
- (iv) give all handlers of radioactive consignments the necessary health and safety training;
- (v) secure a common approach by the Member States in all organizations concerned with international transport.

The Commission has also begun studies on protecting nuclear materials against theft and sabotage and on the agreements for compensation in the event of nuclear incidents whether in the plant or during transport.

E — *Supervising the use of fissile materials*

Uranium and other radioactive fissile materials are not just ordinary substances. It is essential that they should not be diverted to uses other than those declared or to purposes other than peaceful ends for which the undertakings intend them. The nine Member States of the Community have entrusted the Commission with the responsibility for such safeguarding.

The Commission departments responsible are in Luxembourg and every week they send out inspectors who have access at all reasonable times and all places to information which has to be provided by all persons or undertakings using or operating material, equipment or installations for peaceful purposes in the nuclear field.

Every undertaking in the Community which handles fissile materials for peaceful purposes must notify the Commission of the plans and capacity of its installations, the nature of the materials used and produced, the technical processes applied and the methods used to measure and check the quantity and quality of the material held in the plant. It must also give particulars of movements of stocks, the sources of its purchases and the destination of its sales.

With all this information the Commission specialists can keep permanent accounting records of fissile materials, with accounts broken down by installation and by material.

Installations are inspected on two levels—accounting and technical. First, the inspectors call for the accounts of materials held by the undertaking and the documents from its suppliers and transporters; then they draw up an accounting 'inventory' of the materials stored in the plant and check this against the statements made by the undertaking to the Commission. They also verify that the basic characteristics of the installation conform with those declared to the Commission and check that the materials and finished products correspond to the uses as declared.

The safeguards exercised by the Commission on the peaceful use of fissile materials use techniques and methods developed in the laboratories of the Community Research Centre, especially at Ispra, Italy. Since 1969, some thirty research scientists and technicians have been working on the improvement of the safeguarding techniques, cooperating with the specialist organizations belonging to the European Safeguards Research and Development Association (ESARDA).

When the United Nations Treaty on the Non-Proliferation of Nuclear Weapons (NPT) made the International Atomic Energy Agency responsible for making similar inspections in the NPT signatory States, those of the latter which were Member States of the European Community continued to be subject to the Commission's safeguards as those were recognized by the international community.

Average Annual Expenditure of the Commission of the European Communities on Nuclear Safety (in units of account)

The various activities conducted by the European Community in the field of nuclear safety at Community level (as opposed to purely national activity) account for a total of 24 980 000 units of account each year (including staff expenditure), which is included in the Commission Budget under various chapters.

This is only an approximate average for 1975, as some projects extend over several years and it is very difficult to divide them up accurately into twelve-monthly periods. The following table gives a breakdown by major sectors and is again approximate as some projects concern two or three sectors at the same time:

Health protection	4 615 000 u.a.
Protection of the environment	6 775 000 u.a.
Plant safety	9 300 000 u.a.
Supervision of the use of fissile materials	4 290 000 u.a.
	<hr/>
Total	24 980 000 u.a.

On 13 January 1976 the Parliament adopted a resolution on the conditions for a Community policy on the siting of nuclear power stations taking account of their acceptability for the population.

Amongst other things, the Parliament:

- felt that a solid Community framework taking the form of the strict application of suitable regulations should be created to cover the further development of nuclear energy and that this framework should be supervised;
- took the view that in this connection a siting policy for nuclear power stations must be established at Community level as a matter of urgency before a Community map of potential sites is drawn up;
- pointed out to the Commission and the Council of European Communities that applications for the authorization of nuclear power stations must be harmonized at Community level;
- was of the opinion that only by harmonization of authorization procedures and regulations could all the citizens of the Community be given the same guarantees and the same protection;
- emphasized that it was essential for the Community for the provisions of the IAEA (International Atomic Energy Agency) on the transport of fissionable or radioactive materials to be reviewed and improved and for work on a Community programme on waste disposal to be intensified;
- called on the governments of the Member States and the Commission to do all they could to eliminate residual risks as far as possible by introducing new technologies, by adapting research programmes and in particular by strictly supervising and further developing safety regulations;
- was of the opinion that, in addition to the criteria applying at present in the selection of sites, more account must be taken of the risks and constraints involved in the transport of radioactive materials;
- called upon the Commission to carefully consider and if necessary, further explore the possibilities of establishing 'nuclear parks' and platforms at sea or underground nuclear power plants, whereby the supervision of the nuclear power stations could be reduced and, in the case of 'parks', the problem connected with the transport of radioactive materials minimized;
- was of the opinion that the external protection of existing nuclear installations calls for specific and reinforced supervision based on special regulations;
- took the view that, under the Community siting policy, the public must be kept fully informed on the development of nuclear energy and must in all cases be given a clear understanding of the alternatives, which entailed an impoverishment of the quality of life;
- also emphasized that, as part of this Community policy, close collaboration with the local and regional authorities concerned is essential in all the Member States;

- pointed out that the problems associated with the construction of a nuclear power plant extended beyond territorial frontiers and that it would therefore be the Community's task to introduce a procedure for making contact with the third countries bordering on the Community and affected by the Community measures;
- was of the opinion that all parties concerned must be given optimum guarantees, but that the time taken by the procedure for authorizing the construction of nuclear power stations can and must be reduced;
- called upon the parliaments and governments of the Member States to draw up draft legislation, in so far as it does not already exist, that will enable citizens' associations and environmental organizations to use constitutional means in pressing their claims;
- called upon the Commission to revise the Rasmussen report in the light of the research undertaken in certain countries and taking account of the geographical and demographic characteristics of Europe with particular reference to heavy water reactors, and to up-date it by including studies of the latest nuclear technology (fast breeders, high temperature reactors);
- noted that the various constraints governing site selection should lead above all to a review of the scope of certain current energy programmes;
- took the view that a thorough investigation is necessary of the problems connected with the use of cooling towers (dry and wet processes), so that areas not having adequate water reserves may also be considered as sites for nuclear power stations;
- finally was of the opinion that without the introduction of a harmonized siting policy for nuclear power stations, the development of nuclear power, a Community energy policy and, indeed, adequate energy supplies, are seriously at risk.

The Parliament also forwarded to the Council and Commission of the European Communities the Report of its Committee on Energy, Research and Technology on the conditions for a Community policy on the siting of nuclear power stations taking account of their acceptability for the population (rapporteur: Mrs H. Walz).

In the report on European Union which he presented to his colleagues on the European Council on 29 December 1975, Mr Leo Tindemans proposed that should possess a common body responsible for regulating and controlling nuclear power stations, with similar responsibilities and powers to those of the Nuclear Regulatory Commission in the United States. Control should be exerted over the siting, construction and operation of the power stations, the fuel cycles and the disposal of radioactive and thermic waste.

Mr Tindemans took the view that the psychological reactions throughout the whole of Europe against the setting up of nuclear power stations could only be calmed by the existence of a supervisory body offering guarantees of strictness,

openness and in particular independence. These guarantees could be found at national level since more often than not our States were themselves involved directly or indirectly in decisions as to siting and construction. The argument in favour of a European supervisory body was therefore very cogent: it was a question of rendering the necessary development of nuclear energy in Europe acceptable to public opinion. This argument was given additional weight by the fact that numerous power stations were planned for frontier zones where the problems arising go beyond national borders.

In a Resolution on Nuclear Energy, adopted in London on 27 March 1976, the Executive Committee of the European Environmental Bureau strongly questioned the feasibility and usefulness of a Community framework of regulations 'because the staff of the EEC are largely administrative and because only the vaguest of regulations could be developed in view of the variety of reactor types and the fact that they are continually changing in detail'.

The European Environment Bureau was of the opinion that differing national approaches would need to be reconciled before licensing standards could be harmonized and that uniformity might only be achieved by reducing the standards of some member countries; and remarked that it was highly unlikely that optimum guarantees could be given to all parties when those authorizing the construction of a power station were of the opinion that the process can and must be speeded up.

2. Rational use of energy

The Commission's preliminary report on the problems of pollution and nuisances originating from energy production concluded that the most effective pollution abatement method is in fact a decrease in the rate of growth of energy production accompanied by a better utilization of existing resources and by improved technology. This would not only affect the emission of pollutants and decrease problems created by the availability of fuels but also have system-wide implications (i.e. at all steps from the point of extraction to the point of final use). Thus the efforts to reduce energy losses (i.e. by improving the efficiency of processes and apparatuses or by better thermal insulation of the buildings) would decrease the overall impact of energy on the environment and would indirectly as well as directly be of great importance in the fight against pollution.

The report noted that the approach to efficient abatement of pollution coming from energy production, transformation, transport and use cannot be a partial one concentrating on isolated installations or plants. With a view to the long-term goal it is necessary to assess all environmental effects caused by complete energy systems, permitting solutions which, upon comparison with other available systems, may yield the optimum long-term approach. This implies the choice of us-

ing the most appropriate energy form at the right place, not only on the grounds of economics but also in terms of energy conservation and environmental protection.

On 27 November 1974 the Commission submitted to the Council a Community Action Programme and a draft Council resolution on the rational utilization of energy.

In its resolution of 17 December 1974 on a Community Action Programme on the rational utilization of energy, the Council adopted the objective of reducing the medium to long-term growth of energy consumption for the Community as a whole in order to achieve, by 1985, a level of consumption which is 15 % lower than the figure anticipated for that date in the Commission's initial estimates of January 1973. The Council also took note of the measures defined in the Communities Action Programme on the rational utilization of energy and of the procedure proposed for implementing this programme and invited the Commission to report back to it, at regular intervals, on both the situation in the Member States and progress towards the Community objectives.

On 16 January 1976, the Commission submitted to the Council its First Periodical Report on the Community Action Programme for the Rational Use of Energy and some draft recommendations to the Council.

On 4 May 1976 the Council adopted the recommendations on:

- the rational use of energy by promoting the thermal insulation of buildings;
- the rational use of energy in the heating systems of existing buildings;
- the rational use, through better driving habits, of energy consumed by road vehicles;
- the rational use of energy in urban passenger transport;
- the rational use of energy for electrical household appliances.

Certain of these recommendations, e.g. that concerning the rational use through better driving habits of energy consumed by road vehicles and that concerned with the rational use of energy in urban passenger transport, may have direct environmental benefits through lowered pollution or congestion. Other recommendations, such as those relating to the rational use of energy by promoting the thermal insulation of buildings or the rational use of energy in the heating systems of existing buildings may have indirect benefits for the environment by helping to reduce total demand and therefore the environmental damage which is, to a greater or lesser extent, the consequence of meeting that demand.

Chapter IV

Waste

Under the section 'Industrial and Consumer Wastes' of Chapter seven 'Action concerning wastes and residues' of title 1 of part 2 of the Environment Programme, the Council stated that the most important problem for the Community in this field was the elimination of wastes which, because of their toxicity, their non-degradability, their bulk, or for other reasons, require a solution extending beyond the regional framework and possibly even beyond national frontiers. Even if the harmful effects of the wastes do not extend beyond the immediate region, Community action may well become necessary if the elimination or re-use of the wastes are dependent on economic resources. If the solutions adopted give rise to differences in the production and distribution conditions of certain goods, these difference may have repercussions on the functioning of the common market and on international trade.

The Environment Programme specified that work to be carried out should cover: the drawing up of a qualitative and quantitative inventory of wastes or residues which are particularly harmful to the environment; a study, economic and legal aspects of the problems posed by the collection, transport, storage, recycling or final treatment of particular wastes including toxic and dangerous waste, waste oils, titanium dioxide wastes, bulky ferrous scrap, non-biodegradable packaging and waste from slaughter houses and breeding establishments; and, an examination of the action to be taken at Community level with regard to these wastes. The Council called upon the Commission to make appropriate proposals.

1. Framework directive

On 10 September 1974 the Commission submitted to the Council a proposal for a Council directive on waste disposal. Besides having an obligation under the Environment Programme to prepare proposals in this field, the Commission had been notified by the French Government under the agreement of 5 March 1973

of a preliminary draft law on waste disposal and the recovery and recycling of materials. The Commission informed the French Government of its intention to submit a proposal for a directive on this subject to the Council within the time limits set by the information agreement.

In addition to France, the Commission was aware that several other Member States in the Community had already adopted legislation in this field or were preparing to do so.

The German Law of 7 June 1972 was the only outline law dealing solely with waste disposal to have come into force. To preclude any danger to the environment, the law required regional authorities and private individuals to use special installations for the treatment, storage and removal of solid waste. These installations had to conform to regional waste disposal plans.

The drawing up of plans for waste disposal, and the need for authorization, was also an important feature of the United Kingdom Bill on the Control of Pollution (subsequently enacted as the Control of Pollution Act, 1974).

Belgium and the Netherlands had given priority to the disposal of dangerous waste; Belgium had a law on toxic waste and the Netherlands a draft law on chemical waste and waste oils. This draft law would ban the discharge and disposal of chemical waste on or into the soil unless specific authorization had been granted. It also provided for the payments of allowances to those disposing of the waste and the introduction of charges.

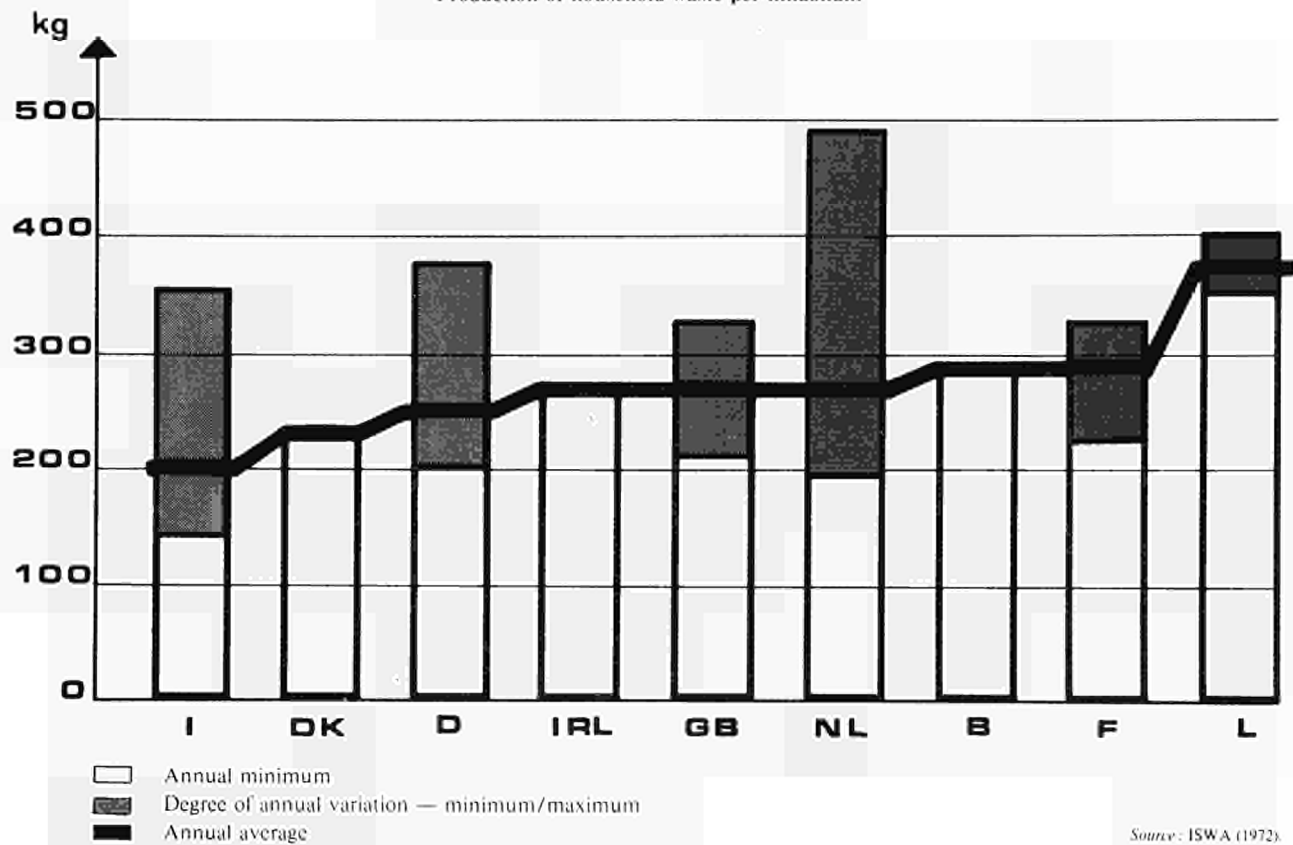
The Danish Law No 372 of 13 June 1973 on the protection of the environment empowered the environment protection Ministers to introduce regulations on waste.

In the other Member States, although there were often special regulations on household refuse, it was the general law for the protection of water, air and the soil that were applicable to waste. In the Commission's view, the disparities between these laws were likely to produce financial burdens which varied from one country, one sector or one firm to another throughout the Community and could create obstacles to the proper functioning of the common market and distortions of competition.

In the light of the resolution of the European Parliament and the report of the Parliament's Committee on Public Health and the Environment and in the light of the Opinion of the Economic and Social Committee adopted on 28 November 1974, the Commission presented to the Council pursuant to the second paragraph of Article 149 of the EEC Treaty amendments to its proposal for a directive on waste disposal.

The directive, as adopted by the Council on 15 July 1975, defines 'waste' as any substance or object which the holder disposes of or is required to dispose of pursuant to the provisions of national law in force.

Production of household waste per inhabitant



'Disposal' is defined as the collection, sorting, transport and treatment of waste as well as its storage and tipping above or underground, the transformation operations necessary for its re-use, recovery or recycling.

The fundamental obligation of the directive is that Member States are required to take the necessary measures to ensure that waste is disposed of without endangering human health and without harming the environment, and in particular:

- without risk to water, air, soil and plants and animals;
- without causing a nuisance through noise or odours;
- without adversely affecting the countryside and places of special interest.

Member States are required to establish or designate the competent authority or authorities to be responsible in a given zone for the planning, organization, authorization and supervision of waste disposal operations.

These competent authorities are required to draw up as soon as possible one or several plans relating to, in particular:

- the type and quantity of waste to be disposed of;
- general technical requirements;
- suitable disposal sites;
- any special arrangements for particular wastes.

The plan or plans may, for example, cover:

- the natural or legal persons empowered to carry out the disposal of waste;
- the estimated costs of the disposal operation;
- the appropriate measures to encourage rationalization, of the collection, sorting and treatment of waste.

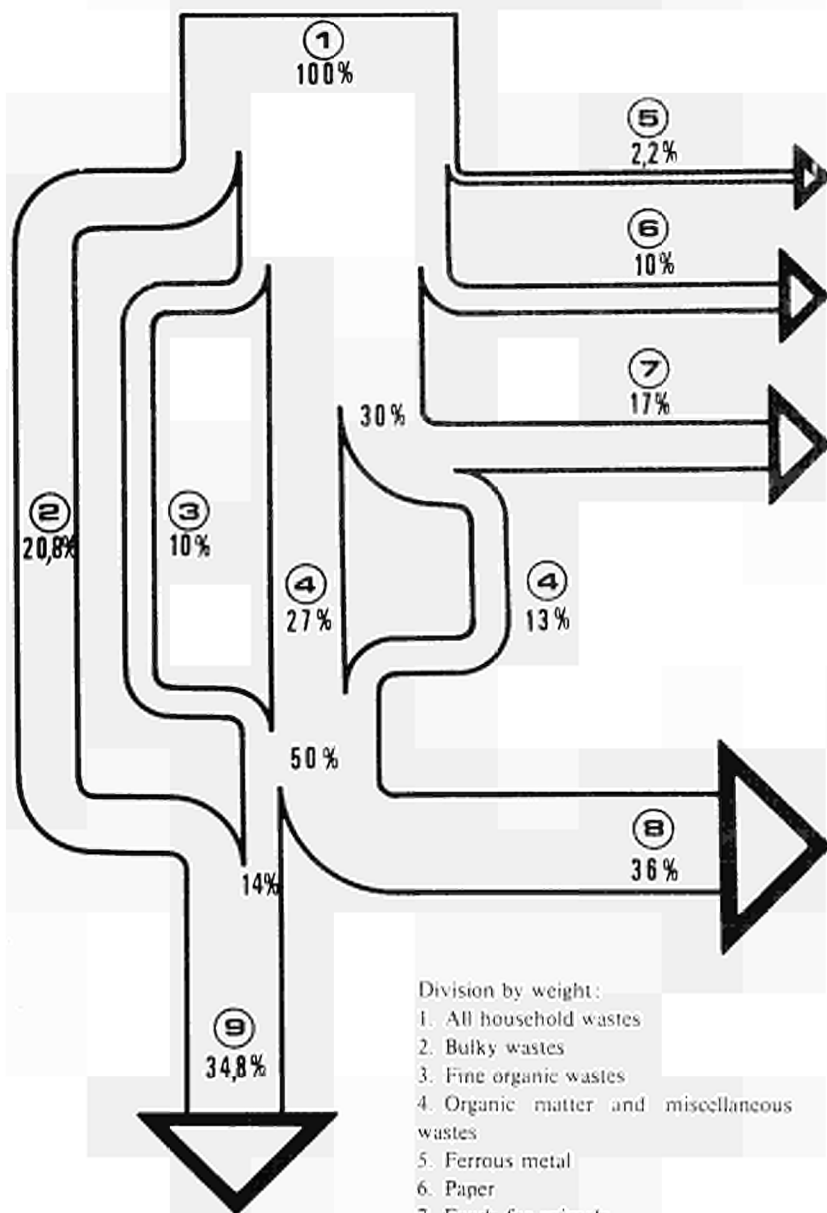
Member States are required to take the necessary steps to ensure that any holder of waste:

- has it handled by a private or public waste collector or by a disposal undertaking;
- or disposes of it himself in an ecologically inoffensive manner.

The directive provides that any installation or undertaking treating, storing or tipping waste on behalf of third parties, must obtain a permit from the competent authority, relating in particular to:

- the type and quantity of waste to be treated;
- general technical requirements;
- precautions to be taken;
- the information to be made available at the request of the competent authority

Reuse of household wastes by the city of Rome (Italy)



Source: Magazine 'Phase Zero' (1974).

concerning the origin, destination and treatment of waste and the type and quantity of such waste.

The installations and undertakings referred to are to be periodically inspected by the competent authority to ensure, in particular, that the conditions of the permit are being fulfilled.

Member States are required every three years to draw up a situation report on waste disposal in their respective countries and forward it to the Commission. The directive imposes an obligation on the installations or undertakings in disposing of waste to supply the competent authority with the necessary information. The Commission is to circulate this report to the other Member States and to report every three years to the Council and to the European Parliament on the application of the directive.

The directive also contained a provision that Member States should take appropriate steps to encourage the prevention, recycling and processing of waste, the extraction of raw materials and possibly of energy therefrom and any other process for the re-use of waste.

Member States are also to inform the Commission in good time of any draft rule concerning:

- (a) the use of products which might be a source of technical difficulties as regards disposal or lead to excessive disposal costs;
- (b) the encouragement of:
 - the reduction in the quantities of certain waste;
 - the treatment of waste for its recycling and re-use;
 - the recovery of raw materials and/or the production of energy from certain waste;
- (c) the use of certain natural resources, including energy resources, in applications where they may be replaced by recovered materials.

These provisions, relating to the recycling and re-use of waste, provide the basis for the Commission's programme in this field as presented in the draft Environment Action Programme 1977-1981.

2. Waste arisings and quantity reclaimed in the EEC

A report on the Economics of Recycling prepared for the Commission (April 1976) revealed that in quantity terms the main arisings are from pulverized fuel ash (PFA) and mining wastes (300 m. tonnes per annum) and chemical wastes (in the region of 40 m. tpa), agricultural wastes (over 1 000 m. tpa) and food wastes (100 m. tpa); with the exception of agricultural wastes and food wastes a high proportion of these materials are not reclaimed but are disposed of as waste.

Other wastes arising from industrial sources (metals, paper, rubber, plastics, textiles and glass) probably exceed 70 m. tpa and all but a small proportion are recovered and recycled to produce more of the original material.

The post-consumer waste stream includes about 72 m. tpa of municipal solid wastes and about 55 m. tpa of other obsolete wastes—mainly scrap metal, but also tyres, waste oils etc. In municipal waste, there is also about 37 m. tpa of recoverable material (metals, paper, glass, plastics, rubber, textiles) and a further 10-20 m. tpa of organic wastes as well as dust, ash etc; only a small proportion is reclaimed. Between 35 and 40 m. tpa of obsolete wastes are not reclaimed.

A high proportion of the materials arising from industrial sources are reclaimed, but recovery of other waste materials (chemical wastes, PFA and mining residuals, agricultural food wastes) is relatively low.

In the case of post-consumer wastes a relatively small proportion of the materials is reclaimed. But some of the municipal waste is used to produce compost (about 5 % of EEC arisings) and to produce usable energy (perhaps 10 % or more).

The report estimated the largest waste arisings in quantity terms that are available for reclamation to be the waste materials from food and agricultural and the residuals from mining etc.

There are about 20 m. tpa available each of paper and of metals.

There are between 5-10 m. tpa available each of metals and (a very approximate estimate) chemicals.

There are about 3 m. tpa or less available of each of other materials.

In terms of specific products, the major elements in the available waste are packaging of all kinds, notably cans, bottles and paper containers, used tyres and waste motor oil; this excludes the products in chemical and mining and food wastes.

In relation to total amount consumed of the material the most important available waste materials appear to be paper (66 %) and glass (46 %); the amount of ferrous metal not reclaimed is less significant (7-15 %).

The report also examined the financial attractiveness of the alternative reclamation methods. The analysis took account of the gross value of the secondary material to the user as a substitute for a material from another source, the costs of initial recovery of the secondary material less any marginal savings arising from the subsequent reduction of the waste disposal load and, where relevant, the costs of further processing.

In general it appeared that the most financially attractive forms of recovery (in terms of the net value per tonne) were the recycling of non-ferrous metals, the recycling of good quality paper, the re-use of glass containers, the recycling of



The post-consumer waste stream includes about 72 million tpa of municipal solid wastes and about 55 million tpa of other obsolete wastes — mainly scrap metal, but also tyres, waste oils etc.

thermoplastics and tyres, the retreading of tyres, the recycling of some textiles, the recycling and re-use of waste oils and the use of straw to produce paper pulp. Also attractive were the recycling of ferrous metals, the recycling of mixed paper to board, the cleaning of solvents and production of animal feedstuffs from food wastes. In general, the least financially attractive options were the use of materials for fuel or compost and the use of plastics for construction material strengthening, mining slags and PFA for construction and landfill.

Overall, the financial attractiveness of by-product generation for any one material was in general low compared with alternative recovery routes: the main exceptions were the waste materials (mining wastes, PFA, agricultural, food and chemical wastes) where there were no other options and glass where the value of the secondary material for recycling was low. The use of reclaimed fibres, rubber, plastic and waste lubricating oil as a fuel was not only usually a less attractive option but could financially be seen as not realising the full potential value.

However, the report recognized that there are factors specific to the individual operating situation that would considerably influence reclamation costs and viability. For example: in certain types of urban area, it may prove impractical to require householders to practice separate collection; industrial waste producers may be unable to separate out wastes at source without considerable expenditure on new plant; and the relative location of the waste arising and the secondary material processors is important. In general the less the margin between the value of the reclaimed material and the costs of recovery, the more likely that the cost of transport will prove a disincentive unless waste producers and secondary material users are located reasonably close to one another.

Amount of different materials in municipal solid waste

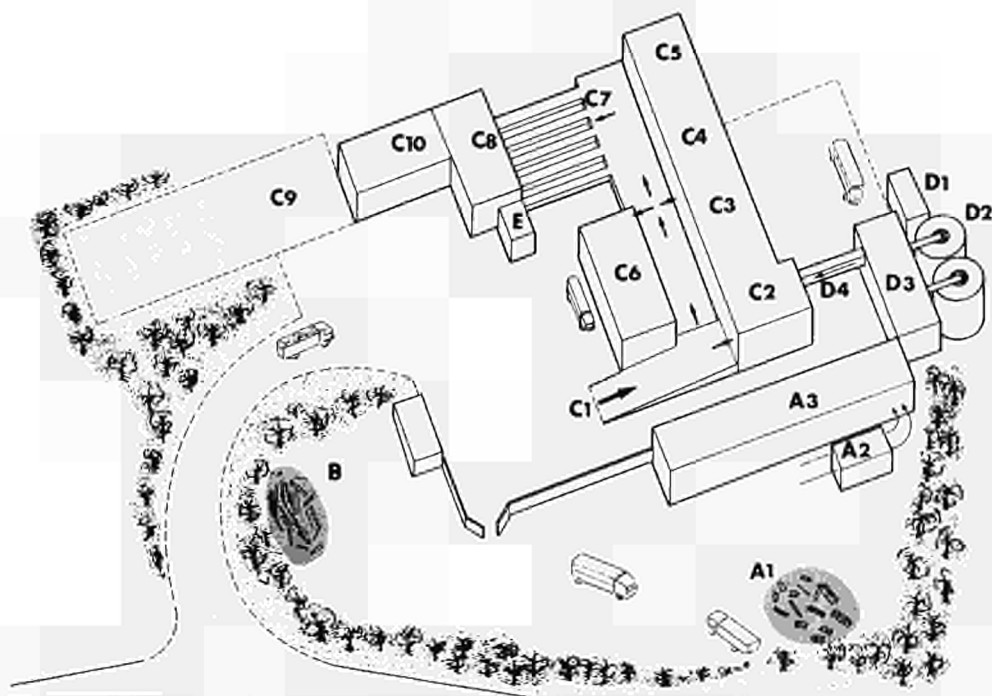
Waste material	Share of EEC waste % by weight	Estimated total amount in EEC per annum '000 tonnes	Amount per person per annum ^{1,2} kg	Amount per person per household ^{1,3} kg per week
Dust and cinders	10-35		56.9	3.4
Vegetable and putrescible matter	10-40	30 639	61.8	3.7
Paper and board	19-40	20 830	80.7	4.8
Glass	4-17	6 300	24.4	1.5
Metals	2- 9	4 267	16.5	1.0
Plastics	2- 6	2 592	10.0	0.6
Textiles	1-10	2 780	10.8	0.6
Other	—	4 592	17.8	1.1
Total	100	72 000	279.1	16.6

¹ Individual figures do not add exactly to totals due to rounding.

² Based on mid 1974 population of 258 m.

³ Based on an average 3.1 people per household, 52 weeks per year.

Centre for waste recycling



Population: 200 000

Plant area: 1.6 ha

A1: Holding area for metal waste

A2: Vehicle crusher/shredder

A3: Storage area for metal waste

B: Holding area for wood waste

C1: Unloading area for household waste

C2: Sorting

C3: Incinerator

C4: Storage of plastic and metal waste

C5: Separation of metals

C6: Storage of waste paper, textiles and glass

C7: Biostabilizer for organic waste

C8: Compost sifting area

C9: Compost drying area

C10: Compost packing and storage area

D1: Storage of waste oil

D2: Storage of separated sludges

D3: Separation of oil

D4: Discharge of methane gas

Source: Cornwall environmental Trust (1974)

The report also recognized that from the Community viewpoint, there may be certain criteria other than financial that should be taken into account when assessing whether action should be taken to encourage further reclamation.

- (a) Additional reclamation in the Community reduces the need to import raw materials with consequent strategic and balance of payments advantages: this is particularly important in the case of metals (other than aluminium), paper, oil-based products and energy.
- (b) The efficient use of secondary materials will result in some saving of 'scarce resources' which is of particular relevance in the case of oil-based products and metals; furthermore, if a greater quantity of secondary materials is used for high grade purposes, there may be considered to be an additional benefit derived from the efficient use of resources.
- (c) There is also some net saving in process energy when materials are recycled as opposed to production from the raw material; this is particularly so in the case of metals (particularly aluminium): less so in the case of plastics, rubber and paper and almost insignificant in the case of glass.
- (d) Reclaiming secondary materials may in some instances result in a net reduction of overall pollution and destruction of amenity; particularly where the raw materials are extracted (metals, glass some chemicals, coal and oil) and the primary processing is relatively polluting.

3. Waste Management Committee

By its decision of 21 April 1976, the Commission established a Committee on Waste Management. The task of this Committee is to supply the Commission with opinions, either at the request of the Commission or on its own initiative on all matters relating to:

- (a) the formulation of a policy for waste management having regard to the need to ensure the best of resources and the safe and effective disposal of waste;
- (b) the different technical, economic, administrative and legal measures which could prevent the production of wastes or ensure their re-use, recycling or disposal;
- (c) the implementation of directives on waste management and the formulation of fresh proposals for directives in this field.

The Committee is chaired by a representative of the Commission and consists of 20 members, two from the Commission and two from each Member State.



The efficient use of secondary materials will result in some saving of 'scarce resources'.

4. Waste oils

Waste oil and residues containing petroleum and tar, in particular residues containing lubricants, are, as noted above, among the substances listed as deserving priority attention under Chapter 7 'Action concerning wastes and residues' of the Environment Programme. A study of this problem, carried out for the Commission, came to the conclusion that the pollution of soil and water by waste oils was becoming acute due to growing industrialization, urbanization, and the continued development of transport facilities. In addition, certain treatments of waste oils created new sources of pollution, especially air pollution.

There had been a steady increase in the quantity of waste oils and in particular of emulsions, a large part of which were disposed of without controls.

The extent and urgency of the problem was underlined by the fact that sometimes as much as 20-60 % of all waste oils were disposed of without any control in some Member States; the resulting water pollution would account for approximately 20 % of all industrial pollution according to some estimates.

**An approximate estimate of quantities of lubricating oils consumed, total and per capita, of quantities of used and waste oils which are disposed without controls, in total and in percentages for each Member State.
The figures are for 1972 and measured in 1 000 tonnes.**

	Consumption of lubricating oils	Number of inhabitants in millions	Consumption by inhabitants in l/a	Quantity of waste oil	Id. as a proportion of the total	Quantity disposed without controls	Id. %
1	2	3	4	5	6	7	8
1. FR Germany	1 081	58.6	18.5	520	48	57 ¹	8.7 ¹
2. France	834	48.9	17	458	55	120	26
3. Italy	548	51.6	10.5	275	50	134	28.5
4. United Kingdom	1 295	52.3	25	650	50	85	13
5. Ireland	35	4.4	8	17.5	50	?	?
6. Denmark	90	4.8	19	45	50	?	?
7. Belgium	?	9.5	?	?	?	?	?
8. Luxembourg	11.3	0.3	37.5	0.6	50	0.6	100
9. Netherlands	209	12.3	16.5	105	50	45	43
10. TOTAL:	4 103.3			2 071.1		441.6	

¹ These figures are only valid for 1971.

The percentage of recovery is therefore about 50 %; according to information received, only about 1 million tonnes of waste oils is actually recycled, thus 1 million tonnes is lost as energy or as lubricants, with obvious consequences for the environment and for a comprehensive fuel supply policy.

In view of the results of this study, and in view of the fact that the French and Dutch Governments had sent to the Commission under the Information Agreement of 5 March 1973 legislative proposals relating, *inter alia*, to the disposal of waste oils, the Commission prepared and submitted to the Council a proposal for a directive on the disposal of waste oils.

In doing so the Commission noted that both in Germany and Denmark there was very detailed and complete legislation which provided for a system of collection and finance, thus ensuring the safe disposal of waste oils. In the Federal Republic of Germany, by the law of 23 December 1968, laying down the measures to ensure the disposal of waste oils (*Gesetz über Massnahmen zur Sicherung der Altölbeseitigung*) a fund had been created, intended to cover the costs which were not covered during the waste oil disposal operations. This fund was financed by a charge levied when lubricants were delivered for consumption. In the Netherlands a draft law on chemical wastes and waste oils would set up a comprehensive system comparable to that which already existed in the Federal Republic of Germany. In the United Kingdom, legislation controlled the disposal of polluting wastes, and in particular of waste oils. In France there was a draft decree which would regulate the discharge of lubricants or oil. Both in France and in Italy, recycled oils were taxed at a lower rate in order to ensure the safe disposal of waste oils and to encourage their re-use. In the other countries there was neither legislation nor proposed legislation specifically concerned with waste oils, but in certain cases, general legislation protected water and air against pollution.

In the Commission's view these differences might lead to financial charges differing from one Member State, from one sector, from one firm, to another within the Community, and thus could create barriers to the proper functioning of the common market and distort competition.

The Commission's draft directive, based on Article 100 of the Treaty of the EEC, was intended to harmonize legislation and to thus create a coherent system of legal provisions applicable in all Member States. It also had the double objective of ensuring environmental protection and at the same time the maximum possible re-use of waste oils which, in the Commission's view, could make a large contribution to energy supply policy.

On 18 October 1974 the Commission adopted certain modifications to the proposed directive (under Article 149, paragraph 2 of the EEC Treaty and in the light of comments and proposals made by the Economic and Social Committee and the European Parliament).

The directive on the disposal of waste oils as adopted by the Council on 16 June 1975 defines 'waste oils' as any semi-liquid or liquid used product totally or partially consisting of mineral or synthetic oil, including the oily residues from tanks, oil-water mixtures and emulsions.

Member States are required to take the necessary measures to ensure the prohibition of:

1. any discharge of waste oils into internal surface waters, ground water, coastal waters, and drainage systems;
2. any deposit and/or discharge of waste oils harmful to the soil and any uncontrolled discharge of residues resulting from the processing of waste oils;
3. any processing of waste oils causing air pollution which exceeds the level prescribed by existing provisions.

Member States are required to take the necessary measures to ensure the safe collection and disposal of waste oils and to ensure that, as far as possible, the disposal of waste oils is carried out by recycling (regeneration and/or combustion other than for destruction).

If the fundamental objectives of the directive cannot otherwise be attained, Member States are required to take the necessary measures to ensure that collection and disposal operations are in fact carried out. They are empowered under the directive to grant indemnities to collection and/or disposal undertakings for the service rendered. These indemnities may be financed, among other methods, by a charge imposed on products which after use are transformed into waste oils, or are waste oils.

The directive provides that any undertaking that disposes of waste oils must obtain a permit and for records to be kept.

On March 1976 the first European Symposium on Waste Oils was held in Brussels under the patronage of the Commission and organized by the European Union of Independent Lubricant Manufacturers.

This symposium reviewed the situation within the European Economic Community as regards the disposal of waste oil and measures being taken to implement the Council directive of 16 June 1975.

5. PCB's

The Action Programme spoke of the important problem posed for the Community by the elimination of wastes which, because of their toxicity, their non-degradability, their bulk or for other reasons, required a solution extending beyond the regional framework and possibly even beyond national frontiers.

The Council of the OECD adopted, at its 315th meeting on 13 February 1973, a Decision on the protection of the environment by control of polychlorinated biphenyls. In this decision, the Member States of the OECD undertake to take every appropriate measure to reduce to a minimum the dispersion of PCB in the environment, in particular by restricting the use of these substances to closed sys-

tems and by monitoring their treatments. On 23 July 1974 under the Information Agreement of 5 March 1973 the French Government forwarded to the Commission a preliminary draft on 'Conditions of use of polychlorinated biphenyls'.

The Commission informed the French Government of its intention to present to the Council, within the period laid down by the agreement on information, a proposal for a directive on this subject.

On 26 August 1974, the Commission forwarded to the Council a proposal for a directive on the harmonization of the laws, regulations and administrative provisions of the Member States relating to restriction of the sale and use of certain dangerous substances and preparations. This proposal for a directive covered amongst other things the conditions of use of PCB.

This directive is discussed under the section of this Report which deals with Chemicals in the Environment.

On 10 February 1975 the Commission submitted to the Council a proposal for a Council directive on the collection, regeneration and/or destruction of polychlorinated biphenyls (PCB's).

The aim of the proposed directive was to cover the conditions of collection, regeneration and destruction of PCB and thus to supplement the control of these substances in order to avoid any dispersal in the environment. The Commission noted that there were at the time no specific laws on collection, regeneration and/or destruction of PCB in force in the Member States.

In the light of the Opinion of the Economic and Social Committee drawn up at its 130th plenary session, held in Brussels on 28 and 29 May 1975 and in the light of the resolution of the European Parliament (embodying the Opinion of the Parliament on the Commission's proposal adopted at its session of 20 June 1975) the Commission forwarded to the Council certain amendments to its proposal under the terms of Article 149, second paragraph of the EEC Treaty.

On 6 April 1976 the Council adopted a directive on the disposal of polychlorinated biphenyls and polychlorinated terphenyls.

Under the directive Member States are required to take the necessary measures to prohibit the uncontrolled discharge, dumping and tipping of PCB and of objects and equipment containing such substances, and also to make compulsory the disposal of waste PCB and PCB contained in objects and equipment no longer capable of being used.

The preferred method of disposal is regeneration.

Member States are required to set up or designate the installations, establishments or undertakings which are authorized for the purposes of disposing of PCB on their own account and/or on behalf on third parties.

Anyone holding PCB who is not authorized to dispose of it himself is required to hold it available for disposal by the authorized installations, establishments or undertakings.

As is also the case with the waste oil directive, the directive establishes that the cost of disposing of PCB shall be borne in accordance with the 'polluter pays' principle.

Member States are required to draw up every three years a situation report on the disposal of PCB's in their territory within the framework of the general report on the disposal of waste which is provided for in the framework directive on waste adopted by the Council on 15 July 1975.

6. Toxic and dangerous wastes

The Council, in adopting the European Communities Programme of Action on the Environment, acknowledged that the disposal of toxic and dangerous wastes is one of the most important problems for the Community and that it therefore requires 'a solution extending beyond the regional framework and possibly beyond national frontiers'.

In view of the specific nature of this problem, the Council therefore decided that the Commission should study its technical, economic and legal aspects, examine the action to be taken at Community level and submit to the Council conclusions from this work together with the proposals arising out of it.

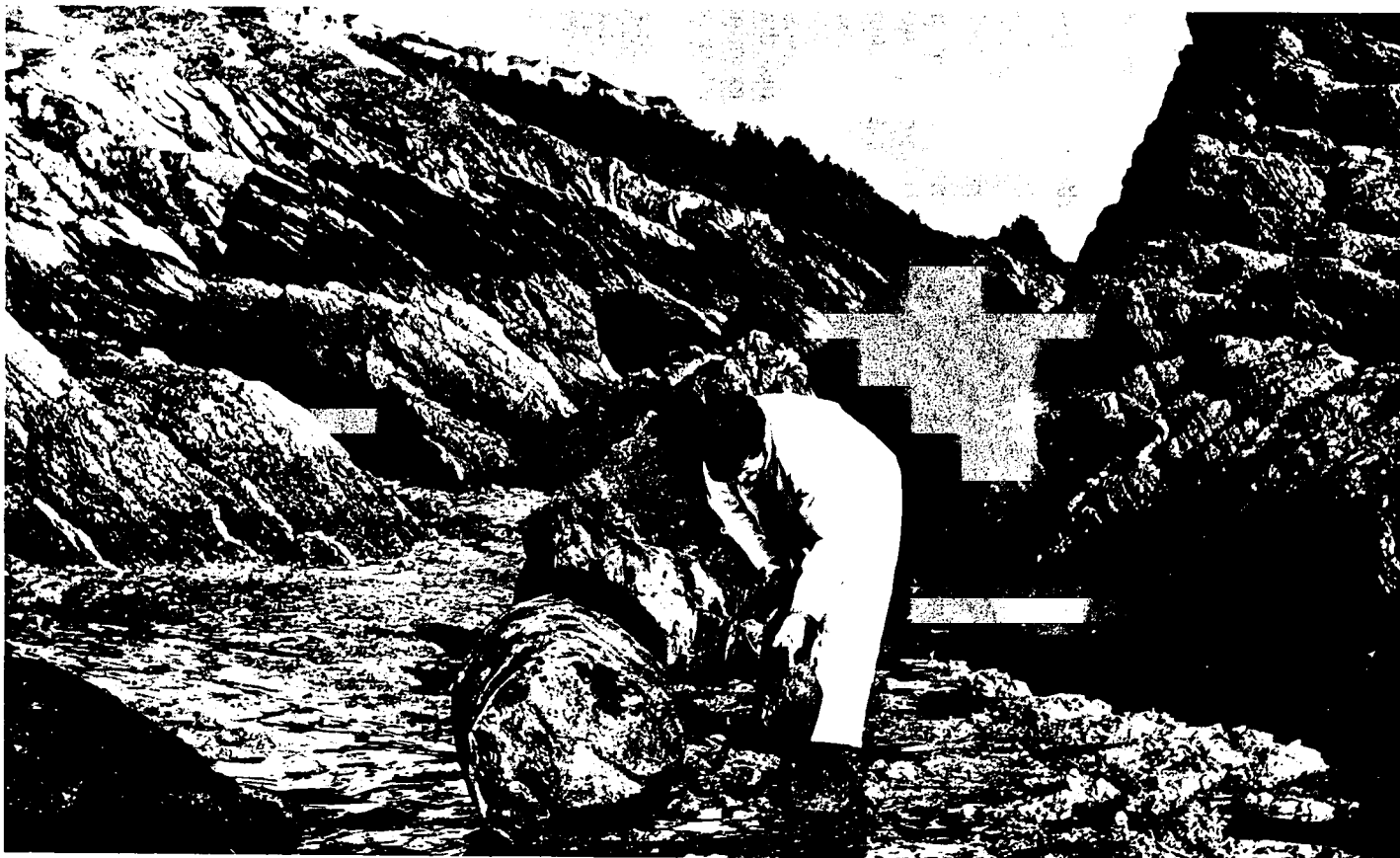
Assisted by a Working Group of National Experts and a Sub-Group of Scientific Experts on toxic and dangerous wastes, and with the aid of certain studies commissioned specifically for this purpose (see list of studies in Annex), the Commission has reviewed some of the major problems arising in the disposal of toxic and dangerous wastes.

Besides the technical aspects, the Commission also reviewed the legal situation in the Member States as regards the disposal of toxic and dangerous wastes.

On 8 November 1973 the Belgian Government under the Information Agreement of 5 March 1973 sent to the Commission the text of a draft law relating to Toxic Waste (loi sur les déchets toxiques). On 11 February 1974 the Commission was notified of a draft French law on Waste Disposal and Recovery (loi relative à l'élimination des déchets et à la récupération des matériaux) and on 31 October 1975 of a draft Dutch law on Chemical Wastes and Used Oils (Regelen inzake chemische afvalstoffen en afgewerkte oliewet chemische afvalstoffen).

The Belgian law came into force on 22 July 1974 and the French law on 15 July 1975. The Dutch bill was adopted by Parliament on 11 February 1976.

The Commission noted that as far as some other Member States were concerned,



England:
Workmen digging out one of the lethal drums of chemicals washed ashore on England's South-West coast containing dangerous toxic chemicals. On 22 July 1976 the Commission submitted to the Council a draft proposal for a Directive on toxic and dangerous wastes.

toxic waste disposal came within the provisions of either general pollution control regulations (Denmark and the United Kingdom) or of general waste control laws (Germany and Italy). Finally there were those Member States (Ireland and Luxembourg) with virtually no legislation on the problem at all.

In several Member States specific regulations on toxic and dangerous waste disposal were being drafted or were contemplated.

The Commission noted that though there existed in some Member States legislation governing the disposal of toxic and dangerous waste, the scope of this legislation, its field of application (collection, transport, storage and treatment, etc.) the form and tasks of the various controlling organizations, the financing systems and the penalties for infringements however different from one Member State to another.

The disparity between the provisions already applicable or in preparation in the various Member States could create unequal conditions of competition, because the nationals of some Member States are obliged to respect more stringent provisions in order to dispose of their toxic and dangerous waste, and the functioning of the common market could be directly affected.

On 22 July 1976 therefore, the Commission submitted to the Council a draft proposal for a Council directive on toxic and dangerous wastes.

The proposal is intended to define a common field of action within which rules on toxic and dangerous waste disposal are to be applied. The concepts of 'toxic and dangerous waste' and of 'disposable' are defined and obligations are imposed on Member States to ensure that disposal operations are carried out without endangering human health and the environment.

Member States are furthermore required to take the necessary measurements to encourage the recycling and processing of toxic waste, the extraction of raw materials and possibly of energy therefrom.

The toxic and dangerous substances or materials specifically envisaged in the directive are:

- Arsenic and its compounds
- Mercury and its compounds
- Cadmium and its compounds
- Thallium and its compounds
- Beryllium and its compounds
- Chrome (or VI)
- Lead and its compounds
- Antimony and its compounds
- Phenols

- Cyanides, but excluding ferro- and ferricyanides
- Isocyanates
- Organo-halogen compounds from processing, but excluding inert polymeric materials and other substances covered elsewhere by the list of the present directive or covered by other directives
- Chlorinated solvents
- Aromatic solvents
- Biocides and phyto-pharmaceutical substances
- Tarry materials
- Pharmaceutical substances from processing
- Peroxides, chlorates and azides
- Ethers
- Laboratory materials

The directive lays down, that with certain exceptions, wastes containing the above toxic and dangerous substances or materials can be disposed of only by the installations, establishments or undertakings authorized by the competent national authorities to do so on their own account on behalf of third parties.

It also establishes that any holder of toxic waste who has not been granted such an authorization, is required to deliver the waste to an authorized installation.

The draft directive does not lay down the specific methods of disposal for the various categories of toxic and dangerous waste. However, in a technical report which accompanies the draft directive information is given on methods of treatment currently practised with relevant remarks. The Commission's role in implementing the directive will include, subsequently, the elaboration of codes of practice for the disposal of various toxic and dangerous wastes.

In order to ensure maximum coordination at national and Community level, it is foreseen that special plans for the disposal of toxic and dangerous waste shall be drawn up and kept up to date by the competent national authorities. Member States shall forward them to the Commission and draw up every three years a situation report on the disposal of toxic and dangerous waste in their respective countries.

The Commission will itself report every three years to the Council and to the European Parliament on the implementation of the directive.

Chapter V

Chemicals in the environment

In addition to the directives and proposals for directives already discussed in other sections of this Report, the Commission—under the dual mandate of the implementation of the General Programme for the Elimination of Technical Barriers to Trade and the Programme of Action of the European Communities on the Environment, has forwarded to the Council proposals for Council directives on:

- (i) the approximation of the laws, regulations and administrative provisions of Member States relating to the classification, packaging and labelling of pesticides.
- (ii) on the approximation of the laws of the Member States relating to ceramic articles intended to come into contact with food (limitation of extractable quantities of lead and cadmium);
- (iii) on the approximation of Member States' laws, regulations and administrative provisions relating to the classification, packaging and labelling of paints, varnishes, adhesives and similar products;
- (iv) approximation of the laws of Member States relating to cosmetic products.

In addition to the above proposals for directives which are still under discussion, the Council adopted on 21 May 1973 an amendment to the Directive of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances. On 24 June 1975 the Council adopted a fifth amendment to this directive. The Council also adopted, on 4 June 1973, a directive on the approximation of Member States laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous preparations (solvents).

In the Programme of Action of the European Communities on the Environment it was recognized that regulations governing the classification, packaging and labelling of dangerous substances and preparations were not necessarily sufficient

in all cases; it might be necessary also to prohibit or restrict marketing and use under certain conditions.

On 25 July the Commission submitted to the Council a proposal for a Council directive on the approximation of the laws of the Member States restricting the marketing and use of certain dangerous substances and preparations.

This proposed directive contained general restrictive provisions applying to fields which were not covered by other directives, such as those on the composition of petrol (lead content) the sulphur level of fuels, lead and cadmium in ceramics and dangerous substances in paints and varnishes.

In the Commission's view the directive would also have the advantage of allowing more rapid and effective implementation in the European Community of restrictions recommended or adopted by other international organizations, such as the decision by the Council on the Organization for Economic Cooperation and Development (OECD).

As adopted by the Council on 27 July 1976 the directive applies mainly to polychlorinated biphenyls (PCB's) the use of which might contaminate human health and the environment.

The toxicity and persistence of PCB's was noticed for the first time in 1966, when traces of these products were found in poisoned fish and wild birds. Accidents which occurred included the contamination of chickens by PCB's present in plastic packaging materials, the discovery of PCB's in wrappings of food products, as a result of the use of carbonless copying paper in the manufacture of paper pulp, and the presence of PCB in cow's milk due to absorption by these animals from feedingstuffs of PCB's arising from herbicide treatment or storage silos. In the most serious accident human beings were poisoned as a result of the leakage of heat transfer liquid in a rice oil pasteurization factory in Japan.

The restrictions on marketing and use of PCB's follow closely the decision adopted by the Council of the OECD on 13 February 1973.

The directive specifies that polychlorinated biphenyls, polychlorinated terphenyls and preparations with a PCB or PCT content higher than 0.1 % by weight may not be used except for the following categories:

1. Closed-system electrical equipment: transformers, resistors and inductors.
2. Large condensers (>1 kg total weight).
3. Small condensers (provided that the PCB has a maximum chlorine content of 43 % and does not contain more than 3.5 % of penta- and higher chlorinated biphenyls).

Small condensers which do not fulfil the above requirements may still be marketed for one year from the date of entry into force of this directive. This restriction does not apply to small condensers already in use.

4. Heat-transmitting fluids in closed-circuit heat-transfer installations (except in installations for processing food-stuffs, feedingstuffs, pharmaceutical and veterinary products. In such installations, the use of heat-transmitting fluids shall still be allowed for 4 years from the date of entry into force of this directive).
5. Hydraulic fluids utilized in:
 - (a) underground mining equipment;
 - (b) machinery servicing cells for the electrolytic production of aluminium, in use when this directive is adopted, until 31 December 1979 at the latest.
6. Primary and intermediate products for further processing into other products which are not prohibited under this directive.

The directive also applies to chloro-1-ethylene (monomer vinyl chloride) and specifies that this substance may not be used as aerosol propellant for any use whatsoever.

In addition to the measures discussed above, the Action Programme on the Environment laid down that the Commission would investigate measures still required to harmonize and strengthen control by the public authorities over certain substances or new synthetic products before they are marketed, particularly:

- the improvement and harmonization of quantitative analysis techniques;
- investigations into the long-term toxicity of these substances and the standardization of toxicity tests;
- compulsory submission of samples accompanied by a description of the methods of quantitative analysis.

The programme specified that such a study would have to consider various possibilities such as the utility of a European Office for the approval of new substances, a Coordinating Committee for coordinating national bodies in this field or any other suitable means with particular regard to pharmaceuticals and certain dangerous industrial products.

A preliminary review of the problem conducted on behalf of the Commission indicated that at the present time more than 9 000 synthesized compounds are already used commercially each year in quantities exceeding 500 kg and about 150 compounds are used in quantities exceeding 50 000 tonnes. According to some evaluations, the number of new chemical compounds synthesized every year could rise to about 250 000, a few hundred (500) of which find their way into the various commercial channels. The review pointed out that the use of some of these compounds could have ecological consequences which were sometimes irreversible, if they were put on the market without there being some knowledge beforehand of the potential risk for man and the environment.

In approaching this question the Commission has been very aware of the activity being undertaken on an international basis relating to pre-market and post-mar-

ket controls of environmental chemicals. Both through bilateral contacts and through the OECD, the Commission has followed legislation recently passed or proposed in Canada, Japan, Norway, Sweden, Switzerland and the United States. In addition, under the information agreement of 5 March 1973, the Commission was notified on 9 June 1975 by the French Government of its intention to introduce legislation on the control of chemicals dispersed in the environment.

As notified to the Commission, the French legislation calls for pre-market assessment of chemical substances for their effects on man and the environment. Assessment shall be made on the basis of specified criteria to determine the undoubted or potential ecological hazard posed by the substance. The chemicals shall then be classified in one of two categories of constraint, depending on the absolute (Category 1) or potential (Category 2) threat it poses.

Producers of new chemicals must submit to authorities a declaration and technical dossier providing information needed for assessing potential hazards. The competent authority may confirm the classification proposed by the applicant, or impose another and inform the applicant of specific constraints applying to the chemical.

The authority may ask a producer to provide any information considered necessary to accomplish the aims of this Act including samples, production figures, etc. Furthermore, the sale, advertising, use for certain purposes, packaging, storage and disposal may be subject to particular requirements. Only chemicals classified in the first category may be totally forbidden. Regulations or restrictions may be imposed on these chemicals concerning:

- the disposal of wastes or surplus amounts of such chemicals or preparations;
- approval for the sale of preparations containing the chemical and the conditions for sale and disposal;
- approval of producers, distributors and users of the chemical substance.

Chemicals on the market before enactment, or classified chemicals for which new information warrants re-examination, may be classified or re-classified according to the same procedures for new chemicals. Producers are required to inform authorities of changes or new facts which may call for use of this procedure.

Violation of the Act shall be punishable by imprisonment of three months to two years and/or a fine of between FF 3 000 and FF 100 000. The law further provides that in certain cases the court may order confiscation of any chemicals and preparations put on the market in contravention of bans or specified requirements, total prohibition of the sale and use of these chemicals or preparations, and the temporary or permanent closure of the production plants involved.

Bearing in mind the important consequences such a measure, if enacted, might have both for the environment and for the functioning of the common market, the Commission by letter of 28 July 1975 informed the French Government that

it had the intention, under the provisions of the information agreement of 5 March 1973 to introduce a proposal on a Community basis in this field and therefore requested the French Government to delay for the time being the introduction of their own legislation.

The Commission has now prepared a draft proposal for amending for the sixth time the Council directive of 27 June 1967 relating to the classification, packaging and labelling of dangerous substances.

The proposed amendment provides that the notifier is required to carry out a study prior to marketing a new substance to enable its effects on man and the environment to be assessed and to submit to the competent authority at the latest on the date of marketing, a notification with an acknowledgement of receipt including:

- a technical dossier containing all the information necessary to evaluate foreseeable direct or indirect risks which the substance might entail for man and the environment in respect of the various uses envisaged;
- a declaration concerning the unfavourable effects of the substance;
- the classification and labelling of the substance in accordance with this directive;
- proposals for any measures relating to the conditions of use which are intended to limit the unfavourable effects.

The proposed amendment provides that the person carrying out the notification shall send the notification dossier to the competent authority. He may at the same time send a copy of the dossier to the Commission.

The directive also provides that Member States shall set up or appoint a competent authority (or authorities) who shall be responsible for:

- receiving the notification and examining this conformity with the prescriptions of the directive;
- examining the foreseeable risks that these new substances might give rise to;
- examining the classification and labelling;
- examining the proposals of measures relating to the conditions of use.

The directive lays down that the authorities may, if they see fit:

- ask for further information and/or verification tests;
- carry out such sampling as is necessary for control purposes;
- take appropriate measures relating to conditions of use while awaiting Community dispositions.

The directive also lays down a procedure whereby the Commission or the Council may adopt or modify the proposals made for:

- classification

- labelling
- disposition relating to conditions of use.

Persistent organo-chloride compounds

On 24 June 1976, the Commission transmitted to the Council a communication concerning the objective evaluation of the risks to human health from pollution by some persistent organo-chlorine compounds. The conclusions of this draft communications were as follows:

1. Because of the difficulties of interpreting the data from experimental animals, and the lack of sufficient data on the long-term effects on man it is not possible at the present time to draw up criteria relating the levels to which man is exposed to possible effects.

To achieve this a considerable amount of research may be essential if man's exposure to these pesticides justifies it. Careful consideration should be given to such a requirement at the present time in view of decreasing usage. Such research should be directed towards those organo-chlorine compounds which are likely to be increasingly used in the future.

2. Apart from the presence of organo-chlorine pesticides in the fatty tissues of the body, no abnormalities have been demonstrated in the general population in the European Community which are directly attributable to the pesticides.
3. Present information from Member States indicates that because of controls, the usage of these persistent organo-chlorine pesticides and man's exposure to them is decreasing. Nevertheless, because of the difficulties and uncertainties mentioned above concerning toxicological evidence in relation to these products, it is considered that:
 - a decreased usage of any of these persistent organo-chlorine pesticides should be recommended within the European Community;
 - the strict control of emissions of organo-chlorine compounds should take place;
 - and the control of residues of organo-chlorine compounds in food and animal feeding stuffs should be reinforced.
4. To verify that usage and levels of exposure continue to decrease, it is considered that appropriate periodic monitoring should take place.
5. In the absence of criteria the attention of the Member States is drawn to the usefulness of the Estimate of the safe level of intake of these compounds (Acceptable Daily Intake or ADI) drawn up by the FAO/WHO Working Party of Experts on Pesticide Residues in Food. The Commission has already taken these into account in preparing its Proposal for a Council Directive relating to the fixing of maximum levels for pesticides in and on fruit and vegetables.



Germany:
Workmen collect and load rubbish onto a collection vehicle as they clean a large river bed area of all sorts of wastes on the first day of operation 'Clean Rhine'.

Thought should be given in the future to the use of such ADI's and to the possibility of utilizing other concepts (for example, blood and other tissue levels) for expressing safe levels of exposure to such pesticides.

6. In considering on the one hand the requirements laid down in the Environmental Action Programme, and on the other hand the difficulties and uncertainties mentioned above, the Commission will continue to review and assess the information available with regard to the problems discussed in this interim report.

Plant protection products

On 4 August 1976 the Commission submitted to the Council a proposal for a Council Directive concerning the placing of EEC-accepted plant protection products on the market. The use of plant protection products is essential in modern agriculture for the protection of crops and crop products from the effects of harmful organisms and weeds. They contribute thereby to the improvement of the productivity of agriculture and to assuring the availability of supplies.

Many plant protection products contain active substances whose use can also present risks to man, animals, plants and the environment and most Member States have rules governing both the marketing and use of such products. These rules differ and particularly those relating to marketing may be an obstacle to the free movement of goods within the Community and may also constitute a disincentive to innovation.

The proposal for a Directive deals with the marketing and otherwise placing on the market of plant protection products.

It envisages the creation of an optional 'EEC-acceptance' to operate in parallel with existing national arrangements for approving plant protection products. An applicant wishing to market a plant protection product within the Community will have the choice either to apply for separate registrations under national legislation as at present or to apply for EEC-acceptance, on its own or in addition to national registrations, to one of the Member States in accordance with the provisions of this Directive. EEC-acceptance, if granted, would be recognized, subject to certain safeguards, by all Member States normally within a 1-2 year period.

EEC-acceptance will permit the free circulation of the product throughout the Community except in so far as Member States may be authorized, particularly because of local conditions, to prohibit its circulation in their territory or to restrict or vary its field of use.

Such a Directive was called for specifically in the Council Resolution of 22 July 1974 on the veterinary, plant health and animal feedingstuffs sectors. It also re-

presents a contribution to the Communities' environmental policy as envisaged in the Programme of Action of the European Communities on the Environment.

This proposal complements the proposal for a Council Directive on the approximation of the laws, regulations and administrative provisions of Member States relating to the classification, packaging and labelling of pesticides. Together with the latter, it considerably improves the protection given to the users of plant protection products and to consumers of plants and plant products.

It will be noted that this proposal does not provide for total harmonization. The market for plant protection products in the Community is specialized and characterized by the large number of products available. Many thousands of different commercial preparations containing several hundred active substances are in use in the Community—in France alone over 6 000 products are officially approved for use in agriculture, although admittedly by no means all are of economic importance. Furthermore, a considerable proportion of nationally registered plant protection products is intended only for local or regional marketing to meet local or regional agricultural and ecological conditions and needs, which can vary significantly over a geographical area as large as the Community. Under these circumstances, it has been judged desirable at this stage to permit Member States to continue to approve for marketing in their own territory plant protection products in accordance with national provisions. In this way the proposal offers the necessary flexibility for manufacturers and distributors of products with only limited regional application.

On 5 August 1976 the Commission sent to the Council a complimentary proposal for a Council Directive prohibiting the placing on the market and use of plant protection products containing certain active substances. The proposal for a Directive concerns prohibition of the marketing and use of certain plant protection products containing active substances whose use is hazardous to human or animal health or is unduly harmful to the environment.

It essentially complements the parallel proposal for a Council Directive concerning the placing of EEC-accepted plant protection products on the market. The latter envisages the creation of the type of an 'EEC-accepted' plant protection product which may be placed freely on the market throughout the Community. Under its provisions, however, Member States would remain free to regulate and, in particular, prohibit the marketing and use within their own territory of plant protection products, other than EEC-accepted products, in accordance with national provisions.

Such prohibitions introduced by Member States often differ and, where these differences are not due to special local conditions, in particular different ecological conditions, they constitute obstacles to trade.

On the other hand, the lack of certain prohibitions may expose the Community as a whole to risks to human or animal health or to the environment.

It is necessary therefore to provide, through this Directive, the means whereby such national prohibitions and restrictions may be harmonized at Community level. In a first stage, it covers plant protection products containing certain mercury or organo-chlorine active substances. These substances have been the subject of extensive study in recent years, their use is now generally recognized to be undesirable in agriculture and has already been prohibited, or otherwise discontinued, in some Member States.

This proposal also represents a contribution to the Communities' environmental policy as envisaged in the Programme of Action of the European Communities on the Environment.

Chapter VI

Noise

The first Programme of Action of the European Communities on the Environment, which the Council adopted on 22 November 1973, did not include a chapter specifically headed 'Noise'. The Council did not adopt, nor did the Commission propose, a coherent programme in this field. The actions envisaged related essentially to harmonization activities in implementation of the general programme for the elimination of technical barriers to trade. In order to remove the economic distortions which are liable to be created by differences in specifications for certain products and noisy equipment, the Commission was asked to submit to the Council a number of proposals for directives. At the same time the Council recognized that the fact of harmonization, though basically motivated by trade and economic considerations, could be used to serve an important environmental goal. It was the Council's clear intention, when it adopted the first Environment Programme, that the general programme for the elimination of technical barriers for trade should also serve the Community as a tool to achieve a general improvement in the quality of the environment.

1. Motor vehicle noise

The first priority was motor vehicle noise. It has long been accepted that noise is one of the major nuisances which go hand in hand with urban development and that the noise of motor vehicle traffic is generally considered to be the chief offender. There have been some very thorough surveys carried out in cities such as Chicago, London, Paris, Nice and New York to assess the amount of discomfort that people experience when confronted with different noises. The results published in the report, for example, by Professor Wilson when he was Chairman of the Research Cooperation Committee of the OECD, show that traffic noise comes top of the list with 36 % of the people concerned, followed by aircraft noise with 9 % and noise from railway trains with 5 %.

In fact, most countries in Europe introduced measures to restrict motor vehicle noise soon after the war. Of course, these measures were not standardized and specialists at ISO (the International Organization for Standardization) felt that a standard ought to be worked out to lay down measuring methods and vehicle operating conditions which would enable precise and reproducible results to be obtained.

Work began in July 1958 and a draft standard was drawn up in 1960. After amendments had been made, it was put to the vote of the Member Bodies in May 1962. It was approved by 27 countries with only one country against, and was formally published in February 1964 as ISO Recommendation R362/Measurement of Vehicle Noise.

At that time several European countries adopted it as their official method of measurement and fixed maximum sound levels for the various vehicle categories. When the Commission of the European Communities came to examine the problem of vehicle noise, it also drew on ISO Recommendation R 362 to draw up the draft directive adopted by the Council of the European Communities on 6 February 1970.

This Directive (70/157/EEC) on the approximation of the laws of the Member States relating to the permissible sound level and the exhaust system of motor vehicles is now in force in all the countries of the European Communities. The directive applies to all motor vehicles intended for use on the road, having at least four wheels, with the exception of agricultural tractors and machinery and civil engineering equipment.

The sound levels established by the directive are set out in the table p. 145.

The method of measurement described in the Directive can be divided into two parts:

- Conditions of sound measurement, and
- Vehicle operating conditions.

The first part indicates the requirements regarding the place where the measurements are taken. This must be an open space, free of obstacles over a radius of 50 metres, with a central part surfaced with asphalt, concrete or similar material over a radius of at least 20 metres. Microphones are placed on either side of the vehicle's path, 7.50 metres from the path of the vehicle's centre line and 1.20 metres above ground level. The measurements are taken using the weighting curve A of the sound-level meter and the rapid response characteristic.

The second part, concerning vehicle operation, was designed to indicate the noise produced by vehicles when accelerating after starting up at traffic lights.

To this end, when approaching the line on which the microphones are placed, the vehicles must travel at a steady speed in second gear if they have three or

Vehicle category	Value expressed in dB(A)
1.1.1. Vehicles intended for the carriage of passengers and comprising not more than nine seats including the driver's seat	82
1.1.2. Vehicles intended for the carriage of passengers, comprising more than nine seats including the driver's seat, and having a permissible maximum weight not exceeding 3.5 tonnes	84
1.1.3. Vehicles intended for the carriage of goods and having a permissible maximum weight not exceeding 3.5 tonnes	84
1.1.4. Vehicles intended for the carriage of passengers, comprising more than nine seats including the driver's seat, and having a permissible maximum weight exceeding 3.5 tonnes	89
1.1.5. Vehicles intended for the carriage of goods, and having a permissible maximum weight exceeding 3.5 tonnes	89
1.1.6. Vehicles intended for the carriage of passengers, comprising more than nine seats including the driver's seat, and having an engine power equal to or exceeding 200 HP DIN	91
1.1.7. Vehicles intended for the carriage of goods, having an engine power to or exceeding 200 HP DIN and a permissible maximum weight exceeding 12 tonnes	91

four gears or in third gear if they have more than four, so that the engine turns at three-quarters of the rpm at which it develops its maximum power. When this rule was laid down this engine speed was generally equivalent to the maximum torque rpm of most engines, i.e. the engine rpm at which the vehicle was capable of the greatest acceleration and at which it was likely to make a lot of noise. However, to take into account the rules of sound practice for town driving and the official speed limits, a clause was added restricting this steady speed to 50 km per hour if the preceding conditions led to a higher speed than this.

It was felt that driving at higher speeds than those authorized in town could be dealt with by other regulations and that motor vehicle manufacturers should not be penalized for the abnormal or unrepresentative driving of a tiny minority of users.

Once a steady speed has been reached, as indicated above, and ten metres before the front of the vehicle is level with the line between the microphones the throttle is fully opened as rapidly as possible.

From this moment on the vehicle's engine turns at its maximum power and the particularly stable and reproducible running conditions that result produce a noise level close to the maximum and ensure a high degree of accuracy in the sound measurements.

These are the essential features of the method. Of course, additional provisions have been laid down for the various types of transmission that can be used in vehicles.

It should be noted that the only purpose of these measurements is to classify vehicles of the same category tested under the same conditions, and that they are not capable of providing a subjective estimate of the nuisance caused by the various categories of vehicles in operation.

This basic directive was supplemented by Directive 73/350/EEC, which requires endurance tests to be carried out on exhaust systems incorporating fibrous material. Vehicle type approval pursuant to Directive 70/157/EEC is carried out either after removing the fibrous matter from the exhaust system or after vehicle has travelled at least 10 000 km (5 000 km in town traffic and 5 000 km elsewhere) or after an engine test using a dynamometer brake under specified conditions.

Lastly, Directive 70/157/EEC provides for measurements to be taken 7 metres from stationary vehicles, with the engine running at three-quarters of the rpm at which it develops its maximum power or the maximum speed permitted by the governor, if the engine is fitted with one.

Further Commission proposals on motor vehicle noise

It is fair to say that the application of the provisions of the Council directive of 6 February 1970 has already led to a significant reduction in noise nuisance in urban centres of the Community. In France for example, since the early 1960's, noise levels have dropped by 7-10 dB(A) in the case of commercial vehicles and 6-8 dB(A) in the case of passenger vehicles. However, the continued increase in the number of vehicles on the road has rendered these provisions partially ineffective. This situation, together with increased demands to protect the urban population and the environment against noise nuisance, has led the Commission to conclude that the limits permitted in the first directive must be made more stringent.

On 20 June 1973 and 5 September 1973 respectively, the Governments of France and the United Kingdom informed the Commission of their interest in seeing a substantial reduction of the present limits and invited the Commission to examine the corresponding possibilities.

After consultations with national experts, the Commission drew up a proposal for a Council directive modifying the Council directive of 6 February 1970. In view of the complexity of the subject this proposal contained both short-term and long-term elements.

The *short-term programme* aims at an initial reduction in the present limits without changing fundamentally the test method and in accordance with the same vehicle

classification scheme as is laid down in the directive already adopted. The proposed reductions do, however, take account of the need to allow certain modifications to be made to the test method, the effect of which will be to make the specifications for some types of car even more stringent. For this reason the reduction proposed for other types of vehicle is greater and may be as much as four decibels for buses, i.e., a reduction of about 50 %. Indeed, the Commission considers that it is possible to further reduce the limits for these vehicles, in view of their major contribution to urban traffic noise and also with a view to reducing the gap between the limits permitted for the various categories of vehicle.

In the Commission's view, this reduction for buses is no more than a first step and is to be followed by further significant reductions aimed at keeping the sound emissions from these vehicles to a minimum; this will be technologically feasible as soon as certain design features are widely adopted.

The new limits proposed are set out in the following table:

Vehicle category	Value expressed in dB(A) (decibels (A))
1.1.1. Vehicles intended for the carriage of passengers and comprising not more than nine seats including the driver's seat	80
1.1.2. Vehicles intended for the carriage of passengers, comprising more than nine seats including the driver's seat, and having a permissible maximum weight not exceeding 3.5 tonnes	81
1.1.3. Vehicles intended for the carriage of goods and having a permissible maximum weight not exceeding 3.5 tonnes	81
1.1.4. Vehicles intended for the carriage of passengers, comprising more than nine seats including the driver's seat, and having a permissible maximum weight exceeding 3.5 tonnes	85
1.1.5. Vehicles intended for the carriage of goods, and having a permissible maximum weight exceeding 3.5 tonnes	86
1.1.6. Vehicles intended for the carriage of passengers, comprising more than nine seats including the driver's seat, and having an engine power equal to or exceeding 200 HP DIN	87
1.1.7. Vehicles intended for the carriage of goods or materials, having an engine power equal to or exceeding 200 HP DIN and a permissible maximum weight exceeding 12 tonnes	88

The aim of the *longer-term programme* is to find a new method of noise measurement which reflects the actual conditions in which vehicles are used in urban traffic and will, on the basis of the results of current studies and research and in accordance with the procedure laid down for adaptation to technical progress, lead to further amendments to the directive of 6 February 1970.

It might, for example, seem fairer to carry out two types of tests:

- a first test could be designed to reveal the maximum sound level when driving under extreme urban conditions but respecting the other traffic rules. In this case the current method in a slightly altered form could prove suitable.
- a second test could be designed to assess the degree of nuisance produced by a vehicle in normal urban traffic conditions. The degree of nuisance could be assessed by taking the equivalent L_{eq} level corresponding to the acoustic energy produced by the vehicle during a typical town driving cycle; this is similar to the method used to measure amounts of gaseous pollutants emitted.

The discussions in the Council on this proposed amendment to the 1970 directive are still progressing.

2. Motor cycle noise

On 12 December 1975 the Commission submitted to the Council a proposal for a Council directive on the approximation of the laws of the Member States relating to the permissible sound level and to the exhaust system of motor cycles.

In a letter of 31 January 1974, the French Government notified the Commission, pursuant to the agreement of 28 May 1969, relating to the status quo procedure for the general programme on the elimination of technical barriers to trade, of its intention to introduce legislation regarding motor cycle noise. The French Government agreed to postpone putting its draft into force until the Council had adopted a directive.

Permissible sound levels

Category of cubic capacity (cm ³)	Permissible sound level dB (A)
≤ 50	80
≤ 125	82
≤ 350	84
≤ 500	85
> 500	86
three-wheeled vehicles	86

In making its proposal, the Commission recognized that motor cycles represented a by no means negligible proportion of the motor vehicles on the roads in urban centres. Moreover, this type of vehicle was tending to increase in number. In view of their technical characteristics, motor cycles were frequently used at full throttle, i.e. at very high engine speeds. It has been proved that with most motor cycles a 20 % increase in speed causes at least a doubling of the sound intensity emitted.

The scope of the directive is limited to two or three wheeled motor cycles whose maximum designed speed is greater than 45 km/h. Provisions relating to the permissible sound level and to the exhaust system of such motor cycles are integrated into a EEC type-approval procedure, similar to that already established in the case of motor vehicles. Technical annexes contain the requisite definitions, the procedure for application for EEC type-approval, the limits to be observed as regards the sound level during the testing of motor cycles in motion and the requirements concerning measuring instruments, conditions and methods.

The approach followed in this directive is one of 'optional' rather than total harmonization. The levels prescribed do not represent a compulsory minimum sound level throughout the countries of the Community, but only a minimum level which, if complied with, must be accepted by Member States so that they may not refuse the registration or sale, entry into service or use of any such motor cycle. Theoretically, individual Member States could have lower standards than the ones provided for in this regulation. Commenting on the proposed directive, the European Parliament has on more than one occasion stressed the need to limit the applicability of the 'optional' system of harmonization where questions of road safety or environmental pollution are concerned.

3. Constructional plant and equipment

Acting on a proposal from the Commission, the Council included the sector 'constructional plant and equipment' in the supplement of 21 May 1973 to the general programme of 28 May 1969 aimed at eliminating technical obstacles to trade in industrial products. The action programme on the environment also called for the Commission to submit proposals to the Council in this field. On 20 December 1974, the Commission sent to the Council proposals for Council directives dealing both with the noise level of constructional plant and equipment and also with the measurement method.

For the purposes of the directives, 'constructional plant and equipment' means all machinery, appliances, equipment and installations which are used, according to their type to perform work on building sites, but are not primarily intended for the transport of goods or persons. Like the motor cycle directive, the proposal follows the 'optional' solution.

In addition to these general directives on constructional plant and equipment, which seek to establish the type-approval procedure and the relevant method of measurement of the sound level (it is to be noted that, during the course of the discussion of this proposal in the Working Groups of the Council, the Technical Annex relating to measurement methods has been substantially modified), the Commission submitted a specific proposal relating to the permissible sound level for pneumatic concrete-breakers and jack hammers. Other special directives will follow.

These three Commission proposals for Council directives are still under discussion in the Council. The European Parliament, though expressing itself in general in favour of the proposals, has once again commented that the optional type of harmonization laid down hardly seems compatible with the dangers to health and the serious effects on the environment caused by this kind of equipment.

4. Tower cranes, etc.

Again within the double framework of the general programme for the elimination of technical barriers to trade and the environment programme—the Commission has presented to the Council three proposals relating to the permissible sound level for tower cranes, current generators for welding and current generators for power supply. Although these three items of equipment are not, from the economic standpoint, the most important amongst the various types of constructional plant and equipment, they are undeniably the noisiest after jack hammers.

Here, too, the 'information agreements' have served a useful purpose. The German Government notified the Commission of a draft regulation providing for progressive limitation of the sound level of tower cranes and the French Government informed the Commission of two draft orders relating to the limitation of airborne noise emitted by current generators for power supply and welding.

In making these proposals, the Commission recognizes that the ISO (International Organization for Standardization) has for some years been studying draft standards for noise emitted by constructional plant and equipment. The Commission endeavours to achieve the closest possible collaboration with the ISO, both at the professional and personal level. The Commission recognizes that the trade in constructional plant and equipment manufactured in the Community countries far transcends the frontiers of the Community. It should certainly be possible to consider applying the principle of strict reference to ISO standards in the event of such standards being published between now and the time these directives are adopted by the Council. In any case, the framework directive provides for the adaptation to technical progress of the general test method and also the general survey method, as well as the technical annexes of the special directives.

5. Aircraft noise

Another area where the Community is seeking to take action on the source of noise itself is aircraft. The Environment Programme of 22 November 1973 did not mention aircraft as such. However, the Council, in reply to Written Question No 654/73 put by Members of the European Parliament on the subject of aircraft noise, stated that 'the Environment Programme of the European Communities provides for mounting a campaign against environmental and noise pollution caused by aircraft'. In that reply, the Council also envisaged standards for aircraft, making use of work done by international organizations.

As members of the Noise Advisory Council are of course well aware, the Fifth Air Navigation Conference of ICAO in 1967 made certain recommendations based on the principal conclusions of the International Conference on the reduction of noise and disturbance caused by civil aircraft (London 1966) with the object of reaching international solutions to the problem through the ICAO. This led the ICAO Council on 2 April 1971 to adopt the first set of standards and recommended practices on aircraft noise, known as 'Annex 16 to the International Convention on Civil Aviation'.

Among other things Annex 16 contains international standards and recommended practices relating to the noise certification of various categories of aircraft.

The first amendment to Annex 16, adopted by the ICAO Council on 6 April 1973, became operative on 16 August 1973. It covered subsonic jet aircraft with a maximum take-off weight greater than 5 700 kg, powered by engines with a bypass ratio greater than two and which received their first individual certificate of airworthiness after 1 March 1972, or aircraft powered by other categories of engine and which were granted their type certificate of airworthiness after 1 January 1969. The same standards applied to subsonic jet aircraft with a maximum take-off weight exceeding 28 500 kg and powered by engines with a bypass ratio less than two if the type certificate of airworthiness was issued before 1 January 1969 and their first individual certificate of airworthiness was not issued before 1 January 1976.

The second amendment adopted by the ICAO Council on 3 April 1974 came into force on 27 February 1975. It extended the scope of the Annex to include all recent jet aircraft, irrespective of weight, and introduced recommended practices for the noise certification of light propeller aircraft.

In the light of these developments, and of progress at international level and in view of the opinions expressed by national experts, the Commission believes that the most effective way of reducing aircraft noise is by the uniform application in all the Member States of the European Community of ICAO standards, in particular those set out in the latest version of Annex 16 to the Chicago Convention

on International Civil Aviation. Article 37 of this Convention, of which Annex 16 is a part, requires each contracting State to undertake to achieve the greatest possible uniformity in regulations and standards. The latter do not become mandatory in a State until embodied in its (national) laws.

The relevant laws of most Member States of the European Community are based on the principles of Annex 16. Nevertheless, there are major discrepancies between them. Italy, for example, has at present only a code of practice which is embodied in the 'Registro Aeronautica Italiana' and provides for a system of certification based on the standards of Annex 16, and Luxembourg still has no laws at all in this field.

Of the other Member States, Germany, France, Ireland, the Netherlands and the United Kingdom based their laws on the first amendment to Annex 16.

Belgium and Denmark based their laws on the latest version of Annex 16.

In the Commission's view such discrepancies not only run the risk of limiting the effectiveness of the measures to combat aircraft noise, but also of creating distortions in competition between purchasers, (airline companies) which would have a direct effect on the functioning of the common market.

The Commission has therefore made a proposal for a Council directive on the limitation of noise emission from subsonic aircraft.

This draft directive embodies the requirements of the latest version of Annex 16 to the Convention on International Civil Aviation, adopted by the ICAO Council on 3rd April 1974 and operative from 27 February 1975.

The directive would establish an EEC noise limitation certificate, i.e. the document by which the Member State which has registered the aircraft recognizes that such aircraft meet the requirements of the directive.

The directive provides for checks on compliance and also for the exchange of information between Member States to make such checks easier. Clearly, actions against aircraft noise have to be on an international scale. The directive therefore not only concerns aircraft on the civil aviation registers of Member States. It also relates to all civil aircraft of non-member countries landing or taking off in a Member State. In accordance with Article 37 of the Convention on International Civil Aviation, the proposal imposes the ICAO standards and recommended practices on aircraft of non-member countries.

The proposed directive would require mutual recognition of an EEC noise limitation certificate issued by a Member State. It leaves Member States free to impose restrictions on aircraft outside the scope of this directive. It therefore provides an incentive to modernize fleets and consequently reduce noise emission.

We have given some thought to the question of retrofitting. There is no doubt that the introduction of turbofan engines with higher bypass ratios has brought

a considerable reduction in the noise of subsonic jet aircraft. Similar engines power new generations of aircraft, but not certain older aircraft still in use. Nevertheless, possible ways of converting these aircraft being investigated. Some nacelle manufacturers have developed quiet nacelle and refanning kits which reduce noise of aircraft fitted with them. From a Commission study on the current composition of civil airline fleets an assessment can be made of the total cost of retrofitting with quiet nacelles. The total for the entire Community is put at US \$200 million (1974), not including the added operating costs after conversion since the cheapest quiet nacelle modification increases fuel consumption and degrades performance.

Admittedly refanning does not have these disadvantages, but even where practicable it costs far more than quiet nacelles.

It should also be borne in mind that some types of aircraft can be neither retrofitted with quiet nacelles nor refanned and that, given the lead times for kits, it would be 1982 before even part of the European fleet could be retrofitted. This puts a limit on the effectiveness of a retrofitting policy.

In the present economic climate, these two solutions cannot be contemplated for the time being, particularly as there are some doubts about the actual reduction achieved in the noise perceived on the ground. Consequently, although it is technically feasible to reduce the noise of the majority of subsonic jets, it does not make economic sense to modify aircraft already in service. On the other hand, there is every justification for taking measures to improve all aircraft (irrespective of their weight) which have not yet been awarded their individual certificates of airworthiness.

National experts are at the moment assisting the Commission in the elaboration of a proposal for a directive to limit the noise of propeller driven civil aeroplanes in the vicinity of airfields.

The directive covers light aircraft with a maximum take-off weight less than 5 700 kg, and of powered gliders. The essential idea is that, with certain exceptions, time limits would be placed on the flying of these light aircraft, or powered gliders, in the vicinity of aerodromes intended chiefly for sport flying, (e.g. flying schools and glider towing).

6. Criteria

In the language of the Communities Environment Programme the term 'criterion' signifies the relationship between the exposure of a target to pollution or nuisance and the risk and/or the magnitude of the adverse or undesirable effect resulting from exposure in given circumstances.

The Commission is now in the process of preparing a proposal for a Council

resolution concerning the determination of criteria for noise. The following tasks have been undertaken:

- compilation of as complete a bibliography as possible on the effects and pollution levels of noise
- a critical analysis of this information—and, as a result,
- the determination of criteria.

Meetings of national experts have been held to discuss and to critically analyse the available bibliography on the adverse or undesirable effects of the exposure of man to noise. The results of this work are given in 'Damage and Annoyance caused by Man' (Document No 5398 e, rapporteurs: H. Bastenier, W. Klosterkötter and J.B. Large).

The Commission has also taken into account the work performed at national and international level. In particular it has considered the report published by the WHO (Geneva) in 1973, entitled 'Health Hazards of the Human Environment' as it relates to noise.

The following are the Commission's preliminary conclusions concerning the criteria establishing the relationship between given exposures and observable effects from noise.

The effects of noise are divided into five categories:

- (a) Sleep interference
- (b) Speech interference
- (c) Annoyance
- (d) Performance of tasks
- (e) Hearing damage

(a) *Sleep interference*

- 35dB(A) is the non-fluctuating (less than 5dB) continuous indoor level up to which reports concerning sleep disturbance or awakenings are constant from about 10 % of the subjects tested irrespective of the cause.
- The continuous equivalent indoor level above which the pattern of sleep (e.g. EEG) is changed in more than 10 % of the subjects and above which the percentage of reports is significantly increased is between 40dB(A) (about 20 % reports) and 50dB(A) (about 50 % reports).
- Changed activation of the central nervous system, which may lead to awakening, is observed if an increase of 10 dB or more occurring in 0.5 sec. or less is superimposed on a continuous background level.

- Reduced sleeping ability of the particularly sensitive population (e.g. old, sick, convalescent) have been demonstrated at values approximately 10 dB below those mentioned above.

(b) *Speech interference*

- A continuous equivalent level of 65dB(A) makes normal conversation just possible at 1 metre.
- A continuous equivalent level of 45dB(A) or less introduces no problems in normal conversation at a distance of 1 metre. At greater distances lower levels correspond to these effects on speech intelligibility.
- In special situations where the contents of the message have to be completely understood, for example teaching in classrooms, medical consultations, the levels of background noise corresponding to the levels in paragraphs 2.1 and 2.2 should preferably be about 10dB lower.
- For television viewing, listening to the radio, or telephone conversations, in cases where the background noise levels show large variations with time, equivalent noise levels corresponding to the levels in paragraphs 2.1 and 2.2 are about 5dB lower.

(c) *Annoyance*

- Under average town living conditions, outside noise which emanates from transportation and industrial sources of 45dB(A) equivalent daytime noise levels will generally cause about 15 % of the population to be highly annoyed. 65dB(A) will generally cause about 40 % of the population to be highly annoyed.
- In noisier living conditions, city centres and near industrial sites, somewhat higher noise levels will correspond to the above described effects. On the other hand in quieter situations such as rural areas the described effects will occur at correspondingly lower levels. Tones and impulsive noises present in the environment increase the level of annoyance at each value of the equivalent noise level.
- During periods where the sensitivity to noise is greater, such as periods of rest on relaxation, the corresponding noise levels are lower.

(d) *Performance of tasks*

The findings of laboratory work show in general:

- A steady noise, without special significance, would not appear to interfere

with most human activities that do not require acoustic information in order to be carried out. This is so even where the steady level is relatively high, possibly as high as 90dB(A) at some times.

- Intermittent or impulsive noise has a more marked disturbing effect than steady noise.
- High frequency noise components (above about 200 Hz) usually cause worse interference with performance than do low frequency components.
- Noise does not have a notable effect on overall performance—but high levels of noise can cause variations in the performance of sequential tasks. There can here be a complete breakdown of performance or a total absence of reaction to stimuli, sometimes followed by a compensating improvement.
- Noise affects the quality of work more than the quantity.
- Complicated tasks, demanding considerable concentrations, are more easily influenced by noise than simple tasks.

(e) Hearing damage

High level noise can cause permanent impairment to hearing, different to age and illness, and which can lead to a handicap. Such a handicap can be avoided for the great majority of the population if the noise level to which they are exposed over their whole lifetime is less than a 24 hour daily value of equivalent continuous sound level, L_{eq} , of 80dB(A). This level corresponds to a value over 8 hours daily of 85dB(A); higher levels of continuous noise may only be endured, with no damage occurring, for shorter periods of time. The damage risk is greater if impulsive noise is added to continuous noise—the human ear cannot tolerate without damage, noise having an instantaneous value greater than 150dB.

In the determination of these criteria, it was considered that specific noise sources such as aircraft, traffic, musical noise etc. were likely to produce different levels of acceptability. The exposure/effect curves for each type of noise are not identical.

It was also considered that because of interindividual differences between members of the general population, the effects of noise can vary considerably.

In the determination of these criteria the population as a whole was considered. Additional considerations should be given to hypersensitive sections of the population, for example, old people, the sick and the very young.

This proposal concerning the determination of criteria for noise does not cover vibrations, and subsonic and supersonic waves, which will be the subjects of further studies.

7. Noise quality objectives

In accordance with Article 1 of the Council Decision of 21 March 1962 instituting a procedure for prior examination and consultation in respect of certain laws, regulations and administrative provisions concerning transport proposed in Member States, as amended by the Council Decision of 22 November 1973, the Netherlands Government sent the text of a draft law to protect the environment against nuisance by noise to the Commission under cover of a letter of 27 October 1975 from the Office of its Permanent Representative to the European Communities.

The draft law would empower the Minister of Public Health and Environmental Protection to make noise abatement regulations applying *inter alia*, to transport (other than by air) and to vehicles. The checks and controls envisaged apply to manufacture, sale and use. They enable noise standards to be established and noise prevention device characteristics and insulation material properties to be designated. The regulations may provide for charging, licensing and zoning.

This proposal by the Netherland's Government is of great interest to the Commission (and to its newly established Noise Committee). The elaboration of noise quality objectives at the appropriate level forms an important part of the work on noise proposed for the second Environment Programme 1977-81.

Chapter VII

Economic aspects of pollution control

One of the general principles endorsed by the Council, when it adopted the Environment Programme of the European Communities, was that the 'polluter should pay'. The Council recognized that the cost of preventing and eliminating nuisances must in principle be borne by the polluter. However, there might be certain exceptions and special arrangements, in particular for transitional periods, provided that they caused no significant distortion to international trade and investment. The Council said that, without prejudice to the application of the provisions of the Treaties, this principle should be stated explicitly and the arrangements for its application including the exceptions thereto should be defined at Community level. Where exceptions were made, the Council added that the need to progressively eliminate regional imbalances in the Community should also be taken into account.

On 5 March 1974 the Commission submitted to the Council a draft communication regarding cost allocation and actions by public authorities on environmental matters. The opinion of the Economic and Social Committee was adopted at its 121st Plenary Session held in Brussels on 26 and 27 June 1974.

The resolution of the European Parliament, embodying the Opinion of the Parliament, appeared in OJ C 76 of 3.7.1974, pages 31 and 32.

On 3 March 1975 the Council adopted a Recommendation which called upon Member States to conform in respect of allocation of costs and of action by public authorities in the field of environmental protection to the principles and rules governing their application which were contained in the Commission communication.

These principles and detailed rules are set out in an Annex to the Council's recommendation of 3 March 1975.

The Commission, in its communication to the Council, defines a polluter as

someone who directly or indirectly damages the environment or creates conditions leading to such damage.

The Communication states that, depending on the instruments used and without prejudice to any compensation due under international law or national law, and/or regulations to be drawn up within the Community, polluters will be obliged to bear:

- expenditure on pollution control measures (investment in anti-pollution installations and equipment, introduction of new processes, cost of running anti-pollution installations, etc.) even when these go beyond the standards laid down by the public authorities.
- the charges.

The Communication defines the purpose of charges as being to encourage the polluter to take the necessary measures to reduce the pollution he is causing as cheaply as possible (incentive function) and/or to make him pay his share of the costs of collective measures, for example purification costs (redistribution function). The charges should be applied, according to the extent of pollution emitted, on the basis of an appropriate administrative procedure.

According to the Commission, charges should be fixed so that primarily they fulfil their incentive function.

In so far as the main function of charges is redistribution, they should at least be fixed within the context of the abovementioned measures so that, for a given region and/or qualitative objective, the aggregate amount of the charges is equal to the total cost to the Community of eliminating nuisances.

Income from charges may be used to finance either measures taken by public authorities or to help finance installations set up by an individual polluter, provided that the latter, at the specific request of the public authorities, is seen to render a particular service to the Community, by reducing his pollution level to below that set by the competent authorities. In the latter instance, the financial aid granted must be limited to compensating for the services thus rendered by the polluter to the Community.

In line with Article 92 *et seq.* of the EEC Treaty, income from charges may also be used to finance the installations of individual polluters for protecting the environment, in order actively to reduce existing pollution. In this case, the measures for financing should be incorporated in an official multi-annual finance programme by the competent authorities.

Where the overall revenue exceeds the total expenditure by the public authorities when applying the two preceding paragraphs, the surplus should preferably be used by each government for its national environmental policies; however, the surplus may be used for granting aid only under the specified conditions.

In fact the Communication provides that aid may be granted for a limited period and possibly of a degressive nature, where the immediate application of very stringent standards or the imposition of substantial charges is likely to lead to serious economic disturbances and the rapid incorporation of pollution control costs into production costs may give rise to greater social costs.

The Communication recognizes that it may also prove necessary to allow some polluters time to adapt their products or production processes to the new standards. In any case, the communication states that such measures may apply only to existing production plants and existing products. (The enlargement or the transfer of existing production plants is to be considered as the creation of new plants where this represents an increase in productive capacity.)

The Commission's communication, annexed to the Council's recommendation of 3 March 1975, also specified that exceptions to the 'polluter pays' principle may be justified where, in the context of other policies (e.g. regional, industrial, social, and agricultural policies or scientific research and development policy), investment affecting environmental protection benefit from aid intended to solve certain industrial, agricultural or regional structural problems.

The Commission's communication lays down that the following shall not be considered contrary to the 'polluter pays' principle:

- financial contributions which might be granted to local authorities for the construction and operation of public installations for the protection of the environment, the cost of which could not be wholly covered in the short term from the charges paid by polluters using them. In so far as other effluent as well as household waste is treated in these installations, the service thus rendered to undertakings should be charged to them on the basis of the actual cost of the treatment concerned.
- financing designed to compensate for the particularly heavy costs which some polluters would be obliged to meet in order to achieve an exceptional degree of environmental cleanliness.
- contributions granted to foster activities concerning research and development with a view to implementing techniques, manufacturing processes and products causing less pollution.

In a separate memorandum to the Member States regarding the Community approach to state aids in environmental matters, the Commission expressed the view that during a transitional period state aids designed to assist existing firms in adapting to laws or regulations imposing major new burdens relating to environmental protection would qualify for exemption under Article 92(3)(b) EEC by being aids to promote the execution of an important project of common European interest.

This would apply only for the six-year period from 1 January 1975 to 31 December 1980. The Commission calculated that this should be long enough to enable

all the Member States to implement arrangements ensuring that the polluter pays principle was applied throughout the Community on broadly similar principles.

In order to qualify for exemption under Article 92(3)(b), national aids would have to satisfy the following tests:

- they would have to be necessitated by new major obligations imposed by the State or by the Community on the recipient firms in relation to environmental protection.
- they would have to be granted to finance investments necessary to the adaptation which these firms would have to make to their plants in operation at 1 January 1975 in order to satisfy the stated obligations.

Such additional investment might be involved either in acquiring new equipment to reduce or eliminate pollution or nuisances or in adopting new production processes having the same effect; in the latter case aid should not be granted in respect to that part of the new investment whose effect is to increase productive capacity. The cost of replacing and operating these investments should be fully borne by the relevant firms.

When expressed as a net after-tax subsidy calculated by reference to the common method set out in the Commission Memorandum to the Council on Regional Aid Schemes, they must not exceed:

- 45 % for investments in 1975 and 1976;
- 30 % for investments in 1977 and 1978;
- 15 % for investments in 1979 and 1980.

The Commission felt that this degressive scale was justified because the Member States must be aware of the need to make polluters pay the price of their pollution as quickly as possible and because firms must be made to treat the investments required to eliminate pollution as a matter of urgency.

The maximum aid, although it was high, took account of the degree of effort required of businesses which had thought out their activities in an economic context where environmental costs were insufficiently taken into account, while the fact that it was always less than 50 % accentuated the fact that, although not immediately applicable to its full extent, the polluter pays principle remained the objective.

It went without saying, moreover, that these maxima would also have to be respected where, in a given Member State, the relevant investments might benefit from several specifically environmental aid schemes, at once.

Each year the Member States would have to give a statistical report for the past year on the aids granted and the investments involved in each industry, expressed as net subsidies.

As required by Article 93(1), the Commission would thus be in a position to monitor the application of these aid schemes and to act where necessary in order to tighten discipline should it be found that the schemes were liable to create problems in certain industries as regards competition and trade within the Community.

Within these limits the Member States would be able to implement both aid schemes in favour of given industries or regions and general schemes applicable to any particular industry or region. Any scheme which does not meet the above conditions would have to be modified, for otherwise the Commission would have to declare it incompatible with the common market.

The Memorandum from the Commission to the Member States also lays down certain guidelines for dealing during the transitional period with aids not satisfying the stated criteria, and after the transitional period with all specifically environmental aids.

Part II

Actions to improve the environment

Chapter I

Dissemination of knowledge relating to environment protection

The Programme of Action of the European Communities on the environment provided for the preparation of a permanent inventory of sources of information on Environment Quality and its integration into a European contribution to the United Nations International Referral System (IRS) and other appropriate international systems, and into the European documentation Network provided for in the Council Resolution of 24 June 1971.

On 3 March 1975, the Commission submitted to the Council a proposal for a Council decision establishing a common procedure for the preparation and constant updating of a European inventory of source of information on the environment.

In preparing its proposal, the Commission consulted two groups of national experts. The first consisted of experts representing the interests of those using the information in question and was responsible for identifying management information requirements. The second group, an offshoot of the Scientific and Technical Information and Documentation Committee (STIDC), was asked to identify the possibilities for improving the provision and networking of the information in relation to the needs of users.

The Commission noted that there was a very wide distribution of documents covering the various aspects of the environment, which were held or indexed by numerous documentation services often specializing in specific disciplines such as chemistry, physics, biology, medicine, toxicology, law, etc. There existed approximately a thousand services possessing information relating to the environment.

Apart from these sources of documentary information, there were individual services and specialists with extensive knowledge whose services were utilized by those responsible for supervising, protecting or managing the environment. It

was estimated that there were approximately three thousand such services and experts.

The Commission believed it was essential to make available to users the knowledge and skills acquired by scientists engaged in research on the environment; such research was at present being carried out in connection with more than 15 000 projects in the Community.

In order that the best use might be made of information on the environment at present available in the Community, the different sources of information must be identified and indexed by standardized methods, and the subjects covered and the services provided must be described and notified to potential users.

The permanent inventory as proposed by the Commission included:

- a list of documentation sources
- a list of current and scheduled research projects
- a list of specialist services and individual experts.

The inventory:

- would constitute a reference index to all sources of information covering a particular problem;
- would form the technical basis for coordination or harmonization of information services and for preparing the network of scientific and technical information on the environment provided for in the action programme;
- would reveal any gaps in current scientific and technical knowledge and thus show the direction in which action, particularly research, should be taken to fill the gaps while avoiding overlapping;
- would enable a Community contribution to be made to appropriate international systems, especially the United Nations International Referral System.

The Economic and Social Committee approved the proposal on 28 May 1975 at its 130th Plenary Session. On 9 June 1975 the Committee of the European Parliament on Public Health and the Environment adopted its report (Document 141/75, rapporteur: Mr H.E. Jahn).

On 8 December 1975 the Council adopted a decision based on the Commission's proposal.

The decision included a model questionnaire. Member States undertook to assemble the information requested in the questionnaire and shall forward the information to the Commission in a manner and form compatible with the latter's requirements.

The information was to be collected annually to enable the inventory to be updated. This information was to be forwarded to the Commission not later than four months after the end of the reference year.

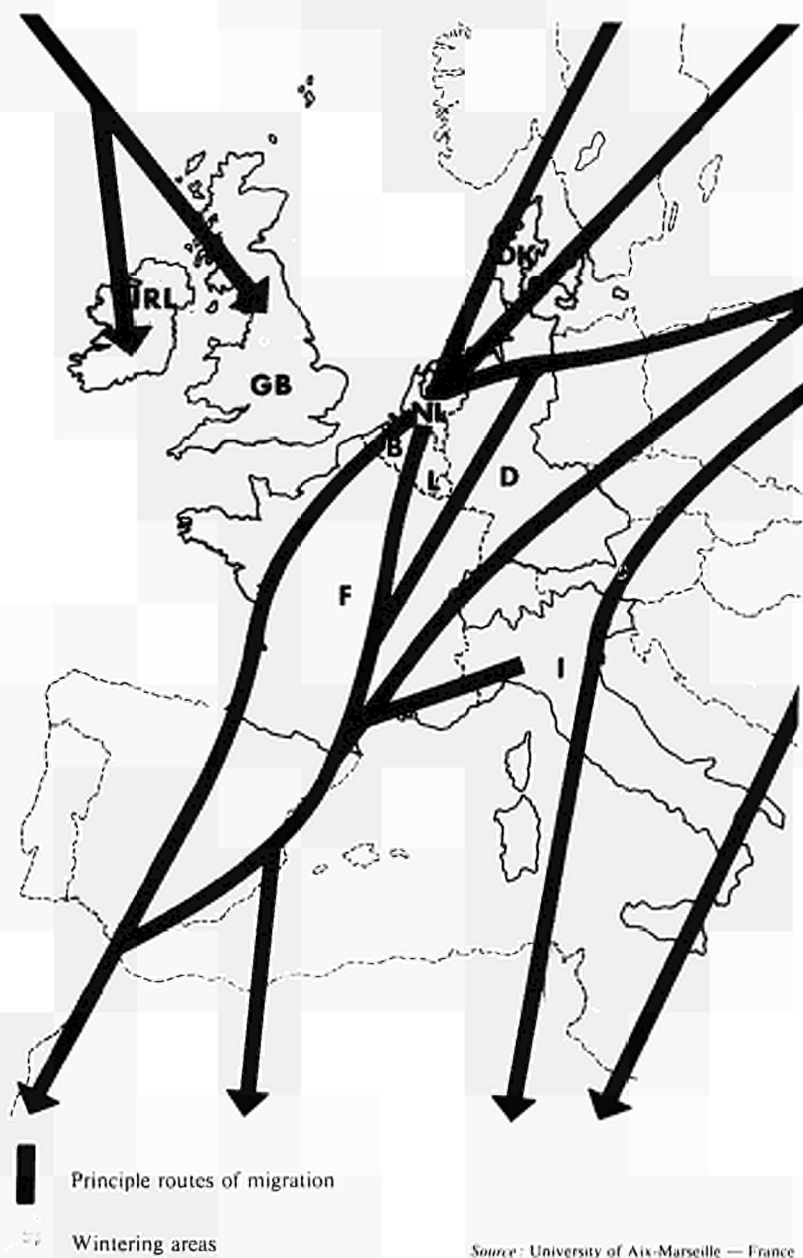
Member States also undertook to designate the national authority which will be responsible for assembling and forwarding to the Commission the information referred to and to inform the Commission.

The Commission for its part would develop the software and the methods of indexing and encoding the information. It was to undertake the automated processing of this information and was to supply Member States with a copy of the inventory on magnetic tape or any other medium and with the software necessary for its use.

The Commission was to forward to the International Referral System (IRS) of the United Nations Environment Programme a magnetic tape containing the appropriate information which the Member States wished to supply to this system.

In the light of any experience gained the list of information constituting the inventory and the methods of preparing the inventory might be revised by the Commission in collaboration with the competent national authorities.

Migration of birds in Western Europe



Chapter II

Protection of the natural environment

1. Wildlife

The Programme of Action of the European Communities on the Environment noted that hundreds of millions of migratory birds and songbirds are captured and killed in Europe every year provoking worldwide protests against the countries which allow the trapping of birds.

This massive destruction provokes a serious threat to the ecological balance in Europe, because it causes plant parasites to proliferate. As a result, the campaign against such parasites requires use on a bigger scale of insecticides which are sometimes harmful to man and to the natural environment.

The Programme of Action stated that policy for the protection of the environment should therefore include measures to prevent the large-scale destruction of birds, particularly songbirds and migratory birds, and more generally to protect the existence of certain animal species threatened with extinction.

The main conclusions of a study on the various aspects of bird protection carried out on behalf of the Commission by the 'Zoologische Gesellschaft von 1858' of Frankfurt-on-Main under the direction of Professor Dr. Bernhard Grzimek in collaboration with the major international organizations concerned, may be summarized as follows:

— of the 408 species of wildbirds living in the Community, 125 are increasing their number whereas 221 species are on the decline, in some cases very rapidly.

The number of species which have become extinct in recent decades varies from one Member State to another: for example, 32 in Italy, 17 in Germany and 6 in Belgium. In the Community as a whole, the number of species threatened with extinction is 58. The corresponding figures for individual Member States are, in some cases, much higher than this;

- the main reasons for the high mortality rate among declining species of birds are:
 - intensive capture by man (hunting, trapping etc.) in some Member States and in the majority of non-Member States affected;
 - loss of habitats due to various types of development (drainage schemes, ill-considered land-reallocation projects, urbanization, tourist development, etc.);
 - poisoning of their food and polluting of their environment.
- given the important role played by birds in maintaining the ecological balance, the quality of the natural environment is seriously jeopardized by the excessive mortality rate of nearly half the autochthonous species in Europe. This situation is not confined to the territory of countries which give inadequate protection to birds but also extends to the territory of other countries which constitute migration areas. This is therefore a typical trans-frontier and international environment problem and cannot be solved by isolated measures taken at national level;
- apart from the detrimental effect on the ecological balance, an excessive mortality rate of nearly half the bird species also produces marked adverse effects in a number of economic sectors, particularly agriculture and tourism, as well as in several scientific fields (ornithology, ethology, biology, ecology, sociology, etc.). On the other hand, the adverse consequences caused in some economic sectors by a reasonable restriction on the number of birds captured (in particular the sporting gun and ammunition industry and trade) should not be over-estimated;
- for many strata of European society birds are an important element in the quality of life and, for a large number of people, especially town-dwellers, they are the main point of contact with nature. Public opinion is coming to consider migratory birds more and more as a common heritage and not as the exclusive property of the country where they may be at any given time.

On 20 December 1974 the Commission transmitted a Recommendation to Member States concerning the protection of birds and their habitats.

The Commission noted that the protection of birds and of certain species of wild flora and fauna could be already significantly improved if all the Member States adhere to the International Convention for the Protection of Birds, adopted in Paris in October 1950, and to the Convention on the Conservation of Wetlands of International Importance especially as Waterfowl Habitat, adopted at Ramsar in February 1971.

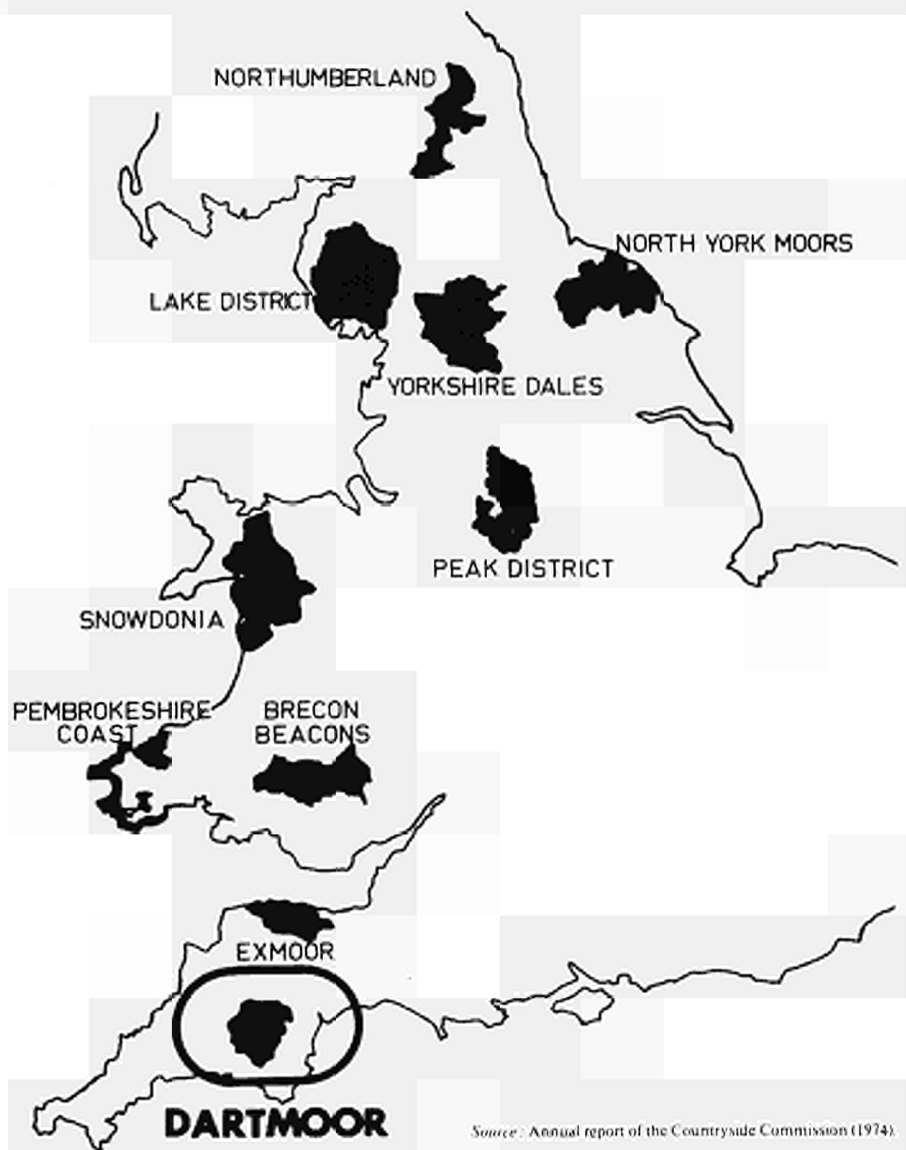
The Commission pointed out the International Convention for the Protection of Birds, adopted in Paris in 1950, replaced and extended the Convention for the Protection of Birds useful to Agriculture concluded in 1902, again in Paris, by 12 European States. In contradistinction to the 1902 Convention, the 1950 one



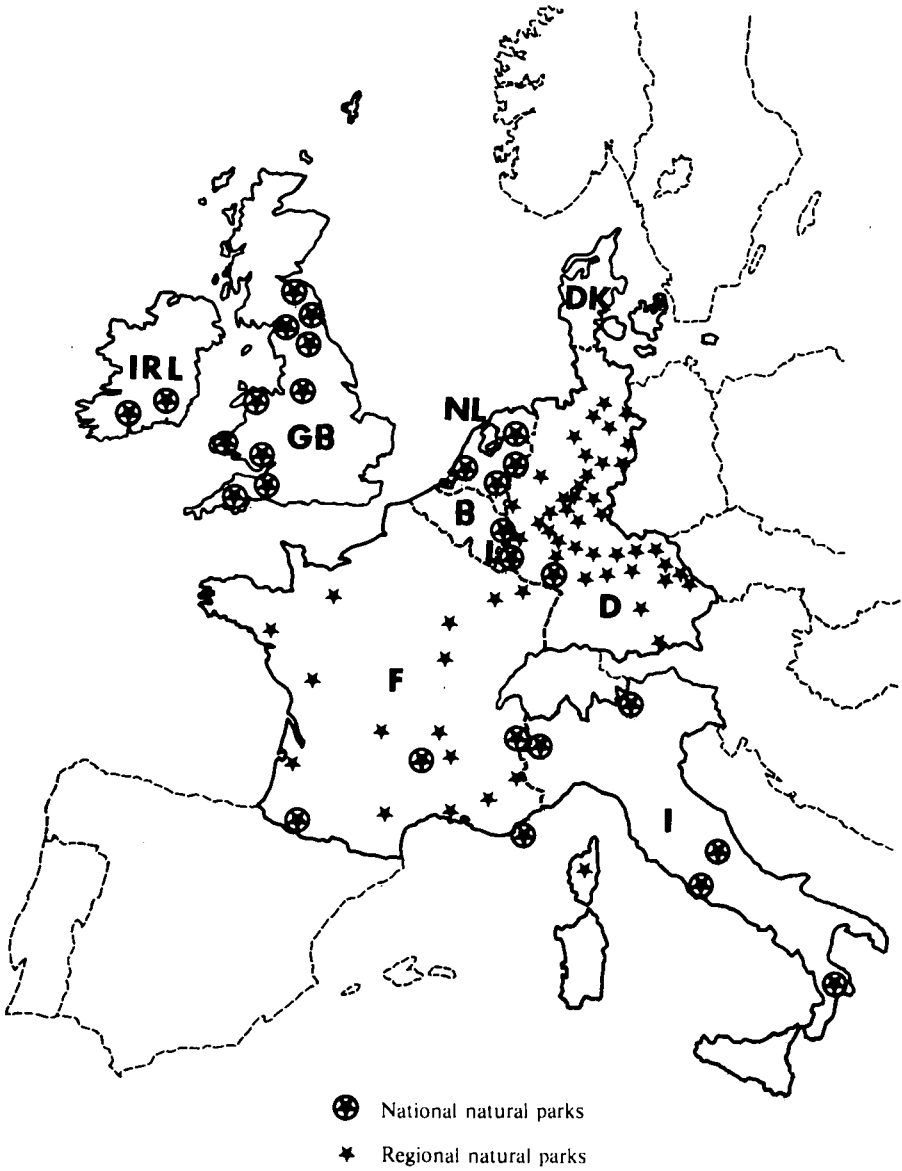
Belgium :

The shooting of game is governed by regulations and subject to licence. Every year, opening and closing dates are announced for the shooting of different types of game.

Situation of the Dartmoor natural park in relation to other natural parks in the United Kingdom



Natural parks in the EEC



Source : Federation of the French natural parks (1973).

was basically motivated by ecological considerations, although Article 5 encouraged an ethical argument by making it an offence to inflict wanton suffering on birds. This Convention applied without exception to all wild birds. It aimed in particular at providing strict protection for all species during reproduction and migration periods. Species threatened with extinction or which are of particular interest are given round-the-year protection. Exceptions to provisions of this Convention may be granted to acceding States in cases where some species through sheer numbers might be detrimental to agriculture. This Convention had been in force since 17 January 1963.

The Commission pointed out that the Convention on Wetlands of International Importance especially as Waterfowl Habitat was adopted on 2 February 1971 by an international conference convened by the Iran Government in Ramsar. It would enter into force as soon as seven States notified it. Apart from the United Kingdom, four States, namely Finland, Iran, Switzerland and the Soviet Union had already deposited their instruments of ratification.

The Commission believed that this Convention was generally regarded as being of vital importance for the protection of the ecological balance and an irreplaceable natural heritage; in scope it went far beyond the mere protection of waterfowl habitats.

For all these reasons the Commission anxious to contribute to the protection and improvement of the environment and of the quality of life, and having regard to the Treaty establishing the European Economic Community, recommended Member States, if they had not already done so, to accede as quickly as possible to both of the above mentioned Conventions, i.e. to the 1950 Convention for the Protection of Birds and the 1971 Convention on Wetlands of International Importance.

The Action Programme also provided that the Community should study with a view to possible harmonization national regulations on the protection of animal species migratory birds in particular.

This study has now been completed and a draft directive has been prepared for transmission to the Council.

2. Mountain and hill Farming

As noted in the Action Programme of the Environment, the Commission on 21 February 1973 forwarded to the Council a proposal for a Council Directive on agriculture in mountain areas and in certain other poorer farming areas. This directive was the subject of a Resolution in which it was foreseen that with a view to maintaining farming and hence a minimum population level for the preservation of the countryside in less-favoured areas, Member States will be author-

ized, in accordance with Community rules to be laid down in due course, to establish a special aid system designed to encourage farming and to improve farmers' incomes in such areas.

It was also foreseen that the Council would 'implement this Resolution by means of a Directive which it shall adopt before 1 October 1973'.

On 28 April 1975 the Council adopted a directive on mountain and hill farming and farming in certain less-favoured areas, in doing so the Council recognized that the steady decline in agriculture incomes in these areas as compared with other regions of the Community, and the particularly poor working conditions prevalent in such areas, were causing large scale depopulation of farming and rural areas. This would eventually lead to the abandonment of land which was previously maintained and would moreover jeopardize the viability and continued habitation of those areas.

The directive authorized Member States to introduce a special system of aids to ensure the continuation of farming. The list of less-favoured areas was to be adopted by the Council in the light of certain characteristics. The directive specified that the less-favoured farming areas should include mountain areas, in which farming was necessary to protect the countryside, particularly for reasons of protection against corrosion or in order to meet leisure needs; they should also include other areas where the maintenance of the minimum population or the conservation of the countryside were not assured.

3. Forestry

The Action Programme on the Environment specified, that the Commission would present to the Council before 31 December 1973 a proposal for a directive on the promotion of measures in the forestry sector aimed at structural improvement in agriculture. The programme noted that the aim was to promote the afforestation of areas hitherto used only for farming which are uneconomic, to make virtually unproductive areas of forest productive, and to set up productive plantations, chiefly for the purpose of protecting the soil from erosion. The essential task of promoting afforestation should form part of the general development programme for each region as regards the use of soil and the maintenance of the landscape.

On 20 February 1974 the Commission submitted to the Council a proposal for a Council directive concerning forestry measures.

The Commission noted, in making its proposal that forestry's major contributions to the improvement of agrarian structure were twofold. First, forestry provided employment both in the forest and subsequently in wood processing industries in rural areas where the opportunities for agricultural employment were decrea-

sing. Secondly, forestry put to good use land that was no longer suitable for or required for agriculture.

In the Commission's view however, forestry provided much wider benefits.

An important objective is the production of wood. All Member States of the Community were net importers and the Community as a whole imported nearly half of its requirements of forest products. An increase in wood production therefore seemed desirable, especially as the long term wood supply position on the world market, was to say the least, uncertain. Of similar importance and, in certain circumstances of even greater importance, were the contributions which forestry makes to the beauty of the landscape; to the conservation of fauna and flora and to the protection of the soil; woodlands also sheltered adjacent agricultural crops against wind. These functions were all an integral part of forest management and were therefore covered by the proposal.

The system of encouragement referred to in the draft directive related to the following measures:

- the afforestation of areas under agriculture and of uncultivated areas;
- the conversion of unproductive or low-production woodlands into productive woodlands;
- the establishment and improvement of shelter belts in the interests of agriculture and the environment;
- additionally the creation of recreational facilities in the forest, such as picnic-sites and paths for pedestrians, cyclists or horse riders.

The directive prescribes that Member States shall fix the level of aids to be granted. The levels of aid may be varied between regions and according to other relevant criteria such as the species to be planted and the needs of industry and the environment. The directive specifies that in those regions which are defined as mountain and hill-farming areas under the Council directive a higher level of aid must be given than in other regions. In any case, the amount of the aids must be at least 60% and not more than 90% of the cost of the measures in question.

Expenditure incurred by Member States shall be eligible for assistance from the Guidance Section of the EAGGF, revenue foregone through fiscal incentives, however, does not qualify as expenditure.

The Commission proposes that, subject to certain limits, the guidance section of the EAGGF shall refund to Member States 25% of the expenditure eligible for assistance. On 24 September 1974 the Parliament adopted a resolution embodying its opinion on the proposal from the Commission, having regard to the report of the Committee on Agriculture and the opinions of the Committee on Budgets and the Committee on Regional Policy and Transport.

In its report, the Committee on Agriculture, pointed out that (using the statistics

from 1969 to 1972) that in the enlarged Community the total area under forest was 31 million hectares as against an area of 94 million hectares used for agriculture. The Committee pointed out that between 1969 and 1972 the total area used for agriculture had decreased by 3.3 % going from 97 296 000 to 94 051 000 hectares. Of the nine Member States the country with the largest proportion of forest was France, which with 14 363 000 hectares of woodland accounted for 45 % of the total Community forest area; it was followed by Germany with 23 %, Italy with 20 % and the United Kingdom with 6 %. The other five Member States accounted for only 6 % of the total between them.

The Committee pointed out that the Community's own timber supply for industrial purposes covered less than 50 % of the requirements. And this percentage was likely to decrease rapidly owing to rising consumption, which for paper and cardboard production was estimated to grow from 26.92 million tonnes in 1970 to 42.81 million tonnes in 1980.

Quite apart from the strictly economic and commercial aspects of timber production, the Committee expressed that the forest fulfils three main functions: it affords physical protection, it is a valuable factor in rural economy and it is a social amenity.

Physical protection: forests play an essential part in protecting the soil against erosion by wind and water and help to stabilize the soil and regulate the flow of water. This is particularly true for mountainous areas, but also for Mediterranean areas where the unpredictable nature of the climate and rainfall makes the soil particularly vulnerable to erosion.

Trees also play a part in protecting crops against the wind (windbreaks) and shading livestock from the sun; they are also important for the enrichment of the soil.

Rural economy: within the framework of projects to be undertaken to restructure Community agriculture, measures to promote afforestation are of particular importance.

There are many facets to the role of the forest in the rural economic life of a country or region: forestry in conjunction with agriculture allows an income to be derived from lands that are little or not at all suited to cultivation in the true sense; it provides employment for farmers who are obliged to give up their own farms and it increases the productiveness of the soil.

A proper balance between arable land, woodland and pastureland is therefore one of the objectives to be attained through structural policy.

Social amenity: the great density of population in the cities and towns of industrialized countries has increasingly pointed up the urban centres need for the forest as a 'lung'. It is essential therefore not only to preserve the forests which still remain in the vicinity of cities but also to create wooded areas in the suburbs where vegetation has largely been destroyed. In many areas the forests attract a

growing number of people from the cities, and as a result they are becoming indirectly an important source of income for the hotel industry and for local business. Forests are therefore a development factor in the general economy at regional level.

On 7 March 1975, the Commission presented to the Council pursuant to the second paragraph of Article 149 of the EEC Treaty, a revised proposal for a Council directive concerning forestry measures this proposal is still under discussion in the Council.

Chapter III

European Foundation for the Improvement of Living and Working Conditions

In its two communications on the environment of July 1971, the Commission recommended the establishment of a European Institute for the Environment which would, in particular, expand the basic ideas on the improvement of living conditions in the society of the future.

During the Paris Summit Conference in October 1971, the President of the French Republic and the Prime Minister expressed the wish that a European Foundation to study living and working conditions should be set up. This Proposal has since been brought up again by the French Government in the context of the Council of Ministers for Social Affairs of 21 May 1973.

In the Action Programme on the Environment, the Commission proposed that the two ideas should be merged in a single project: the European Foundation for the improvement of living and working conditions.

This merger was affirmed in the draft Social Action Programme, which was submitted to the Council on 15 October 1973, and which specifically refers to the services such a Foundation could provide in improving working conditions and the working environment.

When adopting the Action Programme on the Environment the Council noted that the Commission intended to submit proposals to set up a European Foundation for the improvement of living and working conditions to it before 31 December 1973.

It was in fact on 5 December 1973 that the Commission presented to the Council its proposal for a Council Regulation on the creation of a European Foundation for the improvement of living and working conditions.

The following were the main features of the proposed Foundation:

Its Tasks

The Foundation should contribute to the design and establishment of living and working conditions which are more in accordance with Man's aspirations by activity intended to develop and disseminate knowledge likely to assist this development.

In this context the Foundation should carry out a prospective study to define the medium and long-term objectives, the problems likely to arise and the specific topics for research.

The Foundation would:

- coordinate, direct and finance studies most of which will be assigned to study and research institutes and specialized bodies in the Community;
- promote and, where necessary, carry out certain pilot experiments;
- broaden the exchange of ideas between the research workers, the administrators and persons from economic and social life concerned by these studies and experiments, by means of conferences, symposia and seminars;
- assist the actual putting into use and the dissemination of knowledge;
- cooperate with specialized institutes and bodies in non-Member countries.

The studies would analyze and interpret the present and future tangible and intangible needs, whether real or felt, of post-industrial European society, as well as the quantitative and qualitative factors required to satisfy those needs, the restraints limiting their satisfaction and the types of social and economic organization likely to contribute to these factors.

Basically the Foundation would concentrate on the study of long-term problems to prevent any overlapping with the deliberations and studies carried out by the Commission itself.

For example, in the Commission's view, the following topics could be dealt with:

1. *Improvement in living conditions in general*

- the long-term aspects of ecological problems (natural resources, recycling of products, CR products);
- the distribution of human activity (concentration or dispersal, the future of the city, energy production, the future of the car, leisure activities, etc.);
- the future of the city and the habitat, urban renewal and the preservation of Europe's aesthetic and historic heritage;
- the effects of the revolution in the field of information (reduction of transport needs, education and work at home);

- family and health problems;
- the problems of immigration and of integrating the non-European population.

2. *Improvement of working conditions*

- upgrading of man at work (participation, joint management, employer-labour relations, job enrichment, further education, etc.);
- organization of work (teamwork, adjusting machines to the worker, working hours, etc.);
- the specific problems of certain sections of the labour force (young workers, women, handicapped workers, immigrant workers, etc.);
- problems outside the undertaking (transport to the place of work, leisure time, accommodation, etc.).

Structure and organization of the Foundation

The Foundation should be a body for thought and study with sufficient means of its own. Interested bodies in the Member States would be called on to co-operate with it.

The Commission proposed that the Council should determine the seat of the Foundation and that it should be directed and represented by a Director and a Deputy Director.

The broad guidelines for the Foundation would be determined by an Administrative Board of eleven members. Each of the Member States would appoint one member and the Commission would appoint the remaining two. The members of the Board would not need to be officials, as both the Member States and the Commission might also appoint persons who were particularly qualified for the task.

Besides being responsible for the general guidelines, the Administrative Board would supervise the Director's management of the Foundation by approving the Annual General Report, drawn up by the Director, on its activities, financial situation and prospects for the Foundation. The Administrative Board would also draw up the Foundation's budget, which would be transmitted to the Commission in order that the latter might enter an estimate of expenditure in the Community budget as a subsidy for the Foundation.

For all of its activities, both the definition and the implementation of its programme, the Commission believed that the Foundation should make sure of the assistance of bodies from social and economic life, the scientific world and all other parties concerned. The establishment of a permanent Committee to ensure

that these relations will be close and fruitful was desirable. A Scientific and Technical Committee of fifteen members (five representing labour, five representing the employers and the remainder representing the scientific work and other interested parties) would carry this out.

The Scientific and Technical Committee would not only give opinions on projects submitted to it by the Director, but could also take the initiative by forwarding proposals to the Administrative Board and to the Director. For this reason, the Committee was assigned a role exceeding that of a purely Consultative Committee. This was underlined by the fact that the Committee would elect its Chairman from among its number and draw up its own rules of procedure.

The frequency of the meetings proposed—at least four per year—also stressed the importance the Commission placed on close contact between the Directorate of the Foundation and all the interested parties.

The Commission suggested that all the studies carried out by the Foundation should be published.

The Foundation's working programme should take account of the European Communities' requirements in the field of research into and studies on the improvement of living and working conditions. The Director of the Foundation should take account of the following opinions, proposals and suggestions when drawing up the annual programme:

- the Administrative Board would draw up the general guidelines having received the opinion of the Scientific and Technical Committee;
- the Scientific and Technical Committee might make proposals concerning individual actions in the programme;
- all of the Community institutions might put forward suggestions.

The Foundation would be financed by own resources (gifts, legacies, proceeds from the sale of publications, etc.) as well as by an annual subsidy entered in the budget of the European Communities. The latter would constitute the greater part of its revenue. An estimate of expenditure for the first year of activity was annexed to the draft Decision of the Council.

The Section for the Protection of the Environment, Public Health and Consumer Affairs of the Economic and Social Committee delivered its opinion on the Commission's proposal at its meeting on 13-14 May 1974 (Dossier: 50/ENVi SOC - rapporteur Mr de Grave).

On 22 May 1974, the European Parliament having regard to the report of the Committee on Public Health and the Environment (Document N3 of Document 93/74), adopted a First Resolution on the communication and proposal from the Commission. On 22 May 1974, the Parliament, having regard to the report of its Committee on Social Affairs and Employment (Doc. 94/74), adopted a Second Resolution on the same subject.

On 26 May 1975 the Council adopted a Regulation on the Creation of European Foundation for the Improvement of Living and Working Conditions.

The Regulation as adopted by the Council followed in its essential aspects the original proposal of the Commission. The Council decided that the administrative board should consist of 30 members of whom:

- nine members should represent the governments of the Member States;
- nine members should represent the employers' organizations;
- nine members should represent the employees' organizations;
- three members should represent the Commission.

The Council decided also that the seat of the Foundation should be in Ireland.

The Council Regulation provides that, when drawing up the programme, the Director of the Foundation shall take account of the opinions of the Committee of Experts as well as those of the Community institutions and the Economic and Social Committee.

In response to a request made to it by the Commission on 16 July 1975, the Economic and Social Committee prepared its opinion at its 135th Plenary Session held in Brussels on 26-27 November 1975.

The very thorough and thoughtful submission by the Economic and Social Committee, together with other submissions was considered by the Administrative Board of the Foundation when it held its first meeting in Dublin on 6-7 May 1976. At that meeting, the Administrative Board agreed to appoint Mr Michel Carpentier, Director of the Environment and Consumer Protection Service of the Commission of the European Communities, as its first President. It also took a number of other substantive or administrative decisions.

On 28 July 1976 the Commission, approved the appointment of Mr W. de Jong as the Director of the Foundation and of Mr G. Querenghi as the Deputy Director of the Foundation.

Urbanization and the environment in the North West European megalopolis



Source: EEC (1974).

Chapter IV

Urban development and improvement of amenities

Chapter 3 entitled 'Urban development and improvement of amenities' of the second part of Title II of the Programme of Action of the European Communities on the Environment provides for a number of studies on environmental problems closely associated with urban and regional development. All of these studies include the examination of the various aspects of preserving the Community's architectural and natural heritage.

Furthermore, in its resolution of 13 May 1974 on the protection of Europe's cultural heritage, the European Parliament recommended a considerable stepping-up of efforts to preserve this heritage.

The work already carried out within the framework of the abovementioned studies shows that the architectural and natural heritage which reflects Europe's cultural identity is now seriously threatened with decay and disappearance and urgent measures are needed. This finding applies equally to the urban and rural environment.

On 20 December 1974 the Commission made a recommendation to Member States concerning the protection of the architectural and natural heritage. The Commission noted that in recent years, two important steps had been taken to cope with the problem of the decay and the rapid disappearance of the architectural and natural heritage, namely:

- the convention concerning the protection of the World Cultural and Natural Heritage adopted in November 1972 by UNESCO, and the
- 'European Architectural Heritage Year'.

Since the architectural and natural heritage was generally felt to be a determining factor in the quality of life, both these initiatives were of major importance for the protection and improvement of the environment in the Community.



The architectural and natural heritage which reflects Europe's cultural identity is now seriously threatened with decay and disappearance and urgent measures are needed.

The Commission noted that the UNESCO convention calls upon acceding States to draw up national inventories of immoveable property forming part of the world cultural and natural heritage. It also requires that the acceding States should undertake to ensure appropriate protection for the property thus selected. The convention also provides for the setting up of a fund to assist countries not possessing sufficient resources to provide adequate protection for certain property acknowledged to be of universal value. The fund will also contribute to the training of specialists in this field. Apart from its direct value for the preservation of the fixed architectural and natural heritage, this convention is also of distinct importance as regards the protection of numerous species of wild flora and fauna existing in the protected areas. If the Member States could accede to this convention at an early date, this would also provide a very substantial support for the activities undertaken in connection with 'European Architectural Heritage Year'.

The Commission recalled that 'European Architectural Heritage Year' 1975 was an initiative stemming from the Council of Europe. It was to take the form of a campaign spread over three years and was designed to highlight the architectural heritage as a factor determining the quality of life, as well as improving the preservation of this heritage. The campaign was aimed at the public authorities of all levels, the professional interests concerned and the general public, and was to culminate in 1975, which was to be styled 'European Architectural Heritage Year'. It was intended to mark the beginning of a vast movement for the preservation and restoration of this heritage. This campaign, which the European Parliament had already welcomed in its resolution of 13 May 1974 on the protection of Europe's cultural heritage was to consist in two main types of action, namely:

- pilot projects for restoration and renovation of numerous decaying buildings and sites in the participating countries;
- creating public awareness and the general desire to preserve and restore the architectural heritage, which is a necessary condition for the implementation of a policy in this field at all levels of public administration.

The Commission noted that since the start of the campaign, several European countries which were not members of the Council of Europe had joined in its activities and news of similar movements was starting to come in from other continents.

In view of the interests at stake and of the urgency of the problems involved, and having regard to the Treaty establishing the European Economic Community, the Commission recommended that Member States:

- sign or ratify, provided they have not already done so, and if possible before the end of 1975, the convention on the protection of the world cultural and natural heritage, adopted by UNESCO in November 1972;
- actively support the actions taken in execution of the initiatives of the Council

of Europe in connection with the 'European Architectural Heritage Year, 1975'.

The Commission—with the aid of a Study Group of the Scientific and Technical Research Committee (CREST)—has presented to the Council a proposal for a Decision concerning a research programme relating to the development of large conurbations. This programme will be implemented as a 'concerted action', with co-ordination of a number of research activities in the field of urban development conducted by the Member States. The aim of the programme is to produce a comparative analysis of the causes, dynamics and consequences of the development of large conurbations in the Community.

Priority will be given to three subjects:

- identification of the forces governing urbanization and concentration;
- analysis of the dynamics of the process of concentration and elucidation of its consequences and
- assessment of policies in this field (consequences of the unconstrained operation of the relevant factors or of purposive action).

Research

1. Development of environmental research activities of the European Communities

Attempts to coordinate environmental research at Community level started in 1967¹ when the PREST (Working Party on Scientific and Technical Research Policy of the Medium-Term Economic Policy Committee) considering that environmental protection was a most appropriate subject for scientific cooperation in the Community, established an expert group on pollution and nuisances which, later on, was taken over by the COST (Scientific and Technical Co-operation) Committee and assigned to it the task of preparing research projects to be undertaken jointly. The first concrete results came out on 23 November 1971, with the signature of three COST agreements involving most Member States of the EEC as well as several third countries. These dealt with very specific topics, to wit the physico-chemical behaviour of sulphur dioxide in the atmosphere (COST 61a), the analysis of organic micropollutants in water (COST 64b) and sewage sludge processing (COST 68).

In the meantime preparations were made for the inclusion of non-nuclear research, i.e. on environmental protection in the programme of the Joint Research Centre. An arrangement was eventually concluded in 1972 for carrying out environmental research at the Ispra establishment under a contract between the six Member States and the JRC for a period of one year. This made it possible to establish the main lines of the direct action programme in this field, including an effective involvement in the subject matter of two of the COST projects (61a and 64b).

During 1972 and the beginning of 1973 negotiations were held in parallel for the acceptance by the Council, on the one hand, of a Programme of Action on the

¹ It should be noted, however, that research on the effects of ionizing radiation and environmental implications thereof has been carried out under the Euratom treaty since 1961.

Environment and, on the other, of a first Multiannual Research Programme in environmental protection. The latter was considered from the outset as having to include both a direct action to be carried out at the JRC, and an indirect action involving a number of specialized research organizations of the Member States. Indeed, the input from the JRC, albeit important in certain fields, had to be relatively limited in quantity in view of the skilled scientific manpower available. Yet it was felt that a Community programme, in order to make a significant impact in solving environmental problems, must reach a minimum critical size and form a coherent body of research bearing on a variety of subjects. Decisions were eventually made by the Council on 14 May and 18 June 1973 for the research programme and on 19 July and 22 November 1973 for the Action Programme.

The first common research programme (direct and indirect actions) was designed specifically to provide scientific and technical support to the sectoral policy of the Community on environment, essentially with regard to Part II, Title I 'Reduction of Pollution and Nuisances' of the Action Programme, and particularly to the actions concerned with 1) the objective evaluation of the risks to human health and to the environment from pollution, 2) the improvement of measurements of pollution, 3) the management of environmental information.

The direct action to which a total of 15.85 million units of account was allocated, includes research work under the following headings:

- analysis and monitoring of pollution (including development of a multidetection unit, remote sensing of air pollutants, and a pilot data bank on environmental chemicals)
- fate and effects of pollutants
- models and system analysis applied to the eutrophication of a lake and to air pollution
- theoretical studies on thermal pollution and catalytic oxidation of water pollutants.

The Council decision of 26 August 1975 which amended earlier decisions relating to the direct action research work of the European Economic Community laid down that the programme of *direct* research should be subject to review at the beginning of 1976.

The indirect action, to which a maximum amount of 6.3m u.a. was allocated until 31 December 1975 for the conclusion of shared-cost research contracts, comprises the following 6 topics:

- (1) epidemiological surveys of the effects of air and water pollution;
- (2) harmful effects of lead;
- (3) effects of micropollutants on man;
- (4) ecological effects of water pollution;

- (5) remote sensing of air pollution;
- (6) data bank on environmental chemicals.

2. Implementation of the First Environmental Research Programme (Indirect Action)

The first programme, decided by the Council on 18 June 1973, became actually operational with the creation, on 10 December 1973, of the Advisory Committee on Programme Management for Environmental Research which met for the first time on 28 and 29 January 1974. Prior to this, a call for research proposals published in the Official Journal of the European Communities on 28 July 1973, as well as contacts with government authorities involved in environmental research management in the Member States, had resulted in the submission of a large number of applications.

The Commission services and the Advisory Committee examined these proposals and selected a number of them on the basis of the following criteria:

- (a) relevance to the overall programme;
- (b) scientific value of proposal;
- (c) possibility of coordination with other projects in both the direct and indirect actions as well as with national research programmes;
- (d) prospect of success of planned work;
- (e) cost;
- (f) provisions made for complementary financment.

As of 31 January 1975, 125 shared-cost contracts (for which the maximum contribution of the Community was fixed as a general rule at 50 % of total cost) were signed or under preparation of which 10 are under topic 1, 27 under topic 2, 24 under topic 3, 38 under topic 4, 16 under topic 5, 10 under topic 6.

In most cases, obviously only preliminary results are available at present. For administrative reasons all contracts were required to terminate on 31 December 1975 but a number of important projects which have been initiated have not been completed and are being pursued during part of the second programme.

The current yearly level of expenditure for this programme is about 3m u.a. for the Community budget, the total cost being about 6m u.a.

Following is a sample of the coordinated projects initiated during the first programme:

- (a) an epidemiological survey aimed at establishing correlations between air pollution and respiratory diseases in schoolchildren, carried out simultaneously by 10 institutes following the same protocol and involving 20 000 subjects;

- (b) a study of pollution in streams of the Luxembourg-Saarland-Lorraine region, undertaken jointly by Belgian, French, German and Luxembourgish laboratories in relation with the establishment of quality objectives for these water-courses;
- (c) a pilot data bank on environmental chemicals (ECDIN project) carried out by the JRC and seven other organizations; such a data bank makes it possible to collect, store and retrieve all relevant information needed, i.e., to prepare regulations on environmental chemicals and to determine the best counter-measures in case of accidental contamination;
- (d) a project for the development of mutagenicity testing methods for environmental pollutants, involving 9 laboratories, in order to improve the techniques for assessing long-term effects of pollution on human health.
- (e) a group of laboratories is working on the development of remote sensing systems for atmospheric pollution by the use of lasers and other optical methods; they participated in a field campaign in July 1975 to compare the performance of their equipment;
- (f) numerous researches on chronic toxicity of lead at low level have been started; up till now, they have given certain results which have been exploited for the establishment of a draft directive of the Council on the monitoring of the degree of contamination of the population by lead; one project under way should make it possible to determine effectively the importance of lead from automobile exhausts in the total input of lead by populations;
- (g) a project on the characterization of sewage sludges from effluent treatment plants has been completed which should facilitate the development of new techniques for the treatment and utilization of these sludges;
- (h) a critical evaluation of the performance of two plants for the joint incineration of refuse and sewage sludges has been carried out;
- (i) over 1 000 organic micropollutants have been identified in surface waters in view of evaluating the potential toxicity of these waters and to guide the development of treatments for drinking water.

In order to assist the Commission Services and the Advisory Committee in the management of the programme, steering committees for certain closely related projects (e.g. epidemiological surveys) and 'contact groups' in various fields have been established to ensure the progressive coordination and complementarity of the work sponsored.

There are also three management committees, one for each of the COST projects mentioned before, which are run as concerted actions. These entail yearly expenditures of 1.3m u.a. for the Member States to which are added the contributions of third countries which participate.

3. Further environmental research

The Council, on 24 February 1976, adopted a new pluriannual environmental research and development programme (indirect action) for a total amount of 16 m u.a. for the period 1976 to 1980, which is centred on four main fields:

- Research aimed at the establishment of criteria (exposure-effect relationships): heavy metals, organic micropollutants, fibrous materials, new chemical products, air and water (fresh and sea) pollutants, thermal discharges and noise nuisances.
- R & D on environmental management and information: the effort will centre on the problems of new chemicals likely to hazard health or the environment. The ECDIN pilot project will be extended and the findings analysed.
- R & D on the prevention and reduction of pollution and nuisances: special attention will be given to treatment of waste water, sewage sludge, industrial effluent and waste processing.
- Improvement of the environment: the planned research will concern the structure and function of ecosystems, biogeochemical cycles, reclamation of spoiled or waste land, remote sensing of environmental disturbances and the ecological implications of land development and modern methods of farming.

The Council also adopted on 24 February a five year research programme on radiation protection, the aim of which is 'to supplement, broaden and deepen the information necessary to guarantee an objective evaluation of the effects of and dangers arising from ionizing radiations with regard to individuals and to plant, animal and human populations'. This programme thus includes certain aspects of research relevant to environmental protection. It sets out in particular to determine cases where unacceptable changes might be imposed on the environment and its component elements by radioactive contaminants or by irradiation and to develop techniques to prevent the occurrence of such changes.

Part III

International actions

One of the objectives of Community environment policy is 'to seek common solutions to environment problems with States outside the Community particularly in international organizations'.

Furthermore the eighth principle of this policy states that the effectiveness of effort aimed at promoting global environmental research and policy will be increased by a clearly defined long-term concept of a European environmental policy.

In the spirit of the Declaration of the Heads of State or Government at Paris, the Community and the Member States must make their voices heard in the international organizations dealing with aspects of the environment and must make an original contribution in these organizations, with the authority which a common point of view confers on them.

1. Convention on Marine Pollution arising from Land-based Sources (Paris Convention)

The first session of the Conference on Marine Pollution arising from Land-based Sources was held in Paris from 17-21 September 1973, at the invitation of the French Government. The following countries participated: Belgium, Denmark, France, Germany, Ireland, the Netherlands, Norway, Portugal, Spain, Sweden and the United Kingdom. Finland, Luxembourg, Iceland, Italy and Switzerland were present as observers. The Council of Europe, the United Nations Environment Programme (UNEP) and the Commission of the European Communities also attended as observers.

The subject of the Conference was extremely important. With the adoption in 1972 of the Oslo and London Conventions, some progress had been made in controlling pollution of the sea by dumping from ships. Various conventions established within the framework of the International Maritime Consultative Organization (IMCO) had as their object the control of other forms of sea-pollution, especially that resulting from the discharge of oil or oily waste, whether accidental or deliberate. These IMCO conventions were in the process of being reviewed and strengthened (an international conference held in London resulted in the 1973 Convention for the Prevention of Pollution from Ships. But an important

aspect of sea-pollution was not covered by existing arrangements, viz. pollution which reaches the sea through rivers and estuaries, through pipelines or by direct discharge from the coast.

The Paris Convention, in so far as it might lead to a convention being concluded in this matter, would help to fill a major gap which exists at the time in the general system for marine protection.

The principle elements of the draft Convention which were discussed in Paris in September 1973 concerned:

- (a) an undertaking by contracting parties to reduce or eliminate sea-pollution caused by the discharge of substances listed in one or several annexes;
- (b) the establishment, by the contracting parties, of a common monitoring network in the maritime zone covered by the Convention, namely the North Sea and the North-East Atlantic;
- (c) the establishment of a commission (composed of representatives of the Contracting Parties), which might *inter-alia* have the task of proposing the programmes of pollution-abatement in question, coordinating and exploiting the monitoring network; reviewing the list of substances in the annex or annexes; establishing environmental quality objectives to guide the general pollution-abatement programmes or sub-regional agreements which might be concluded between two or more of the contracting parties.

As noted above, the Commission of the European Communities participated as an observer at the first session of the Paris Conference. An invitation to this effect was given verbally by Mr Robert Poujade, French Minister for the Protection of Nature and the Environment, at the time of the Council session of 19 July 1973, which adopted the Community Environment Programme. (This invitation was subsequently confirmed in writing). During this meeting the Commission's President, Mr Ortolí, and its Vice-President, Mr Scarascia-Mugnozza both expressed great interest in the objectives of the Paris Conference and in its successful outcome. They also stressed the close relationship between the proposed Paris Convention and the Community's own programme in the field of land-originating sea-pollution. They referred especially to the fact that, under the Community's action programme, Member States of the Community had committed themselves to undertaking a course of action on a Community level, for the reduction or elimination of land-based pollution; that environmental quality objectives were to be established on a Community basis, as well as certain standards and that, in these circumstances the opportunity should exist for the Community not only to attend the Conference but also, subsequently, to adhere to any Convention which might result from the Conference.

In saying this, the representatives of the Commission were conscious that it was too early to ask the Council to take a definitive decision as of that moment on

the question of the Community's signature. In fact, at the end of July 1973, the form of the Convention itself, the nature of the obligations which would result from it, and the duties and responsibilities of the Commission to be created within the framework, were not yet clearly defined.

At the first session of the Paris Conference the Netherlands presented a draft text which, amongst other things, formally proposed that the Convention should be opened for the signature of the Community. The examination of the relevant article, and other articles, was not undertaken during the course of the first session but was reserved for a later session.

On 12 November 1973 the Commission submitted to the Council a proposal for a Council decision concerning the participation of the European Economic Community in the negotiations for the conclusion of a Convention for the Prevention of Sea Pollution from Land-based Sources. In the light of this proposal, the Council authorized the Commission to participate jointly with the Member States concerned in the negotiations with the object of concluding the Convention, invited the Member States to work together with the Commission to achieve this objective, and reminded the Member States that they should adopt a common position on the essential provisions of the Convention before the next session of the Conference. The Council also invited the Commission to inform participating third countries of its decision regarding the Commission's role in the negotiations.

The Diplomatic Conference on the Convention for the Prevention of Marine Pollution from Land-based Sources ended in Paris on 22 February 1974. This Conference adopted a 'Convention on the Prevention of Marine Pollution from Land-based Sources' which provided, amongst other things that the Convention should be open for signature at Paris, from 4 June 1974 to 30 June 1975, by the States invited to the Diplomatic Conference, and by the European Economic Community. The States participating were, Austria, Belgium, Denmark, France, Federal Republic of Germany, Iceland, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

On 3 March 1975 the Council adopted a decision concluding the Convention for the Prevention of Marine Pollution from Land-based Sources. The President of the Council was authorized to designate the persons in power to sign the Convention and to confer on them the powers they required to bind the Community.

The Community was to be represented by the Commission in the Commission established under the Convention. The Commission was to put forward the position of the Community in accordance with such directives as the Council might give it.

The Council also authorized the Commission to represent the Community in the working group entitled 'Interim Commission' established on the basis of resolution number III Annexed to the Final Act of the Convention.

In a Resolution on the same subject of 3 March 1975, the Council invited the Member States affected by the Convention for the Prevention of Marine Pollution from Land-based Sources to sign the Convention as soon as possible, and in any case before 31 May 1975.

The Council considered it advisable to ensure coherent implementation of the undertakings entered into under this convention, of those which may result from the European convention for the protection of international watercourses against pollution, being drawn up by the Council of Europe, and, more generally, of the other commitments arising from the carrying out of the programme of action of the Communities on the environment.

The Council also stated that it would endeavour to examine the proposal for a Decision on the reduction of pollution caused by certain dangerous substances discharged into the aquatic environment of the Community with a view to taking a decision by 30 June 1975.

On 23 June 1975 Mr Brendan Dillon and Mr Michel Carpentier signed the Convention on behalf of the Community. The following Member States have also signed the Convention: Federal Republic of Germany, Belgium, Denmark, France, Ireland, Luxembourg, Netherlands and the United Kingdom.

Other States who have signed the Convention are: Spain, Iceland, Norway, Portugal and Sweden.

2. European Convention for the Protection of International Watercourses against Pollution (Strasbourg Convention)

On 12 May 1969, the consultative Assembly of the Council of Europe adopted Recommendation 555 under which it advised the Committee of Ministers to assign to a group of government experts the task of drawing up as quickly as possible a European Convention for the Protection of Fresh Water against Pollution (based on a draft prepared by this Assembly).

In reply to this recommendation, the Council of Europe's Committee of Ministers successively:

- invited the *ad hoc* group on the protection of water within the European Committee for the safeguarding of the natural environment and natural resources to express its opinion on the draft presented by the Assembly;
- assigned (in March 1970) to the Secretariat General of the Council of Europe the task of preparing, with the cooperation of consulting experts, legal principles which could serve as a basis for the drawing up of an appropriate instrument in the field covered by Recommendation 555;
- decided (in December 1970) to set up an *ad hoc* Committee of Experts entrusted

ed with the task of establishing a European Convention on the protection of fresh water against pollution.

This *ad hoc* Committee met for the first time from 15-19 February 1970. They subsequently met six more times, assisted by a working party on technical matters charged with the preparation of Annexes I, II and III relating respectively to the minimum standards, lists of substances and special standards referred to in the Convention draft. In the final stages of preparation of the Convention, a drafting committee was set up which was to meet five times.

A decision was taken during a coordination meeting of the Council's working party on the Environment on 15 November 1973, to invite the Commission by letter of 22 December 1973 to be represented for the first time, as an observer, in the last meeting of the *ad hoc* committee, on 5-8 February 1974.

In the course of this meeting, the *ad hoc* Committee completed the draft text of the Convention.

Under the terms of this draft text the Member States of the Council of Europe would undertake in particular to:

1. take all appropriate measures to reduce existing pollution and prevent new forms of water pollution;
2. apply to international waterways either special standards or minimum standards. Some of the special standards were defined in an Annex to the Convention while others had yet to be worked out by a group of technical experts set up by a resolution of the Committee of Ministers. Such standards fixed the quality thresholds for the water of international waterways according to the 'functions' assigned to the latter. These 'functions', which themselves corresponded to the various uses to which the waterways are put, would continue to be laid down either by international commissions responsible for ensuring cooperation between contracting parties whose territories are separated or crossed by the same international waterway, or within the framework of intergovernmental agreements. The minimum standards were defined in an Annex to the Convention.

The contracting parties, however, might request derogations (to be defined in an Annex to the Convention) in respect of certain waterways and certain parameters. These derogations would be determined by a second group of experts set up by a resolution of the Committee of Ministers;

3. enter into negotiations, if one of them so requested, for the conclusion of 'cooperation agreements' for the amendment of existing agreements. If a contracting party did not enter into negotiations within a reasonable time, any of the contracting parties concerned would accordingly notify the Committee of Ministers of the Council of Europe, which would place itself at the disposal of the contracting parties for the purpose of seeking a procedure for arriving at a satisfactory solution.

After an analysis of this text, the Commission took the view that there was some measure of agreement between the Council of Europe's draft Convention and the Community's programme as regards the objectives set and the nature of the measures contemplated. Nevertheless, its general economy and institutional aspects, plus the very fact that the object of the Convention was covered by the Community's programme of action on the environment, involved a risk that if the Convention were to remain as it stood, the action taken at Community level might be affected.

Consequently, it was the Commission's view that certain amendments should be made to the text in order to improve certain clauses and enable the Community to sign this Convention.

The Commission accordingly proposed that the Council should call upon Member States to reserve their position concerning the Convention until the Commission had approached the Council of Europe with the view to the amendment of the draft Convention in such a way as to enable the European Economic Community as such to accede to this Convention side by side with its Member States.

On 9 December 1974, the Commission reported to the Council that the Secretary General of the Council of Europe had shown quite considerable understanding with regard to the Community's position. This had facilitated the achievement of an agreement ad referendum concerning the amendments to be made in the draft Convention.

In the light of the results of these negotiations and of the Council's decision on 7 November 1974 that the Community should participate in the Convention, the Commission proposes that the Council formally approve such participation.

At the present time, the Council has not yet been able to take this final decision since the European Convention for the Protection of International Watercourses against Pollution has not been finally adopted by the Ministers of the Council of Europe.

3. Protection of the Mediterranean Sea against Pollution

In the context of the United Nations Environment Programme (UNEP), the countries bordering the Mediterranean were invited to attend an Intergovernmental Meeting, held in Barcelona from 28 January to 4 February 1975, on the protection of the Mediterranean.

During this meeting, a programme of action was adopted for the protection of the Mediterranean, involving:

- (a) integrated planning for the development and management of the natural resources of the Mediterranean basin;

- (b) a coordinated programme of research and continuous supervision, involving the exchange of information and appraisal of pollution levels and protection standards;
- (c) a framework agreement on the protection of the Mediterranean marine environment, together with related protocols and technical annexes covering each of the principal sources of sea pollution;
- (d) a study of the institutional and financial implications of this project.

On 7-11 April 1975 a meeting of legal experts was held in Geneva to examine the draft outline agreement and also the two draft Protocols on the prevention of dumping at sea by ships and aircraft and the control of pollution from hydrocarbons and other noxious substances as a result of accidents at sea. At the time of that meeting it was expected that one or more countries bordering the Mediterranean would take steps to propose draft Protocols on other sources of pollution, with special reference to the prevention of pollution from land-based sources.

Accordingly, in the interests of consistency and rationality, the Commission felt that the Member States concerned and the Community should move jointly to lay before the Intergovernmental Meeting, whose next session was due to be held in Barcelona from 2-13 February 1976, the amendments which would enable the Community to participate in the outline convention and also a draft Protocol on the protection of the Mediterranean against pollution from landbased sources, to be modelled, *mutatis mutandis*, on the clauses of the Paris Convention.

On 28 May 1975 the Commission submitted to the Council a draft Council decision to this effect. By a decision of 8 December 1975, the Council authorized the Commission to take part, in the fields within the Community's competence, in the intergovernmental negotiations in Barcelona, with a view to enabling the Community to sign, if it so desired, an outline Convention, accompanied by protocols, relating to the prevention of marine pollution in the Mediterranean Sea.

The Conference, which was held in Barcelona from 2-16 February 1976, was attended by the plenipotentiaries of the following States in the Mediterranean regions:

Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Morocco, Spain, Tunisia, Turkey and Yugoslavia, together with observers from the European Economic Community, the United Kingdom, the USA, the USSR and various international organizations. Albania, Algeria and Syria did not attend the Conference's work.

The following texts were adopted by the Conference:

- the Convention on the protection of the Mediterranean Sea against pollution;
- a protocol on cooperation in the campaign against the pollution of the Med-

iterranean Sea by hydrocarbons and other harmful substances in the event of a critical situation arising;

- a protocol on the prevention of the pollution of the Mediterranean Sea by dumping from ships and aircraft;
- ten resolutions concerning the creation, objectives and tasks of a regional centre in Malta;

The Convention is open for signature by the European Economic Community so that it may become a Contracting Party.

On 30 April 1976 the Commission submitted a communication to the Council in which it recommended that the Council should:

- (a) approve the results of the negotiations which the representatives of the Community had conducted at Barcelona;
- (b) decide to substantively approve the Convention on the protection of the Mediterranean Sea against pollution and of protocol on the prevention of the pollution of the Mediterranean Sea by dumping from ships and aircraft forthwith, and
- (c) authorize the President of the Council to nominate the person or persons entitled to sign these agreements, subject to their conclusion, since the Convention must, under Article 24, be signed by the Community before 17 February 1977;
- (d) adopt the proposal for a decision concerning the conclusion of these agreements by the Community.

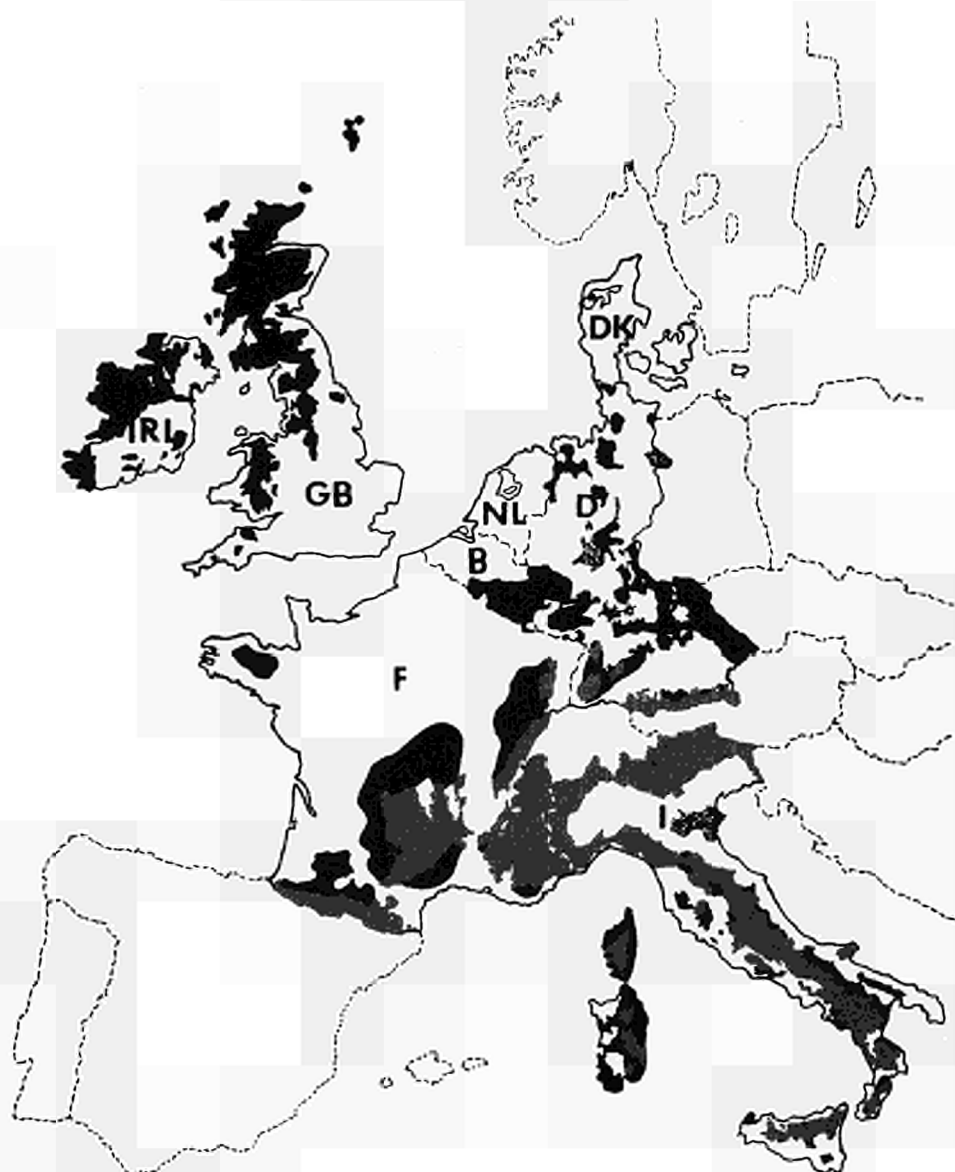
On 13 September 1976 the signature, by the Community, took place in Madrid concluding the Convention on the Protection of the Mediterranean Sea against Pollution and of the protocol of the Convention of the Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft.

4. Protection of the Waters of the Rhine Basin against Pollution

The Action Programme on the Environment stressed the fact that the growing pollution of the waters of the Rhine and its tributaries was giving increasing cause for concern to people who used them or lived in the area. The Action Programme recalled various resolutions of the European Parliament on this subject as well as earlier communications from the Commission to the Council on the environment which also referred to the problem of the Rhine.

The Action Programme recalled that the signatory States of the Berne Convention which set up an International Commission for the Protection of the Rhine against Pollution, took part in a ministerial conference held in The Hague on 25

Unfavourable agricultural zones in the EEC



- Mountainous areas
- ▨ Areas threatened by depopulation
- ▩ Areas affected by specific handicaps

Source: Commission of the European Communities (1974).

and 26 October 1972 on the initiative of the Dutch Government. The Commission was represented at this conference as an observer.

Among a number of major decisions taken by this Conference was one on chemical pollution. The Conference decided that the International Commission would have the task of drawing up lists of materials in respect of which discharge must be prohibited, limited or made subject to certain conditions, of carrying out a survey to ascertain their source, and of working out a programme of action in stages which would be submitted to the governments for approval after one year.

At the Ministerial Conference on the protection of the Rhine against pollution, which was held in Bonn on 4 and 5 December 1973, the signatory States of the Berne Convention 'approved the general principles and in particular the three lists submitted by the International Commission covering substances whose discharges is to be prohibited, restricted or made subject to certain conditions. The Ministers agreed that, having regard to the Council of Europe declaration on the black list, their States would as far as possible prevent the discharge of substances on the black list into the waters of the Rhine catchment area.

The Ministers instructed the International Commission to draft the text of an international agreement on the basis of those principles, if possible before the next Ministerial Conference, and to submit it to the States for approval.'

This Conference, which the Commission of the European Communities attended as an observer, also agreed that in taking these measures, account would be taken of the work carried out by the European Communities, in accordance with their programme of action on the protection of the environment.

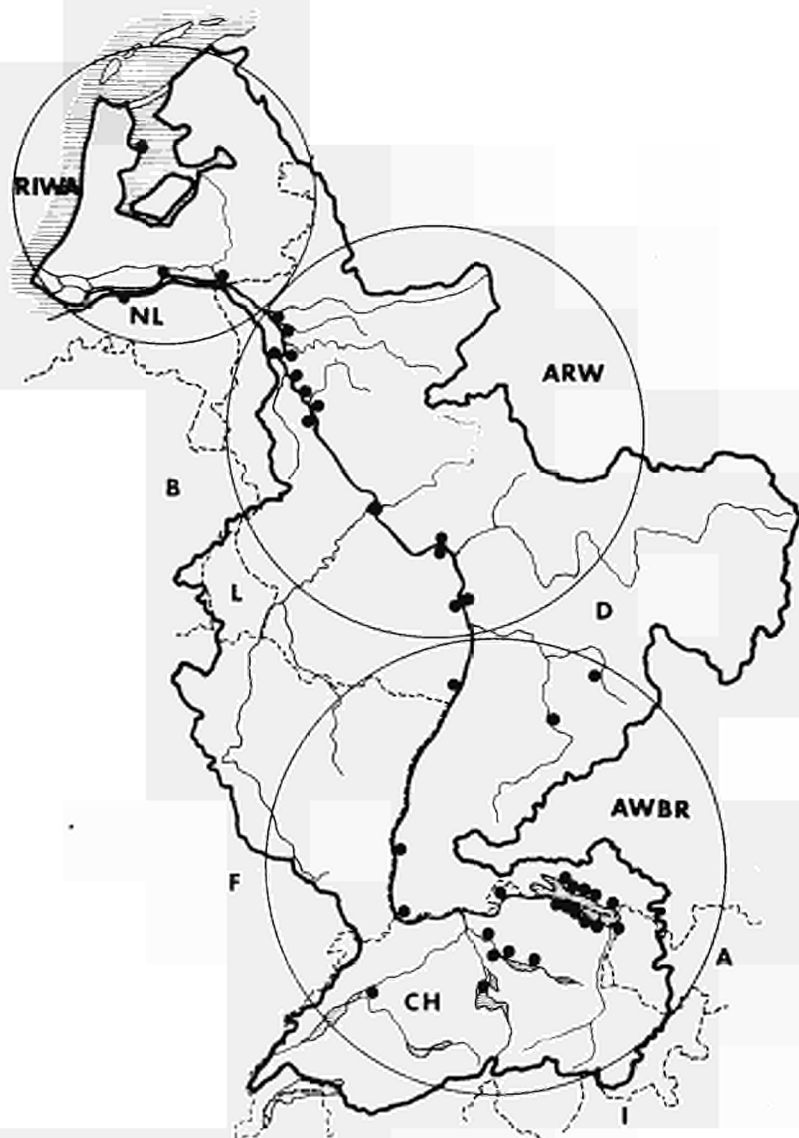
Several meetings were held by specialized working parties in the International Commission in order to prepare a draft convention on the protection of the Rhine against chemical pollution. This was discussed at a plenary meeting of the International Commission held in Amsterdam on 6 and 7 March 1975.

The draft convention discussed at the Amsterdam meeting made provision for the fixing of limit values for pollutants on a black list and quality objectives for pollutants on a grey and beige list. This draft also provides for the establishment of national inventories of discharges containing the substances appearing on the various lists.

In order to ensure that the limit values and quality objectives are adhered to, the draft Convention stipulates that the signatory States shall make use of a variety of means according to the case in hand, viz., application of better techniques, implementation of laws and establishment of detailed programmes.

It was clear to the Commission that the draft convention currently being discussed by the International Commission for the Rhine made allowance, in addition to the provisions applicable to the individual Member States concerned, for the implementation of a number of measures already adopted or in the course

International surveillance of the Rhine basin



- Limit of the basin and the 3 administrative zones
- Stations for measuring the pollution

Source: IAWR Annual report (1973)

of being adopted by the European Communities under its environment programme which gave the Communities authority in this field.

For this reason and also to ensure that action taken to prevent water pollution throughout the whole Community was consistent, the Commission felt that the European Economic Community as such should participate alongside the Member States concerned in the preparation of a Convention for the protection of the Rhine against chemical pollution with a view to the Community's signing the Convention.

On 10 June 1975 the Commission submitted to the Council a draft Council decision to this effect. On 19 January 1976 the Commission received from the Council a mandate to negotiate.

The third ministerial Conference took place in Paris in April 1976. The Conference approved the draft Convention on the protection of the Rhine against chemical pollution and the participants indicated their intention to sign the Convention before the summer of 1976. The Ministers of the five riparian States also gave their agreement that the Community should become a contracting party. The Convention will therefore be open for the signature of the Community.

This positive result was all the more important for the Commission and for the Community in that it came after the adoption by the Council on 8 December 1975 of the directive concerning pollution caused by certain dangerous substances discharged into the aquatic environment of the Community.

In fact it was the existence of this agreement at Community level which permitted the adoption of the Convention on Chemical Pollution of the Rhine. The text of that Convention is in fact based almost entirely on that of the Community directive. (The final text of the directive was approved by the Council on 4 May 1976.

On 17 September 1976 the Commission transmitted to the Council a draft decision relating to the conclusion by the Community of the Convention of the Protection of the Rhine against Chemical Pollution, and an additional Agreement to the Agreement signed in Berne on 29 April 1963 relating to the participation of the Community in the International Commission for the Protection of the Rhine against Pollution.

The Ministers who met in Paris in April 1976 also pursued the discussions they had begun in The Hague in 1972 concerning the reduction of salt pollution. They decided to continue the negotiations, after making a certain amount of progress, and therefore met in Berne on 25 May 1976 with a view to reaching an agreement which would permit them to draw up a Convention for this kind of pollution.

The result of these latest ministerial deliberations was the approval, in its broader lines, of a draft agreement on concrete measures for a progressive reduction of the discharge of salt.

To this end, it was agreed that France would construct an installation for the retention of part of the salt production on the site of the potash mines in Alsace. In a first phase which would begin three months after the entry into force of the agreement, 20 kg/per second of chlorine ions would be injected into the deep-lying strata of the ground. The cost of this first phase would be about 116 million French francs over 10 years. The other contracting parties would participate in the total costs, by providing France with a monetary contribution according to the following key:

- Germany 30 %
- The Netherlands 34 %
- Switzerland 6 %

The intention is to increase the retention of chlorine ions to 40 kg/per second 2 years after entry into force of the agreement and if possible, to 60 kg/per second in the two following years.

The participants in this Conference indicated their intention to sign in September 1976.

5. Law of the Sea Conference

The first United Nations Conference on the Law of the Sea met at Geneva in 1958, with 86 States participating, and produced four international conventions: Convention on the Territorial Sea and Contiguous Zone, Convention on the High Seas, Convention on Fishing and Conservation of the Living Resources of the High Seas, and Convention on the Continental Shelf. There is also an Optional Protocol of Signature concerning the Compulsory Settlement of Disputes. All of these instruments are in force; the number of parties ranges from 35 to 55.

A second Conference was called by the General Assembly in Geneva in 1960 to seek to resolve disagreements over the breadth of the territorial sea and fishery limits. However, the 82 States represented were unable to adopt any substantive proposal on these matters.

It was not until 1967 that legal questions involving the sea were again the subject of an Assembly resolution. At that time the Assembly created the first Committee on the sea-bed, a 35 member *ad hoc* body which was replaced the following year by the Committee that later became the preparatory body for the Conference. Originally consisting of 42 members, the latter Committee was twice enlarged until it became a 91 member body in 1971. Its full name was the Com-

mittee on the Peaceful Uses of the Sea-Bed and the Ocean Floor beyond the Limits of National Jurisdiction.

The Committee devoted its first two years to elaborating legal principles and norms for international cooperation in the exploration and use of the sea-bed and ocean floor. The outcome of this work was the Declaration of Principles Governing the Sea-Bed and the Ocean Floor, and the Subsoil Thereof, beyond the Limits of National Jurisdiction. This Declaration was adopted by the Assembly in 1970, in Resolution 2749 (XXV).

The Declaration, the first internationally agreed set of principles covering this vast area of ocean space, begins with the principle that the international area of the sea-bed and its resources 'are the common heritage of mankind' and 'shall not be subject to appropriation by any means by States or persons'. The Declaration goes on to say that the area shall be open to peaceful uses by all States without discrimination, and that exploration and exploitation 'shall be carried out for the benefit of mankind as a whole'.

On the basis of these principles, the Declaration states, an international regime for the area and its resources, including international machinery to give effect to its provisions, shall be established by 'an international treaty of a universal character, generally agreed upon'. This regime, it adds, shall 'provide for the orderly and safe development and rational management of the area and its resources and for expanding opportunities in the use thereof, and ensure the equitable sharing by States in the benefits derived therefrom, taking into particular consideration the interests and needs of the developing countries, whether land-locked or coastal'.

At the same time that it adopted this Declaration of Principles, the Assembly decided that it would convene the Third United Nations Conference on the Law of the Sea. It made the Sea-Bed Committee the preparatory body for the Conference.

The subjects for the Conference were set out in General Assembly Resolution 2750 X (XXV), as follows:

- The establishment of an equitable international regime—including international machinery—for the area and the resources of the sea-bed and the ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction;
- A precise definition of the area;
- A broad range of related issues including those concerning:
 - The regimes of the high seas, the continental shelf, the territorial sea (including the question of its breadth and the question of international straits) and contiguous zone;
 - Fishing and conservation of the living resources of the high seas (including the question of the preferential rights of coastal States);

- the preservation of the marine environment (including the prevention of pollution);
- Scientific research.

In 1973 the Assembly fixed as the goal of the Conference 'to adopt a convention dealing with all matters relating to the law of the sea'. It asked the Conference to bear in mind 'that the problems of ocean space are closely interrelated and need to be considered as a whole'.

The first session of the Third United Nations Conference on the Law of the Sea was in December 1973 and dealt with questions of procedure. The second session was held in Caracas from 20 June to 29 August 1974.

This session was marked by extensive public debates at which each delegation had the opportunity to air its views—first in a series of general statements by 115 countries in plenary meetings and then in committee discussions of specific issues. This opening phase was closely followed by closed, informal meetings at which delegates set down their views in the form of draft treaty articles, usually in alternative versions representing different outlooks. Meanwhile negotiations on the differences continued.

In its communication to the Council of 20 March 1974 the Commission strongly emphasized that, given the considerable overlapping of the various subjects to be dealt with by the Conference on the Law of the Sea, the Community and the Member States should adopt a joint attitude on all the subjects which come within the Community's jurisdiction or which are of particular interest to it.

In accordance with this proposal, the Council decided, on 4 June 1974, that co-ordination would be carried out according to routine procedure on matters within the jurisdiction of the Community and that, as regards other subjects of an economic character of interest to the common market, the Member States should confer together, with the representatives of the Commission, in order to define the joint attitude which they would adopt at the Conference.

The Community was invited to the Conference as an observer and was represented by a Commission delegation composed of officials from the principal departments concerned (the Legal Service, the Directorate-General for External Relations, the Directorate-General for Agriculture and the Environment Service).

The work of the Conference was carried on in three main Committees, each composed of all States taking part in the Conference.

The *first Committee* was concerned with a legal regime (body of rules) and machinery (world-wide authority) for the area of the sea-bed beyond the jurisdiction of individual States.

The *second Committee* dealt with a wide range of issues concerning the law of

the sea, from the territorial sea and the proposed economic zone to the rights of land-locked countries and the special problems of archipelagos.

The *third Committee* was concerned with the preservation of the marine environment and with marine scientific research.

The third session of the Conference held in Geneva from 17 March to 9 May 1975 led to the establishment, under the responsibility of the Chairman of the Conference and the Chairmen of the three main Committees, of a '*single negotiating text*' covering all the subjects on the Conference agenda.

This was an unofficial text which took account of all the discussions which had taken place up to the end of the Geneva session. It was not an agreed compromise but purely and simply a working document intended to help future negotiations and to which the delegations were completely free to make any amendments.

The single negotiating text comprised four sections:

- the first section, prepared by the Chairman of the First Committee, dealt with a regime for the sea-bed beyond the limits of national jurisdiction;
- the second section, presented by the Chairman of the Second Committee, dealt with territorial seas, straits used for international navigation, the economic zone, the continental shelf, the high-seas, land-locked countries, archipelagos and the regime for islands and enclosed and semi-enclosed seas;
- the third section, presented by the Chairman of the Third Committee, dealt with the protection and preservation of the marine environment, marine scientific research and the development and transfer of technology;
- the fourth part, presented by the Conference Chairman, dealt with the settlement of disputes.

The Third United Nations Conference on the Law of the Sea held a new session in New York from 15 March to 7 May 1976. Most of the work at this session of the Conference was devoted to an article-by-article discussion of sections I, II, and III of the Single Text and the presentation of delegations' amendments to that text.

The upshot of these discussions (both formal and informal) was the formulation at the end of the session, of a revised version of the single text, responsibility for which would be borne by the Chairmen of the three committees. This version, like the original version, reflects the views expressed by the delegations during the New York session and is of equal status. The articles of the single text which have been changed in the revised version are those for which amendments commanding a large measure of support within the Conference had been tabled. The unchanged articles are those in respect of which no amendments were proposed or where such amendments failed to attract sufficient support during the

session, or again which dealt with subjects on which the antagonism of the positions expressed did not allow negotiations to be pursued.

The new single text will serve as a basis for the discussions due to take place at the next session of the Conference. This will be held once more in New York from 2 August to 17 September 1976.

The revised single negotiating text contains certain important provisions relating to the protection of the marine environment.

- (a) As regards dumping, the revised single negotiating text provides for general undertakings, particularly on the question of international coordination and entrusts the coastal State with the task of controlling pollution by dumping in its economic zone.
- (b) As regards pollution from shipping, the revised single negotiating text lays down that the powers of the coastal State in respect of pollution would be extended throughout the economic zone and would relate to all international rules and standards, while allowing it to apply national rules in the territorial sea.

On 2 June 1976, the Commission submitted a communication to the Council on the Third United Nations Conference on the Law of the Sea. In this communication the Commission proposed, *inter alia*:

- Adoption of a common position with regard to the provisions on pollution from vessels;
- Adoption of common positions in order to ensure the coherent implementation of commitments to be entered into in the future Convention and of those undertaken by the Member States in the framework of the execution of the Community's environment programme.

The Commission also proposed that the Council authorize it to enter into negotiations at the Third United Nations Conference on the Law of the Sea with a view to having inserted in the International Convention of the Law of the Sea currently being drawn up by that Conference a clause enabling the European Economic Community to become a contracting party to the said Convention.

In making this proposal, the Commission noted that the revised single negotiating text which was regarded at this stage as the blueprint of that Convention, contained a number of provisions relating to matters in which the Community was at present vested with its own exclusive powers.

These powers related to the following matters:

- provisions governing the living resources of the economic zone;
- Sea-Bed;
- preservation of the marine environment.

As far as this last category is concerned, the Commission communication pointed out the single negotiating text (Part III) provides that the states shall lay down national laws and regulations to prevent, reduce and control pollution of the marine environment and urges them to lay down global and regional rules, standards and practices in this field.

The Commission noted that the Community as such is already a contracting party to an international convention containing provisions similar to these in the single negotiating text. This is the Convention on the Prevention of Marine Pollution from Land-Based Sources, signed in Paris on 21 February 1974.

By concluding this Convention on its own behalf, the Community became vested with the necessary powers to take and apply in the Community appropriate measures to combat pollution, as provided for in that Convention. The measures to be taken by the Community correspond precisely to those laid down in Article 17 of the single negotiating text (Part III).

The Commission noted that the Council had, moreover, recently adopted, in the form of a Directive, common rules relating to pollution caused by certain dangerous substances released into the marine environment of the Community. This Directive, in the Commission's view, provides the Community with powers the nature and purpose of which are the same as those vested in states by the revised single negotiating text.

It is also to be noted, that in the event that the Council adopts the Commission's proposal regarding the dumping of wastes at sea the Community will exercise in the maritime zone in question powers which are the same as those vested in the States by Article 20 of the single negotiating text (Part III) relating to pollution caused by the dumping of waste and other substances.

In conclusion, it may be stated that decisions already taken in the context of the Communities Action Programme on the Environment have played, and will continue to play, an important part in the field of the Communities international relations as a whole.

6. Cooperation with third countries

The Commission has exchanged letters regarding cooperation in environmental matters with the United States, with Canada and with Switzerland.

A similar exchange of letters is in preparation with Japan.

The purpose of such exchanges of information is to enable both the Community and the non-Member States to keep each other up to date on the progress of their respective work, thus avoiding unnecessary duplication and, by acting in harmony, forestalling any problems which might arise from differences in the assessment and handling of environmental issues.

Part IV

Summary and Conclusions

State of progress of the European Community's environment programme as at 15 September 1976

Pollution control

I — Objective assessment of the dangers to human health and the environment presented by pollution

Annexed hereto is a detailed account of the work carried out with a view to assessing objectively the dangers to human health and the environment presented by pollution. The work related primarily to lead and its compounds, organohalogen and organophosphorus compounds, hydrocarbons with probable carcinogenic effects, sulphur compounds associated with suspended particles, oxides of nitrogen and carbon, photochemical oxidants, asbestos, vanadium, inorganic micropollutants and noise. This work has led to the drafting of reports and, in some cases, of draft directives which are discussed in detail in the Annex hereto.

II — Prevention and reduction of water pollution

1. *Fresh water*

Some very important work has been undertaken at Community level in relation to combating fresh water pollution and some striking results have been achieved. The work was especially concerned with:

- the definition of quality objectives;
- the reduction of pollution caused by certain dangerous substances discharged into the aquatic environment;

- the reduction of pollution caused by certain industrial activities;
- the participation by the Community in International Conventions.

A — Quality objectives

Directives adopted by the Council

On the Commission's proposal, the Council adopted two directives:

- a directive on the quality required of surface waters intended for the abstraction of drinking water, adopted on 16 June 1975;
- a directive concerning the pollution of fresh and sea bathing water, adopted on 8 December 1975.

These two directives fix the parameters and values corresponding to the specific use and functions of these two types of water.

Proposals for directives and decisions forwarded to the Council by the Commission

The Commission has forwarded to the Council on 31 July 1975 a draft directive relating to the quality of water for human consumption.

On 2 August 1976 the Commission sent the Council a proposal for a directive on the quality requirements for waters capable of supporting freshwater fish.

Finally, on 30 April 1976 the Commission sent the Council a proposal for a Council Decision establishing a uniform procedure for the exchange of information on the quality of surface fresh water in the Community.

The latter proposal is aimed at organizing and developing exchanges of information between the pollution surveillance and monitoring networks so that a better insight can be gained into the fresh water pollution situation in the Community, comparisons can be made and the effects of the application of national and Community legislation on pollution levels can be monitored.

Proposals for directives being prepared and other work in progress within the Commission

With the help of a panel of national experts set up by the Commission in 1972 (the panel has met about ten times since then and has set up numerous ad hoc sub-groups), the departments of the Commission are currently drawing up proposals for directives relating to:

- the quality of water for agricultural use,
- the protection of aquatic life in general,
- the quality of water for use in industry,
- the methods of measurement and sampling frequencies in respect of surface waters for human consumption.

Furthermore, in order to establish common methods of reaching and maintaining quality objectives, an analytical and critical study of experiments at national level in this field has been undertaken. There was a preliminary exchange of views on the results of this study at the eighth plenary meeting of the Working Party on Water Quality. The results showed that the use of mathematical models as management aids should be encouraged and that an effort must be made to develop overall decision-making models, that is to say models concerning the qualitative and quantitative aspects of water management.

Among the measures on which only a preliminary exchange of views has been held attention should be drawn to the joint investigation and determination of the minimum satisfactory long-term quality requirements to be met by the different components of the Community's environment. No consensus of opinion was reached on the direction and scope of such measures at this meeting. The Commission intends to draw up a basic document which will be submitted to the national experts at one of their next plenary meetings.

B — Reduction of pollution caused by certain dangerous substances discharged into the aquatic environment

Directive adopted by the Council

On 4 May 1976 the Council adopted a Directive on pollution caused by certain dangerous substances discharged into the aquatic environment.

This very important Directive:

- introduces a system of prior authorizations for the discharge of a number of dangerous substances into the aquatic environment;
- provides for the laying down of limit values and quality objectives for the substances on a 'black list'
- also provides for the establishment of programmes designed to reduce pollution caused by the discharge of substances on a 'grey list'.

Work in progress within the Commission

With the help of national experts who met for the first time on 15 and 16 July 1976, the Commission is currently drawing up a proposal for a directive on the

protection of underground water against pollution caused by the discharge of dangerous substances.

Furthermore, the work begun pursuant to the Directive of 4 May 1976, principally with a view to drawing up proposals for directives laying down limit values and quality objectives for the substances on the 'black list' has been started with the help of a panel of national experts. The principal result of the work has been to enable definitions to be drawn up of those substances which should be given priority treatment, i.e. mercury, cadmium, aldrin, dieldrin and endrin.

C — Action specific to certain industrial sectors

Directives adopted by the Council

The Council has not yet adopted any of the proposals for directives transmitted by the Commission and mentioned below concerning certain industrial sectors.

On 3 March 1975, however, it adopted a Resolution on energy and the environment.

Proposals for directives transmitted by the Commission to the Council

The Commission has transmitted two proposals for directives in this field to the Council:

- the first, transmitted on 20 January 1975, concerns the reduction of water pollution caused by wood pulp mills;
- the second, transmitted on 18 July 1975, concerns waste from the titanium dioxide industry.

The Commission attaches great importance to these two proposals for Directives branches of industry producing waste which, because of its volume, quantity and the nature of the pollutants which it contains, has serious effects on water quality and its possible self-purification capacity.

Work in progress within the Commission

The Commission is studying pollution caused by the iron and steel industry, the petrochemical industry, the food industry and tanneries.

Furthermore, in accordance with the Council Resolution on energy and the environment, the Commission, with the help of a panel of national experts, has

started studies of the biological effects of cooling water and of the cooling systems in power stations.

D — Participation in international conventions

Draft convention on the protection of international watercourses against pollution

Negotiations on this draft have been in progress within the Council of Europe since 1967. The Permanent Representatives Committee agreed in principle to Community participation in this convention and on the texts of articles to be included in the draft convention to enable the Community to participate in it.

Convention for the protection of the Rhine against chemical pollution

On 20 September 1976 the Commission sent the Council a draft decision on the conclusion by the Community of a Convention for the protection of the Rhine against chemical pollution, and an additional agreement to the Berne Agreement, allowing participation by the Community in the work of the International Rhine Commission. It must be pointed out that the Commission has already been participating in the work of the International Rhine Commission as an observer since 1973.

2. Sea water

Directives and Decisions adopted by the Council

The Directive of 4 May 1976 concerning pollution caused by certain dangerous substances discharged into the aquatic environment also concerns sea water.

Furthermore, in a Decision of 3 March 1975, the Council agreed that the Community should participate as such in the Paris Convention on the prevention of marine pollution from land-based sources, which is applicable to the North-East Atlantic. That Convention was signed by all the States bordering on that area and by the Community on 23 June 1975.

Finally, on 19 July 1976 the Council authorized the Community to sign the so-called Barcelona Convention on the protection of the Mediterranean Sea against pollution and a Protocol on the prevention of the pollution of the Mediterranean Sea by dumping from ships and aircraft.

The Council has also named those authorized to sign the Convention on behalf of the Community. The Convention was signed on 13 September 1976.

Proposals for directives and decisions transmitted to the Council by the Commission

On 6 May 1976 the Commission sent the Council a proposal for a decision on the conclusion of the Barcelona Convention and of a protocol referred to above.

On 12 January 1976 the Commission sent the Council a proposal for a directive on the dumping of wastes at sea.

Mention must also be made of the proposal for a Commission directive transmitted to the Council on 18 July 1975 concerning waste from the titanium dioxide industry mentioned above.

Work in progress within the Commission

The Commission intends to send the Council, in the near future, a proposal for a Council directive on the quality requirements for waters capable of supporting freshwater fish.

The Commission is also participating in the work of various bodies responsible for administering international conventions:

- (a) In the case of pollution from land-based sources, the Commission is participating, on behalf of the Community, in all the committees and specialized working parties set up under the Paris Convention. Within this framework it has made a study, jointly with Belgium, designed to catalogue and analyse the control and monitoring systems used with regard to substances on the 'black list'.
- (b) In the case of marine pollution by the deliberate dumping of wastes, the Commission is participating as an observer in the work of the Commission responsible for implementing the Oslo Convention.
- (c) As regards marine pollution resulting from deep-sea prospecting and mining, the Community is participating in the work of a special working party, set up under the above-mentioned Paris Convention, which is working out measures to be taken on pollution caused by drilling rigs. The Commission is also participating as an observer in the work being carried out following the London Conference of 1973/75 on the problems of safety and protection against pollution during prospecting for and the production of mineral resources in the sea in North-West Europe; one working party is dealing with civil liability arising from this type of pollution. Finally, the Commission is keeping a close watch on the work in this area carried out under the Third Conference on the Law of the Sea.

III — Atmospheric pollution

Directives and Decisions adopted by the Council

The Council adopted:

- on 28 May 1974, a Directive relating to air pollution by exhaust gases from motor vehicle engines;
- on 24 November 1975, a Directive relating to the approximation of the laws of the Member States relating to the sulphur content of certain liquid fuels;
- on 24 June 1975, a Decision establishing a common procedure for the exchange of information collected by the surveillance networks which monitor atmospheric pollution caused by certain sulphur compounds and by dust.

Proposals for directives transmitted to the Council by the Commission

The Commission transmitted to the Council:

- on 25 April 1975, a Directive on biological standards for lead and a Directive on air quality for standards for lead;
- on 25 February 1976, a proposal for a Resolution on the laying down of standards and a proposal for a Directive concerning health protection standards for sulphur dioxide and suspended particulate matter in urban atmospheres;
- on 9 December 1975, a proposal for a Directive relating to the measures to be taken against the emission of pollutants from diesel engines for use in wheeled agricultural or forestry tractors;
- on 30 December 1975, a proposal for a Directive on the use of fuel-oils with the aim of decreasing sulphurous emissions.

Once the European Parliament has delivered its opinion on the proposal for a directive, the Commission expects the Member States to make a special effort to reconcile their points of view on the question of the lead content of petrol, which was forwarded to the Council in December 1973, and anticipates that the Council will act rapidly on this draft directive.

Work in progress within the Commission

In addition to the work concerning the objective assessment of the risks referred to in the Annex, the Commission is also continuing with work, in accordance with the Council Resolution on energy and the environment, on the development of methods of measurement for nitrogen oxides, on the supply of low-pollution fuels, and on promoting the development of desulphurization processes and of any other process which would reduce atmospheric pollution by SO₂.

IV — Noise

Proposals for directives transmitted to the Council by the Commission

The Commission has sent the Council proposals for directives concerning the permissible noise level of:

- motor vehicles;
- pneumatic concrete-breakers and jackhammers;
- tower cranes;
- certain types of current generators for welding and power supply purposes;
- motorcycles;
- subsonic aircraft.

The Commission has also proposed a method for the measurement of the sound level of constructional plant and equipment which could serve as a basis for all Community rules in this field. A rapid decision by the Council on this proposal would therefore be an important step in the realization of a noise control policy.

Work in progress within the Commission

The Commission is continuing its work on the preparation of three directives:

- on airborne noise levels of domestic appliances;
- on noise levels of lawn-mowers;
- on the limitation of noise from light propeller-driven aircraft.

These drafts have been worked out following notification of draft legislation in the Member States, transmitted to the Commission in accordance with the information agreement on the environment of 5 March 1973.

Finally, in accordance with the Resolution on energy and the environment, studies are in progress on noise pollution caused by the cooling towers of power stations.

V — Waste

Directives adopted by the Council

Three Directives have been adopted by the Council:

- on 16 June 1975 a Directive on the disposal of waste oils,

- on 15 July 1975 a Directive on wastes,
- on 6 April 1976 a Directive on the disposal of polychlorinated biphenyls and polychlorinated terphenyls.

Furthermore, on 26 June 1975 the Council adopted a programme on the management and storage of radioactive waste.

Proposal for a directive transmitted to the Council by the Commission

On 28 July 1976 the Commission sent the Council a draft directive on toxic and dangerous waste. The draft provides for a system of prior authorization for the disposal of such waste and for measures to promote their recycling and processing.

Work in progress within the Commission

As part of the work being carried out by CREST, a panel of national experts has been set up to examine those areas where scientific and technical information about primary and secondary raw materials is lacking and to draw up a multi-annual research programme in those two fields.

The Commission has carried out numerous studies on the problems of recycling and disposing of waste. With a view to forming a panel of persons under the aegis of the Commission who are competent in this particularly important field of the Community's economic activities and especially obtaining help in drawing up an overall policy in this field, the Commission set up a waste Management Committee on 21 April 1976, which will meet shortly. The Committee will examine the results of the studies referred to above, and in particular those concerning bundled waste paper, discarded vehicles and agricultural wastes.

The Commission also plans to hold a meeting between the directors of the waste exchange already formed in certain Member States with a view to exchanging information and comparing experience gained in this field.

Finally, the Commission is continuing to implement the programme on the management and storage of radioactive waste.

VI — Chemicals in the environment

Directives adopted by the Council

Several Directives have been adopted by the Council:

- on 22 November 1973, on detergents
- on 22 November 1973, on methods of testing the biodegradability of anionic surfactants
- on 27 July 1976, on the marketing and use of certain dangerous substances and preparations.

Furthermore, on 14 July 1976 the Commission adopted, by the procedure for adaptation to technical progress, an amendment to the Directive of 27 June 1967 concerning the classification, packaging and labelling of dangerous substances.

Proposals for directives transmitted to the Council by the Commission

The Commission has sent the Council several proposals for directives concerning:

- ceramic articles intended to come into contact with food,
- the classification, packaging and labelling of paints, varnishes, adhesives and similar products;
- the classification, packaging and labelling of pesticides;
- the placing of EEC-accepted plant protection products on the market;
- the prohibition of the marketing and use of certain pesticides;
- and amendment to the Directive of 27 June 1967 concerning the classification, packaging and labelling of dangerous substances.

The last proposal requires that a study be made of every new substance before it is marketed in order to assess its effects on man and the environment. A file giving the results of this study would be compiled by the manufacturer of the new substance or by whoever markets it, and a copy would be given to the Member State concerned and to the Commission. This proposal, which also lays down conditions for the examination of the file, is an important step in the prevention of pollution from chemical products.

Work in progress within the Commission

Following the Seveso accident, the Commission is currently studying the measures which should be taken in future to prevent such accidents from recurring, with a view to drawing up suitable proposals.

VII — Scientific aspects

A — Research

Decisions adopted by the Council

In Decisions of 5 February and 14 May 1973 the Council adopted a number of Community research projects to be carried out at the JRC's Ispra establishment. This programme, involving the sum of 15.85m u.a., covers the period from 1 January 1973 to 31 December 1976.

In a Decision of 18 June 1973, the Council adopted a first research programme for the protection of the environment (indirect project). This programme, involving the sum of 6.3m u.a., covered the period from 1 January 1973 to 31 December 1975.

In a Decision of 15 March 1976, the Council adopted a new multiannual research and development programme in the environmental field (indirect action).

This programme covers the period from 1 January 1976 to 31 December 1980. A maximum of 16m u.a. and of ten officials have been allocated to this project.

Proposal transmitted to the Council by the Commission

In May 1976 the Commission sent the Council a proposal for a multiannual research programme to be implemented by the JRC (1977-80), providing for a project in the field of the environment and resources. The Council will shortly be asked to take a decision on this proposal.

Work in progress within the Commission

The Member States are informed regularly of the results of the work carried out under the research programmes on environmental protection conducted at both the JRC establishment in Ispra and under contracts concluded with research organizations in the Member States. The Advisory Committee on Programme Management (ACPM) meets regularly to direct these two programmes. As regards research contracted out, the ACPM has begun an evaluation of the preliminary results obtained under the 1973-75 programme. It has also begun discussion of research projects submitted by research organizations in the Community in response to the call for tenders which appeared in OJ No C 78 on 3 April 1976.

As indicated above, two multiannual research programmes are being drawn up as part of the work carried out by CREST, one concerning raw materials, the other the development of large urban agglomerations.

B — Dissemination of information

Decision adopted by the Council

In a Decision of 8 December 1975, the Council established a common procedure for the setting up and constant updating of an inventory of sources of information on the environment in the Community.

Work in progress within the Commission

The setting up of this inventory is proceeding satisfactorily. The practical work is being carried out in close collaboration with the Member States and with representatives working on the International Referral System (IRS) which is being developed by UNEP. According to current expectations, this inventory should be available at the end of the year. The Commission will shortly forward to the Council a proposal concerning participation by the Community as a regional focal point in the operation of the IRS.

The forthcoming completion of the European network, EURONET, will necessitate the creation of a coherent set of information services. Consequently the Commission, with the help of two panels of experts provided for in the action programme, is studying data banks specializing in environmental matters (legislation, analysis of pollution control technology, information from conferences).

VIII — Economic aspects

Recommendation adopted by the Council

On 3 March 1975 the Council adopted a recommendation regarding cost allocation and action by public authorities on environmental matters.

Work in progress within the Commission

With the help of a panel of national experts set up by the Commission in 1972, the Commission is currently drawing up a draft Council recommendation to the Member States concerning the assessment of pollution control costs in industry. This proposal for a recommendation will shortly be transmitted to the Council.

The panel has begun to discuss a Commission working document aimed at laying down conditions for the grant of state aids to industry in the environment field when the present aid arrangements end in 1980.

The panel has also discussed the operation of systems of charges imposed by some Member States to discharges of effluent into watercourses.

Some aspects of the application of the 'polluter pays' principle have also been discussed, and in particular the incorporation of ecological considerations in other policies and the problem of pollution chains.

IX — Information agreement

The Commission regularly receives notification from the Member States of proposed laws, regulations and administrative provisions, under the Information Agreement on the environment of 5 March 1973.

As at 1 July 1976 the Commission had received 147 notifications, broken down as follows:

Member State	Planned measures	Measures in force	International Agreements	Miscellaneous	Total
Belgium	1	3	1	—	5
Denmark	1	24	4	—	29
FR Germany	28	2	2	2	34
France	26	6	3	6	41
Ireland	2	—	—	—	2
Italy	4	—	2	—	6
Netherlands	6	17	—	—	23
Luxembourg	1	—	—	—	1
United Kingdom	6	—	—	—	6
Total	75	52	12	8	147

The measures notified concern water pollution (44), atmospheric pollution (24), waste (14), noise (18), international agreements (12), and 35 concern plans for general or miscellaneous measures.

Improvement of the environment

I — Protection of natural spaces

Directive adopted by the Council

On 28 April 1975 the Council adopted the Directive on mountain and hill farming and farming in certain less-favoured areas.

At its meeting of 7 November 1974, the Council asked the Commission to begin work on the classification of Community territory on the basis of its environmental characteristics, in order to enable the objectives to be identified and defined.

Proposal for a directive transmitted to the Council by the Commission

On 21 February 1974 the Commission sent the Council a proposal for a directive on the encouragement of forestry measures to improve agricultural structures.

Work in progress within the Commission

The work involves:

- the development of a mapping system to present consolidated data on the natural environment as an aid to planning the use of space;
- rural areas;
- urban spaces and coastal areas.

At the request of the Council, the Commission immediately began work on the classification of Community territory on the basis of its environmental characteristics. This work is intended to follow a programme spread over several years, and will involve close collaboration between the Commission and the Member States.

The first stage of the work will involve the drawing up of an inventory of the Member States' activities with regard to:

- (i) the availability of data on environmental characteristics suitable for use in a method for classifying territory;
- (ii) methods, processes and models so far tried out, whose objectives are in line with those of the Community programme.

This work is contracted out by the Commission and the results are discussed by a panel of national experts.

As regards measures relating to rural spaces, the Commission has drawn up an inventory of the knowledge obtained concerning the ecological effects of modern agricultural production methods with a view to ascertaining those aspects on which insufficient knowledge has been obtained and to deciding on the measures which should be implemented at Community level. The measures to be implemented relate to:

- the misuse of pesticides;
- the intensive use of certain fertilizers;
- intensive livestock farming;
- modern agricultural methods;
- the effects of land improvement.

As regards pesticides, the results of the study show that the use of persistent organochlorine insecticides and of organo-mercury fungicides should be forbidden, and that the use of the most dangerous pesticides should be subject to an approval system. This work has led to two draft directives being drawn up, which were presented to the Council in July and August.

As to the use of fertilizers, it has been found that the information available is incomplete and that supplementary studies will be necessary.

Several studies on intensive livestock farming are under way. They concern maximum environmentally permissible numbers per hectare, comparison of the laws of the Member States and health protection requirements for organic wastes returned to the soil.

Furthermore, a major research programme was adopted by the Council on 27 July 1975.

Two studies on modern agricultural methods are in progress: the first relates to the ecological implications of land improvement, the second to the consequences in terms of production of special constraints aimed at protecting the environment.

The Commission is also carrying out a study of the ecological consequences of the abandonment of cultivated land, which also includes an inventory and classification by type of such land.

In the field of quality foodstuffs, a study has been carried out on the feasibility of developing typical high-quality agricultural products. It has been backed up by a study on the development of a system of fruit-growing which meets the taste quality criteria. Studies of the same type are in preparation for poultrymeat and pigmeat.

In the field of the development of production techniques to replace certain modern techniques and ensure better environmental protection, a preliminary study has been carried out on the feasibility of developing biological and integrated con-

trol methods of protecting crops to replace conventional control methods involving the massive use of pesticides. This work has been backed up by a study on the development of a fruit-growing system under the heading of 'integrated pest control'.

The study of the environmental problems of city centres is complete. The conclusions will shortly be submitted to a panel of national experts, so that possible Community measures can be worked out.

The results of the study of national urban development policies are expected by the end of the year. Following the work carried out by CREST in this field, the Commission will shortly present the Council with a draft decision on a research programme on the growth of large conurbations. The two-year programme will probably be implemented in the form of concerted action, with the projects being financed and carried out in the Member States and coordinated at Community level.

Finally, studies on the planning and ecological management of coastal areas and on the protection of natural spaces and the countryside are almost complete.

II — Protection of animal life

Work in progress within the Commission

Over the last two years the Commission has investigated a number of questions concerning the protection of migratory birds and of some endangered or disappearing species of animals.

Interpretation of the results of this study, which took longer than was expected, prevented the Commission from submitting proposals to the Council as it had undertaken to do. However, the preparation of these proposals has reached an advanced stage and it should be possible to transmit them to the Council by the end of the year.

The Washington Convention on international trade in endangered species of wild flora and fauna came into force on 1 July 1975. By 1 July 1976 twenty-six States had ratified it, including one Member State of the EEC. Ratification by the other Member States is expected in the coming months. The Commission hopes to have observer status at a meeting of the parties who have ratified the Convention, which will be held in Berne in November. As the territory of the Community is considered under the EEC Treaty as one economic area, the Commission has on several occasions proposed the simultaneous ratification of the Convention by the Member States; these talks have not achieved any positive results.

As regards harmonization at Community level of measures taken to apply the Convention, discussions with national experts have made it possible to decide

which areas should receive priority treatment: these are the identification and possible marking of specimens, import and export permits, the bringing in of marine species and the registration of permits issued.

III — Natural resources

Work in progress within the Commission

The Commission has received the final report of the study on the availability of Community water resources. The conclusions of the report which will be submitted to a panel of national experts for their opinion in October, show that generally speaking sufficient water is available in the Community, except in drought years such as 1976, but that it is unevenly distributed between the different geographical regions of the Community.

On 4 November 1974 the Council asked the Commission to begin work on the identification of a minimum of water resources and on the classification of territory on this basis. This is being done with the aid of national experts. The Commission will inform the Council at the appropriate moment of the results of this work.

A study of world resources, geochemistry and environmental pollution from mercury, and of production, consumption and future world and Community needs, is now being published.

Studies of global resources of metals in the platinum group, chromium, fluorine, phosphorus, tin and lead have been completed, as have those on ores containing fluorine and phosphates.

The results of these studies, after examination and evaluation, will be published in the 'Environment and Quality of Life' series.

IV — European Foundation for the improvement of living and working conditions

Decisions adopted by the Council

On a proposal from the Commission, the Council has adopted three Regulations:

- on 26 May 1975, on the creation of a European Foundation for the improvement of living and working conditions;
- on 1 June 1976, on the financial provisions applying to the Foundation;
- on 29 June 1976, laying down the conditions of employment of staff of the Foundation;

The Council has entered 2.6 m u.a. in the draft budget for 1977.

The Commission has appointed the Director and Deputy Director of the Foundation; these appointments took effect on 1 September.

Proposals transmitted to the Council by the Commission

The Commission has sent the Council two proposals for decisions concerning:

- the appointment of the members of the Committee of Experts of the Foundation;
- the rules of procedure of the Administrative Board of the Foundation.

Furthermore, to maintain a balance between the two aspects of the Foundation's work, i.e. working and living conditions, the Commission has sent the Council a proposal for an amendment to the Regulation of 26 May 1975 on the creation of the Foundation, providing for the creation of a second post of Deputy Director.

The Commission hopes that the Council can adopt these three proposals rapidly.

Work in progress within the Commission

The Administrative Board of the Foundation met for the first time in Dublin on 6 and 7 May.

The first meeting enabled a discussion to be held on the direction which the Foundation's work should take and on the programme for 1977.

The work of the Foundation will concentrate on the following three topics:

- the organization of work, and in particular measures relating to the humanization of working conditions;
- problems peculiar to certain categories of workers, especially young school or university leavers, people of retiring age, and immigrants;
- certain subjects common to both living and working, in particular the problem of time: the relation between work and leisure time.

In accordance with the wishes of the Council, the Foundation's work will be to keep abreast of and promote experiments in the field, rather than to carry out studies of a general nature.

The Commission believes that these arrangements should enable the Foundation to become operational by the end of 1976.

Public awareness and education

Work in progress within the Commission

The Commission has continued its efforts to bring about more active interest on the part of the population in environmental problems, adding its contribution to the efforts undertaken in the Member States.

It has also continued its cooperation with non-governmental organizations, in particular with the European Environmental Bureau.

As regards education, the Commission will shortly be meeting representatives of primary schools in the Member States with a view to setting up a network for the exchange of experience acquired by the schools in environmental education (9 to 14 year-olds). This network would make it possible to test the first information booklets for teachers which are currently being prepared for some specific fields of environmental protection. The Commission has also contributed financially to the organization of summer schools running courses on basic environmental problems. Finally, the Commission is drawing up an initial statement on the environmental situation in the Community.

Action by the Community and Member States in international organizations, conferences and conventions

1. International organizations

The Member States and the Commission collaborate regularly on the preparation of various meetings planned by those international organizations dealing with environmental problems (UNEP, OECD, Council of Europe, ECE, WHO, UNESCO, IMCO, FAO). The Commission works in close collaboration with the secretariats of those organizations.

2. International conventions

As mentioned in the first part of this summary, the joint action by the Community and its Member States in certain international conferences and conventions dealing with water pollution has been successful. The Council's adoption of the Directive of 4 May 1976, concerning pollution caused by certain dangerous substances discharged into the aquatic environment of the Community, enabled decisive progress to be made in the formulation of a draft Convention for the protection of the Rhine against chemical pollution. Represented by the Commission, the Community participated in this work, which culminated in the Ministerial Conference of 1 and 2 April 1976 in Paris and on 25 May 1976 in Berne, and in the fortieth Plenary Session of the International Rhine Commission on 6 and 7 July in Luxembourg. During these negotiations it became clear that Community participation in the management body of the Convention, the International Commission, was indispensable. As mentioned in Part I, the Commission has sent the Council a draft decision on the conclusion by the Community of the Convention on the protection of the Rhine against chemical pollution, and on a draft Additional Agreement to the Berne Agreement providing for participation by the Community in the work of the International Rhine Commission.

The Commission took part in the negotiations at the Barcelona intergovernmental meeting, which was held from 2 to 16 February 1976, and which adopted a Convention on the protection of the Mediterranean Sea against pollution and a

Protocol on the prevention of pollution of the Mediterranean Sea by dumping from ships and aircraft. The Council agreed to the conclusion of this Convention, which was signed on 13 September 1976.

As regards the implementation of the Helsinki Final Act, the Commission contributed to the formulation of the Community position at the final session of the Economic Commission for Europe.

The Commission took part as an observer at the conference on human settlements organized by the United Nations in Vancouver. It also participated in the preparatory work for the United Nations Conference on water which will be held in Argentina in March 1977.

3. Relations with non-member countries

Relations with non-member countries have developed significantly during the last few months. Apart from the technical cooperation which has existed between the Commission and the US Government since July 1974, similar cooperation was begun with the Canadian Government on 6 November 1975 and with the Swiss Government on 12 December 1975. The Permanent Representatives Committee has been kept informed of the various forms taken by this cooperation. The principle of such a similar cooperation arrangement has recently been accepted by the Japanese Government. An exchange of letters setting out the form of such cooperation will take place before the end of the year.

In the context of the Euro-Arab dialogue, the Commission is chairing a specialized group from the European side on the marine environment and the development of coastal areas. The work of this group should in principle lead to the formulation of cooperation projects for implementation in the Arab countries.

Finally, under the information agreement on the environment of 5 March 1973, the Commission has been notified of agreements reached between certain Member States and non-member countries (see Part I, Chapter II of the Action Programme).

Conclusions

It can be seen from what has gone before that a large amount of work has been carried out in the field of environmental protection at both national and Community level: some 130 laws have been drawn up in the Member States, fifty of which are already in force.

- At Community level, the Council has already taken favourable decisions on some twenty texts, whilst approximately twenty are still being discussed within the Council.

Apart from their political and legal value, the preparatory work carried out in collaboration with the national governments, the thinking and discussions to which they lead and the implementing measures which follow them mean that these texts form a basis for a Community-wide programme of promotion and education, the importance of which is only now being realized.

The fact of becoming accustomed to working together, particularly within international organizations or conventions, also plays an important role in producing a consensus of opinion in favour of paying more attention to the environment when implementing economic development programmes. A 'European awareness' of the environment is developing gradually in this way.

There is no doubt that the forthcoming adoption by the Council of the programme of action for the period 1977-81 will enable the work undertaken during the past three years to be continued and stepped up for the benefit of present and future generations.

Objective evaluation of the risks to human health and the environment from pollution

Work carried out since 1973 under Chapters I and 2 (Part II, Title I) of the Action Programme has produced the following results in respect of the various first category pollutants:

Lead and lead compounds

The dose/effect relationship of these pollutants in respect of human health has been evaluated.

As indicated in Chapter 3 of Part I, two proposals for Directives were submitted to the Council in 1975, one on biological standards for lead and the screening of the population for lead, the other on air quality standards for lead. These proposals, on which the European Parliament and the ESC expressed a favourable opinion, are now being discussed by the COREPER Working Party on the Environment.

The Directive on biological standards proposes maximum blood lead levels for each individual and for a statistical distribution of population groups.

Work to improve the comparability of the results of blood lead level analysis has been continued.

The Directive on air quality standards sets mean annual levels which are not to be exceeded in residential areas, and monthly median levels for rush-hours which are not to be exceeded in roads with heavy traffic.

Organochlorine compounds

A report has been prepared on organochlorine compounds, i.e. pesticides and their metabolites, in particular the following compounds: DDT and its metabolites, aldrin, dieldrin and endrin, heptachlor and heptachlor epoxide, chlordane, HCH (hexachlorocyclohexane) and lindane.

The results of this study show that it is impossible at present to lay down health protection criteria for the following reasons:

- lack of knowledge,
- human exposure levels,
- difficulties in interpreting data obtained from experiments on animals, and
- lack of precise information on long-term effects.

The information obtained from the Member States shows that the use of persistent organochlorine pesticides is diminishing.

On 24 June 1976, the Commission forwarded a communication on this subject to the Council.

The ecological consequences of the presence of persistent organochlorine compounds are being studied.

Organophosphorus compounds

A report showing the available information on the environmental contamination levels of these compounds, as measured in the Member States, is now being published.

The Commission will shortly be sending the Council a communication on the dose/effect relationships of organophosphorus compounds.

Hydrocarbons with known or probable carcinogenic effects

A qualitative inventory has been produced on the pollutants with known carcinogenic effects present in the environment.

A quantitative study setting out the available information on the presence of phenols, hydrocarbons, detergents, nitrosamines, plasticizers and aromatic amines has been carried out. It became clear that there are numerous gaps in knowledge of this field, which makes any evaluation of the risks involved extremely difficult.

A programme for comparing systems of measuring cyanides, phenols and hydrocarbons in water has been carried out; the results of this study have been published.

A study of the dose/effect relationship of carcinogenic polycyclic hydrocarbons is being prepared.

Sulphur compounds and suspended particles

A report on levels of these pollutants measured in the atmosphere of the Member States is being published.

A preliminary programme for comparing methods of measuring sulphur dioxide contained in standard samples, simulating a sample of polluted air, produced satisfactory results using manual analytical techniques.

Results obtained with mobile laboratories, however, are less satisfactory. This led the Commission to repeat the experiment; the results are being analysed.

A critical examination of available data made it possible to draft specific proposals which have been submitted to the Council. As indicated in Chapter 3 of Part I of the Action Programme, these concern a resolution on criteria for sulphur dioxide and suspended particles in urban atmospheres, and a draft directive on health protection standards for sulphur dioxide and suspended particles in the urban atmosphere.

Oxides of nitrogen

A critical examination of the available data is in progress and should enable firm proposals to be drawn up and forwarded to the Council concerning health protection criteria for nitrogen oxides.

Carbon monoxide

A critical examination of the available data is in progress and should enable firm proposals to be drawn up and forwarded to the Council concerning health protection criteria for carbon monoxide.

A programme for comparing methods of measurement for carboxyhaemoglobin has been carried out, involving thirty-six laboratories, with a view to improving the comparability of these measurement results.

Photochemical oxidants

A study is being made of the effects of photochemical oxidants on health and the environment.

Asbestos

A study of health protection criteria has been carried out.

It became clear that there are still relatively few data on asbestos levels measured in the environment. More information is currently being sought on dose/effect relationships and on exposure levels in the population.

A statement on this subject together with firm proposals will shortly be submitted to the Council in due course.

Vanadium

A study of health protection criteria has been carried out. In view of the lack of sufficient data on dose/effect relationships, it proved impossible to work out criteria for vanadium. Existing data and experiments on animals show that levels at present measured in the air, water and foodstuffs represent no risk to the population of the Community.

A statement on this subject will shortly be submitted to the Council.

Noise

A report has been published on dose/effect relationships. A communication on the criteria will be presented to the Council in due course.

Inorganic micropollutants

A study of the levels of environmental pollution caused by these pollutants has been published.

Mercury and cadmium

Studies to establish health protection criteria for mercury and cadmium are at present being prepared.

Quality of water for human consumption

A draft directive has been forwarded by the Commission to the Council and is currently under discussion (see Ch. 2 of Part I of the Action Programme).

During the preparation of this Directive, problems raised by the effect of the hardness of drinking water on public health were discussed at a specialized European symposium in Luxembourg in 1975. It was found that in certain regions of the world an increase in the frequency of heart disease could be linked to the consumption of soft water and to the excessive and uncontrolled use of water softeners. The Commission has consequently proposed a cautious policy on minimum concentrations required for water hardness and certain minerals in the Community quality standards for water intended for human consumption.

The chemical and microbiological analytical techniques for the various pollutants in drinking water were the subject of intra-laboratory comparison programmes at European level, aimed at harmonizing methods of analysis.

This scientific comparison enabled a significant step to be made regarding the comparability of results of chemical and microbiological methods of measurement for drinking water.

Ecological criteria

A scientific symposium was held in 1975 on the principles and methods governing the drawing up of ecological criteria for hydrobiocenoses. The main objectives were the establishment of principles and methods for the evaluation of criteria for hydrobiocenosis, i.e., the scientific bases for evaluating the effects of surface water pollution. There was also a proposal to define the biological methods to be used to evaluate the extent of such pollution.

The discussions revealed the complexity of the matters in question, in view of the number of types of pollutants to be considered, the diversity of water ecosystems in the Community, and the problem of biotope accessibility. Proposals were put forward concerning the principles to be established and the methods to be followed and a large amount of information on dose/effect relationships was obtained.

Annexes

Annex I (a)

Council

Agreement of the representatives of the governments of the Member States meeting in Council of 5 March 1973 on information for the Commission and for the Member States with a view to possible harmonization throughout the Communities of urgent measures concerning the protection of the environment

THE REPRESENTATIVES OF THE GOVERNMENTS OF THE MEMBER STATES, MEETING IN COUNCIL.

Whereas the reduction of pollution and nuisances is of particular importance for the European Communities; whereas measures must be taken as a matter of urgency to combat such pollution and nuisances;

Whereas the Commission has proposed to the Council an action programme in this respect which must aim to maintain and, wherever possible, to improve the quality of the environment in the territory of the Member States of the Community;

Whereas measures in this sector are being prepared in most of the Member States;

Whereas some of these measures, if they are not harmonized, could affect the functioning of the common market and the implementation of the Communities' programme for the reduction of pollution and nuisances and the protection of the natural environment;

Whereas, nevertheless, the pursuit of harmonization must not delay the adoption of essential measures for better protection of the environment;

Whereas knowledge of the intentions of Member States in this respect must be available to the Commission and the Member States, especially to enable the latter to propose Community measures where appropriate;

Whereas it is therefore necessary to establish a procedure for giving information concerning the intentions of the Governments of the Member States and concerning measures which they have in draft; especially where such measures are likely to affect the functioning of the common market and the implementation of the Communities' programme for the reduction of pollution and nuisances and the protection of the natural environment;

Whereas such information must be given as early as possible before the entry into force of the measures envisaged;

Whereas the Governments of the Member States must however be able, by way of exception, to take immediate action at national level when this is urgently necessary for reasons of safety or health;

HAVE AGREED AS FOLLOWS:

In order to ensure that the Commission and the Governments of the Member States are kept informed and in order to allow the Commission, where appropriate, to submit suitable proposals to the Council:

1. The Commission shall be informed as soon as possible of any draft legislative, regulatory or administrative measures and of any international initiative concerning the protection or improvement of the environment which
 - may directly affect the functioning of the common market, or
 - are relevant to the Communities' programme for the reduction of pollution and nuisances and the protection of the natural environment,or
 - are of particular interest to the Communities and the Member States from the point of view of the protection of public health or of the natural environment, particularly where these measures may have repercussions for other Member States.

The Governments of the Member States take note that the Commission will, as soon as possible, communicate to the Governments of the Member States all information acquired pursuant to this Agreement.

2. The legislative, regulatory or administrative measures referred to in item 1, which are liable to have a direct effect on the functioning of the common market shall only be adopted if the Commission does not notify the Governments concerned, within two months of receiving such information, of its intention to submit to the Council proposals to adopt Community measures on this subject. Such proposals must take into account the aims of the national measures in question from the point of view of environmental protection.

However, if the Commission does not submit to the Council a proposal within five months of receipt of such said information, the Government concerned may proceed immediately with the proposed measures. The same shall apply if the Council has not acted on the proposal from the Commission within five months of its receipt.

3. In appropriate cases², the procedure described in item 2 will be extended to draft measures liable to affect the implementation of the Communities' programme, as adopted by the Council, for the reduction of pollution and nuisances and to the protection of the natural environment.
4. Notwithstanding the foregoing and by way of exception, legislative, regulatory or administrative measures may be adopted if these are urgently necessary for serious reasons of safety or health. The Governments of the Member States will immediately communicate the texts concerning such measures to the Commission which will transmit them to the Governments of the other Member States as soon as possible.
5. The Governments of the Member States will coordinate their views on any international initiative in respect of the environment likely to affect the functioning of the common market or the implementation of those parts of the Communities' programme for the reduction of pollution and nuisances and the protection of the natural environment to which the procedure laid down in item 2 applies by virtue of item 3, without prejudice to the application of the Treaties and in particular of Articles 113 and 116 of the Treaty establishing the European Economic Community.

¹ The Representatives of the Governments of the Member States, meeting in Council, take note that this Agreement is a gentlemen's agreement.

² These cases will be determined at the time of defining the programme for the reduction of pollution and nuisances and the protection of the natural environment.

Annex I (b)

Agreement of the representatives of the governments of the Member States of the European Communities, meeting in Council of 15 July 1974 supplementing the Agreement of 5 March 1973 on information for the Commission and for the Member States with a view to possible harmonization throughout the Communities of urgent measures concerning the protection of the environment

THE REPRESENTATIVES OF THE GOVERNMENTS OF THE MEMBER STATES OF THE EUROPEAN COMMUNITIES,
MEETING IN COUNCIL,

Whereas an Agreement¹ on information for the Commission and for the Member States with a view to possible harmonization throughout the Communities of urgent measures concerning the protection of the environment, was concluded on 5 March 1973; whereas the application of point 3 of this Agreement should be more precisely defined, as provided for in the footnote relating to this point,

HAVE AGREED AS FOLLOWS:

Initially, the appropriate cases referred to in point 3 of the aforesaid Agreement shall concern the draft legislative, regulatory or administrative measures, i.e. measures of a binding nature, which are liable to affect the implementation of the programme of action of the European Communities on the environment², approved on 22 November 1973, wherever it is laid down that, for the implementation of this programme, the Commission shall submit proposals for relevant measures of the Communities inasmuch as the latter provisions are required to take the form of Regulations or Directives.

¹ OJ No C 9 of 15.3.1973, p. 1.

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