

PART 8

**LEGAL PROVISIONS FOR PREVENTION OF HEALTH RISKS
FROM MARINE POLLUTION IN THE MEDITERRANEAN**

8.1 THE LEGAL BASIS FOR MARINE POLLUTION PREVENTION AND CONTROL IN THE MEDITERRANEAN

Up to two decades ago, very few countries had specific marine pollution prevention and control legislation, although many aspects were covered by general public health and other legislation. A survey on national legislation in Mediterranean countries on protection of the marine environment from land-based sources was conducted in 1976 as part of the technical preparations for the relative protocol (WHO/UNEP, 1976). This survey showed that states were adopting different approaches (due to historical, geographical, political, economic and other factors) in dealing with the problem of marine pollution, and signs of harmonization were conspicuous by their absence. Similarly a survey of pollutants from land-based sources conducted in 1976-77 showed that legal enactments controlling various aspects of marine pollution tended to be dispersed among laws and regulations intended primarily for other purposes, and were often incorporated into legislation concerned with fisheries, with navigation and with port authorities. Sometimes, the only effective and enforceable control was that available under planning laws.

The situation has altered significantly over the last two decades, in that there has been a greater emphasis on comprehensive, as opposed to fragmentary, marine pollution legislation. In countries which are member states of the European Union, legislation is now based on the relative E.C. Directives. Other countries which are not member states, but have economic links with the Community, have modelled their legislation on these Directives to various extents. E.C. Directives, however, are specific. On a more general level, the 1976 Barcelona Convention for the protection of the Mediterranean Sea against Pollution and its related protocols, together with the creation of Ministries for the Environment in the various countries, have triggered off a significant trend among Mediterranean countries towards comprehensive legislation for marine pollution prevention and control.

At overall regional level, the main legal instrument is the 1976 Barcelona Convention. The Convention provides for control of the various types of marine pollution through specific protocols or other equivalent legal and administrative instruments, but does not by itself bind contracting parties to any specific measure. Five protocols have been signed and ratified so far:

1. The Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft, signed in Barcelona in February 1976;
2. The Protocol concerning Cooperation in Combating Pollution of the Mediterranean Sea by Oil and other Harmful Substances in Cases of Emergency, signed in Barcelona in February 1976;
3. The Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources, signed in Athens in May 1980;
4. The Protocol concerning Mediterranean Specially Protected Areas, signed in Geneva in April 1982.
5. The Protocol concerning pollution arising from exploration and exploitation of the continental shelf, the seabed and its subsoil, signed in Madrid in October 1994.

From the viewpoint of human health, the protocol on pollution from land-based sources is the most important. In view of the considerable economic and legal implications of this protocol, the text itself is similar to the Convention in that it provides the framework for prevention and control measures, implementation being achieved progressively. To date, the following measures have been adopted by contracting parties on a joint basis in terms of the protocol:

1. Interim environmental quality criteria for bathing waters (September 1985);
2. Interim environmental quality for mercury (September 1985);
3. Measures to prevent mercury pollution (September 1987);
4. Environmental quality criteria for shellfish waters (September 1987);
5. Measures for control of pollution by used lubricating oils (October 1989);
6. Measures for control of pollution by cadmium and cadmium compounds (October 1989);
7. Measures for control of pollution by organotin compounds (October 1989);
8. Measures for control of pollution by organohalogen compounds (October 1989);
9. Measures for the control of pollution by organo-phosphorus compounds (October 1991);
10. Measures for the control of pollution by persistent synthetic materials in the Mediterranean Sea (October 1991);
11. Measures for the control of radioactive pollution (October 1991);
12. Measures for control of pollution by pathogenic microorganisms (October 1991);
13. Measures for the control of pollution by carcinogenic, teratogenic and mutagenic substances (October 1993).

All these measures represent minimum ones agreed to by all Mediterranean countries. At national level, several countries already possess stricter ones. In a number of instances, no quantitative control in the form of standards is included, mainly because either the current state of the art, or other considerations, precluded the adoption of definitive standards at the particular time. All measures are subject to updating.

8.2 CURRENT LEGAL PROVISIONS IN MEDITERRANEAN COUNTRIES

8.2.1 Bathing waters

Criteria and standards for bathing water quality in the Mediterranean region differ from country to country. From this point of view, countries can be broadly divided into two

groups. The first group is formed by Member States of the European Union (France, Greece, Italy and Spain) which are bound by, and have their relevant national legislation based upon, the 1976 E.C. Directive on the Quality of Bathing Waters, along with a number of other countries which, although not E.U. Member States, have based their legislation on the provisions of the E.C. Directive. The second group is composed of those other countries whose legislation is either *ad hoc* (i.e. based on the evaluation of local requirements) or, in some cases based either on the recommendations of the 1974 WHO Bilthoven Working Group on guides and criteria for recreational quality of beaches and coastal waters, or on the interim criteria for bathing waters adopted by Mediterranean States in their capacity of contracting parties to the 1976 Barcelona Convention for the protection of the Mediterranean Sea against pollution and its related protocols, adopted at their fourth Ordinary Meeting in Genoa in 1985.

In 1983, and again in 1985, within the framework of the Long-term Programme of Pollution Monitoring and Research in the Mediterranean (MED POL Phase II), WHO and UNEP jointly proposed interim microbiological quality criteria and standards for bathing waters in the region. These proposals are given in Table 8.2.1.1. In October 1985 in Genoa, Mediterranean States accepted only part of these proposals as an interim measure. The criteria adopted are shown in Table 8.2.1.2.

The microbiological standards established in the 1976 E.C. Bathing Water Directive are reproduced in Table 8.2.1.3, and the physico-chemical ones in Table 8.2.1.4. Conformity with the provisions of the Directive does not forbid any Member State from adopting stricter measures, which each country has in fact done, especially with regard to the mandatory or imperative values. In some countries, recreational water is classified into a number of quality categories, ranging from high to just acceptable.

Table 8.2.1.1

Interim quality criteria for Mediterranean bathing waters
proposed by WHO and UNEP in 1983

Parameter	Concentration per 100 mL not to be exceeded		Minimum number of samples	Analytical method	Interpretation method
	50% of the samples	90%			
Faecal coliforms	100	1000	10	Membrane filtration, m-FC broth or agar incubated at $44.5 \pm 0.2^\circ \text{C}$ for 24h	Graphical or analytical adjustment to a lognormal probability distribution
Faecal streptococci	100	1000	10	Membrane filtration, KF-streptococcus agar incubated at $36 \pm 0.5^\circ \text{C}$ for 48h	

Table 8.2.1.2
Interim quality criteria for bathing waters adopted by Mediterranean states in 1985

Parameter	Concentration per 100 mL not to be exceeded 90% of the samples	Minimum number of samples	Analytical method	Interpretation method
Faecal coliforms	100	10	WHO/UNEP Reference Method No. 3, "Determination of Faecal Coliforms in seawater by the Membrane Filtration Culture Method", <u>or</u> WHO/UNEP Reference Method No. 22, "Determination of Faecal Coliforms in seawater by the Multiple Test Tube Method".	Graphical or analytical adjustment to a lognormal probability distribution

Table 8.2.1.3

Microbiological criteria and standards contained in the 1975 E.C. Directive on the quality of bathing waters

	Parameters	G	I	Minimum sampling frequency	Method of analysis and inspection
1	Total coliforms/100 mL	500	10 000	Fortnightly (1)	Fermentation in multiple tubes. Sub-culturing of the positive tubes on a confirmation medium
2	Faecal coliforms/100 mL	100	2 000	Fortnightly (1)	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
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 L	-	0	(2)	Concentration by membrane filtration. Inoculation on a standard medium. Enrichment -- subculture on isolating agar -- identification
5	Enteroviruses PFU/10 L	-	0	(2)	Concentration by filtration, flocculation or centrifuging and confirmation

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 Table 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) Concentrations 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.

Table 8.2.1.4
Physico-chemical criteria and standards contained in the 1975 E.C. Directive
on the quality of bathing waters

	Parameters	G	I	Minimum sampling frequency	Method of analysis and inspection
1	pH	-	6 to 9 (0)	(2)	Electrometry with calibration at pH 7 and 9
2	Colour	-	No abnormal change in colour (0)	Fortnightly (1)	Visual inspection or photometry with standards on the Pt.Co scale.
		-	-	(2)	
3	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)	
4	Surface-active substances (lauryl-reacting with methylene, blue sulfate)	-	No lasting foam	Fortnightly (1)	Visual inspection or absorption spectro-photometry with methylene blue.
		≤0.3	-	(2)	
5	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)	
6	Transparency m	2	1(0)	Fortnightly (1)	Secchi's disc.
7	Dissolved oxygen % saturation O ₂	80 to 120	-	(2)	Winkler's method or electrometric method (oxygen meter).
8	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.
9	Ammonia mg/litre NH ₄			(3)	Absorption spectrophotometry, Nessler's method, or indophenol blue method.
10	Nitrogen Kjeldahl mg/litre N			(3)	Kjeldahl method.

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 Table 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) Concentrations 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.

8.2.2 Shellfish waters

As is the case with recreational waters, quality criteria and standards for shellfish waters vary from country to country, both globally and within the Mediterranean region. Mediterranean countries which are member states of the European Union are bound by the microbiological limits set forth in the E.C. 1979 Directive on the quality of shellfish waters, which is reproduced in Table 8.2.2.1. However, each state has its own legislation which, in every case, is stricter than the terms of the Directive.

Table 8.2.2.1

Microbiological criteria and standards contained in the 1979 E.C. Directive on the quality of shellfish waters

	Parameter	G	I	Reference methods of analysis	Minimum sampling and measuring frequency
1	Faecal coliforms/100 mL	≤300 in the shellfish flesh and intervalvular liquid ⁽¹⁾		Method of dilution with fermentation in liquid substrates in at least three tubes in three dilutions. Subculturing of the positive tubes on a confirmation medium. Count according to MPN (most probable number). Incubation temperature 44° C ± 0.5° C	Quarterly

G = guide

I = mandatory

(1) However, pending the adoption of a Directive on the protection of consumers of shellfish products, it is essential that this value be observed in waters in which live shellfish directly edible by man.

In 1983 and 1986, WHO and UNEP proposed interim microbiological quality criteria and standards for shellfish waters and shellfish in the Mediterranean. The former are reproduced in Table 8.2.2.2. These were not accepted by Mediterranean states, and an expert consultation jointly convened by WHO and UNEP in 1987 made alternative recommendations which were identical to the 1979 E.C. Directive. These were adopted by Mediterranean states on a common basis later the same year.

It should be stressed that although the terms of both the E.C. 1979 Directive and (as a result) the joint measures adopted by all Mediterranean states in 1987 utilize examination of shellfish alone (examination of the ambient water is recommended, but is not mandatory), the criteria and standards are limited to the acceptability or otherwise of the area for shellfish growing and/or harvesting. In no way do they determine the acceptability of shellfish for human consumption, this being determined through appropriate sanitary measures in each country.

Table 8.2.2.2

Microbiological quality criteria and standards for Mediterranean shellfish waters and shellfish proposed by WHO and UNEP in 1983

Faecal coliforms in SHELLFISH-GROWING WATERS			
Concentration of faecal coliforms per 100 mL not to be exceeded 80% 100% of the samples	Minimum sampling frequency	Analytical method	Interpretation method
10 100	In winter monthly; in summer fortnightly	Membrane filtration m-FC broth or agar incubated at $44.5 \pm 0.2^\circ \text{C}$ for 24h	Graphical or analytical adjustment to a lognormal probability distribution
Faecal coliforms in SHELLFISH FLESH			
Concentration of faecal coliforms per gram of flesh	Minimum sampling frequency	Analytical method	Interpretation method
2: sale permitted between 3 and 10: temporary prohibition of sale 10 and above: sale prohibited	In winter monthly; In summer fortnightly	Multiple tube fermentation and counting according to MPN. MacConkey broth incubated at $36 \pm 0.5^\circ \text{C}$ for 24h and then at $44.5 \pm 0.2^\circ \text{C}$ for 24h	By individual results histograms or graphical adjustment of a lognormal probability distribution

8.2.3 Selected metals and their compounds

8.2.3.1 Mercury

(a) National provisions

Table 8.2.3.1 summarizes the information provided by MED POL national coordinators on national legal limits for maximum mercury concentrations in seafood in force in Mediterranean countries. Table 8.2.3.2 lists the information on water quality criteria for mercury and effluent standards.

Table 8.2.3.1

Maximum permissible mercury levels in seafood
in Mediterranean countries

Country	Year of implementation	Maximum permissible mercury concentrations	Remarks
Cyprus	1983	0.5 mg/kg	All fish (dry, frozen, fresh, canned) All shellfish (fresh, frozen)
France	1976	0.5 mg/kg 0.7 mg/kg	All fish, crustacea and mollusca, except tuna and swordfish Tuna and swordfish. No legislation in force, but random tests made on important fish. Those which exceed limits are banned from the market. Both of the above levels apply to domestic and imported products
Greece	1974	0.7 mg/kg (methyl-mercury)	Limit for all seafood caught locally or imported, and intended for local consumption. Enforcement through veterinary practice New legislation under preparation
Israel	1979	1.0 mg/kg	All edible fish
Italy	1971	0.7 mg/kg	In force for fish and fishery products imported from outside the E.C. region
	1976	0.7 mg/kg	In force for frozen tuna (<i>Thunnus thynnus</i>) and other tunas and bonitos of domestic and E.C. origin
	1978	0.7 mg/kg	In force for bivalve molluscs of domestic production
	1980	0.7 mg/kg	In force for fresh sharks and dogfish

Country	Year of implementation	Maximum permissible mercury concentrations	Remarks
Malta	1983	0.7 mg/kg	For tuna and "similar fish"
		0.5 mg/kg	Other seafood
Spain	1973	0.5 mg/kg	In force for fresh, chilled and frozen fish and seafood if at least 5 kg weight, and for any canned or processed fish and fishery product
Former Yugoslavia	1983	0.5 mg Hg-T/kg 1.0 mg Hg-T/kg 0.8 mg Hg-T/kg 1.5 mg Hg-T/kg	Fresh fish Fresh tuna, shells and crabs Canned fish Canned tuna, shells and crabs
		0.4 mg Hg-0/kg 0.8 mg Hg-0/kg 0.6 mg Hg-0/kg 1.0 mg Hg-0/kg	Fresh fish Fresh tuna, shells and crabs Canned fish canned tuna, shells and crabs

Hg-T = total mercury
Hg-0 = organic mercury

Table 8.2.3.2

Water quality criteria for mercury and effluent standards in force in Mediterranean countries

Country	Year of implementation	Maximal Hg conc. in seawater	Effluent Standard	Remarks
France	N/A	E.U.	E.U.	The limits of the European Union apply
Greece	N/A	E.U.	E.U.	The limits of the European Union apply
Israel	N/A	N/A	N/A	Control exercised on a case by case basis

Country	Year of implementation	Maximal Hg conc. in seawater	Effluent Standard	Remarks
Italy	N/A	E.U.	E.U.	The limits of the European Union apply
Malta	N/A	N/A	N/A	Administrative controls are set at 1 µg Hg/L for effluents
Spain	N/A	E.U.	E.U.	The limits of the European Union apply
Turkey	N/A		200 µg/L	For discharges into sewage systems with complete treatment or discharge into deep waters
			50-160 µg/L	For different types of industries
Yugoslavia (Croatia)	1984	0.2 µg Hg-T/L 0.02-0.1 µg Hg-0/L	-	Depending on category of seawater

N/A: Not available
E.U.: European Union values

(b) E.C. provisions

The European Commission has issued detailed directives on limit values and quality objectives for mercury discharges by the chloralkali electrolytic industry and by sectors other than the chloralkali electrolysis industry.

The annexes (I-IV) of the first directive appear in Table 8.2.3.3. Member States can either apply the limit values in Annex I or the quality objectives in Annex II and the monitoring procedure in Annex IV. Authorizations for discharges issued by Member States opting to apply the limit values must contain provisions at least as stringent as those in Annex I. All authorizations shall be reviewed at least every four years. Also, authorizations for new plants must contain a reference to the standards corresponding to the best technical means available for preventing discharges of mercury (see statement at end of Table 8.2.3.3).

Table 8.2.3.3

Annexes I to IV of Council Directive 82/176/E.C. of 22 March 1982 on limit values and quality objectives for mercury discharges by the chloralkali electrolysis industry (O.J. L81 of 27 March 1982)

Limit values, time limits by which they must be complied with, and monitoring procedure for discharges by the chloralkali electrolysis industry.

1. The limit values expressed in terms of concentration which, in principle, should not be exceeded are set out in the following table.

Unit of measurement	Monthly average limit values not to be exceeded from 1 July		Remarks
	1983	1986	
<u>Recycled brine and lost brine</u> Micrograms of mercury per litre	75	50	Applicable to the total quantity of mercury present in all mercury-containing water discharged from the site of the industrial plant

In all cases, limit values expressed as maximum concentrations may not be greater than those expressed as maximum quantities divided by water requirements per tonne of installed chlorine production capacity.

2. However, because the concentration of mercury in effluents depends upon the volume of water involved, which is different for different processes and plants, the limit values expressed in terms of quantity of mercury discharged in relation to installed chlorine production capacity given in the following table must be observed in all cases.

Unit of measurement	Monthly average limit values not to be exceeded from 1 July		Remarks
	1983	1986	
<u>Recycled brine</u> Grams of mercury per tonne of installed chlorine production capacity	0.5	0.5	Applicable to the mercury present in effluent discharged from the chlorine production unit
<u>Lost brine</u> Grams of mercury per tonne of installed chlorine production capacity	8.0	5.0	Applicable to the total quantity of mercury present in all mercury-containing water discharged from the site of the industrial plant

3. The daily average limit values are four times the corresponding monthly average limit values given in points 1 and 2.

4. In order to check whether the discharges comply with the emission standards which have been fixed in accordance with the limit values laid down in this Annex, a monitoring procedure must be instituted. This procedure must provide for:

- the taking each day of a sample representative of the discharge over a period of 24 hours and the measurement of the mercury concentration of that sample, and
- the measurement of the total flow of the discharge over that period.

The quantity of mercury discharged during a month must be calculated by adding together the quantities of mercury discharged each day during that month. This total must then be divided by the installed chlorine production capacity.

Quality Objectives

For those Member States which apply the exception provided for in Article 6 (3) of Directive 76/464/E.C., the emission standards which Member States must establish and ensure are applied, pursuant to Article 5 of that Directive, shall be fixed so that the appropriate quality objective or objectives from among those listed below is or are complied with in the area affected by discharges of mercury from the chloralkali electrolysis industry. The competent authority shall determine the area affected in each case and shall select from among the quality objectives listed in paragraph 1 the objective or objectives that it deems appropriate having regard to the intended use of the area affected, taking account of the fact that the purpose of this Directive is to eliminate all pollution.

1. In order to eliminate pollution in Directive 76/464/E.C., and pursuant to Article 2 of the Directive, the following quality objectives are set:

- 1.1 The concentration of mercury in a representative sample of fish flesh chosen as an indicator must not exceed 0.3 mg/kg wet flesh.
- 1.2 The total concentration of mercury in inland surface waters affected by discharges must not exceed 1 µg/L as the arithmetic mean of the results obtained over a year.
- 1.3 The concentration of mercury in solution in estuary waters affected by discharges must not exceed 0.5 µg/L as the arithmetic mean of the results obtained over a year.
- 1.4 The concentration of mercury in solution in territorial seawaters and internal coastal waters other than estuary waters affected by discharges must not exceed 0.3 µg/L as the arithmetic mean of the results obtained over a year.
- 1.5 The quality of the waters must be sufficient to comply with the requirements of any other Council Directive applicable to such waters as regards the presence of mercury.

2. The concentration of mercury in sediments or in shellfish must not increase significantly with time.

3. Where several quality objectives are applied to waters in an area, the quality of the waters must be sufficient to meet each of them.

4. The numerical values of the quality objectives specified in 1.2, 1.3 and 1.4 may, as an exception and where this is necessary for technical reasons, be multiplied by 1.5 until 30 June 1986, provided that the Commission has been notified beforehand.

Reference Method of Measurements

1. The reference method of analysis for determining the mercury content in waters, the flesh of fish, sediments and shellfish is by flameless atomic absorption spectrophotometry after suitable pretreatment of the sample which takes account in particular of pre-oxidation of the mercury and of successive reduction of the mercury ions Hg (II).

The limits of detection¹ must be such that the mercury concentration can be measured to an accuracy¹ of ±30% and a precision¹ of ±30% at the following concentrations:

¹ the definitions of these terms are as given in Council Directive 79/869/E.C. of 9 October 1979 concerning the methods of measurement and frequencies of sampling and analysis of surface water intended for the abstraction of drinking water in the member States (OJ No L 271, 29.10.1979, p 44).

- in the case of discharges, one tenth of the maximum permitted concentration of mercury specified in the authorization,
 - in the case of surface water, one tenth of the mercury concentration specified in the quality objective,
 - in the case of the flesh of fish and shellfish, one tenth of the mercury concentration specified in the quality objective,
 - in the case of sediments, one tenth of the mercury concentration in the sample or 0.05 mg/kg dry weight, whichever is the greater.
2. Flow measurement must be carried out to an accuracy of $\pm 20\%$.

Monitoring Procedure for Quality Objectives

1. For each authorization granted in pursuance of this Directive, the competent authority shall specify the restrictions, the monitoring procedure and deadlines for ensuring compliance with the quality objective or objectives concerned.
2. In accordance with Article 6 (3) of Directive 76/464/E.C., the Member State shall report to the Commission for each quality objective chosen and applied, on:
 - the points of discharge and the means of dispersal,
 - the area in which the quality objective is applied,
 - the location of sampling points,
 - the frequency of sampling,
 - the methods of sampling and of measurement,
 - the results obtained.
3. Samples must be properly representative of the quality of the aquatic environment in the area affected by the discharges, and the frequency of sampling must be sufficient to show any changes in the aquatic environment, taking into account in particular natural variations in the hydrological regime. The salt-water fish analysis must be carried out on a sufficiently representative number of samples and species.
4. With regard to the quality objective in 1.1 above, the competent authority shall choose the species of fish to be adopted as indicators for analysis. For salt waters the species chosen from among those inhabiting coastal waters and caught locally may include cod, whiting, plaice, mackerel, haddock and flounder.

Statement on Article 3 (3)

The Council and the Commission state that the application of the best technical means available makes it possible to limit discharges of mercury from the site of a new industrial plant using the recycled-brine process to less than 0.5 g/tonne of installed chlorine production capacity.

The Annexes (I-II) of the second directive concerning mercury discharges by sectors other than the chloralkali electrolysis industry appear in Table 8.2.3.4. As in the previous case, Member States can either apply the limit values in Annex I or the quality objectives in Annex II. The limit values apply at the point where waste waters containing mercury leave the industrial plant or the treatment plant. The conditions for authorizations are the same as those for the previous directive.

Table 8.2.3.4

Annexes I and II of Council Directive 84/156/E.C. on the limit values and quality objectives for mercury discharges by sectors other than the chloralkali electrolysis industry (O.J. L74 of 17 March 1984)

Limit values, time limits by which they must be complied with, and the procedure for monitoring discharges by sectors other than the chloralkali electrolysis industry.

1. The limit values and the time limits for the industrial sectors concerned are set out together in the table below:

Industrial sector ^(*)	Limit value which must be complied with as from:		Unit of measurement
	1 July 1986	1 July 1989	
1. Chemical industries using mercury catalysts: (a) in the production of vinyl chloride (b) in other processes	0.1	0.05	mg/L effluent
	0.2	0.1	g/t vinyl chloride production capacity
	0.1	0.05	mg/L effluent
	10	5	g/kg mercury processed
2. Manufacture of mercury catalysts used in the production of vinyl chloride	0.1	0.05	mg/L effluent
	1.4	0.7	g/kg mercury processed
3. Manufacture of organic and non-organic mercury compounds (except for products referred to in point 2)	0.1	0.05	mg/L effluent
	0.1	0.05	g/kg mercury processed
4. Manufacture of primary batteries containing mercury	0.1	0.05	mg/L effluent
	0.05	0.03	g/kg mercury processed

Industrial sector ^(*)	Limit value which must be complied with as from:		Unit of measurement
	1 July 1986	1 July 1989	
5. Non-ferrous metal industry ^(**)			
5.1 Mercury recovery plants	0.1	0.05	mg/L effluent
5.2 Extraction and refining of non-ferrous metals	0.1	0.05	mg/L effluent
6. Plants for the treatment of toxic wastes containing mercury	0.1	0.05	mg/L effluent

(*) Limit values for industrial sectors other than the chloralkali electrolysis industry which are not mentioned in this table, such as the paper and steel industries or coal-fired power stations, will, if necessary, be fixed by the Council at a later stage. In the meantime, the Member States will fix emission standards for mercury discharges autonomously in accordance with Directive 76/464/E.C.. Such standards must take into account the best technical means available and must not be less stringent than the most nearly comparable limit value in this table.

(**) On the basis of experience gained in the implementation of this Directive the Commission will, pursuant to Article 6 (3), submit to the Council proposals for more stringent limit values to be introduced 10 years after the notification of this Directive.

The limit values given in the table correspond to a monthly average concentration or to a maximum monthly load.

The amounts of mercury discharged are expressed as a function of the amount of mercury used or handled by the industrial plant over the same period or as a function of the installed vinyl chloride production capacity.

2. Limit values expressed as concentrations which in principle must not be exceeded are given in the above table for the industrial sectors 1 to 4. In no instance may limit values expressed as maximum concentrations be greater than those expressed as maximum quantities divided by water requirements per kilogram of mercury handled or per tonne of installed vinyl chloride production capacity.

However, because the concentration of mercury in effluents depends on the volume of water involved, which differs for different processes and plants, the limit values, expressed in terms of the quantity of mercury discharged in relation to the quantity of mercury handled or to the installed vinyl chloride production capacity, given in the above table, must be complied with in all cases.

3. The daily average limit values are twice the corresponding monthly average limit values given in the table.

3. The daily average limit values are twice the corresponding monthly average limit values given in the table.

4. A monitoring procedure must be instituted to check whether the discharges comply with the emission standards which have been fixed in accordance with the limit values laid down in this table.

This procedure must provide for the taking and analysis of samples and for measurement of the flow of the discharge and, where appropriate, the quantity of mercury handled.

Should the quantity of mercury handled be impossible to determine, the monitoring procedure may be based on the quantity of mercury that may be used in the light of the production capacity on which the authorization was based.

5. A sample representative of the discharge over a period of 24 hours will be taken. The quantity of mercury discharged over a month must be calculated on the basis of the daily quantities of mercury discharged.

However, a simplified monitoring procedure may be instituted in the case of industrial plants which do not discharge more than 7.5 kilograms of mercury per annum.

Quality objectives

For those Member States which apply the exception referred to in Article 6 (3) of Directive 76/464/E.C., the emission standards which Member States must establish and ensure are applied, pursuant to Article 5 of that Directive, will be fixed so that the appropriate quality objective or objectives from among those listed in sections 1, 2 and 3 of Annex II to Directive 82/176/E.C. is or are complied with in the area affected by discharges of mercury.

The competent authority shall determine the area affected in each case and shall select from among the quality objectives listed in section 1 of Annex II to Directive 82/176/E.C. the objective or objectives that it deems appropriate having regard to the intended use of the area affected, while taking account of the fact that the purpose of this Directive is to avoid or eliminate all pollution.

The numerical values of the quality objectives specified in 1.2, 1.3 and 1.4 of Annex II of Directive 82/176/E.C. may, as an exception and where this is necessary for technical reasons, be multiplied by 1.5 until 1 July 1989, provided that the Commission has been notified beforehand.

8.2.3.2 Cadmium

(a) National provisions

The only information available on maximum permissible cadmium levels on seafood is from Italy and former Yugoslavia (the latter prior to 1990). This is summarized in Table 8.2.3.5. Information available on water quality criteria and standards in force is summarized in Table 8.2.3.6.

Table 8.2.3.5

Maximum limits of permissible cadmium levels in seafood in Mediterranean countries

	Year of enactment	Maximum permissible concentration	Comments
Italy	N/A	2 mg/kg	indicative for caphalopods
Former Yugoslavia	1983	0.1 mg Cd-T/kg 1.0 mg Cd-T/kg 0.15mg Cd-T/kg 1.5 mg Cd-T/kg	fresh fish fresh tuna, shells and crabs, canned fish canned tuna, shells and crabs

N/A: Not available

(b) E.C. provisions

The European Commission has issued in 1983 a Council directive on limit values and quality objectives for cadmium discharges (83/513/E.C.) in the framework of Directive 76/464/E.C. which concerns pollution caused by certain dangerous substances discharged into the aquatic environment. Annexes I-IV of this directive appear in Table 8.2.3.7. In Annex I there are specific limit values for each type of industry which must be applied by the Member States unless they opt to employ the quality objectives of Annex II. The directive does not specify any limit values for industries manufacturing phosphoric acid and/or phosphatic fertilizers from phosphatic rock but this fact does not release the countries from their obligation to fix emission standards for these discharges.

Table 8.2.3.6

Water quality criteria and effluent standards in force in Mediterranean countries according to information received from the National Coordinators for MED POL

	Year of enactment	Maximal Cd conc. in µg Cd/L		Remarks
		Water Quality Criteria	Effluent Standard	
France	N/A	E.U.	E.U.	the limits of the European Union apply
Greece	N/A	E.U.	E.U.	the limits of the European Union apply
Italy	N/A	E.U.	20	the limits of the European Union apply
Monaco	N/A	E.U.	E.U.	the limits of the European Union apply
Spain	N/A	E.U.	E.U.	the limits of the European Union apply
Turkey	N/A	10 µg Cd/L	2000 100 150 120 100 600	Only set for discharges into sewage systems with complete treatment or discharge into deep waters Metal industry (ceramics and other raw materials production) Raw material for dye production Petrochemical industry Miscellaneous industries Domestic wastewaters
Former Yugoslavia	1984	2 µg/L 5 µg/L	No No	For categories I to II For categories III to IV of effluents

N/A: Not available

E.U.: European Union values

Table 8.2.3.7

Annex I to IV of Council Directive 83/513/E.C. of 26 September 1983
on limit values and quality objectives for cadmium discharges
(O.J. L291 of 24/10/83)

Annex I

Limit values, time limits and verification frequencies and procedures for discharges of cadmium.

1. Limit values and time limits

Industrial sector ⁽¹⁾	Unit of measurement	Limit values which must be complied with as from	
		1.1.1986	1.1.1989 ⁽²⁾
1. Zinc mining, lead and zinc refining, cadmium metal and non-ferrous metal industry	Milligrams of cadmium per litre of discharge	0.3 ⁽³⁾	0.2 ⁽³⁾
2. Manufacture of cadmium compounds	Milligrams of cadmium per litre of discharge	0.5 ⁽³⁾	0.2 ⁽³⁾
	Grams of cadmium discharged per kilogram of cadmium handled	0.5 ⁽⁴⁾	(5)
3. Manufacture of pigments	Milligrams of cadmium per litre of discharge	0.5 ⁽³⁾	0.2 ⁽³⁾
	Grams of cadmium discharged per kilogram of cadmium handled	0.3 ⁽⁴⁾	(5)
4. Manufacture of stabilizers	Milligrams of cadmium per litre of discharge	0.5 ⁽³⁾	0.2 ⁽³⁾
	Grams of cadmium discharged per kilogram of cadmium handled	0.5 ⁽⁴⁾	(5)
5. Manufacture of primary and secondary batteries	Milligrams of cadmium per litre of discharge	0.5 ⁽³⁾	0.2 ⁽³⁾
	Grams of cadmium discharged per kilogram of cadmium handled	1.5 ⁽⁴⁾	(15)

Industrial sector ⁽¹⁾	Unit of measurement	Limit values which must be complied with as from	
		1.1.1986	1.1.1989 ⁽²⁾
6. Electroplating ⁽⁶⁾	Milligrams of cadmium per litre of discharge	0.5 ⁽³⁾	0.2 ⁽³⁾
	Grams of cadmium discharged per kilogram of cadmium handled	0.3 ⁽⁴⁾	(5)
7. Manufacture of phosphoric acid and/or phosphatic fertilizer from phosphatic rock		(7)	(7)

- (1) Limit values for industrial sectors not mentioned in this table will, if necessary, be fixed by the Council at a later stage. In the meantime the Member States will fix emission standards for cadmium discharges autonomously in accordance with Directive 76/464/E.C.. Such standards must take into account the best technical means available and must not be less stringent than the most nearly comparable limit value in this Annex.
- (2) On the basis of experience gained in implementing this Directive, the Commission will, pursuant to Article 5 (3), submit in due course to the Council proposals for fixing more restrictive limit values with a view to their coming into force by 1992.
- (3) Monthly flow-weighted average concentration of total cadmium.
- (4) Monthly average.
- (5) It is impossible for the moment to fix limit values expressed as load. If need be, these values will be fixed by the Council in accordance with Article 5 (3) of this Directive. If the Council does not fix any limit values, the values expressed as load given in column "1.1.1986" will be kept.
- (6) Member States may suspend application of the limit values until 1 January 1989 in the case of plants which discharge less than 10 kg of cadmium a year and in which the total volume of the electroplating tanks is less than 1.5 m³, if technical or administrative considerations make such a step absolutely necessary.
- (7) At present there are no economically feasible technical methods for systematically extracting cadmium from discharges arising from the production of phosphoric acid and/or phosphatic fertilizers from phosphatic rock. No limit values have therefore been fixed for such discharges. The absence of such limit values does not release the Member States from their obligation under Directive 76/464/E.C. to fix emission standards for these discharges.

2. Limit values expressed as concentrations which in principle must not be exceeded are given in the above table for the industrial sectors 2, 3, 4, 5 and 6. In no instance may limit values expressed as maximum concentrations be greater than those expressed as maximum quantities divided by water requirements per kilogram of cadmium handled. However, because the concentration of cadmium in effluents depends on the volume of water involved, which differs for different processes and plants, the limit values, expressed in terms of the quantity of cadmium discharged in relation to the quantity of cadmium handled, in the above table must be complied with in all cases.

3. The daily average limit values are twice the corresponding monthly average limit values given in the above table.

4. A monitoring procedure must be instituted to check whether the discharges comply with the emission standards which have been fixed in accordance with the limit values laid down in this Annex.

This procedure must provide for the taking and analysis of samples and for measurement of the flow of the discharge and the quantity of cadmium handled.

Should the quantity of cadmium handled be impossible to determine, the monitoring procedure may be based on the quantity of cadmium that may be used in the light of the production capacity on which the authorization was based.

5. A sample representative of the discharge over a period of 24 hours will be taken. The quantity of cadmium discharged over a month must be calculated on the basis of the daily quantities of cadmium discharged.

However, a simplified monitoring procedure may be instituted in the case of industrial plants which do not discharge more than 10 kg of cadmium per annum. In the case of industrial electroplating plants, a simplified monitoring procedure may only be instituted if the total volume of the electroplating tanks is less than 1.5 m³.

Annex II

Quality objectives

For those Member States which apply the exception referred to in Article 6(3) of Directive 76/464/E.C., the emission standards which Member States must establish and ensure are applied, pursuant to Article 5 of that Directive, will be fixed so that the appropriate quality objective or objectives from among those listed below is or are complied with in the area affected by discharges of cadmium. The competent authority shall determine the area affected in each case and shall select from among the quality objectives listed in paragraph 1 the objective or objectives that it deems appropriate having regard to the intended use of the area affected, while taking account of the fact that the purpose of this Directive is to eliminate all pollution.

1. The following quality objectives¹, which will be measured sufficiently close to the point of discharge, are fixed, with the object of eliminating pollution within the meaning of Directive 76/464/E.C. and pursuant to Article 2 of that Directive²:
 - 1.1 The total cadmium concentration in inland surface waters affected by discharges must not exceed 5 µg/litre.
 - 1.2 The concentration of dissolved cadmium in estuary waters affected by discharges must not exceed 5 µg/litre.
 - 1.3 The concentration of dissolved cadmium in territorial waters and in internal coastal waters other than estuary waters affected by discharges must not exceed 2.5 µg/litre.
 - 1.4 In the case of waters used for the abstraction of drinking water, the cadmium content must conform to the requirements of Directive 75/440/E.C.³.
2. In addition to the above requirements, cadmium concentrations must be determined by the national network referred to in Article 5 and the results compared with the following concentrations²:
 - 2.1 In the case of inland surface waters, a total cadmium concentration of 1 µg/litre.
 - 2.2 In the case of estuary waters, a dissolved cadmium concentration of 1 µg/litre.
 - 2.3 In the case of territorial and internal coastal waters, other than estuary waters, a dissolved cadmium concentration of 0.5 µg/litre.

If these concentrations are not complied with at any one of the points on the national network, the reasons must be reported to the Commission.
3. The concentration of cadmium in sediments and/or shellfish, if possible of the species *Mytilus edulis*, must not increase significantly with time.
4. Where several quality objectives are supplied to waters in an area, the quality of the waters must be sufficient to comply with each of those objectives.

¹ The cadmium concentrations indicated in 1.1, 1.2 and 1.3 are the minimum requirements necessary to protect aquatic life.

² With the exception of quality objective 1.4, all concentrations relate to the arithmetic mean of the results obtained over one year.

³ Directive 75/440/E.C. concerns the quality required of surface water intended for the abstraction of drinking water in the Member States (OJ No L 194, 25.7.1975, p.26). It provides for a mandatory cadmium value of 5 µg/litre on the basis of 95% of the samples taken.

Annex III

Reference methods of measurement

1. The reference method of analysis used for determining the cadmium content of waters, sediments and shellfish is atomic absorption spectrophotometry after preservation and suitable treatment of the sample.

The limits of detection¹ must be such that the cadmium concentration can be measured to an accuracy¹ of $\pm 30\%$ and at a precision¹ of $\pm 30\%$ at the following concentrations:

- 1.1 in the case of discharges, one-tenth of the maximum permitted concentration of cadmium specified in the authorization,
 - 1.2 in the case of surface water, 0.1 $\mu\text{g/litre}$ or one-tenth of the cadmium concentration specified in the quality objective, whichever is the greater,
 - 1.3 in the case of shellfish, 0.1 mg/kg , wet weight,
 - 1.4 in the case of sediments, one-tenth of the cadmium concentration in the sample or 0.1 mg/kg , dry weight, with drying being carried out between 105 and 110°C at constant weight, whichever value is the greater.
2. Flow measurements must be carried out to an accuracy of $\pm 20\%$.

Annex IV

Monitoring procedure for quality objectives

1. For each authorization granted in pursuance of this Directive, the competent authority will specify the restrictions, monitoring procedure and time limits for ensuring compliance with the quality objective(s) concerned.
2. In accordance with Article 6 (3) of Directive 76/464/E.C., the Member State will, for each quality objective chosen and applied, report to the Commission, on:
 - 2.1 the points of discharge and the means of dispersal,
 - 2.2 the area in which the quality objective is applied,
 - 2.3 the location of sampling points,
 - 2.4 the frequency of sampling,
 - 2.5 the methods of sampling and measurement,
 - 2.6 the results obtained.

¹ The definitions of these terms are given in Council Directive 79/869/E.C. of 9 October 1979 concerning the methods of measurement and frequencies of sampling and analysis of surface water intended for the abstraction of drinking water in the Member States (OJ No L. 271, 29.10.1979, p.44).

3. Samples must be sufficiently representative of the quality of the aquatic environment in the area affected by the discharges, and the frequency of sampling must be sufficient to show any changes in the aquatic environment, taking into account, in particular, natural variations in the hydrological regime.

8.2.3.3 Zinc and copper

(a) National provisions

Greece, Italy, the Libyan Arab Republic, France, Spain, Tunisia, and Turkey appear to have pieces of legislation dealing with zinc and/or copper. It is most probable that other countries have similar provisions.

(b) E.C. provisions

The basic Directive providing for the protection of marine waters in the E.U. is 76/464/E.C., according to which both zinc and copper are classified as List II substances. This list includes substances which although they are recognized as having harmful effects in the aquatic environment, their impact is considered to be moderate and confined to relatively restricted areas. Their discharge requires prior authorization with the aim of minimizing water pollution. However, no specific values have been set.

E.C. Directive, 79/923/E.C., provides for the quality of waters inhabited by bivalve shellfish. According to the Annex, monitoring is required at least every six months for both metals to be determined in the water and in the flesh of the shellfish, employing AAS. According to the Directive the concentration should not exceed levels that affect the shellfish or their larvae. The possibility of synergistic effects of copper and zinc with the other metals listed (Ag, As, Cd, Cr, Hg, Ni and Pb) should be considered. No specific standards are set but 100% of samples examined should fulfil the above mentioned provisions.

The Directive requires from the member states to monitor and correlate these levels with the copper and zinc discharges in the same waters according to the Directive 76/464/E.C..

8.2.3.4 Arsenic

(a) National provisions

The Spanish 1985 Law on Waters does not include an explicit provision for coastal waters, but regulates discharges into rivers which could pollute the sea. Regulations enacted in 1986 under this law includes limit values for a large number of substances (including arsenic). The Italian 1976 Law on the protection of waters from pollution (which specifically includes marine waters) sets limit values for several substances in effluents, including arsenic. French legislation also sets limit values on the concentrations of pollutants in effluents, but does not specifically mention arsenic.

(b) E.C. provisions

From the more general aspect, E.C. Council Directive 76/464/E.C. of 4 May 1976 (E.C., 1976) on pollution caused by certain dangerous substances into the aquatic

environment of the Community includes "Substances in respect of which it has been proved that they possess carcinogenic properties in or via the aquatic environment". As in the case of the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources, this provides double coverage for carcinogenic substances falling within chemical groups itemized separately in the same annex, and at the same time caters for other substances with the same properties not already covered. A communication to the Council from the Commission dated 22 June 1982 (E.C., 1982) contains a list of 129 chemical substances, drawn from various groups, which are considered as potential candidates for eventual inclusion in List 1 to the 1976 Directive. Out of 21 substances selected as priority items within this list, arsenic and its mineral compounds, are placed under the specific heading of carcinogens.

8.2.3.5 Organotin compounds

(a) National provisions

The use of antifouling paints containing organotin compounds was first brought under control by the French Government (January 1982), which banned the use of paints containing more than 3% in weight of these compounds for the protection of hulls of boats less than 25 tonnes (Alzieu, 1986). A second decree (16 September 1982) extended the ban to the whole French coastal area and to all organotin paints. Present regulations, in force from February 1987, ban the use of antifouling paints containing organotin compounds for all boats and marine craft less than 25 m in length, with the exception of hulls made of alloy.

In Italy, organotin biocides were forbidden from May 1985 for use in industrial cooling waters discharged to shellfish farming areas.

(b) E.C. provisions

At the European Union level, a proposal for a ban on the sale to the general public of paints containing organotins and the use of these paints on boats under 25 m and in fish farm nets and cages is under consideration by member states.

8.2.4 Selected organic pollutants

8.2.4.1 Organohalogen compounds

(a) National provisions

DDT was the first chlorinated organic compound which, owing to its persistence, toxic potential, and ubiquity in both environment and food, was recognized as a global risk to man's ecosystem and his health. In 1972 this awareness led to a nearly complete ban on its use in many countries. The present legal provisions applying in the Mediterranean countries are shown in Table 8.2.4.1.

(b) E.C. provisions

At a regional level the European Union took the following measures. By Council directive 76/769/E.C. of 27 July 1976 the use of PCB and PCT was restricted to closed-system electrical equipment, hydraulic fluids, condensers etc. In the same year a directive was issued (76/403/E.C. of 6 April 1976) to regulate the disposal of

these substances. This directive was succeeded by a new and more detailed one which includes instructions for collection, storage, disposal, transport, and labelling.

The policy of the Union so far has been to set limits of discharge for industrial plants. Table 8.2.4.2 indicates the limit set for certain organohalogenes. Quality objectives have also been set for those countries wishing to apply this option. Table 8.2.4.3 shows these quality objectives for the various organohalogenes.

Table 8.2.4.1

Legal provisions for organohalogenes in Mediterranean countries

Country	Provisions
Algeria	Total ban on PCB, DDT and lindane
Cyprus	Control use of pesticides, ban on use of aldrin/dieldrin, DDT, chlordane and PCB. Lindane used only as wood preservative. DDT in fish should not exceed 5 mg/kg
France	E.U. Directives apply. Control on production. Ban use of drins, DDT, HCH, HCB, toxaphene and DBCP in agriculture
Greece	E.U. Directives apply
Israel	Industrial effluent standard of 0.02 mg/L for sewage systems
Italy	E.U. Directives apply. Indicative figure for PCB in fish of 5 mg/kg. Effluent standard of 0.05 mg/L for organohalogen pesticides
Libya	Control on import and manufacture of all organohalogenes
Malta	PCB, PCT and chlorinated pesticides are not manufactured and their importation and use is prohibited
Monaco	E.U. Directives apply
Spain	E.U. Directives apply
Former Yugoslavia	Limits for all organohalogenes varying from 0.001-0.1 mg/L depending on the category of water. For seafood, PCB 3 mg/kg, DDT 1.0 mg/kg, HCH (alpha, beta, gamma) 0.1 mg/kg, HCH(gamma) 0.5 mg/kg (pesticides on a fat wt basis).

Table 8.2.4.2

E.U. limits set for industrial discharges
(mg/L, monthly averages)

Industrial sector	Limit	Date of application	Directive
1) Production of HCH	2	1.10.88	84/491/E.C.
2) Extraction of lindane	2	"	"
3) Production of HCH and extraction of lindane	2	"	"
4) Production of CCl ₄	1.5	1.1.88	86/280/E.C.
5) Production of chloromethanes	1.5	1.1.88	"
6) Production of CFCs	No limit set		
7) Production of DDT	0.7	1.1.88	"
	0.2	1.1.91	"
8) Production of PCP	1	1.1.88	"
9) Production of drins	2	1.1.89	88/347/E.C.
10) HCB production and processing	1	1.1.90	"

Table 8.2.4.3

E.U. quality objectives for certain organohalogens

Compound	Quality objectives
HCH (total)	20 ng/L in territorial waters close to discharge points. 100 ng/L in inland surface waters affected by discharges
CCl ₄	12 µg/L in all types of waters
DDT	10 µg/L for pp DDT and 25 µg/L for total DDT applies from 1.1.88 for all types of waters
PCP	2 µg/L from 1.1.88 for all types of waters
Drins	30 ng/L for all with a maximum of 5 ng for endrin
HCH	0.03 µg/L from 1.1.90 for all waters

Note: The phrase "The concentration of (organohalogen) in sediments and/or molluscs and/or shellfish and/or fish must not increase significantly with time" accompanies the objectives.

8.2.4.2 Organophosphorus compounds

(a) National provisions

In most of the Mediterranean countries, pollution by organophosphorus compounds is regulated through the general legislation. Only in very few countries specific legislation exists.

In Cyprus, the Pest Control Products Law and subsequent amendments and regulations control the use of pesticides in which organophosphorus based pesticides are also included. In addition, regulations based on the Sales of Foods and Drugs Law control the maximum permissible levels of organophosphorus pesticides in food. However, marine food is not covered.

In France, no restrictions are imposed on their use or sale but production industries may have to follow the provisions of Law 76-663 for the protection of the environment.

In Libya, Law 7 of 1982 on the Protection of the Environment and subsequent legislation and regulations control the import, manufacture, transport and use of organophosphorus pesticides for the protection of water resources, agricultural products, livestock and human life.

In Malta, organophosphorus pesticides are regulated by the Pesticide Control Act of 1966 which is in the process of being updated. In Monaco, they are controlled by the general legislation on phosphorus containing compounds and in Turkey by the general legislation on environmental protection and control.

In Italy, Law 319/1976 sets the acceptable concentration for total organophosphorus pesticides in effluents to 0.1 mg/L.

(b) E.C. provisions

In 1982, E.C. prepared a list of 129 potentially dangerous substances based on their toxicity, persistence and bioaccumulation. This is in fact List I of the Annex to Directive 76/464/E.C.. In February 1990 the Commission proposed to the Council that priority should be given to some of these substances for the purpose of fixing limit values and quality objectives. Among them are the following organophosphorus compounds: azinphos-methyl, azinphos-ethyl, fenitrothion, fenthion, malathion, parathion, parathion-methyl and dichlorvos.

8.2.4.3 Polycyclic aromatic compounds

(a) National provisions

A number of Mediterranean countries have recently promulgated legislation on the prevention and control of marine pollution from land-based sources. This legislation is mainly designed to provide for compliance with the provisions of the 1980 Athens Protocol. In the majority of cases, no specific regulations concerning limit values for concentrations in effluents, water or seafood appear to have been issued. In the case of Mediterranean E.U. Member States, national legislation is based on the relevant E.C. Directives.

(b) E.C. provisions

From the more general aspect, E.C. Council Directive 76/464/E.C. of 4 May 1976 (E.C., 1976) on pollution caused by certain dangerous substances into the aquatic environment of the Union includes "Substances in respect of which it has been proved that they possess carcinogenic properties in or via the aquatic environment". As in the case of the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources, this provides double coverage for carcinogenic substances falling within chemical groups itemized separately in the same annex, and at the same time caters for other substances with the same properties not already covered. A communication of the Council from the Commission dated 22 June 1982 (E.C., 1982) contains a list of 129 chemical substances, drawn from various groups, which are considered as potential candidates for eventual inclusion in List 1 to the 1976 Directive. Out of 21 substances selected as priority items within this list, PAH (in particular 3,4-Benzopyrene and 3,4-Benzofluoranthene) are placed under the specific heading of carcinogens.

8.2.5 Radionuclides

(a) National provisions

Efforts have been made recently to collect information on the national regulations for controlling radionuclide releases into the marine environment existing already in the Mediterranean countries. Table 8.2.5.1 lists the national legal provisions available as the basis for controlling radioactive pollution of the marine environment. These legal documents are very difficult, however, to be compared directly with each other, since they have been prepared in different contexts, taking into account prevailing circumstances in each country. Nevertheless it has been remarked that there are two categories of Mediterranean countries towards the control of radionuclide discharges into the marine environment. The first category includes countries where ICRP principles for radiation protection were fully accepted as the basis, and the regulations for control of radionuclide discharges into the environment were set up following the guidelines drawn by the IAEA. The second category includes countries where practically no legal provisions have been prepared, since there has been no intentional release of radionuclides into the environment. Although the situation is not clear, it is likely that, even in the second-category countries, legal provisions for the basic safety standards for radiation protection based on the ICRP recommendations may exist, since medical applications of radionuclides are rather widely exercised also in these countries.

In the first-category countries where nuclear industries have already been developed the legal permits for environmental releases of radionuclides are normally accompanied by imposed monitoring of effluents released as well as environmental monitoring of the areas receiving discharges. The monitoring operations are normally conducted by operators of nuclear installations or competent national authorities in order to ensure the safety of the release operations. Therefore, a number of monitoring data have been and will be available to competent national authorities, although these data have not always been published. In order to follow the long-term trend of radioactive contamination of the Mediterranean Sea within the framework of the implementation of the Mediterranean Action Plan it is considered important to assemble these monitoring data, especially the data on the amounts of radionuclides introduced into the Mediterranean marine environment from each country, at a centralized competent body dealing with environmental pollution of the Mediterranean Sea.

Table 8.2.5.1

Existing national legislations for controlling radioactive marine pollution
in the Mediterranean countries

Country	Legal provisions available for marine pollution control	Acceptance of ICRP principles as the basis for these regulations
France	<ul style="list-style-type: none"> . Law for combatting pollution of water systems (1964) . Regulatory order on discharge limits of radioactive effluents from nuclear centres and measures for environmental monitoring (1976) 	Yes
Israel	<ul style="list-style-type: none"> . The prevention of sea pollution law (1983) . The prevention of sea pollution from Land-based sources law (1988) 	N/A
Libya	<ul style="list-style-type: none"> . Regulation on ionized radiation use and protection against its hazards (1981) . Maximum allowed limits for radioactive materials in foodstuff 	N/A
Morocco	<ul style="list-style-type: none"> . Law on maritime fisheries (1973) . Draft order on the protection against ionizing radiation and radioactive substances 	N/A
Spain	<ul style="list-style-type: none"> . Spanish nuclear legislation (1964) . Directive for regulating nuclear installation and radioactivity (1972) . Directive on regulations for health protection against ionizing radiation (1982) 	Yes
Syria	<ul style="list-style-type: none"> . Series of basic safety criteria for the radioactive protection . Maximum levels of radioactivity tolerated in food 	N/A

N/A: Not available

(b) E.C. provisions

Attention is drawn to relevant Articles of the "Radiation Protection Provisions of the Euratom Treaty" and the Regulations, Directives and Decisions contained in the "Community Radiation Protection Legislation" of August 1990 (document number XI-3539/90 EN) issued by the Directorate General; Environment, Nuclear Safety and Civil Protection; Radiation Protection Division; Commission of the European Communities (CEC). Other prior CEC directives (CEC, 1980; CEC, 1984) are dealt with in Table 8.2.5.2.

Table 8.2.5.2

Existing E.U. legislation for controlling radioactive marine pollution

Legal provisions available for marine pollution control	Acceptance of ICRP principles as the basis for these regulations
Directive of the Commission on the basic standards for radioprotection of the general public and radiation workers (1980)	Yes
Directive of the Commission on the fundamental measures for radioprotection in medical examinations and treatments (1984)	N/A
Directive of the Commission for modifying the basic standards for radioprotection of radiation workers (1984)	N/A

N/A: Not available.

