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ABSTRACT

In this article the current problems and legal impacts of cross-media pollution are analyzed. The author proposes and comments on Draft Articles on Cross-Media Pollution in International Drainage Basins. While there is strong support concerning an integrated regulatory approach, risk reduction and an end of fragmentation of laws and organizational structures (especially within the OECD-States), doubts remain as to whether product life-cycle assessments/avoidance by treatment at source must be included. The author, by contrasting OECD Recommendation C (90) 164 and a new EU-Draft Directive on Integrated Pollution Control, pleads for the wider approach of integrated pollution control being closely interlinked with the precautionary principle, according to which duties to prevent possible environmental interference are triggered by mere concern potential even in cases of scientific uncertainty, provided that the risk of significant harm is plausible.

Editor's Introductory Remark

Originally the author intended to present the following text to the Water Resources Committee of the International Law Association¹

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The author is very indebted to the members of the Water Resources Committee, and especially to Professor Ludwik A. Teclaff of Fordham University School of Law, for their critical comments. This manuscript was written in February, 1994 and updated in October.

1. The first meeting of the reestablished ILA Water Resources Committee was convened in the Dutch Foreign Ministry at The Hague, the Netherlands, on 28-30 October 1991. Six working groups were formed: "Divisions from International River Basins" (Chair: Judge Dr. E. Manner), "Estuarine Zones" (Chair: Professor Robert Hayton), "Remedies" (Chair: Klaus W. Cuperus and Prof. Alan Boyle), "Monitoring the Work of the ILC related to Water Resources and the Environment" (Chair: Prof. Rosenne), "Consideration of ILC Rules relevant to WRC work" (Chair: Prof. Rosenne) and "Cross-Media Pollution" (Chair: Dr. H. Hohmann). The second meeting of the Committee took place on 24 April 1992 during the ILA Congress at Cairo, Egypt, the third on 1-3 June 1993 in Berlin, Germany and the fourth on 10-12 February 1994 in Rome).

in order to propose the adoption of the Rules of Cross-Media Pollution by the International Law Association (ILA). The Committee on its third meeting congratulated the author for his highly qualified report, but decided not to follow his broad concept. Instead of this, the Water Resources Committee will confine itself to propose three more general rules for adoption by the ILA². It encouraged the author to publish his broader concept. The author is convinced that international environmental law has developed further³ than the Rules on Cross-Media Pollution, which in the near future will be adopted by the International Law Association.

I. CURRENT LEGAL PROBLEMS OF CROSS-MEDIA POLLUTION

For the first time during its 59th Conference at Belgrade, the International Law Association (ILA) accepted that international water resources are closely tied with other natural resources. The adopted "Articles on the Relationship between Water, Other Natural Resources and the Environment" (hereinafter: Belgrade Articles of 1980) read as follows: Art. 1: "Consistent with Article IV of the Helsinki Rules, States shall ensure that:

a) the development and use of water resources within their jurisdiction do not cause substantial damage to the environment of other States or of areas beyond the limits of national jurisdiction; and

b) the management of their natural resources (other than water) and other environmental elements located within their own boundaries does not cause substantial damage to the natural condition of the waters of other States."

Art. 2: "Articles XXVI and XXXVII of the Helsinki Rules, duly expanded with the addition of the consideration of acts or omissions concerning natural resources other than water and of other environmental elements in their reciprocal relationships with water resources, are applicable to the States referred to in Article 1."⁴

2. Cf. Hohmann, et. al. Cross-Media Pollution, in Hayton, Report of the Water Resources Committee, in: *ILA-Report of the 66th Conference held at Buenos Aires 1994*.

3. Much depends on the question how safe the legal grounds should be. In the author's view, an OECD-Recommendation and an EU former EC directive might be sufficient as a proof for a crystallizing rule of customary law, if there are sufficient indicators that several national legislations will follow this legal concept.

4. In: *ILA Report of the 59th Conference held at Belgrade 1980*, London 1982, p.4 and the discussion at p. 359-99, reprinted with the commentary of Cano, Barberis & Teclaff in Manner & Metsälampi (eds.) *The Work of the ILA on the Law of International Water Resources*, Helsinki 1988, p.215-38, reprinted without the commentary in: Hohmann, *Basic Documents*

Today, the concept of these Belgrade-Articles is too limited. When drafting Article 1, the Committee had especially in mind the problems of priority of uses (e.g. the use of water for energy or mineral resources vs. recreational and other uses), soil-erosion (e.g. by irrigation), salinization of the soil (as the result of over-use of the water), modification of the air (i.e. of clouds) by human action or atomic radiation et cetera.⁵ The approach was dominated by the principle of equitable use.

The current problems are more severe: one of the most obvious examples is dumping or incineration of wastes at sea which means hazardous wastes which are difficult to handle on land are dumped in the sea, thus polluting the water, or incinerated on ships, thus polluting the atmosphere. The resulting polluted clouds produce rain which increases the pollution of the sea.

Today, the two dominant pathways by which potential pollutants reach the oceans from the continent are rivers and the atmosphere; most of the lead, cadmium, copper, iron and zinc as well as of nutrients including phosphorus dissolved in the sea are river and atmospheric inputs as well as direct discharges.⁶ It can be assumed that similar transfers of pollution occur in drainage basins in that land and atmospheric pollution, originating from, *inter alia*, intensive production in industry and agriculture, have a large impact on water pollution. It is known that the atmospheric deposition accounted for as much as 30-40 percent of the total copper and lead loadings in the upper Great Lakes.⁷ This shows the close relationship between the environmental media: The pollution of one environmental medium may always have impacts on the other media—an insight which has grown in recent years. Cross-media pollution leads to the acceptance of a principle which may be called the "*best practicable environmental option*" (BPEO)-principle, the integrated approach according to which wastes, sewage, discharges and hazardous substances, which cannot be avoided,⁸ must be handled, treated and disposed of in that

of *International Environmental Law*, London/Dordrecht/Boston Graham & Trotman/Nij-hoff 1992, doc.12 d.

The quoted Articles XXVI—XXXVII of the Helsinki Rules are its Procedures for the Prevention and Settlement of Disputes. Most of its articles are mere recommendations.

5. Cf. the Commentary by Cano, Barberis & Teclaff, *Id.* at 218-24.

6. Cf. GESAMP: *The State of the Marine Environment* (UNEP Regional Seas Report and Studies No.115), UNEP Nairobi 1990, p. 33.

7. Cf. J.Schmandt, J.Clarkson & H.Roderick eds., *Acid Rain and Friendly Neighbors. The Policy Dispute between Canada and the United States* (revised edition), Durham N.C. 1988, p. 209. See also B. Rabe & J. Zimmerman, *Cross-Media Environmental Integration in the Great Lakes Basin*, 22 *Environmental Law* 253, 258 (1991): "More than 1.000 organic compounds, as well as metals such as lead, cadmium, mercury, and arsenic, are detectable in the Great Lakes, with air deposition the only plausible source in many instances. Toxic contamination of surface water attributable to groundwater discharge, landfill leaching, pesticide runoff from farm land, and release from lake-bottom sediments further compounds the problems facing the Basin."

8. Because of the precautionary principle, avoidance of hazardous substances and wastes

medium which would produce the least environmental harm.⁹ The BPEO-principle urges States to assess environmental consequences in order to decide what medium is best suited, or least vulnerable, for the dumping of wastes. This principle may also be called *integrated pollution (prevention and) control*¹⁰ (IPC), a principle which recognizes the integrated nature of the environment by requiring:

- first, end of fragmentation (or more precisely harmonization) of laws and organizational structures,
- second, risk reduction (especially by EIA) and integrated regulatory approach, and
- third, treatment at source or product life-cycle assessments ("cradle-to-grave" concepts); only this third aspect is controversial.

There are several consequences of the BPEO/IPC-principle. One aspect is acceptance of the *hydrographic basin*-concept. When water and land are closely interrelated, the management of an international river must not be based on the ILC's watercourse- but on the ILA's basin concept.¹¹ Since the BPEO/IPC-principle depends on assessments of the alternatives, *environmental impact assessments* (EIA) become the key instrument for the prevention of cross-media pollution. Regular information-exchange, early notification and consultation, regular monitoring, common research and standard-setting as well as institutional cooperation are other important means for that purpose.¹² Other necessary management instruments

by product-substitution, recycling or similar treatment at the source is the duty of primary importance; if avoidance is not possible, only then the BPEO-principle applies. Cf. Hohmann, *Precautionary Legal Duties and Principles of Modern International Environmental Law*, London/Dordrecht/Boston Graham & Trotman/Nijhoff, to be published in July 1994, p. 190.

9. Cf. Winter, *Der Schutz der Nordsee als Problem internationaler Übereinkommen*, 10 *Natur und Recht* (1988), 269; Hohmann, *Suche nach nationalen und internationalen Regelungen eines modernen Meeresumweltschutzes*, 12 *Natur und Recht* (1990), 55; see also footnotes 58-59 and accompanying text.

10. Thus the term used by OECD-Recommendation C (90) 164, adopted on 31 January 1991, in: OECD, *OECD Monographs No.37: Integrated Pollution Prevention and Control*, OECD/GD (91) 86, Paris April 1991, and in: Hohmann, *supra* note 4, doc.30 f. The term "integrated pollution control" seems also now to be accepted in the U.S. and other States, of the references *infra* note 60.

11. Cf. Schiedermaier & Rest, *Wasserrecht international*, in: Kimminich, v.Lersner & Storm (eds.), *Handwörterbuch des Umweltrechts*, vol. 2, Berlin (E.Schmidt) 1988, col.1126 s; Hayton, *Observations on the ILC Draft Rules on the Non-Navigational Uses of Int. Watercourses: Articles 1-4*, 3 *Colo J.Int. Env. Law & Pol.* (1992), 34; Caponera, *Principles of Water Law and Administration-National and International*, Rotterdam Balkema 1992, 184-186 and Hohmann *supra* note 8, p. 22 and 115.

12. The reference of Art. 2 of the Belgrade Articles of 1980, quoted *supra* note 4, to Art. XXIX of the Helsinki Rules is not sufficient, since Art. XXIX only *recommends* information and consultation.

include especially: single permits covering all releases and processes, policy planning and economic instruments. Another consequence of the BPEO/IPC-principle is that no source of pollution may be treated separately from other sources. The division between rules only for "dumping" and rules only for "discharge"¹³ and the exclusion of nearly all estuaries and partly of internal waters and of the coastal zone from the application of the river and regional sea conventions as well as the exclusion of offshore installations and chemical tankers from the application of the oil pollution rules of the sea conventions mean a piecemeal-approach leading to open questions not covered by these conventions.¹⁴ These loopholes may result in cross-media pollution (hereinafter: CMP). The better way is to have regulations with overlapping areas of concern.¹⁵ This last point may only be covered partly by the rules, since most of it, with the exception of estuaries, some internal waters and wetlands, is beyond the purview of the Water Resources Committee. Nevertheless, this aspect should be mentioned because what happens in drainage basins is of vital importance to the protection of the marine environment, and therefore, is an element in CMP that should be taken into consideration. Other policy aspects connected with CMP are: minimization of the quantity and harm of waste, rational use of resources, product-substitutions, application of cleaner technologies and of recycling strategies and interdiction of transboundary movements of hazardous wastes.¹⁶ Institutional measures should include: changes in organizational structures and internal decisionmaking procedures, establishment of integrated inspection and enforcement authorities, establishment of coordinating mechanisms within and among government bodies, and arrangements for cooperating internationally and among different levels of government within countries.

13. The International Convention on the Prevention of Marine Pollution by Dumping of Wastes, London 1972, 11 ILM 1294 (1972), as amended in 1978/80/89 (in: Burhenne ed, *International Environmental Law-Multilateral Treaties*, Berlin: E.Schmidt 1974 ss, 972:96 A/ 96 B/ 96 C (amendment of 1989 is missing), only current integrated version in: Hohmann, *supra* note 4, at doc. 45), covers the "dumping" in the sense of Art. III (1)(a) of this Convention. The International Convention for the Prevention of Pollution from Ships MARPOL, London 1973 and Protocol 1978, as amended 1984-87 (only current version in: Hohmann, *Id.*, at doc. 46), covers the "discharge" in the sense of Art. 2 (3)(a) of that Convention. Open and unresolved is especially the release of harmful substances directly arising from, or related to the exploration, exploitation and associated offshore processing of seabed mineral resources (Art. III (1)(c) of the London Dumping and Art. 2 (3)(b)(ii) of the MARPOL Convention). The UN Law of the Sea Convention, Montego Bay 1982 (official text UN Sales No. E83.V.5, New York 1983, and 21 ILM (1982), 1261) uses the definitions of the London Dumping and MARPOL Convention.

14. Cf. L.A.Teclaff & E.Teclaff, *Transfer of Pollution and the Marine Environment Conventions*, 31 Nat.Res.J. 199-201 (1991), and Hohmann, *supra* note 8, at 229. The respective provisions of the UN Law of the Sea Convention remain very abstract.

15. Cf. Teclaff/Teclaff, at 211.

16. The management instruments and the institutional measures are taken from: Principles 5 and 6 of the Appendix to OECD Recommendation C (90) 164, *supra* note 10.

II. DRAFT RULES ON CROSS-MEDIA POLLUTION AND COMMENTARY OF THE DRAFT RULES

In my view, the *Draft Rules on Cross-Media Pollution in International Drainage Basins* would be a correct interpretation and a desirable codification of current customary law. Of course, CMP is not limited to drainage basins. Its largest impact seems to be on the marine environment. As long as the "recording bodies" (ILA, Institut de Droit International (IDI) and International Law Commission (ILC)) treat each environmental medium separately and divide water into freshwater and the marine environment, a codification must be limited to one medium only. As applied to the Water Resources Committee, for example, codification would be limited to drainage basins.

The following commentary will analyze the development of these rules, whether they are already established customary law (*de lege lata*) or whether they are still crystallizing or evolving rules (*de lege ferenda*).

Art. 1 Use of Terms

(1) For the purposes of these Articles, cross-media pollution means the transfer, directly or indirectly, of environmental damage or hazards from one area to another or from one environmental medium to another or the transformation of one type of pollution into another.

(2) The environmental media referred to in sub-paragraph 1 include the atmosphere, the land, freshwater resources (surface and underground waters, snow and ice, clouds and all other states of atmospheric waters) and the marine environment.

Commentary to Art. 1:

The term "drainage basin" must be not defined, since its definition is contained in Art. II of the Helsinki Rules.¹⁷ Art. 1 (2) repeats definitions which are not disputed within the ILA.¹⁸ Only the term "cross-media pollution" in Art. 1 (1) is new. It had been in use for years, especially by the OECD, but it was defined for the first time in an article in 1987.¹⁹

17. Art. II of the ILA Helsinki-Rules on the Uses of the Waters of International Rivers, (1966), reprinted in: Manner & Metsälampi (eds.), *supra* note 4, at 19.

18. According to the commentary of Cano, Barberis & Teclaff to the Belgrade Articles of 1980, *supra* note 4, at 217-19, the term "natural resources", which was used in Art. 1 (b) of the Belgrade Articles, consists of: "water resources, the air space and the earth (soil)". Today it seems preferable to use the term "environmental media", since it is now very wide-spread, while "natural resources" cover—in addition to the environmental media—forests, mineral deposits et cetera. The terms "earth" and "air mass" should be replaced by "land" and "atmosphere", which are more supported today.

19. L.A.Teclaff & E.Teclaff, *International Control of Cross-Media Pollution-An Ecosystem*

The definition in Art. 1 (1) derives from all the various provisions of UN, OECD, EU (EC) documents, as especially Art. 195 UN Convention on the Law of the Sea (1982) and other documents cited as a proof for the rule codified in Art. 2 (2) of these Draft Rules.²⁰ Two words of Art. 1 (1) deserve further specification: The word "transfer" implies physical movement from place to place or from one environmental medium to another, while "transform" refers to the quality or the nature of the pollution.²¹

Art. 2 Basic Duties

(1) The basin States of an international drainage basin shall, individually or jointly, protect and preserve all environmental media of that basin, including estuaries, coastal zone, other ecosystems and the sea, from environmental damages or hazards and from cross-media pollution, as defined in Art. 1 (1).

(2) In taking measures to prevent, reduce and control pollution of the drainage basin, States shall refrain from transferring, directly or indirectly, damage or hazards from one area to another or from one environmental medium to another or to transform one type of pollution into another. This does not prevent the transfer or transformation of pollution in order to prevent, reduce and control pollution of the environment as a whole.

(3) Measures for the prevention, control and reduction of water pollution should be taken, where possible, at source.

(4) Drainage basins should be managed in ways that meet the requirements of environmental media and various human needs, without compromising the ability of future generations to meet their needs.

Commentary to Art. 2:

Art. 2 (1) formulates the duty to protect and preserve the three environmental media of the basin from environmental damages or hazards, which are appreciable, serious or significant, or which result in a detrimental alteration of the quality,²² and from cross-media pollution. Protection and preservation means: first, avoidance or at least reduction of those damages or hazards—this point is specified in Art. 2 (3) and 2 (4) of the Draft Rules, and, second, an integrated approach in the sense of the BPEO, a point, which is specified in Art. 2 (2), Art. 3 and Art. 4 of

Approach, 27 Nat. Res.J. 21, 28 (1987).

20. For further references see *infra* the commentary and also Teclaff & Teclaff *Id.* at 27 et seq. and *supra* note 14, at 194 et seq.

21. S.Rosenne & A.Yankov (eds.) United Nations Convention on the Law of the Sea 1982. A Commentary-Volume IV, Dordrecht/Boston/London Nijhoff 1990, para. 195.6 at 72.

22. A duty "to prevent pollution" means regularly: a duty to prevent appreciable, serious or significant pollution, or a detrimental alteration of the quality, Birnie & Boyle, *International Law and the Environment*, Oxford Clarendon Press 98-102 (1992).

the Draft Rules. Art. 2 (1) emphasizes, that ecosystems and the "land/sea interface"²³ must be protected and preserved. As Teclaff & Teclaff have pointed out, one of the biggest gaps in the regulation of waste disposal occurs between the law of the land and the law of the sea, i.e. in the estuarine and coastal zone.²⁴ Therefore, an integrated approach means that the management of the estuarine and coastal zone shall become an integral matter of the drainage basin commission in order to avoid loopholes in the environmental management.²⁵ The ecosystem approach should be the basis, since it automatically demands the integrated management of the basin, thus respecting all environmental media.²⁶ That the catchment area itself may be seen as an ecosystem, or a variety of ecosystems, has been emphasized in the ECE Guidelines on the Ecosystem Approach in Water Management (hereinafter: Ecosystem Guidelines)²⁷ and in the Great Lakes Water Quality Agreement.²⁸ Agenda 21 speaks of water "as an integral part of the ecosystem".²⁹

Art. 2 (1) of the Draft Rules may be regarded as an established customary duty. The duty to protect and preserve the environmental media of the basin, that is the water and ecosystems, is supported by: Art. 20 and Art. 21 II of the ILC Draft Articles on the Law of the Non-Navigational Uses of International Watercourses (hereinafter: 1991 ILC Draft Articles),³⁰ several conventions, as e.g. Art. 2 of the 1992 ECE Convention on the Protection and Use of Transboundary Watercourses

23. Teclaff & Teclaff, *supra* note 14, at 210.

24. *Id.* at 210.

25. *Id.* at 211.

26. Cf. Teclaff & Teclaff, *supra* note 19, at 30

27. No. 6 in the ECE Guidelines on the Ecosystem Approach in Water Management, 30 June 1992, UN-Doc. ENVWA/WP.3/R.28. And No.7 adds: "The multi-media approach is important in ecosystems-based water management. The transfers from one environmental medium to others should be assessed and controlled."

28. Art.I (g) of the Revised Great Lakes Water Quality Agreement of 1978, TIAS 9257, 30 UST 1383-1487, as amended 1983 and by Protocol signed 18 November 1987, consolidated by the International Joint Commission (1989); only international source for the consolidated version: Hohmann, *supra* note 4, at doc.56 b.

29. Agenda 21, UN-Doc. A/Conf.151/26, reprinted in: St.Johnson (ed.) The Earth Summit, London/Dordrecht/Boston Graham & Trotman/Nijhoff 125 (1993) Chapter 18, No.18.8.

30. Draft Articles as adopted in first reading by the Commission at its 43rd session (July 1991), UN-Doc.A/CN.4/L.463/ Add.4, in: 30 ILM (1991) 1575, in: 2 Yb.Int.Env.Law (1991), 764 and in: Hohmann, *supra* note 4, at doc.18. (In the meantime, the ILC has adopted the Draft Articles at its July 1994 Session. UN Doc, A/CN. 4/L. 492 and Add. In Article 20 and 21 II the word "appreciable" is replaced by "significant").

Art. 20 reads: "Watercourse States shall, individually or jointly, protect and preserve the ecosystems of international watercourses".

Art. 21 II reads: "Watercourse States shall, individually or jointly, prevent, reduce and control pollution of an international watercourse that may cause appreciable harm to other watercourse States or to their environment, including harm to human health or safety, to the use of the waters for any beneficial purpose or to the living resources of the watercourse."

and International Lakes (hereinafter: ECE Convention on Transboundary Watercourses),³¹ Art. II of the Great Lakes Water Quality Agreement³² and other freshwater agreements requiring prevention and reduction of water pollution,³³ as well as by important declarations, as e.g. Art. III of the 1979 IDI Athens Resolution on Pollution of Rivers and Lakes and International Law (hereinafter: Athens Resolution)³⁴ and Art. 1 of the 1982 ILA Montreal Rules on Water Pollution in an International Drainage Basin (hereinafter: Montreal Rules).³⁵ The duty to protect estuaries and coastal zones and to prevent marine pollution from land-based sources is supported by: Art. 23 of the 1991 ILC Draft Articles,³⁶ Articles 192, 194 I and 207 of the Law of the Sea Convention, by all conventions of the UNEP Regional Seas Programme adopted after 1978³⁷ and by the UNEP-Montreal Guidelines.³⁸ A number of newer conventions emphasize the ecosystem-approach.³⁹

31. ECE-Convention, in: 31 *ILM* 1312 (1992), Art. 2 reads:

(1) "The Parties shall take all appropriate measures to prevent, control and reduce any transboundary impact".

(2) "The Parties shall, in particular, take all appropriate measures:

(a) To prevent, control and reduce pollution of waters causing or likely to cause transboundary impact;

(b) To ensure that transboundary waters are used with the aim of ecologically sound and rational water management, conservation of water resources and environmental protection;

(c) . . .

(d) To ensure conservation and, where necessary, restoration of ecosystems".

32. Revised Great Lakes Water Quality Agreement, see *supra* note 28.

33. For references concerning Rhine, Lake Constance, Great Lakes, Colorado/US-Mexican border region and African rivers cf. Hohmann, *supra* note 8, at 246-50.

34. Institute of International Law, 58 *Yearbook*, Part II, Sessions of Athens 196 (1979); reprinted (as all other quoted ILA, IDI and ILC documents) in: Hohmann, *supra* note 4, at doc.16.

35. In: *ILA Report of the 60th Conference held at Montreal 1982*, 13-14, reprinted in Manner & Metsälampi (eds), *supra* note 4, at S.239-241 and in Hohmann, *id.* at doc. 13.

36. Draft Articles, *supra* note 30. Art.23 reads: "Watercourse States shall, individually or jointly, take all measures with respect to an international watercourse that are necessary to protect and preserve the marine environment, including estuaries, taking into account generally accepted international rules and standards". The final version is identical.

37. All the Regional Seas Conventions since 1978, starting with the Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution (Art. 8), 17 *ILM* 511 (1978), (the only exception being the Cartagena Convention). See also: Art. 10 of the Abidjan-Convention, Art. 5 of the Lima Convention, Art. 8 of the Jeddah-Convention, Art. 12 of the Nairobi-Convention and Art. 13 of the Noumea Convention. References for these Conventions, see *infra* note 42.

38. Montreal Guidelines for the Protection of the Marine Environment against Pollution from Land-Based Sources, UNEP Environmental Law Guidelines and Principles No.7, 1985, reprinted in: Hohmann, *supra* note 4, at doc.6.

39. E.g. the Convention on the Conservation of Antarctic Marine Living Resources, Canberra 20 May 1980, 19 *ILM* 841 (1980), Convention on the Regulation of Antarctic

In Art. 2 (1) any reference to the "equitable use" principle as formulated in Art. 1 of the Montreal Rules should be avoided since the duty to protect and preserve ecosystems is not dependent on any balancing-of-interests approach (in the sense of the determination of what constitutes "equitable use" according to Art. V of the Helsinki Rules).⁴⁰ "Significant or substantial harm," but not inequitable use, are thresholds triggering the duty of prevention and abatement.⁴¹

Article 2 (2) of the Draft Rules contains the key provision of cross-media pollution. It may be regarded as an established customary duty since it is largely supported by several conventions for different regions, especially by Art. 195 of the Law of the Sea Convention, seven conventions of the UNEP Regional Seas Programme for seven different regions,⁴² Art. 3 VI of the 1992 Helsinki Convention on Protection of the

Mineral Resources Activities, Wellington 2 June 1988, 27 *ILM* (1988), 865; Protocol to the Antarctic Treaty, Madrid 3 October 1991, 30 *ILM* (1991), 1455; Convention on Wetlands of International Importance, especially as Waterfowl Habitat, Ramsar 2 February 1971, *UNTS* 996, 245-68; Convention on the Conservation of European Wildlife and Natural Habitats, Bern 19 September 1979, *Cmd* 8738 TS 56 (1982); ASEAN Agreement on the Conservation of Nature and Natural Resources, Kuala Lumpur 9 July 1985, in: UNEP, Rummel-Bulksa & Osafo (eds.), *Selected Multilateral Treaties in the Field of the Environment* vol.2 Cambridge Grotius, 343 (1991) Great Lakes Water Quality Agreement 1978/87, all reprinted in: Hohmann, *supra* note 4, at docs.67, 67a, 67b, 62, 68, 70 and 56 b.

40. Cf. the critiques by Handl, *National Uses of Transboundary Air Resources: The International Entitlement Issue Reconsidered*, 26 *Nat.Res.J.* (1986), 415 *et seq.*, especially at 424, and by Hohmann, *supra* note 8, at 90-92.

Of different opinion are especially Schwebel, Third Report, UN Doc.A/CN.4/348 and *Corr.1* = YBILC 1982 II Part One, 65, 85; Bourne, *The ILC Draft Articles on the Law of International Watercourses: Principles and Planned Measures*, 3 *Colorado J.Int.Env.L & Policy* (1992), 75, and P.Wouters, *Allocation of the Non-Navigational Uses of International Watercourses*, 30 *Can.Yearbook Int.L.* 43 (1992). They believe that the no appreciable harm rule (Art. 7 of the ILC Draft Articles of 1991) is subordinated towards the equitable use (Art. 5 of the ILC-Draft); for critical comments concerning Bourne's position cf. Lammers, 3 *Colorado J. Int. Env. L. & Pol.* (1992), at 103-09 and Handl, *Id.*, at 129-33. The final version of ILC-Draft Article 7 of 1994, *supra* note 30, tries to harmonize the two concepts (see Art. 7 II lit. a); nevertheless, the duty to protect and preserve ecosystems or more precisely, to exercise due diligence in using water in order not to cause significant harm (ILC-Draft Article 7 I of 1994) is not depending on any balancing of interest; this balancing is only exceptionally necessary when significant harm is caused to another basin state *despite the use of due diligence*.

41. The same holds true for protection and conservation, since the latter means the management of human use of a natural resource or the environment in such a manner that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations; cf. Munro/Lammers/WCED Experts Group, *Environmental Protection and Sustainable Development*, London/Dordrecht/Boston Nijhoff, 9 (1987).

42. Art. 3 (e) of the Kuwait Convention for the Persian-Arab Gulf 1978 (17 *ILM* 1978, 511), Art. 4 V of the Abidjan Convention for the West and Central African Region 1981 (20 *ILM* 1981, 729), Art. 3 V of the Lima Convention for the South-East Pacific 1981 (in: Burhenne, *supra* note 13, at 981:84), Art. 3 V of the Jeddah Convention for the Red Sea 1982 (in: Burhenne *Id.* at 982:13), Art. 4 II of the Cartagena Convention for the Caribbean 1983 (22

Marine Environment of the Baltic Sea,⁴³ Art. 2 IV of the 1992 Paris Convention for Protection of the Marine Environment of the North-East Atlantic⁴⁴ and Article 2 IV of the ECE Convention on Transboundary Watercourses.⁴⁵ The duty formulated in Art. 2 (2) of the Draft Rules is also supported by several important declarations, especially by Principle 14 of the Rio Declaration, Principle 6 of the UNEP Montreal-Guidelines (1985), Principle 6 of the UNEP Cairo Guidelines (1987), Art. 5 of the 1987 IDI Cairo Resolution on Transboundary Air Pollution (hereinafter: Cairo Resolution), the OECD-Declaration on Environment Resources for the Future and the OECD-Recommendations C (78) 4 and C (90) 164.⁴⁶ The second sentence of Art. 2 (2) of the Draft Rules repeats the formulation of the official footnote of Principle 6 of the Montreal Guidelines, which was intended to prevent deadlock in the event of a pollution problem inevitably requiring some form of cross-media transfer.⁴⁷ This second sentence underlines the holistic, or integrated approach and indicates an aspect already formulated by Art. 4 of the Draft Rules, namely that there is a duty of basin States to handle, treat or dispose of wastes, pollutants or hazardous substances in a manner that produces the "least net environmental harm",⁴⁸ according to prior assessment.

ILM 227, 1983), Art. 4 V of the Nairobi Convention for the Eastern African Region 1985 (in: Burhenne, *Id.* 985:46), Articles 4 VI and 5 II of the Noumea Convention for the South Pacific Region 1986 26 ILM 38 (1987). All Conventions are reprinted in: Sand (ed.) *Marine Environment Law in the UNEP. An Emergent Eco-Regime*, London/New York Tycooly Publ./Cassell (1988); several are reprinted in: UNEP, Rummel-Bulska & Osafo, *supra* note 39, and in: Hohmann, *supra* note 4, at docs.50-53.

43. In: Burhenne, *supra* note 13, 992:28, and in: 3 Yearbook Int. Env.Law (1992), disc doc.1.

44. In: 32 ILM 1069 (1993), in: 3 Yearbook Int.Env.Law (1992), 759; and in: Burhenne 992:71.

45. For reference see *supra* note 31.

46. Rio Declaration on Environment and Development, UN-Doc.A/CONF.151/26, reproduced in 3 Yearbook Int.Env.Law (1992), 835; Montreal-Guidelines, *supra* note 38; Cairo-Guidelines: UNEP-Environmental Law Guidelines and Principles no. 8; IDI Cairo Resolution 1987 in: 62 (1987 II), 296; OECD-Rec.(78) 4, in: OECD, *OECD and the Environment*, Paris 1986, 46-51; OECD-Rec.(90) 164, *supra* note 10; all *Annuaire del IDI* documents (without Rio Declaration) are reprinted in: Hohmann, *supra* note 4, at docs. 6, 7, 17, 30 d and 30 f. The formulation of Art. 6 of the Montreal-Guidelines corresponds to Art. 195 UN Convention on the Law of the Sea. Very remarkable are the OECD-documents:

Principle 7 of Rec. C (78) 4 reads: "Authorities should ensure that the water pollution control measures they implement do not lead to uncontrolled pollution transfers to other water resources or to soil or to air systems".

Principles 3 and 9 of the Declaration read: "They declare that they will: 3) Reduce overall pollution through comprehensive control, so that problems are not transferred from one part of the environment to another . . . 9) Improve the management of natural resources, using an integrated approach . . .".

The integrated approach is described by Rec. (90) 164.

47. I am indebted to Peter H.Sand of the World Bank for this information. For details cf. also Qing-Nan Meng, *Land-Based Marine Pollution: International Law Development*, London (1987).

48. I am indebted to Prof.Josepf Dellapenna for this formulation.

Because of the precautionary principle, the duty to produce the least net environmental harm is subordinated vis-à-vis the primary duty to avoid harm by treatment at the source,⁴⁹ which is the reason why the principle of treatment at source should at least be mentioned. It is mentioned in Art. 2 (3) of the Draft Rules, which repeats the formulation of Art. 2 III of the ECE Convention on Transboundary Watercourses, but weakens the "shall" of the Convention into "should". This rule is supported explicitly by: Art. 2 III and 3 I (a) of the ECE Convention on Transboundary Watercourses and Art. 12 (a) of the World Charter for Nature (1982).⁵⁰ A few other conventions of two other regions seem to support the principle of treatment at source implicitly.⁵¹ Its clearest recognition can be found in various ECE and OECD declarations, especially in Principle 4 of the ECE Declaration of Policy on Prevention and Control of Water Pollution, including Transboundary Pollution (1980) and in the OECD-Recommendation on Integrated Pollution Prevention and Control (1991).⁵² This principle seems to be currently acknowledged only in the OECD/ECE-region. Its global acceptance is not yet well established. Therefore, the formulation "should" in Art. 2 (3) is more adequate.

The intergenerational equity, set forth in Art. 2 (4), is a principle which, after 1988, has become widely accepted. This acceptance is evident by the documents of three regions for the preparation of the Earth Summit,⁵³

49. See *supra* note 8. For the meaning of the principle of treatment at source cf. Hohmann *supra* note 8, at 202-03 and 316-18.

50. For reference to the ECE Convention see *supra* note 31. World Charter for Nature, adopted on 28 October 1982 by UN-Res.37/7, UN GAOR 37th Sess., Supp.No.51 (A 737/51) 17, and in: 22 ILM (1983), 455 and in: Hohmann, *supra* note 4, at doc.3.

Principle 12 (a) of the World Charter reads: "Discharge of pollutants into natural systems shall be avoided, and:

a) Where this is not feasible, such pollutants shall be treated at source, using the best practical means available".

51. Art. 10 (a), (b) and (c) of the ASEAN Agreement, *supra* note 39 (additional references: Burhenne, *supra* note 13 985:51, and in: Hohmann, *supra* note 4, at doc. 70), emphasizing environmentally sound industrial processes/products and environmentally sound agricultural practice as well the need to promote these two points by economic incentives; and Art. 4 III (f) and (g) of the Bamako OAU Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa, Bamako 1991 (30 ILM 773 (1991) and in: Hohmann, *supra* note 4, at doc.73), emphasizing a duty to apply and promote clean production methods.

52. ECE-Declaration, as adopted by ECE-decision B (XXXV), in: ECE, *Two Decades of Cooperation on Water*, ECE/ENVWA/2, New York 1988, 1-7; OECD-Recommendation C (90) 164 final, adopted by the Council on 31 January 1991; both reprinted in: Hohmann, *supra* note 4, doc. 19 and 30 f. For further references cf. Hohmann *supra* note 8 at 202.

53. Bergen ECE-Ministerial Declaration on Sustainable Development 1990, 20 EPL 100 (1990), Bangkok ESCAP-Ministerial Declaration on Environmental Sound and Sustainable Development in Asia and the Pacific (1990) (UN-Doc.A/CONF.151/PC/38, 26 March 1991, 36-40), Tlatelolco ECLAC-Platform on Environment and Development 1991 (UN-Doc. A/CONF.151/PC/L.30, 2-9), all three reproduced in: Hohmann, *supra* note 4, docs. 38, 38a

the Earth Summit documents (Principle 3 of the Rio Declaration, nr.24 of the preamble and Art. 3 I of the UN Framework Convention on Climate Change, nr.23 of the preamble of the Convention on Biological Diversity), Art. 2 V (c) of the ECE Convention on Transboundary Watercourses and Art. 2 of the WCED-Legal Principles for Environmental Protection and Sustainable Development (1987).⁵⁴ In addition, several conventions (e.g. nearly all conventions of the UNEP Regional Seas Programme) have acknowledged intergenerational equity as an important principle in their preambles.⁵⁵ The formulation of Art. 2 (4) is based on Principle 5 (b) of the ECE Guidelines on the Ecosystem Approach in Water Management.⁵⁶

**Art. 3 Best practicable environmental option
and Assessment**

(1) States should manage the waters of drainage basins in their territories so that wastes, pollutant discharges and hazardous substances are handled, treated and disposed of in that environmental medium which would produce the least environmental harm, according to prior assessment of the environmental impacts.

(2) The basin States shall not undertake measures for water pollution control without prior consideration, at an early stage, of their environmental effects, including their impact on all environmental media. Where the extent, nature or location of a proposed activity is such that it is likely to significantly affect the environment, a comprehensive environmental impact assessment should be undertaken.

(3) An environmental impact assessment should include as a minimum:

a) a description of the proposed activity,

and 38b.

54. WCED-Principles in: Munro/Lammers *supra* note 41, at 25-33, and in: Höhmann, *supra* note 4 at doc. 40. Reference for ECE Convention on Transboundary Watercourses *supra* in note 31. Rio-Declaration, in: 31 *ILM* 876 (1992). Convention on Biological Diversity, in: 31 *ILM* (1992), 822, Framework Convention on Climate Change, in: 31 *ILM* (1992), 851; all three reproduced in: St.Johnson ed., *The Earth Summit. The United Nations Conference on Environment and Development (UNCED)*, London/Dordrecht/Boston (Graham & Trotman/Nijhoff) 1993, 57 *et seq.*

Art. 2 V (c) of the ECE Convention on Transboundary Watercourses reads: "Water resources shall be managed so that the needs of the present generation are met without compromising the ability of future generations to meet their own needs".

55. For further references Hohmann, *supra* note 8, at 307-08.

56. For reference see *supra* note 27. Principle 5 (b) reads: "Such policies and strategies should aim, *inter alia*, at:

(b) Providing for the sustainable use of water resources and other ecosystem components in ways that meet the requirements of aquatic ecosystems and various human needs, individually or collectively, without compromising the ability of future generations to meet their needs".

- b) a description of the potentially affected environmental media,
- c) a description of practical alternatives to the proposed activity,
- d) an assessment of the likely or potential environmental impacts, including cross-media impacts, of the proposed activity and its alternatives,
- e) an identification and description of measures available to mitigate adverse environmental impacts of the proposed activity and its alternatives, and an assessment of those measures,
- f) an indication of gaps in knowledge and uncertainties which may be encountered in compiling the required information,
- g) an indication of whether the environment of any other State or of areas beyond national jurisdiction is likely to be affected by the proposed activity or its alternatives and
- h) a brief, nontechnical summary of the information provided under the above headings.

Commentary to Art. 3:

Art. 3 (1) draws the necessary consequence of Art. 2 (2) of the Draft Rules. Since both are interrelated, it is possible to conclude that the idea of Art. 3 (1) is acknowledged in the same way as Art. 2 (2) of the Draft Rules. Art. 3 (1) is supported, in addition to the documents supporting Art. 2 (2) by: Principle 2 of the 1980 ECE Water Pollution Declaration, the ILA Belgrade Articles of 1980 and the OECD Recommendation C (90) 164.⁵⁷

The only difficulty which may arise is the question of what to call this principle. The principle of *best (practicable) environmental option* (BPEO) is explicitly recognized only in the United Kingdom⁵⁸; implicitly, it is also acknowledged in other States.⁵⁹ In the alternative, the OECD-Recommend-

57. For references to the ECE Water Declaration see *supra* note 52, to the Belgrade Articles see *supra* note 4 and the OECD Recommendation see *supra* note 10.

Principle 2 of the 1980 ECE Water Pollution Declaration reads: "Water pollution control should be handled taking into account of possible interactions of pollutants on air, land and water."

58. Cf. Taylor & Dispose & Duffy, *EEC Environmental Policy and the Control of Water Pollution*, 24 *Journal of Common Market Studies* (1980), 225 (235); Winter, *supra* note 9 at 269.

59. Cf. e.g. Reh binder, *Das Vorsorgeprinzip im internationalen Vergleich* (Umweltrechtliche Studien 12), Düsseldorf: Werner, 1991, p. 10, speaking about the "bestmögliche Umwelt-option". On p. 258 Reh binder continues (translated by this author, emphasis added):

"The best practicable environmental option principle has been developed in the UK; but it has not yet been specified and exercised; therefore, currently questions concerning the transfer of this principle are only possible with regard to its theoretical concept.

The best practicable environmental option principle means not only that the production

dation C (90) 164 has offered the term *integrated pollution (prevention and control) (IPC)*, a principle which now seems to be accepted in the USA, the United Kingdom, Netherlands, Sweden and partly in Germany.⁶⁰ The

of residual materials shall as far as possibly be avoided by best available technology but also that residual materials, if they are nonetheless produced, must be handled, treated and disposed of in that environmental medium which would produce the least environmental harm. This principle is closely related with the duty not to transfer damage from one environmental medium to another, a principle mainly developed in U.S. law, but it is more demanding: It demands an ecological cross-media perspective of the residual materials of industry aimed at preventing that the problem is transferred to the weakest, i.e. most sensible medium.

A few points of this approach may be found in the duty to reduce and recycle residual materials (sec. 5 (1) no. 3 Federal Immissions Control Act of Germany). According to the systematic approach of German law, it seems not so much necessary to enrich the conditions of authorizations by the best practicable environmental option, but to accept this principle as a normative guideline for the establishing of emission standards. A typical example is the U.S. water law demanding to respect the results on other environmental media when establishing the emission standards".

60. Cf. Frances Irwin, introduction, in: N. Haigh & F. Irwin (eds.), *Integrated Pollution Control in Europe and in North America*, Washington/London (Conservation Foundation/Institute for European Environmental Policy) 3 (1990):

"Integrated pollution control, in contrast to other forms of environmental integration, seeks particularly to link air, water, and waste programs. Its concern is institutional changes that reduce total risk to the environment from the pollutants. It recognizes that plants, animals, eco-systems are important links among pollutants. So far, however, it has treated them mainly as receptors of pollutants, and the focus has been on other pollutants rather than on natural resources and conservation directly. The UK's 1988 proposal for legislation that would apply the best available technology across media at major facilities may be the first governmental use of the term 'integrated pollution control'. In this instance, it applies to integration at the source. IPC has been referred to as 'internal' integration in the Netherlands. It is used in conjunction with 'external' integration between environmental policy and other policy sectors such as energy and agriculture.

The case studies examine integration of two functions - permitting and planning. Chapters 6 and 7 of the book outline three efforts to integrate permitting: Hamburg (FRG) and Rijmond (NL) coordinate permits within their jurisdictions, Sweden issues a single permit covering air, water, and waste put on land. Chapter 8 analyzes the establishment in the UK of the new Her Majesty Inspectorate of Pollution and the development of the concept of best practicable environmental option. Chapter 9 explains how planning for single-medium programs was transformed into integrated planning in the Netherlands.

A focus on all releases of a pollutant from the source is the most common approach to integration. Sweden and the Netherlands already use this approach, Sweden operationally and the NL both strategically and operationally. The UK and the NL have proposed further moves towards integrated permitting of releases at the source. The US is exploring integrated permitting in relation to waste reduction." (Emphasis added.)

Also Paul S. Wilson & Ted K. Harris, *Integrated Pollution Control: A Prologue* 22 Environmental Law 1 (1992).

"Several institutional vehicles for integration are under discussion in the U.S. Among the options is a comprehensive federal statute that would regulate all pollutants on the basis of an 'unreasonable risk' standard, and would replace existing federal environmental statutes. Proposals for integration have also been based on 'incremental statutory change'

broader national support speaks in favor of IPC. In addition, IPC seems to be more comprehensive than BPEO, at least, as this author suggests, one wants to follow the broad concept of IPC,⁶¹ as it was done by the OECD in its Recommendation C (90) 164. This aforementioned OECD-Recommendation takes into account the whole commercial and environmental life cycle of substances and products, *inter alia* by risk assessments, and aims at minimization of the quantity and harm of waste⁶² and at promoting the development and application of no or low waste technology and cleaner technologies.⁶³ In addition, it includes several institutional measures⁶⁴ and management instruments,⁶⁵ which in part are quoted in Art. 4 (3) of the Draft Rules. In contrast, the EU (former EC)-Proposal for a Council Directive on Integrated Pollution Prevention and Control⁶⁶ is an example of the narrow concept, which focuses on distributing wastes between the three environmental media, in order to produce the least net environmental harm. Its main concern is issuing single permits, covering all releases and processes (Arts. 3, 5 and 8 of the Draft Directive), by a lead competent authority coordinating the permitting procedure (Art. 6 of the Draft Directive). The Draft Directive can be criticized in that it nearly ignores the precautionary principle. The Draft Directive does not contain a concept of product-substitutions, clean production methods, recycling, saving resources and energy, and prevention of waste, which are questions linked to the keyword "life-cycle analysis".⁶⁷ The EU-Commission justifies this narrow approach⁶⁸ by arguing that life-cycle analyses should be more advanced, which in their opinion will take another ten years.

The Draft Rules formulate the most essential aspect of the narrow concept

and on changes in administrative practice under existing statutes".

61. Cf. Wilson & T.Harris, *Id.*: "The idea of IPC has been used in widely differing ways . . . At one extreme, it includes physical, economic and sociopolitical interactions at a level of global planning. At the other extreme, the concept of integration may be applied on a 'narrow and strictly operational level, attempting to distribute wastes between the three media . . .'" (quoted from: Guruswamy, *Integrated Pollution Control: The Way Forward*, 7 *Ariz.J.Int. & Comp.L.* 173-80 (1990)). Wilson/Harris clarify that there is consent that the following measures are belonging to IPC: end of fragmentation of laws and organizational structures, risk reduction (especially by EIA) and integrated regulatory approach; possibly, product life-cycle assessments (cradle-to-grave concepts) are also belonging to IPC.

62. OECD Recommendation C (90) 164 (reference *supra* in note 10), Principle 1 of the Appendix.

63. *Id.*, Principle 2 of the Appendix.

64. *Id.*, Principle 5 of the Appendix.

65. *Id.*, Principle 6 of the Appendix.

66. Brussels, GEN/ASC/pre 2, April 1993.

67. Cf. Weber in: *elni-newsletter* (newsletter of the environmental law network international, edited by the Eco-Institute Darmstadt) no.1/1993, p. 27.

68. The narrow approach concentrates on two aspects: first, end of fragmentation of laws and organisational structures, second, risk reduction (especially by EIA) and integrated regulatory approach. The wider approach would also include precautionary aspects, namely treatment at source/product life-cycle assessments. See *supra* note 61.

of IPC in Art. 3 (1) here the term BPEO should be used - and the further aspects in Art. 4 (2) and 4 (3) of the Draft Rules.

EIA, as set forth in Art. 3 (2) of the Draft Rules, is connected with Art. 3 (1) in that the duty to produce the least net environmental harm in the least vulnerable environmental medium (BPEO) can only be fulfilled by assessments. The duty to assess the environment has often been accepted.⁶⁹ The more specific duty to employ an EIA, if there is a risk of significant environmental effects, has been widely supported by the following conventions: Art. 206 of the Law of the Sea Convention, all conventions of the UNEP Regional Seas Programme adopted after 1982 (four regions),⁷⁰ three regional seas conventions for Black Sea, Baltic Sea and Northeast-Atlantic,⁷¹ three freshwater agreements adopted after 1982,⁷² two global conventions for protection of the Antarctic⁷³ and two regional nature protection agreements.⁷⁴ The World Charter for Nature and two global UNEP Guidelines have also supported this duty.⁷⁵ In sum, the duty of an EIA is already established in customary law. The formulation of Art. 3 (2) is an almost verbatim quotation of Principle 1 of the 1987 UNEP Guideline Goals and Principles of EIA (hereinafter: UNEP EIA-Guideline).⁷⁶

Art. 3 (3) formulates the minimal requirements of the EIA by quoting

69. Cf. e.g. Principle 4 of the 1978 Shared Resources Draft Principles (17 ILM 1097 (1978)) and in: Hohmann, *supra* note 4, at doc. 2) and Art. 11 (b) of the World Charter for Nature (reference *supra* in note 50).

70. Art. 11 of the Jeddah, Art. 12 of the Cartagena, Art. 13 of the Nairobi and Art. 16 of the Noumea Conventions, as well as Art. 13 of the Kingston Protocol (in: Hohmann *supra* note 4, at doc. 51 b); for other references see *supra* note 42.

71. Art. 7 of the 1992 Helsinki Convention (reference *supra* note 43), Art. 6 (and Annex IV) of the 1992 Paris Convention (reference *supra* note 44) and Art. XV (5) of the 1992 Bucharest Convention on Protection of the Black Sea against Pollution, 32 ILM 1101 (1993) Burhenne *supra* note 13, at 992-93, and in: 3 Yearbook Int.Env.Law 1992 (disc doc.3).

72. Art. 7 of the 1983 La Paz Agreement 22 ILM 1025 (1983), and in: Hohmann, *supra* note 4, at doc. 57 c), applicable, inter alia, to freshwater in the US-Mexico border area; Art. 3 of the 1987 Regensburg Agreement on Cooperation on Management of Water Resources in the Danube Basin (O.J. of the EEC No.L 90/20 of 5 April 1990, and in: Hohmann, *supra* note 4, at doc. 54 e); and Art. 3 I (h) & Art. 11 of the 1992 ECE Convention on Transboundary Watercourses (reference *supra* note 31).

73. Art. 4 of the 1988 Wellington Convention on the Regulation of Antarctic Mineral Resource Activities CRAMRA (in: Burhenne *supra* note 13, 988:42) and Art. 8 of the 1991 Protocol on the Antarctic Treaty (in: 30 ILM 1455 (1991), both reproduced in: Hohmann, *id.*, docs.67a and 67b.

74. Art. 14 of the ASEAN Agreement (reference *supra* note 39) and the 1991 ECE Espoo Convention on Environmental Impact Assessment in a Transboundary Context 30 ILM 802 (1991) and in: Hohmann, *Id.* at doc.24.

75. Principle 11 (c) of the World Charter (reference *supra* note 50); Principles 6 II and 8-10 of the 1982 Offshore Guidelines (UNEP Environmental Law Guidelines and Principles no.4 and in: Hohmann, *supra* note 4, at doc.5); and the 1987 Goals and Principles of EIA (17 EPL 1987 no. 1, at 36, and in: Hohmann, *Id.* at doc.9).

76. For reference see note 75.

Principle 4 of the UNEP EIA-Guideline, which is identical with Principle 8 of the 1982 Offshore Guidelines.⁷⁷ There seems to be consent about the EIA minimal requirements since two Conventions (the 1991 Antarctic Protocol and the 1991 Espoo Convention) demand more or less the same content of the EIA documentation.⁷⁸

Art. 4 Integrated Management of the Basin

(1) The main objectives of the management are: to protect water resources against pollution and excessive use; to preserve the water environment and ecology; to safeguard and improve the hydrologic cycle in general; and to provide adequate water supply in both quality and quantity for domestic, industrial and agricultural purposes, account being taken of long-term demands. This shall be done through an integrated approach, which respects all environmental media with a view to ensuring long-term environmental and economic sustainability.

(2) The basin States shall, at the request of one of them, enter into consultation concerning the integrated management of the environmental media of the basin, especially with a view of establishing a basin commission.

(3) The integrated management may include the following measures:

a) issuing single permits, covering all releases and processes, by a lead competent authority coordinating the permitting procedure, for projects and activities that are likely to affect natural resources,

b) establishing integrated inspection and enforcement authorities,

c) using economic incentives,

d) encouraging and or subsidizing development and application of cleaner technologies, of low-waste technologies and of recycling strategies as well as—in the case of highly dangerous substances —of product-substitutions.

(4) Special attention should be given to estuaries, the coastal zone, the pollution of the sea, land reclamation, soil-degradation and air pollution by, inter alia, coordinated mechanisms of basin States with States bordering regional seas or their respective commissions.

(5) It is recommended, that any modification of the natural river bed by human conduct be permitted only after an environmental impact assessment.

Commentary to Art. 4:

Article 4 draws another conclusion from the need to control CMP by

77. For reference see note 75.

78. See Art. 3 of Annex I of the Antarctic Protocol (reference *supra* note 73), and Art.2 II, 4 I and Appendix of the 1991 Espoo Convention (reference *supra* note 74).

formulating a system of integrated management and by thus enforcing the drainage basin concept.⁷⁹ It is difficult to understand that the ILC preferred the "watercourse"—approach, since the basin concept has become more and more dominant, at least since 1987.⁸⁰

Art. 4 (1) would for the first time call for the main objectives of water management in an ILA resolution. There is no strict context with CMP. Art. 4 (1) is only needed, if one assumes that today the Helsinki Rules do not speak comprehensively enough about the main objectives of water management. Vis-a-vis Art. V and VI of the Helsinki Rules, it should be clarified that protection of water resources and providing drinking water of sufficiently good quality for present and future generations become factors of prime importance.⁸¹ Art. 4 (1) is an important step in that direction. Art. 4 (1) is quoted: the first sentence from OECD Recommendation C (78) 4,⁸² the second from the OECD Declaration on Environment Resources for the Future, 1985.⁸³ The same idea may be found in Art. 26 II of the ILC Draft Rules 1991.

Art. 4 (2) concerns the end of fragmentation (or more precisely, the harmonization) of organizational structures by institutionalized cooperation. Its formulation is similar to that of Art. 26 I of the 1991 ILC Draft Rules.⁸⁴ The same idea may be found in various declarations and conventions.⁸⁵ There are several reasons that policy makers argue for further integration of environmental laws and institutions: to prevent or solve pollution problems rather than transferring them to other parts of the environment, to choose more efficient controls, to increase the ability

79. Cf. also Teclaff & Teclaff, *supra* note 19, at 21.

80. For the Rhine: partly by the Chemical Pollution Convention (1976) 16 ILM 242 (1977), and, especially by the Rhine Action Programme (1987) in: Hohmann, *supra* note 4, doc. 54 d), for the Danube: by the Regensburg Convention (1987) O.J. EEC 1990 L 90, 20, for the Lake Constance: by the Guidelines for the Protection of the Lake Constance (1987), based on Art. 4 e of the Steckborn Convention, in: Hohmann, *supra* note 4, doc. 55 c), for the Great Lakes: by the Great Lakes Water Quality Agreement 1978 (as revised 1987), *supra* note 28; for the Niger: since 1963, UNTS 587, 9-18; all reprinted in: Hohmann, *supra* note 4.

81. Cf. the 1980 ECE Water Pollution Declaration, *supra* note 52, which by its official footnote to Principle 3 clarifies that providing drinking water of sufficiently good quality for human health is the factor of prime importance.

82. OECD Recommendation C (78) 4 (Final), Water Management Policy and Instruments, adopted on 5 April 1978, in: OECD, *OECD and the Environment*, Paris (1986)46 (reprinted in: Hohmann, *supra* note 4, at doc.30 d).

83. OECD Declaration on Environment Resources for the Future, 1985, in: OECD *Id.* at 19 s.

84. Reference *supra* note 30. Art. 26 I reads: "Watercourse States shall, at the request of any of them, enter into consultations concerning the management of an international watercourse, which may include the establishment of a joint management mechanism". The final version of 1994, see *supra* note 30, art. 24 I.

85. Cf. e.g. Art. 3 and 7 of the ILA Montreal Rules *supra* note 35, Art. 2 VI and 9 of the ECE Convention on Transboundary Watercourses (reference *supra* note 31). See also Hohmann, *supra* note 8 at 196-98 and 309-12 with further references concerning institutionalized cooperation.

to set priorities, to cooperate more effectively with other policy sectors and to simplify the administrative system.⁸⁶

Art. 4 (3) formulates requirements of integrated regulatory approach (lit. a and b) as well as of treatment at source (lit. d); both may be supported by economic incentives (lit. c). In Art. 4 (3)(d) the wider approach of IPC⁸⁷ is applied. This is necessary to avoid possible tensions between IPC and the precautionary principle.⁸⁸ Only under the wide interpretation of IPC can we conclude that the main aim of IPC is to avoid or reduce pollution problems instead of merely to prevent their transfer to other parts of the environment.⁸⁹ Art. 4 (3)(a) and (b) are supported by

86. Irwin, *supra* note 60, at 7-9.

87. See *supra* note 68.

88. It would be solved by giving priority to treatment at source vis-à-vis BPEO, see *supra* note 8. The precautionary principle may now be regarded as an established principle of modern international environmental law, cf. Hohmann, *supra* note 8, at 344.

89. Wilson & Harris, *supra* note 60, at.viii-x:

"Some commentators have suggested that it is too early to even judge the viability of a cross-media perspective because we may not know enough to assess cross-media effects. Others suggest that, while a truly integrated regulatory approach is unattainable at least in the near term, integration in several forms is already at hand. Recent experience in assessing cross-media pollution in the Great Lakes Basin and in planning a response to it supports the latter view. EPA's *Reducing Risk* study (Sept.1990) is based on risk assessments. Risk-based priority setting compares risks to decide how best to allocate resources . . .

With considerably more assurance, the EPA Science Advisory Board (SAB) concluded that 'preventing pollution at the source is usually a far cheaper, more effective way to reduce environmental risk, especially in the long run'. *Reducing Risk* also explicitly linked pollution prevention to the challenge of cross-media pollution, describing prevention techniques as 'especially promising because they do not move pollutants from one environmental medium to another, as is often the case with end-of-pipe controls. Rather, the pollutants are not generated in the first place' . . .

The potential of pollution prevention to improve environmental protection policy has been suggested for a number of years. With the passage of the federal Pollution Prevention Act of 1990, 42 U.S.C.A. 13101, publication of EPA's Pollution Prevention Strategy, and development of other EPA prevention activities, a limited federal focus on pollution prevention is developing."

Also Irwin, *supra* note 60, at 18: "The source is a critical point at which to integrated pollution control decisions on both the operational and policy levels because choices can be made about the amounts, types, timing, and location of pollutants that will be released. At the operational level, this approach may mean dealing with all releases from the commercial and environmental cycles of a product, from a single manufacturing or waste management facility, or from an activity such as agriculture. Integration at an individual facility may take one of four related forms: a) selecting the best available control technology across media, b) searching for use and waste reduction opportunities, c) designing control systems aimed at reducing total releases and costs, and d) assessment of environmental

the EU-Draft Directive on IPC (Arts. 3, 5, 6 and 8) as well as by the OECD Recommendation C (90) 164,⁹⁰ which demonstrates that the first two points are regarded as central for IPC. The formulation of Art. 4 (3) is largely taken from Principle 6 of the Appendix to the aforementioned OECD-Recommendation.⁹¹ Art. 4 (3)(c) and (d) belong to the wider concept of IPC. As was already noted, there is some support for these four measures by national legislation, especially in the USA, the United Kingdom, Netherlands, Sweden and partly in Germany.⁹² Nearly all these instruments are mentioned as necessary instruments for a policy of rational use of water by ECE and OECD declarations, decisions or recommendations.⁹³ Since a global acceptance outside of the OECD/ECE

impacts of projects and program."

90. For reference of the EU-Draft Directive see *supra* note 66 and of the OECD Recommendation see *supra* note 10.

91. Principle 6 of the Appendix reads:

"Integrated pollution prevention and control can be achieved through a variety of management instruments. In considering the selection of such instruments, specific attention should be given to:

- a) issuing single permits, covering all releases and processes;
- b) linking environmental instruments with land-use planning and natural resource management systems and the regulation of services such as transport and other communications;
- c) undertaking environmental impact assessments for policy proposals and projects;
- d) policy planning to develop strategies to achieve overall improvement of environmental quality;
- e) establishing integrated inspection and enforcement authorities;
- f) using economic instruments;
- g) encouraging and/or subsidising development of cleaner technologies and
- h) covering whole life cycle issues in the development of industry management plans."

And Principle 2 of the Appendix adds:

"Certain policies, common to all aspects of environmental protection, are essential to an effective integrated approach. These include that:

- a) sustainable development, including energy conservation and the rational use of renewable resources, should be taken into account;
- b) the development and application of no or low waste technology and of recycling strategies should be promoted;
- c) cleaner technologies should be applied and safer alternatives should be substituted for harmful substances"

92. The meaning of these instruments for achieving integration is explained in the OECD monograph on Integrated Pollution Prevention and Control, *supra* note 10.

93. Cf. e.g. the ECE Declaration of Policy on the Rational Use of Water (decision C(XXXIX), (1984), in: ECE, *supra* note 52, at 12-21; the OECD Recommendation on Water Resource Management Policies: Integration, Demand Management and Groundwater Protection, Rec. C (89) 12, 1989 the OECD Recommendation Use of Economic Instruments in Environmental Policy, Rec. C (90) 177, 1991, the two OECD recommendations are not reproduced in an OECD documentation; all reproduced in: Hohmann, *supra* note 4, at documents 21, 25 d and 30 e.

region seems not yet established, Art. 4 (3) was formulated in a soft manner, by using a "may".

Art. 4 (4) concerns again the harmonization of organizational structures. The integrated eco-management of a drainage basin must not be separated of the coastal zones and regional sea's management, since both are largely dependent on each other—a point which was emphasized, *inter alia*, by: Art. 23 of the 1991 ILC Draft Articles, Art. 1 II (c) of the 1990 Convention on the International Commission for the Protection of the Elbe (hereinafter 1990 Elbe Convention)⁹⁴ and by the mentioned conventions supporting Art. 2 (1) of the Draft Rules.⁹⁵ Institutional measures are necessary for that purpose, in order to avoid loopholes by better accepting coordinating mechanisms. This last point is based on Principle 5 of the Appendix to OECD Recommendation C (90) 164.⁹⁶

Art. 4 (5) draws a conclusion from the interrelationship between land and water: Examples as the dyking, regulation and canalization of the River Rhine demonstrated the consequences of fall of water level, bed and bank erosion, destruction of former ecosystems and nursery grounds, loss of higher species (e.g. the salmon) which formerly existed in the river,⁹⁷ Art. 4 (5) would be a codification *de lege ferenda*. Only a very few conventions mention this point. According to the Regensburg Convention on Cooperation on Management of Water Resources in the Danube Basin (1987) "the maintenance of watercourses which might lead to a change in the river flow" belongs to the eco-management.⁹⁸ According to Art. 2 I (k) of the 1990 Elbe-Convention, "hydraulic structures and regulation of the waters must be discussed".⁹⁹ The Lake Constance-Guidelines (1987) and the Rhine Action Programme (1987)¹⁰⁰ oblige partly to a renaturalization of the river/lake. Since the modification of the natural river may have serious impacts on the whole ecosystem, including the river and the land, it is desirable to mention this as a special point of integrated management.

94. Magdeburg 8 October 1990, in: Burhenne, *supra* note 13, at 990:75.

95. *Supra* note 37 and accompanying text.

96. Principle 5 reads:

"The institutional measures and administrative procedures necessary to implement an integrated approach include:

a) . . .

b) establishment of coordinating mechanisms within and among government bodies; and

c) arrangements for cooperating internationally and among different levels of government within countries".

97. Cf. J.de Jong & H. Smit, *The Rhine: two Centuries of International River Management*, and I.M.Goppel, *The Target Policies of the International Rhine Commission*, both in: Wil D.Verwey ed., *Nature Management and Sustainable Development*, Amsterdam/Springfield VA/Tokyo IOS 385,406 (1989)

98. Art. 2 II (b) of the Danube Convention *supra* note 72.

99. *Supra* note 94.

100. *Supra* note 80.

Art. 5 Cooperation between the Basin States

(1) The basin States shall, at the request of one of them:

- a) coordinate or pool their scientific and technical research programs to prevent and combat cross-media pollution,
- b) establish harmonized, coordinated or unified networks for monitoring and control of cross-media pollution and
- c) establish jointly emissions standards and quality objectives for the environmental media of the basin with the aim of ascertaining the "best practicable environmental option" in controlling cross-media pollution.

(2) Technologically advanced basin States shall take all practical steps to promote and finance the transfer of the best available technology, needed for the eco-management of the basin, to those basin States which are in need of it.

Commentary to Art. 5:

Cooperation between the basin States as set forth in Art. 5 (1) of the Draft Rules aims at ending the fragmentation of organizational structures, which is one of the central aspects of CMP.¹⁰¹ Regular information exchange, prompt warning of dangers, early notification and consultation are already dealt with by Articles 5 and 6 of the 1982 ILA Montreal Rules.¹⁰² These duties as well as coordinated research, harmonized networks for monitoring and control, joint emission standards or quality objectives are so well established that they do not need any further commentary.¹⁰³

101. Cf. Wilson/Harris, *supra* note 60, at ii-v:

"Since 1989, William Reilly, EPA-administrator, has described a vision of change in US environmental policy and law. The vision is of a less fragmented, more unified, or "integrated" set of EPA goals and programs . . . The idea of integration is based on the insight that humans live in a singular environment. However, the institutions we use to allocate resources and distribute pollution are fragmented. While pollutants commonly move across environmental media of land, air and water, federal and state regulatory efforts have generally not been organized to reflect that reality . . . IPC was broadly described at a 1988 Brussels meeting as 'the range of organizational and legislative changes that enable institutions to deal with the connected nature of environmental problems'". They continue that the fragmentation of existing laws and organizational structures are at the main concern of IPC.

102. *Supra* note 35.

103. *Supra* note 8 at 196-8, 309-12 and G. Handl, *Grenzüberschreitendes nukleares Risiko und völkerrechtlicher Schutzanspruch* (Schriften zum Völkerrecht vol. 100), Berlin Duncker & Humblot 4 (1992). The duties of information, notification and consultation may now be regarded as *jus cogens* (thus: Hohmann, *Id.* at 197 s and partly J. Brunnée 49 *ZaöRV* 806 (1989), doubting this: Stephan Kadelbach, *Zwingendes Völkerrecht*, Schriften zum Völkerrecht vol.101, Berlin 1992 p. 319 s.).

Concerning Article 6 (1)(c): Principle 4 a of the ECE Decision on Principles regarding Cooperation in the Fields of Transboundary Waters (1987) (in ECE, *supra* note 52, at 25) demands the complimentary use of emission standards and quality objectives.

Without the duty to take all practicable steps to promote and finance the transfer of technology, as codified in Art. 5 (2), developing countries would be excluded from the highly sophisticated eco-management required under Art. 4 (3) of the Draft Rules. This duty has been accepted since 1989/90. Three Conventions supported the duty to ensure or to promote the best available environmentally sound technology are expeditiously transferred to developing countries.¹⁰⁴ The Earth Summit documents acknowledged the duty to take all practicable steps to promote and finance this transfer.¹⁰⁵

III. CONCLUSIONS

Since nature is interdependent (in the sense of one bio-physical continuum, an integrated management of the drainage basin is needed. The environment is indivisible, thus requiring integrated management. The fragmentation of laws and organizational structures has given the wrong impression that air or land pollution of a drainage basin is outside the concern of water management through a basin commission. This artificial separation of the environment in three distinct environmental media facilitates cross-media transfers (CMP). Today customary law requires prevention of CMP. This article presented the legal rules, which are necessary to implement this duty. Harmonization of laws and organizational structures shall be achieved through an integrated approach for all three environmental media, by establishment of basin commissions and of coordinating mechanisms with regional seas commissions, aimed at covering also the land-sea interface (coastal zone, estuaries et cetera), and by employment of joint research, monitoring and standard-setting. IPC also requires risk reduction and integrated regulatory approach. Key elements for this are assessments/EIA and the duty to produce the least net environmental harm in the least vulnerable environmental medium (BPEO), according to prior assessment. Since the broad concept of IPC is closely connected with the precautionary

104. Cf. Art. 10 II (d) of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 28 ILM 652 (1989); Art. 10 II (c) of the Bamako Convention (reference *supra* note 51) and Art. 10 A of the 1990 Adjustments and Amendments to the Montreal Protocol, 30 ILM 539 (1991); Art. 10 A reads as follows:

"Each Party shall take every practicable step . . . to ensure:

- a) That the best available, environmentally safe substitutes and related technologies are expeditiously transferred to Parties operating under para 1 of art. 5 and
- b) That the transfers referred to in subpara a occur under fair and most favourable conditions."

105. Cf. Art. 4 V of the Climate Convention, Art. 16 of the Biodiversity Convention, No. 18.25 of the Agenda 21; cf. also Principles 7 and 9 of the Rio Declaration; for references see *supra* note 46 and 54.

principle, the duty to avoid or minimize waste by treatment at source is an integral aspect of IPC. The proposed Draft Rules specify the equitable use-principle as well as the duty to abate and prevent appreciable harm. The proposed Draft Rules are a necessary amendment to the Helsinki rules, the 1980 Belgrade Articles and the Montreal Rules and to other existing instruments for protection of the environment of water basins as a whole. Therefore, its adoption by the ILA is both necessary and desirable.

Documentation annex:

The proposed Draft Rules on Cross-Media Pollution in International Drainage Basins:

Art. 1 Use of Terms

(1) For the purposes of these Articles, cross-media pollution means the transfer, directly or indirectly, of environmental damage or hazards from one area to another or from one environmental medium to another or the transformation of one type of pollution into another.

(2) The environmental media referred to in sub-paragraph 1 include the atmosphere, the land, freshwater resources (surface and underground waters, snow and ice, clouds and all other states of atmospheric waters) and the marine environment.

Art. 2 Basic Duties

(1) The basin States of an international drainage basin shall, individually or jointly, protect and preserve all environmental media of that basin, including estuaries, coastal zone, other ecosystems and the sea, from environmental damages or hazards and from cross-media pollution, as defined in Art. 1 (1).

(2) In taking measures to prevent, reduce and control pollution of the drainage basin, States shall refrain from transferring, directly or indirectly, damage or hazards from one area to another or from one environmental medium to another or to transform one type of pollution into another. This does not prevent the transfer or transformation of pollution in order to prevent, reduce and control pollution of the environment as a whole.

(3) Measures for the prevention, control and reduction of water pollution should be taken, where possible, at source.

(4) Drainage basins should be managed in ways that meet the requirements of environmental media and various human needs, without compromising the ability of future generations to meet their needs.

Art. 3 Best practicable environmental option and Assessment

(1) States should manage the waters of drainage basins in their territories so that wastes, pollutant discharges and hazardous substances are handled, treated and disposed of in that environmental medium

which would produce the least environmental harm, according to prior assessment of the environmental impacts.

(2) The basin States shall not undertake measures for water pollution control without prior consideration, at an early stage, of their environmental effects, including their impact on all environmental media. Where the extent, nature or location of a proposed activity is such that it is likely to significantly affect the environment, a comprehensive environmental impact assessment should be undertaken.

(3) An environmental impact assessment should include as a minimum:

- a) a description of the proposed activity,
- b) a description of the potentially affected environmental media,
- c) a description of practical alternatives to the proposed activity,
- d) an assessment of the likely or potential environmental impacts (including cross-media impacts) of the proposed activity and its alternatives,
- e) an identification and description of measures available to mitigate adverse environmental impacts of the proposed activity and its alternatives, and an assessment of those measures,
- f) an indication of gaps in knowledge and uncertainties which may be encountered in compiling the required information,
- g) an indication of whether the environment of any other State or of areas beyond national jurisdiction is likely to be affected by the proposed activity or its alternatives and
- h) a brief, non-technical summary of the information provided under the above headings.

Art. 4 Integrated Management of the Basin

(1) Main objectives of the management are: to protect water resources against pollution and excessive use; to preserve the water environment and ecology; to safeguard and improve the hydrological cycle in general; and to provide adequate water supply, in quality and quantity for domestic, industrial and agricultural purposes, account being taken of long-term demands. This shall be done by an integrated approach, respecting all environmental media, with a view to ensuring long-term environmental and economic sustainability.

(2) The basin States shall, at the request of one of them, enter into consultation concerning the integrated management of the environmental media of the basin, especially with a view of establishing a basin commission.

(3) The integrated management may include the following measures:

- a) issuing single permits, covering all releases and processes, by a lead competent authority coordinating the permitting procedure, for projects and activities that are likely to affect natural resources,

b) establishing integrated inspection and enforcement authorities,
c) using economic incentives,
d) encouraging and or subsidizing development and application of cleaner technologies, of low-waste technologies and of recycling strategies as well as—in the case of highly dangerous substances —of product-substitutions.

(4) Special attention should be given to estuaries, the coastal zone, the pollution of the sea, land reclamation, soil-degradation and air pollution by, inter alia, coordinated mechanisms of basin States with States bordering regional seas or their respective commissions.

(5) It is recommended, that any modification of the natural river bed by human conduct be permitted only after an environmental impact assessment.

Art. 5 Cooperation between the Basin States

(1) The basin States shall, at the request of one of them:

a) coordinate or pool their scientific and technical research programs to prevent and combat cross-media pollution,
b) establish harmonized, coordinated or unified networks for monitoring and control of cross-media pollution and
c) establish jointly emissions standards and quality objectives for the environmental media of the basin with the aim of ascertaining the "best practicable environmental option" in controlling cross-media pollution.

(2) Technologically advanced basin States shall take all practical steps to promote and finance the transfer of the best available technology, needed for the eco-management of the basin, to those basin States which are in need of it.