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A Survey of the existing International legal rules on the
Dumping of Radioactive Waste into the Sea.

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I. Introduction and historical development.

1. During the use of radioactive materials, for whatever purpose, radioactive waste products will be generated. This is not different from other human activities. The existence of waste creates the problem how to dispose of it in a safe way. Safe disposal means without causing danger to man or to the environment.
2. Some of the radioactive waste product in fluid or gaseous form can be safely released into the environment. Almost everywhere these kind of releases are controlled by the National Authorities and are strictly regulated. As only very small quantities are permitted to be released directly in the environment this method is not practicable for bigger quantities, nor for radioactive waste in solid form. So the idea was born to dispose of these kinds of radioactive waste by dumping them, after suitable treatment and conditioning, into the sea.
3. In Europe the United Kingdom was the first country that permitted this method for disposal of radioactive waste. Other countries - among them the Netherlands - followed suit. The conditions for the dumping operations at that time were determined in each country according to its own nations. No international consultations took place.
4. The need, however, to arrive at internationally accepted standards was felt and so the first effort to establish an international point of view was the publication in 1961 of the IAEA-report:

" Radioactive Waste Disposal into the sea" (Safety Series no. 5, 1961).

5. During the years 1967-1972 the IAEA organized a number of technical panels and meetings covering a wide variety of subjects connected with the dumping into the sea of radioactive waste. Subjects covered were standardization of waste categories, methods of surveying and monitoring marine radioactivity, reference methods for marine radioactivity studies, procedures for establishing limits for radionuclides in seawater, nuclear techniques in environmental pollution studies, studies on radioactive contamination of the marine environment and tracer techniques in sediment transport. From this, not exhaustive, list of subjects can be seen that IAEA limited its role, from 1967-1972 to conducting specialized studies, which have been very useful in the setting up of general rules for the dumping of radioactive waste into the sea. Next to the series of special studies and limited subjects, conducted within IAEA, the more general directed efforts were conducted within NEA, during the years 1965-1967.
6. The specialized Committee of NEA, the Radiation Protection and Public Health Committee, worked out the first common rules for all aspects of dumping radioactive waste into the sea. These rules were subsequently approved by the Steering Committee of NEA and became obligations for the Member States. Since then the appropriate bodies of NEA have kept the rules under review and have amended them whenever this was necessary. The work done by NEA included developing safe and economic methods for dumping operations, the conducting of a scientific risk assessment, the drawing up of specifications for the containers used in dumping operations, the developing of procedures for conducting and supervising dumping operations etc.
7. In joint operations NEA has provided technical and legal assistance in the organization of operations, during which NEA provided international surveillance.

In this manner and starting with the year 1967 yearly dumping operations were conducted under the aegis of NEA. Eight operations of this kind took place. The U.K. participated in all of them, Belgium and the Netherlands participated seven times, Switzerland six times, France twice, Sweden and the Federal Republic of Germany once.

In the eight operations a total volume corresponding to 115.870 200-litre drums, containing 291.490 Curies of activity, were dumped.

8. In the meantime the USA, which at that time was not yet a Member-State of NEA, also permitted dumping operations in the Atlantic Ocean. The conditions for these operations were, however, quite different from the NEA-practice, especially with regard to the conditioning and the depth of the sea. The USA-dumping operations took place between 1950 and 1962. Afterwards the dumping operations were discontinued. The U.S.A. radioactive waste dumped into the Atlantic Ocean was an amount corresponding to 339.203 200-litre drums, containing 79.443 Curies. The corresponding amounts dumped into the Pacific Ocean were 52.011 200-litre drums, containing 14.550 Curies.
9. The next important development in establishing international laws in the dumping of radioactive waste was the entry into force of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, the London Convention. The Member-States of NEA, subsequently adapted their collaboration to the London Convention by establishing a Multilateral Consultation and Surveillance Mechanism for Sea Dumping of Radioactive Waste. This was accepted by the procedure, known as a Decision of Council (i.e. of OECD) and under the terms of the Treaty by which OECD was set up, this formal Decision of Council is binding on the Member-States.
10. In the next two chapters some aspects of the London Convention and of the OECD-regulations will be discussed. In the final chapter of this paper an attempt is made to explore what other

international legal rules may be of direct relevance to
the dumping of radioactive waste into the sea.

II. The London Convention and the I.A.E.A. Recommendations.

1. The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Materials of 29 December 1972 (Trb. 1973, 172), according to its Preamble refers to the United Nations Resolution 2749 (XXV), recognizes that the capacity of the seas to absorb all kinds of materials is not infinite, and is aimed at protecting the marine environment. Finally it encourages States in a common geographic area to conclude agreements to supplement the terms of the Convention.
2. The basic duties of the Signatories of the Convention are to be found in Article I.
The Signatories of the Convention undertake to take all possible measures to avoid pollution of the sea by dumping wastes and other materials. That is to say, according to the final part of Article I: wastes and other materials that may endanger the health of man, or may cause damage to the marine fauna and flora or may prohibit other rightful uses of the seas including possibilities for recreation.
3. The scope of the Convention is very wide, as it does not limit itself to wastes, but also includes other materials such as sinking ships, platforms and other constructions (Article III).
4. To fulfill the purposes of the Convention the Signatories have agreed not to allow the dumping of materials, listed in Annex I. This Annex I is a so-called 'Black-list' of prohibited materials.
Materials listed in Annex II may be dumped, provided that for each dumping a special permit has been given by the Competent Authorities. Other materials may be dumped with a general permit (Article IV).
5. Radioactive wastes are included in Annex II, the special permit category, and the I.A.E.A. was entrusted with setting up the rules necessary to deal with this kind of material. These activities of the I.A.E.A. include, according to Annex I, 6, the defining of radioactive materials that are prohibited for dumping into the sea, and establishing recommendations for the dumping of not-prohibited radioactive materials (Annex II, D).

Signatories of the Treaty shall take the I.A.E.A.-recommendations fully into account.

6. This outline of the mechanism set up by the Convention raises some interesting legal points, and has some important consequences for the application of the I.A.E.A.-recommendations. The I.A.E.A. did issue the definition and recommendations required of it. The text was published in an Information Circular (INFCIRC/205/Add. 1).

7. A basic provision of the Convention in the setting up of a system of permits, and in the case of radioactive materials of special permits for dumping into the sea.

Article VI of the Convention orders the Member-States to appoint an Authority or Authorities to issue the permits. In the Netherlands this is not necessary as under the Nuclear Energy Act, Article 29, the Authorities for issuing permits for the disposal of radioactive substances are already designated, and the Radioactive-Substances Decree implements the Nuclear Energy Act.

8. The permit-system implies that someone addresses himself to the designated Authorities and requests a permit for dumping radioactive wastes into the sea.

This distinction of two parties, the permit-issuing authority and the holder of the permit implies that each of them also has a distinct role and distinct duties. In this respect the Convention as well as the IAEA recommendations are not always as clear as could be wished as will be shown later on.

9. Let us first consider who has to apply for a special permit to dump radioactive wastes into the sea. The Convention answers this question only indirectly, as it imposes duties on Member-States. The answer therefore must be derived from what under the Convention the Authorities of the Member-States have to do. Article VI, 2 of the Convention states that special permits are needed for radioactive materials loaded on the territory of the Permit-Authority, and also for these materials to be loaded in a ship, registered in the Member-State or carrying its flag, if the loading takes place on the territory of a non-Member-State. It is especially the latter provision that may

cause so many difficulties that it will remain in its present form - a dead letter - as will be shown in paragraphs 10-12.

10. The text of Article VI, 2, mentioning a ship registered in a country or carrying its flag, already hints at the possibility that the registration-country and the flag-country are not necessarily the same country. This is a long existing problem in shipping law. What the Convention evidently wants to do - it could not do otherwise - is impose a duty on a Member-State having jurisdiction over a ship. It is doubtful whether this result has been achieved by the present text.
It is even possible that two Member-States have the same duty towards the same ship as National laws differ in the legal consequences of registration or carrying a flag.
11. The point raised in paragraph 7 is a purely formal one. Some other objections can be raised as well. Suppose no doubt exists on the jurisdiction of a given Member-State over a given ship, and the shipowner wants to apply for a special permit. In that case he has to furnish his Authorities with a whole range of data that are not in his possession and even if he gets the data, he can not verify them. How can he be expected to give details, enumerated in annex IV on the dumping site, or the conditioning on the contents and strength of the containers?
The shipowner is not an expert on radioactive waste, he is just someone who wants a cargo for his ship. Even if the ship-owner furnishes all necessary data to his National Authority, that Authority has no means to verify them, as the cargo is not yet on board of the ship, and so outside their jurisdiction.
12. A third objection against this rule on ships is that the National Authority in many countries has no means to enforce the rule. Ships go all over the world and pick up cargo where and when they can. National Shipping Authorities of a country with a big merchant fleet can scarcely be expected to keep track of the movements of each ship, let alone know beforehand what cargo it is loading in some far-away part of the world.
These three objections sufficiently show that the rule of article VI 2, with respect to ships is insufficient for its purpose and needs either to be revised or to be deleted.

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13. In the IAEA Recommendations, required by Annex II, Section D, of the Convention, several points need clarification or even redrafting. This paper will confine itself to one major item, that has already given difficulties in interpretation in the Netherlands. The part of the Recommendations referred to is part C.5, Escorting Officers.
14. Paragraph C.5 lists 8 separate duties of an Escorting Officer. 4 powers he must have and 3 qualifications. So the standards set for an Escorting officer are high, and rightly so, as the Escorting Officer is responsible for the way in which the dumping operation is executed. The question arises however whom the Escorting Officer is representing. As has already been pointed out the London Convention has set up the system of a Special Permit issuing Authority and a Special Permit Holder. Once the Authority has issued a Special Permit, it is up to the Permit Holder that all conditions attached to the permit are fulfilled. The duty of the Authority is of course not at an end with the issuing of the Permit, the Authority has to see to it that all conditions are indeed fulfilled by the Permit Holder.
15. If we now look at the duties and powers of an Escorting Officer as enumerated in sections C.5.2. and C.5.3. of the Recommendations we see a mixture of items that are clearly within the responsibilities of the Permit Holder and other items that are more in the province of the Authority. A few examples may demonstrate this point. In C.5.2.1. point (5) is stated that the Escorting Officer is responsible for the radiological safety of all personnel engaged in the operation. Now the primary responsibility for radiological safety lies with the Permit Holder, in just the same way as in operations taking place entirely on land. The same case applies to point (7). It is even more clear in this point as it involves giving instructions to the master of the ship. Now the ship has been chartered by the Permit Holder and not by the Authority. So the only thing the Authority can do is to make sure that a provision of/in this kind of instructions is included in the Charter-Agreement. On the other hand a power as described in point C.5.3.1. to stop the dumping operation is a power that the supervising Authority must have.

16. An Escorting Officer can either represent the Permit Holder or the supervising Authority, he can not represent both. Duties and responsibilities of the Permit Holder and ^{of} the supervising Authority should be more clearly defined. In redefining the relevant part of the recommendations it should be kept in mind that organizing a dumping operation takes a long time. The operation does not start with the loading of the containers in the ship, but long before. The preparation of a dumping operation in fact, starts immediately after an operation has been concluded, to be ready for next year's operation. Then preparations are made by the future Permit-Holder, and are necessary to comply with all conditions he knows that will be attached to the Special Permit. In this respect the Recommendation may raise questions on other points as discussed, as well. It would however take too long to go into more detail in this paper.

III. The Multilateral Consultation and Surveillance Mechanism
for Sea Dumping of Radioactive Waste (NEA).

1. The NEA-Mechanism is solely destined to deal with radioactive waste. The London Convention covers a whole range of materials. Moreover, the new Mechanism is based on many years of practical experience in Common dumping operations. As a consequence the possible legal criticism on the Mechanism concerns only relatively minor points.
2. The first points where perhaps the terms of the Mechanism might be adjusted concern several time limits to the rules, and the separate items the notification must include (e.g. Article 3). It is clear that a balance must be found between the possibilities to give notification on a subject well in advance of the ~~actual~~^{actual} dumping operation and the time necessary to enable other Member-States to react to the notification and for the Secretariat of NEA to organize consultations, if necessary. This all is no new problem; it was already recognized and discussed during the meetings preparatory to setting up the mechanism. It would be suitable to rediscuss the time limits in the light of experience gained.
3. Article 5 of the Mechanism is closely related to the IAEA recommendations so after what has already said on the subject of Escorting Officers in Chapter II, needs no new discussion.
4. In Article 6 is stated that the NEA-representative acts in accordance with the instructions of the Director General of NEA, as is right and proper. However no mention is made of notifying the National Authorities concerned, of those instructions. In practice no notification was given. As the NEA-representative has to work in close liaison with the National Authority it would be wise to inform

this Authority of the instructions, to enable them to co-operate better and also to answer questions from the Permit-Holder on the extent he is obliged to give information to the NEA-Representative. As far as known no difficulties on this score have arisen during the 1977-operations, but nevertheless this point should be clarified in view of possible complications in the future.

5. A last point regards Article 6(e) and the significant radiation hazard to the crew. Neither the IAEA Recommendation or the Mechanism indicates a maximum permissible dose for crew members. A limit, however, is necessary. Up to now this matter is left to the National Authorities. A discussion whether it would be advisable to include a dose limit in the Mechanism, and if yes, what this limit has to be, should form part of the reviewing procedure to which Member-States have agreed.

IV. Other International Rules.

1. Next to the London Convention and the OECD-Mechanism at least two other treaties have to be considered in connection with the dumping of radioactive waste into the sea. The first is the Treaty of Paris on third party liability and the second is the Euratom Treaty.

states that

2. The Treaty of Paris radioactive materials including radioactive waste during transport from a nuclear installation are subject to the special regime of third party liability of the Treaty (Article 4).

In connection with the dumping into the sea of radioactive waste this gives rise to the following questions:

- a. Are radioactive wastes, as have been dumped into the Atlantic during the last years indeed radioactive wastes that are transported from a nuclear installation and so subject to the special regime of the Treaty of Paris?
- b. Who is or ought to be responsible for third party liability?
- c. Where or when does the responsibility of each party involved end?

These questions will be discussed in this order.

3. The low-level and medium level radioactive waste, as it is loaded on board of the ship, is originating from different sources. Roughly speaking half of the total amount has come from hospitals, scientific and technical laboratories and also from nuclear research installations, the other half comes from nuclear power stations. In the Netherlands, and also in some other countries radioactive waste is not being transported directly from the installations of origin to the ship. To the contrary, the waste suitable for dumping ^{is} assembled during a period of a year at one site, which is in the Netherlands the E.C.N.-Institute at Petten. The E.C.N. is itself a nuclear installation within the meaning of the Treaty of Paris. At the E.C.N. the waste is-if necessary-processed, conditioned and in general made ready for dumping. When this work is completed part of the total amount of

containers can still be identified as containing only radioactive waste coming from a nuclear installation, with the other containers this is often not possible.

They are however after having been treated transported from a nuclear installation to the ship and by ship to the dumping site.

4. As the situation arising as a consequence of dumping operations was clearly not foreseen by the Treaty, it is now a matter of interpretation. Of course it is advisable to make this point clear in the course of the already announced revision of the Treaty. Two interpretations are possible.

a. As the radioactive waste is transported from a nuclear installation to another place the Treaty is applicable.

b. The Treaty is not, or ought not to be applicable.

The waste may come, or pass through, a nuclear installation, but there are some objections against application of the Treaty. The Treaty institutes a special regime for third party liability because nuclear installations create a special kind of risk where the normal regime is not deemed to be sufficient. Now as we have seen, only part of the waste destined to be dumped comes from a nuclear installation. Differentiation between this waste and other waste is, if not impossible, at least very difficult. The waste coming from a nuclear installation does not create a risk different from that created by waste coming from a hospital or a laboratory.

It is in the same class. So the special regime of the Treaty ought not be applicable.

5. The first interpretation is simple and straight forward but does not take into the account the reason why the Treaty instituted a special system of third party liability. The second interpretation does just that, but will, if accepted, involve changes in the text of the Treaty.

6. The Treaty institutes a special regime of third party liability, supplementing the normal legal rules on this

subject. One of these special rules is the focussing of the liability on the operator of the nuclear installation wherefrom radioactive material is transported. Therefore the answer to the question who should be liable is closely connected to the choice between the two interpretations mentioned in paragraph 5. But there is also a special factor to be considered. It is common practice that all waste to be dumped to assembled at one site, owned by the organisation that will organize and conduct the actual dumping operation and so will apply for a Special Permit. In applying for a Special Permit he takes upon him the responsibility that the waste is suitable and in a suitable form for dumping under the rules of the IAEA Recommendations and the rules of the NEA-Mechanism. Having taken this responsibility it seems only logical that he is also liable for damages, in the same way that someone who takes upon himself the responsibility to drive a car, is liable for damage to third parties, occasioned by his driving.

7. In all legal systems of third party liability, and also in the Treaty of Paris, the end of the liability of each party is clear. In the usual case of e.g. transporting radioactive material from one installation to another, the operator of the first installation is liable until the material is arrived at the second installation. Afterwards the operator of the second plant is liable for damages. In a dumping operation however, the waste is not transported to an operator, but to a spot deep in the Ocean, where it is not retrievable and which is not owned by anybody. Here also exists a choice between two systems:
 - a. If a dumping operation is conducted properly only a very remote and theoretical possibility exists that the waste could cause damage to someone, even to the broad interests of the London Convention. Laws are not written for very far-fetched contingencies with a very low probability of happening. So no special legal rules are necessary. Might a remote possibility nevertheless happen, the situation must be judged on an ad hoc basis.

-15-

If this choice is made, it should be made clear that the liability of the Special Permit Holder ends with the arrival of the containers at the bottom of the ocean.

b. Liability should continue after the dumping until all potential danger has disappeared as a result of the radioactive decay of the dumped radionuclides. Let us suppose this time to be 100 years. For obvious reasons it seems unrealistic in this case to put the liability on the Special Permit Holder. So only one possibility remains; the Authority (or State) that has issued the Special Permit must be liable after the completing of the dumping operation.

8. In the Euratom-Treaty the articles 34 and 37 might be considered as being relevant for the dumping of radioactive waste into the sea. In my opinion article 34 has no bearing on dumping operations as this article refers to "experiences particulièrement dangereuses", so to exceptional cases that create more than normal danger. The dumping of radioactive waste under the restrictions of the London Convention, the IAEA-Recommendations and the NEA-Mechanism does not come into this category.
9. Article 37 needs a closer study. The dumping of radioactive waste certainly involves a potential risk of contamination of water. Article 37 continues saying that plans for releasing in what is now called the environment shall be announced to the Commission to enable this Body to determine whether the release will endanger the territory ^{of} another Member-State. The Commission is advised in these matters by an independent Expert-Committee.
10. Literally the text of article 37 does not say that a project for the release of radioactive material should only be laid before the Commission, if a potential danger for contamination of the territory of another Member-State exists. The judge of that is the Commission. Releases of radioactivity ^{into} the environment takes place at thousands of places within the European Community. It is a fact that article 37 has never been interpreted in the sense that all requests for a licence from all kinds of laboratories etc. must be put before the Commission. It would even be physically impossible for the Expert-Committee to deal with all cases. So the practice exists that under the terms of article 37 only plans for large installations are judged and moreover installations planned at a site when a real possibility for contaminating another territory exists.
11. The question whether a dumping operation of radioactive waste comes within the scopes of article 37 should be answered in accordance with the long standing practice. Another factor should be taken into consideration also. That factor is whether any need exists that the Commission pronounces itself on a project of this kind. Including this factor is also in accordance with

the existing practice of Euratom. The Euratom Treaty for an example, makes it quite possible for the Commission to issue directives, regulations etc. on the subject of transport of radioactive materials. Yet the Commission has never done this because no need for Euratom-rules existed as this transport was already adequately regulated by IAEA-Regulations and several Treaties on transport by rail, road, water etc.

2. With regard to dumping operations of radioactive waste the situation exists that all Member-States of Euratom are at the same time Member-States of the London Convention as well as OECD-Member-States, and have taken up the obligations of these Member-Stateships. The practice of the dumping operations undertaken by the European Countries is that the site of the dumping is far removed from Europe, about 450 nautical miles from the nearest land-mass!

3. Under those circumstances no potential danger to Euratom-Members exists that is not already adequately dealt with in other international legislation or where Euratom is better equipped to deal with new problems than the already existing mechanisms. Moreover the Commission of Euratom has never insisted having special rights or obligations during the preparation of the London Convention or the OECD-Mechanism. Out of all this follows that no obligation for Member-States of Euratom exists under article 37 of the Euratom Treaty.

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