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# PROTECTIVE MEASURES AND THE "TORREY CANYON"

ALBERT E. UTTON\*

"The law relating to international shipping is highly complex and in a number of respects, quite out of date."<sup>1</sup>

## I. INTRODUCTION

At 0911 hours on Saturday, 17 February, 1968, the *Anee Tanker* was reported aground on the shoals of Cape Cod. She was bound for Providence, Rhode Island, with a cargo of 117,000 tons of Kuwait crude oil, and she struck the shoal when travelling at about 17 knots.

Within two hours a Navy helicopter was over the ship. The threat of oil pollution was evidently on a scale which had no precedent. Ships of the Navy began, on the evening of 18 February, a continuous operation of spraying detergent in order to disperse the oil which had escaped; and they were later assisted by chartered commercial vessels. Large-scale preparations to deal with oil pollution on the beaches were also undertaken.

The salvage crew first went aboard on Sunday, 18 February, but the heavy swell in the area during the first two or three days made it hazardous to get any craft alongside for the purpose of transferring the equipment needed for an inspection. On Monday, 19 February, it became clear that many of the cargo tanks were damaged and that an estimated 30,000 tons of oil had spilled into the sea.

From their first visit to the ship on 20 February, representatives of the Department of the Navy provided all possible assistance. This included a detailed hydrographical survey of the shoal around the ship,<sup>2</sup> heavy lifts of equipment by helicopters from the salvage vessels to the ship and the continuous ferrying of salvage personnel. The wind changed to the south-east on Thursday, 22 February, and conditions worsened the following day. On Saturday, 24 February, oil began to arrive on the Massachusetts beaches;

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<sup>1</sup> Home Office, *The "Torrey Canyon,"* Cmnd. No. 3246, at 10 (1967) [hereinafter cited as *White Paper*].

<sup>2</sup> The primary purpose of such a survey is to measure the direction and intensity of the flow of the water.

100 miles of coastline were affected. On the evening of Sunday, 25 February, high seas and strong winds caused the ship to break her back, releasing possibly a further 30,000 tons of oil into the sea. On Monday, 26 February, the Government decided that all hope of minimizing pollution through towing away the ship, or any part of her, must be abandoned. Thus, on the following days, after endangered ships and aircraft had been warned, the ship, in order to set on fire the oil remaining aboard, was bombed by aircraft of the Navy and the Air Force.

In the foregoing account, only the names, places and dates have been changed from an account set out in the White Paper, "The Torrey Canyon," which, in April 1967, was presented to Parliament by the Secretary of State for the Home Development by Command of Her Majesty.<sup>3</sup> The point is that the same thing could happen here, and, in fact, has happened here, although to a lesser extent.<sup>4</sup>

"The Torrey Canyon was a tanker of 118,285 tons dead weight" and she was carrying "oil in all but two of her 18 tanks."<sup>5</sup> It is estimated that she eventually spilled 50,000<sup>6</sup> to 100,000 tons<sup>7</sup> of crude oil into the sea. This crude oil was carried in with the tide as a black sticky ooze, sometimes as much as 18 inches thick on the Cornish beaches;<sup>8</sup> it made its ugly impact along the South Coast of England, up the English Channel, and across to the West Coast of France.<sup>9</sup>

Wild life suffered bitterly under the onslaught. Estimates ranged from "at least 100,000 sea birds . . . killed by the chocolate-brown ooze"<sup>10</sup> down to 40,000.<sup>11</sup> Valiant efforts were made by volunteers and

<sup>3</sup> White Paper 3.

<sup>4</sup> See 113 Cong. Rec. H4778-79 (daily ed. April 27, 1967).

The wrecks of the *Pendleton* off Cape Cod in 1951 and the *P. W. Thirtie* off Newport, Rhode Island in 1960 are illustrative of what could be in store from oil pollution resulting from wrecks. In the *P. W. Thirtie* case, for example, the release of over 310,000 gallons of oil wiped out the entire oyster fishery of Narragansett Bay. See Rienow & Rienow, *The Oil Around Us*, N.Y. Times, June 4, 1967, § 6 (Magazine), at 110, col. 2.

In addition, a significant amount of pollution results from the intentional routine dumping of oily wastes at sea. *Id.* at 24, col. 1. Admiral A.C. Richmond reported in 1954 that "recent estimates indicate that world shipping is discharging waste oil into the sea at the rate of one million tons per year . . ." Quoted in Stubbs, *Oil Pollution: Penalty and Damage Aspects*, 16 JAG J. 140, 141 (1962). The callousness of this dumping of waste oil in order to clean tanker tanks is shockingly illustrated by the tanker or tankers dumping oil off the Cornish Coast after the wreck of the *Torrey Canyon*, evidently with the thought that with so much oil about the dumping would not be detected. See *The Times* (London), April 8, 1967, at 1, col. 3.

<sup>5</sup> White Paper 2.

<sup>6</sup> C. Gill, F. Booker & T. Soper, *The Wreck of the Torrey Canyon* 79 (1967).

<sup>7</sup> *The Times* (London), March 28, 1967, at 9, col. 1.

<sup>8</sup> *Id.*, March 20, 1967, at 13, col. 1-2.

<sup>9</sup> *Id.*, April 12, 1967, at 5, col. 3.

<sup>10</sup> *Newsweek*, April 10, 1967, at 51, col. 1.

<sup>11</sup> 1 *Environmental Science and Technology* 273 (1967).

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conservation groups to save as many birds as possible, but most of this effort was unavailing. For example, out of one reported group of 6000 brought ashore, "less than 500 were saved."<sup>12</sup> Besides the birds killed due to direct contact with the oil,<sup>13</sup> many were killed by skin burns from and ingestion of the highly concentrated detergents that were used to dissolve the oil and clean the beaches.<sup>14</sup>

Oyster beds and fisheries were polluted as far away as the coast of Brittany.<sup>15</sup> Although the evidence regarding the effect of the Torrey Canyon disaster on fish and other sealife is rather inconclusive,<sup>16</sup> completed studies clearly demonstrate the destructive effect of oil pollution on the ecology of the sea. In a statement presented to the Senate Foreign Relations Committee it was reported that:

Many forms of marine life are killed outright by such contact [with oil] and the best evidence of this is the almost

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<sup>12</sup> N.Y. Times, June 9, 1967, at 92, col. 1.

<sup>13</sup> In a statement presented to the Senate Foreign Relations Committee, it was reported that:

Once a bird has come into contact with the oil by landing in it, swimming into it from the surface or by coming up underneath it, he is almost invariably doomed. In cold weather, a spot of oil the size of a coat button is sufficient to cause death, particularly if located over the vital organs. The oil mats the contour and down feathers into strings instead of the broad water repellent and circulation resistant surfaces normally sealing the insulating layer of air between feathers and body. Once this seal is opened icy water seeps in against the skin and body heat is lost faster than it can be renewed. The process of degeneration is speeded up if there is also oil on the wings since this inhibits movement and thus feeding. If the oil covering is extensive, the bird must swim for all it is worth just to stay afloat since the oil destroys natural buoyancy. . . .

Even in warm weather, oiling is fatal to birds. Inability to fly or swim properly interferes with feeding. Preening in an effort to remove the oil transfers much of it to the beak and from there to the digestive tract. Following a recent severe spill in Narragansett Bay, a large number of ducks killed by the oil were examined internally and found to have the entire alimentary canal coated with a layer of oil.

Hearing-on International Convention for the Prevention of Pollution of the Seas by Oil—1961 Before the Senate Comm. on Foreign Relations, 87th Cong., 1st Sess. 25 (1961) [hereinafter cited as 1961 Hearing].

<sup>14</sup> The British government was issuing the potent detergents at a rate of 66,000 gallons per day in its fight to save the Cornish Beaches. *Chemical Week*, April 8, 1967, at 59.

<sup>15</sup> *The Times* (London), April 14, 1967, at 6, col. 4.

<sup>16</sup> The oil pollution research unit from Orielson Field Centre, on its first inspection of Porthmeor Beach near St. Ives found not a single periwinkle or limpet. An official of the Orielson Centre said the beach was sterile, and that "[t]he killer is the detergent. It would have been better if the beaches had been left." *The Times* (London), June 5, 1967, at 2, col. 7. He suggested that detergents may have damaged membranes that join the shells to the bodies of shellfish, since Cornish fishermen found limpet living without their shells, and crabs and lobsters without legs and claws. *Id.* The appraisal of Mr. Roy Jenkins, the Home Secretary, however, was optimistic when he stated that "very few crabs and shorehaunting fish have been found dead. This was in areas heavily polluted with oil and where substantial quantities of detergents have been used." 1 *Environmental Science and Technology* 273 (1967).

complete absence of living things from the bottoms of bays and harbors where oil spills occur regularly. Those animals which can survive direct contact take on highly objectionable tastes and odors.<sup>17</sup>

The *Torrey Canyon* incident had its worst impact upon the miles of beautiful, rural coast of southwestern England.<sup>18</sup> The beaches themselves were rendered unusable not only to wildlife but also to humans. The worst contamination of the beaches was cleared by Herculean efforts. An army of citizen volunteers and government troops employed an extensive restoration procedure that included the "spraying of detergent shortly before the tide comes up and by hosing the beach subsequently,"<sup>19</sup> and the use of earth-moving equipment to turn over the sand.

However, recontamination of once-cleaned beaches is expected to continue to occur as other oil deposits are exposed by tidal action washing away overlying sand, and as winter storms release oil previously trapped in caves and pools. A study of a beach contaminated by oil in 1957 showed that the damaging contamination continued after the lapse of eight years.<sup>20</sup>

In addition, it should be noted that "[t]he economic losses in fisheries and oyster beds, the uncomputable losses in esthetics, recreational enjoyment and biological values are only part of the cost of sea pollution."<sup>21</sup> The damage to restaurateurs, hotel owners, beach concessionaires and unnumbered others who directly or indirectly rely to a substantial extent on the "resort-beach economy," though again difficult to measure, is significant.<sup>22</sup> For example, it has been noted that "in the small resort community of Narragansett, R.I. (population

<sup>17</sup> 1961 Hearing 23. In the same report, it is noted that:

In experiments with *Nitzschia*, a diatom food of the oyster, Dr. Galtsoff found that these microscopic plants were seriously inhibited in their growth if oil remained for more than 1 week on the surface of the water in which they were living. Another effect of the presence of oil was to stimulate the growth of certain bacteria which in turn became so numerous that the *Nitzschia* died. Presumably, the effects of longlasting oil spills would be the same on many of the other minute organisms at the base of oceanic food chains.

Oil smeared on exposed intertidal flats quickly coats all life including commercially valuable softshelled clams (*Nya arenaria*) and razor clams (*Ensis directus*), and a variety of other more or less sessile dwellers of this zone on both muddy and rocky shorelines. The famous Dungeness crab of the west coast is another casualty of this type of pollution. Even fur seals have been killed as a result of contact with oil.

Id. at 24.

<sup>18</sup> See *The Times* (London), March 28, 1967, at 9, col. 1.

<sup>19</sup> White Paper 7-8.

<sup>20</sup> 1 *Environmental Science and Technology* 273 (1967).

<sup>21</sup> Rienow & Rienow, *supra* note 4, at 111, col. 2.

<sup>22</sup> See *The Times* (London), March 25, 1967, at 1, col. 1-2; id., March 27, 1967, at 1, col. 1-3; id., March 28, 1967, at 8, col. 6-7.

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3444) the estimated loss to local businesses of one day's closing of their beaches in good weather runs between \$10,000 and \$50,000."<sup>23</sup>

Furthermore, because of the ever-increasing size of oil tankers, even worse disasters may be in prospect. At the beginning of 1966, the *Torrey Canyon*, with a dead weight of 118,285 tons, was the third largest tanker in the world, but by the end of the year, she had slipped to tenth or twelfth place;<sup>24</sup> she already is, or soon will be, dwarfed by tankers two to five times her size.<sup>25</sup> In fact, it is predicted that by 1970 there will be 160 tankers of 200,000 tons or more in service.<sup>26</sup> The increased size of tankers, plus the fact that 25-30 million barrels of oil are being carried on the oceans each day,<sup>27</sup> plainly warns that a recurrence of the *Torrey Canyon* disaster in the future could be of catastrophic dimensions.

In view of this threat of future incidents such as the *Torrey Canyon* disaster and in response to the statement in the British White Paper on the *Torrey Canyon* incident that "[t]he law relating to international shipping is . . . in a number of ways quite out of date,"<sup>28</sup> it is appropriate to explore what measures a coastal state may take in order to protect itself from the threat of oil pollution emanating from damaged vessels off its coasts. In examining the question of *what* measures may be taken, it is necessary to answer the included question of *when*—prior or subsequent to collision—such measures may be taken and *where* in the adjacent high seas they may be taken.

In discussing the rights of a coastal state, it is essential to keep in mind the competing policy factors at stake. These are freedom of navigation on one hand, and the interest of the coastal state in protecting itself from harm on the other. The use of the high seas for communication and transport demand that access be as free as possible.<sup>29</sup> On the other hand, the actions of ships plying seas adjacent to the coastal area can have significant detrimental impact on the coastal state even though the ships are well beyond the territorial seas<sup>30</sup> or

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<sup>23</sup> 1961 Hearing 22.

<sup>24</sup> Chemical Week, April 8, 1967, at 64. The *Torrey Canyon* was nearly as long as three football fields laid end to end (974 feet), and carried almost eight times as much as the standard T-2 World War II tanker which had a dead weight tonnage of 16,765. Id.

<sup>25</sup> The *Idemitsu Maru* from Japan is already in service and weighs in at 209,302 tons dead weight. Rienow & Rienow, supra note 4, at 115, col. 1. Vessels weighing 312,000 tons are on order, N.Y. Times, July 22, 1967, at 52, col. 6, and we are told that 500,000 ton tankers are being planned. Oil & Gas J., May 22, 1967, at 79.

<sup>26</sup> The Times (London), Dec. 29, 1967, at 15, col. 3.

<sup>27</sup> Chemical Week, April 8, 1967, at 64.

<sup>28</sup> White Paper 10.

<sup>29</sup> Britain as a major sea-faring nation is sensitive to this and accordingly has not enacted domestic legislation to enable Her Majesty's Government to exercise jurisdiction even within the 12-mile maximum for contiguous zones. Informal discussions with British officials.

<sup>30</sup> At the 1958 Geneva Conference on the Law of the Sea, 21 states, including the United Kingdom and the United States, of the 86 represented, asserted three miles as the

even the 12-mile outer limit of the contiguous zone as set by the 1958 Geneva Convention on the Territorial Sea and the Contiguous Zone.<sup>31</sup>

## II. THE "CONTIGUOUS ZONE" CONCEPT

Neither existing international conventions nor national legislation dealing with oil pollution are specifically addressed to the question of what protective measures a coastal state may take in such incidents as the *Torrey Canyon*. They are directed rather at the extensive problem of deterring the day-by-day discharge of oil from ships in transit.<sup>32</sup>

The 1954 Convention for the Prevention of Pollution of the Sea by Oil,<sup>33</sup> for example, sets up zones extending 50 miles from the coast in which ships are prohibited from discharging oil into the sea, and provides for penalties to be imposed by signatory states for such discharge.<sup>34</sup> Similarly, national legislation is aimed at punishing the routine discharge of oil after the fact. For example, the U.S. Oil Pollution Act of 1924<sup>35</sup> prohibits "the discharge of oil by any method . . . into or upon the navigable waters of the United States . . ."<sup>36</sup> and provides penalties.<sup>37</sup> British legislation such as the Oil in Navigable Waters Acts of 1955<sup>38</sup> and 1963<sup>39</sup> makes the discharge of oil punishable, but specifically exempted are those cases where the escape of oil was caused by damage to the vessel.<sup>40</sup> This exception is exactly the *Torrey Canyon* situation.

The *Torrey Canyon* went aground on the Seven Stones Reef, outside British territorial waters, 15 miles west of the Cornish

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limit of the territorial sea, and the rest claimed jurisdiction over distances varying from four miles up to 200 miles. The Commission did not, however, enact any resolution limiting the extent of the territorial sea. See W. Bishop, *International Law; Cases and Materials* 489-90 (2d. ed. 1962).

<sup>31</sup> Art. 24(2), adopted by the U.N. Conference on the Law of the Sea, April 29, 1958, [1964] 2 U.S.T. 1606, T.I.A.S. No. 5639, 516 U.N.T.S. 205. Both the United Kingdom and the United States are signatories to this convention. See 516 U.N.T.S. 206.

<sup>32</sup> For a discussion of international and national legislation, see Nanda, *The Torrey Canyon Disaster—Some Legal Aspects*, 44 *Denver L.J.* 400, 406-15 (1967).

<sup>33</sup> International Convention for the Prevention of Pollution of the Sea by Oil, opened for signature May 12, 1954, [1961]. 12 U.S.T. 2989, T.I.A.S. No. 4900, 327 U.N.T.S. 3 (effective Dec. 8, 1961).

<sup>34</sup> Art. III, annex A. In 1962 the Convention was amended by enlarging the restricted zones and changing the Conference of Contracting Governments to the Convention of 1954, London, April 4-11, 1962.

<sup>35</sup> 33 U.S.C. §§ 431-37 (Supp. II 1965-66).

<sup>36</sup> *Id.* § 433. The word "discharge" is defined to encompass only "grossly negligent" discharges. *Id.* § 432(3).

<sup>37</sup> *Id.* § 434.

<sup>38</sup> Oil in Navigable Waters Act, 1955, 3 & 4 Eliz. 2, c. 25.

<sup>39</sup> Oil in Navigable Waters Act, 1963, c. 28.

<sup>40</sup> Oil in Navigable Waters Act, 1955, 3 & 4 Eliz. 2, c. 25, § 4(2)(a).

peninsula, and about 10 miles from the British Isles of Scilly.<sup>41</sup> Thus, measuring from the Isles of Scilly, the wreck occurred well within the 12-mile maximum for contiguous zones set by the 1958 Geneva Convention on the Territorial Sea and the Contiguous Zone.

Within this contiguous zone, and outside the British territorial sea,<sup>42</sup> the British took direct action. In addition to the bombing, measures used in the *Torrey Canyon* case included spraying the oil slick with emulsifying agents or coagulating agents, burning the escaping oil by use of combustible agents, and using urethane booms.<sup>43</sup>

May such occasional measures be lawfully carried out within the 12-mile contiguous zone?<sup>44</sup> In order to answer this question it is appropriate to examine certain international law conventions and concepts which do not deal specifically with oil pollution but which are related generally to the rights of coastal states over adjacent high seas. One of these is the concept of the "contiguous zone."

Tracing the historical development of the "contiguous zone" concept, there appears to be no doubt that a country may under certain circumstances exercise its power beyond its territorial borders in order to protect itself from injury. In the early case of *Church v. Hubbard*,<sup>45</sup> Chief Justice Marshall affirmed that the power of a state "may certainly be exercised beyond the limits of its territory"<sup>46</sup> in order to protect itself from injury.

Any attempt to violate the laws made to protect this right, is an injury to itself, which it may prevent, and it has the right to use the means necessary for its prevention. These means do not appear to be limited within any certain marked boundaries, which remain the same, at all times and in all situations. . . . If they are such as are reasonable and necessary to secure their laws from violation, they will be submitted to.<sup>47</sup>

International practice over the years has confirmed the lawfulness of exerting jurisdiction for limited purposes, primarily the enforcement of customs law, over high seas adjacent to a nation's territorial boundaries.<sup>48</sup> The U.S.-British Treaty of 1924,<sup>49</sup> for example, pro-

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<sup>41</sup> See *The Times* (London), March 29, 1967, at 1, col. 1.

<sup>42</sup> See discussion note 30 *supra*.

<sup>43</sup> White Paper 6-7.

<sup>44</sup> The British government explicitly said that they were not concerned with whether the action was lawful or not. *Id.* at 3. Also see the statement of The Home Secretary, Mr. Jenkins, in the *Times* (London), March 28, 1967, at 1, col. 2: "The overriding factor has been to minimize pollution; legal and financial considerations have not been our concern. International law has not been considered from the time the ship foundered."

<sup>45</sup> 6 U.S. (2 Cranch) 187 (1804).

<sup>46</sup> *Id.* at 234.

<sup>47</sup> *Id.*

<sup>48</sup> For a brief history of United States practice, see H. Briggs, *The Law of Nations*



vided for the boarding and searching of private vessels at no "greater distance from the coast . . . than can be traversed in one hour by the vessel suspected . . ." <sup>50</sup> This use of a flexible standard meant the distance could be considerably more than the extent of the nation's territorial waters and, in fact, more than the 12-mile limit for contiguous zones set by the 1958 Convention.

The U.S. Anti-Smuggling Act of August 5, 1935, <sup>51</sup> in addition, authorized the President to establish "customs enforcement areas" up to 50 nautical miles outward from the outer limit of customs waters, which themselves extend 12 miles out from the shore. <sup>52</sup> Laws allowing the boarding of vessels hovering outside a nation's territorial waters have been common in international practice, <sup>53</sup> and practically all nations have so exercised jurisdiction for customs purposes. <sup>54</sup>

Generally speaking, the "contiguous zone" concept has been used to allow coastal states to take unilateral action over a limited variety of events on the high seas in order to protect their own interests, while at the same time leaving freedom of the seas unsullied in general. <sup>55</sup> The exact outlines of the concept of the "contiguous zone," at least prior to the 1958 Convention, were not clearly drawn; and there has been by no means full agreement as to what activities justify the unilateral exercise of competence over contiguous zones. Professor Philip Brown in 1940 expressed the view that "the consensus of opinion, as well as of practice, overwhelmingly sustains the right of every nation to defend its laws and security from threatened violations, under varying circumstances, in the waters contiguous to the conventional three-mile limit. . . ." <sup>56</sup> On the other hand, Professor Lauterpacht would limit the use of force by the littoral state very narrowly to those ships outside the territorial water "but intending to enter it with a view to injuring the littoral state." <sup>57</sup> Thus, although there has not been agreement as to the precise purposes for which the "contiguous zone" concept can

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372-75 (2d ed. 1952). See also *Cook v. United States*, 288 U.S. 102 (1933); *Arch v. United States*, 13 F.2d 382 (5th Cir. 1926); *United States v. Bengochea*, 279 F. 537 (5th Cir. 1922); *United States v. 1,250 Cases of Liquor*, 286 F. 260 (S.D.N.Y. 1922); *The Grace & Ruby*, 283 F. 475 (D. Mass. 1922).

<sup>49</sup> Convention with Great Britain for Prevention of Smuggling of Intoxicating Liquors, Jan. 23, 1964, 43 Stat. 1761 (1925), T.S. No. 685.

<sup>50</sup> *Id.* art. II(3), 43 Stat. 1762.

<sup>51</sup> 19 U.S.C. §§ 1701-11 (1964).

<sup>52</sup> *Id.* § 1701(a). See Jessup, *The Anti-Smuggling Act of 1935*, 31 *Am. J. Int'l L.* 101 (1937); see also H. Briggs, *supra* note 48, at 375-76, for a brief account of cases arising under the 1935 act.

<sup>53</sup> See D. Bowett, *Self-Defense in International Law* 71-75 (1958); W. Masterson, *Jurisdiction in Marginal Seas* 181-92 (1929).

<sup>54</sup> See W. Bishop, *supra* note 30, at 521-23.

<sup>55</sup> M. McDougal & W. Burke, *The Public Order of the Oceans* 578 (1962).

<sup>56</sup> Brown, *Protective Jurisdiction*, 34 *Am. J. Int'l L.* 112, 114 (1940).

<sup>57</sup> He also recognizes state practice exercising jurisdiction in contiguous zones in

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be used, there is general agreement that the littoral state can unilaterally exercise control over a limited variety of events in contiguous waters.

The 1958 Convention on the Territorial Sea and the Contiguous Zone affirms this principle and spells out those situations over which the coastal state may exercise unilateral control. Article 24 states in part:

1. In a zone of the high seas contiguous to its territorial sea, the coastal state may exercise the control necessary to:

(a) Prevent infringement of its customs, fiscal, immigration or sanitary regulations within its territory or territorial sea;

. . .

2. The contiguous zone may not extend beyond twelve miles from the base line from which the breadth of the territorial sea is measured.

Thus, the 1958 Convention expressly authorizes the littoral state to take preventive measures to protect against the violation of specific categories of domestic laws. It is restrictively written; the categories are severely limited, and the maximum seaward limit of the contiguous zone is rigidly fixed at 12 miles.

Applying this article to the *Torrey Canyon* situation, the initial question must be met whether regulations prohibiting oil contamination would qualify as "sanitary regulations." Judicial interpretation of the River and Harbor Act of 1899<sup>58</sup> gives possible insight into a reasonable construction of the term "sanitary regulations." The 1899 Act broadly prohibited the discharge of "any refuse matter of any kind or description whatever . . . into any navigable water of the United States."<sup>59</sup> The courts in construing the term "refuse matter" have had no difficulty in holding that the discharge of oil from ships was a discharge of "refuse matter" and therefore punishable under the Act.<sup>60</sup>

However, the 1958 Convention is more restrictively phrased and the question whether oil pollution regulations are "sanitary regulations" is not free from doubt. There is some reluctance to include oil pollution regulations under the umbrella of "sanitary regulations."

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regard to revenue and sanitary laws. 1 L. Oppenheim, *International Law* 497 (8th ed. H. Lauterpacht Ed. 1953).

<sup>58</sup> Act of Mar. 3, 1899, ch. 425, 30 Stat. 1121-61.

<sup>59</sup> *Id.* § 13, 30 Stat. 1152.

<sup>60</sup> *United States v. Standard Oil Co.*, 384 U.S. 224, 230 (1966). See also *United States v. Ballard Oil Co.*, 195 F.2d 369, 370-71 (2d Cir. 1952); *La Merced*, 84 F.2d 444, 446 (9th Cir. 1936).

Some officials would place a narrow interpretation on the term "sanitary," requiring the regulation to have some connection with human, plant or animal health.<sup>61</sup> In addition, the question is asked: Where would we stop if we were to allow oil pollution to come under "sanitary"? The fear is that a broad interpretation could lead to abuse and thereby serve as a threat to freedom of the seas.

In answer to these fears it is not difficult to demonstrate that oil pollution does have a direct detrimental impact on human, plant and animal health. Even the primitive state of knowledge that we presently possess reveals the deleterious effect oil pollution has on the ecology of sealife.<sup>62</sup> It does not take much imagination to conclude that the uncontrolled destruction of land and aquatic life near areas inhabited by humans—where they work, play and feed—constitutes an unsanitary condition and a threat to health. The destruction of sea birds has another direct impact on sanitation:

The water birds, too, are links in a chain; many are scavengers, patrolling our beaches as natural sanitation squads. Without them, beaches would become unapproachable because of the stench; ships' garbage would float on the waves and clutter the harbours; foulness and disease would choke our inlets and bays.<sup>63</sup>

Therefore, under the terms of the 1958 Geneva Convention itself, it can be concluded that the littoral state, assuming it has local regulations aimed at deterring oil pollution, may take reasonable preventive measures within the 12-mile contiguous zone to protect itself from oil pollution emanating from damaged vessels.

As to *what* measures may be taken in this zone, Article 24 of the 1958 Convention states simply that the coastal state "may exercise the control necessary" to prevent infringement of its sanitary regulations. Within this context, what are the limits to the unilateral exercise of protective measures: May ships be bombed, may they be visited and searched? When may otherwise lawful coercive measures be taken: May a coastal state anticipate the threatened collision, or must it wait until the pollution actually reaches its shores? In answering these questions, as well as the further question of where—in the territorial waters, 12-mile contiguous zone, or beyond—such measures may be taken, it is appropriate to examine another international law concept—"self-defense."

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<sup>61</sup> Discussions with British officials.

<sup>62</sup> See discussions notes 13 & 16 *supra*.

<sup>63</sup> Rienow & Rienow, *The Oil Around Us*, N.Y. Times, June 4, 1967, § 6 (Magazine) at 110, col. 2.

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III. NECESSITY AND PROPORTIONALITY—THE CONCEPT OF  
SELF-DEFENSE

A. *Definition and Application Within the Contiguous Zone*

Article 51 of the United Nations Charter uses the term "self-defense" with reference only to intentional, hostile acts utilizing force of high intensity.<sup>64</sup> Since the *Torrey Canyon* wreck caused the British government to take "protective measures," even though the threat was neither intentional, hostile, nor forceful, the term "self-defense" is not strictly applicable to this situation.<sup>65</sup> Nonetheless, some of the considerations that apply to the concept of "self-defense" are also relevant to the use of coercive protective measures in contiguous zones. This is so not only because of the generic similarity between such protective measures and measures employed in self-defense but also because both types of "measures" and the occasions when they lawfully may be exercised must be limited in order to minimize the threat posed by the unilateral exercise of such "measures" to the free use of the high seas. Furthermore, Article 24 of the 1958 Convention on the Territorial Sea and the Contiguous Zone indicates that, within the contiguous zone, the coastal state may exercise that control "necessary" to prevent infringement of its sanitary regulations. Similarly, the primary factors defining the outer boundaries of lawful self-defense are necessity and proportionality.<sup>66</sup> On the basis of these similarities, it is submitted that coercive protective measures aimed at preventing oil pollution, to be lawful, must be justified by necessity, and any action taken must be proportional to the threat posed.

Early formulations attempted to establish a rigid, objective definition of necessity. In 1841, Daniel Webster as Secretary of State spoke of the necessity of self-defense having to be "instant, overwhelming, leaving no choice of means, and no moment for deliberation."<sup>67</sup> The essence of Webster's formulation is the imminence of the threat, and this is still the heart of necessity. However, necessity does not readily lend itself to rigid, abstract phraseology. Necessity must be determined in the context of an infinite variety of factual situations.<sup>68</sup> This does not mean that "necessity" is a hollow word, devoid of interpretive bounds. Customary law has consistently required a high

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<sup>64</sup> Article 51 states: "Nothing in the present Charter shall impair the inherent right of individual or collective self-defense if an armed attack occurs against a Member of the United Nations . . . ."

<sup>65</sup> See D. Bowett, *supra* note 53, at 66-86; M. McDougal & F. Feliciano, *Law and Minimum World Public Order* 209-13 (1961).

<sup>66</sup> See authorities cited note 65 *supra*.

<sup>67</sup> Quoted in H. Briggs, *supra* note 48, at 985.

<sup>68</sup> See M. McDougal & F. Feliciano, *supra* note 65, at 234.

degree of imminence to justify the use of force in self-defense.<sup>69</sup> McDougal and Feliciano point out that “[o]ne index of the required condition of necessity is precisely the degree of opportunity for effective recourse to nonviolent modes of response and adjustment . . . .”<sup>70</sup>

This concept of “necessity” can be illustrated by reference to the *Torrey Canyon* incident. The British White Paper reports that there were three possible methods of disposing of the oil within the ship: pumping it into other vessels, refloating the ship and burning the oil in the ship where she was aground.<sup>71</sup> Before resorting to the final alternative of burning the contents of the ship, the first two were exhausted. The oil could not be transferred to other vessels because

it was impracticable to install on board the generating equipment which would have been required to push the oil out. There was constant danger of a major explosion in view of the quantity of oil which had escaped, the presence of gas under pressure, and the pounding of the ship on the rocks. The chief salvage officer of the Dutch salvage team died, and other members of the team were injured, as a result of an explosion which took place on Tuesday 21st March.<sup>72</sup>

Every effort was made to refloat the ship so that it could be towed away. The White Paper realistically reports:

Up to the afternoon of 26th March the attempts to refloat the ship were being pressed forward, and not without hopes of success. But the weather was further deteriorating, and on the evening of that day the ship began to break up. This created a new situation in which the chances of getting the ship away diminished almost to the vanishing point. There was still some slight possibility of towing off a section of the ship, but this possibility disappeared late on the following day; the ship was by then in three parts.<sup>73</sup>

So as a last resort: “On that evening (Monday 27th March) the Government decided to attempt to fire some oil slicks from the air, and also to attempt to destroy the remaining cargo by opening the deck over each tank by HE bombs and setting fire to the oil.”<sup>74</sup>

The threat of the release of further oil into the sea was highly imminent due to the likelihood of the breaking of the ship in the rough

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<sup>69</sup> For examples of the general consensus, see D. Bowett, *supra* note 53, at 53 & n.1; L. Oppenheim, *supra* note 57, at 298.

<sup>70</sup> M. McDougal & F. Feliciano, *supra* note 65, at 237.

<sup>71</sup> White Paper 4.

<sup>72</sup> *Id.*

<sup>73</sup> *Id.* at 5.

<sup>74</sup> *Id.*

## "TORREY CANYON"

seas, and all reasonable alternatives proved to be either impracticable or abortive.<sup>75</sup> The decision to burn the cargo of the *Torrey Canyon*, although it could lead to her total destruction,<sup>76</sup> was a necessity justifying the use of napalm and high explosive bombing as a protective measure.

Also to be considered is the proportionality of the protective measure. In terms of magnitude and intensity, is the quantum of the protective measure proportional to the danger threatened? Is the consequentiality of the response proportional to the consequentiality of the imminent danger?<sup>77</sup> In the *Torrey Canyon* situation, in view of the potentially deleterious consequences, economic, ecological, and aesthetic, to hundreds of miles of coast line, there can be little doubt that the British response in bombing, although of great magnitude and intensity, was potentially less harmful than the threat posed and, therefore, well within the bounds of proportionality.

Thus, in answering the "what" question—what types of protective measures could be used lawfully—necessity and proportionality justified the use of the most violent of the alternatives. It is with reference to these factors, necessity and proportionality, that the "what" question must be answered, within each factual context, in the "Torrey Canyons" of the future.

### B. *Beyond the Contiguous Zone*

As noted above, because of the importance of maintaining the high seas open to all nations to be used freely for transportation and communication, every minor potential impact on the littoral state does not justify the unilateral exercise by that state of control over adjacent waters. Such unilateral action can be justified only where the potential impact would be significantly harmful. Therefore, even if necessity dictates that protective action must be taken promptly outside the contiguous zone, such action is not justified if the potential impact on the coastal state would not be significantly harmful.

This would suggest that as the potential harm to the coastal state increases, the distance from the coast line at which the coastal state may lawfully take protective measures also increases, given, of course, that it is necessary to take the action if the harm is to be prevented. Thus, it is submitted that the realities of the situation, lodged firmly in the concepts of necessity and consequentiality, not an inflexible 12-mile maximum, should dictate when and where such protective

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<sup>75</sup> *Id.*

<sup>76</sup> Although the White Paper emphasizes that the purpose "was not to sink and destroy the vessel, but to open up what remained of the cargo tanks and burn the oil in them," *id.* at 6, risk of destruction of the ship must have been very high.

<sup>77</sup> See M. McDougal & F. Feliciano, *supra* note 65, at 241-44.

measures may be applied unilaterally.<sup>78</sup> The 12-mile maximum set by the 1958 Convention does not comprehend the reasonable measures that a littoral state may have to take to protect itself from injuries caused by events that may occur at great distances from its shores.

Chief Justice Marshall, in *Church v. Hubbart*,<sup>79</sup> was much wiser than the framers of Article 24 of the 1958 Convention when, discussing unilateral protective measures, he stated:

These means do not appear to be limited within any certain marked boundaries, which remain the same, at all times and in all situations. If they are such as unnecessarily to vex and harass foreign lawful commerce, foreign nations will resist their exercise. If they are such as are reasonable and necessary to secure their laws from violation, they will be submitted to.<sup>80</sup>

Therefore, in answering the question regarding *where* a coastal state may take protective measures, it is submitted that the British would have been acting lawfully in undertaking the wide spectrum of preventive measures they attempted even if the *Torrey Canyon* had been aground beyond the maximum 12-mile area prescribed by Article 24 of the 1958 Geneva Convention.

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<sup>78</sup> Bowett states:

In certain circumstances the state cannot await the arrival of a danger to its security within its own territorial jurisdiction, but must take measures to prevent that danger from materializing while still outside its territorial jurisdiction. In this case the state may claim a measure of 'protective jurisdiction' and use force in the exercise of that jurisdiction beyond the limits of state territory. . . . [T]here is, however, no agreement on the precise nature of the circumstances which enable this protective jurisdiction to be exercised or on the forms of prevention to which the state may have recourse in the exercise of its right to self-defense.

D. Bowett, *supra* note 53, at 66.

<sup>79</sup> 6 U.S. (2 Cranch) 187 (1804).

<sup>80</sup> *Id.* at 234.

The Inter-Governmental Maritime Consultative Organization, in light of the *Torrey Canyon* incident, has been exploring ways of avoiding "the hazards presented by the carriage of oil or other noxious or hazardous cargoes." IMCO Rep. C/ES.III/5, May 8, 1967, at 1.

As in the case of the establishment of a mileage limit within which protective action may be taken, there should not be rigidity in defining what noxious or hazardous substances justify unilateral protective measures. Not only do circumstances vary beyond our ability to predict, but ever changing technology makes it impossible for us to foresee what may injure the coastal state.

It is true that the lack of a precise definition of what constitutes "noxious or hazardous cargoes" could lead to abuse by coastal states, IMCO Rep. LEG/WG(I). I/2, Sept. 18, 1967, at 3, IMCO Rep. LEG II/WP.3, Nov. 17, 1967, at 8-9, but any attempt at drawing up a detailed, exclusive list of "noxious or hazardous cargoes" is faced with the difficulty of keeping up with constant technological developments, particularly in chemicals. Also, a cargo may become hazardous by "the nature of the cargo itself or by virtue of the quantity of the cargo (innocuous in itself) which is carried." *Id.* at 8.

C. *The "When" Question—Anticipatory Action*

The "when" and "where" questions are nearly synonymous at times. The answer to the "where" or space dimension may be controlled by the answer to the "when" or time dimension. If necessity dictates that the coastal state take action immediately over a moving ship, it answers "where" such action is to be taken. In the *Torrey Canyon* case, the vessel was already stopped, but *quaere*—could the British have taken anticipatory action and boarded the vessel before she struck the Seven Stones Reef?

The hovering laws and customs enforcement experience provide an extensive example of coastal states exercising the right to visit and search, in order to prevent an anticipated injurious impact upon the coastal state.<sup>81</sup> In the *Torrey Canyon* incident, for example, it is submitted that, if, because of hazardous navigation conditions, the coastal state had previously determined and declared that the Seven Stones Reef area was off-limits for ships of specified sizes, shapes and cargoes, such as oil tankers, and yet the vessel persisted in a course that would take it close to the Seven Stones Reef, the British would have been justified in boarding the ship in order to force her to alter course. The risk of running aground on a known navigational hazard and of resultant oil pollution would justify such protective measures. Necessity would dictate that if the course is to be changed it must be done before the ship is exposed to the navigational hazards in the forbidden zone. The degree and imminence of the risk of injury to the coastal state would support the lawfulness of the anticipatory measure of boarding. The justification for such anticipatory action as boarding is analogous to the justification for stopping an automobile driver who is driving under the influence of alcohol. The authorities do not have to wait until the driver has actually had a wreck. The potentially harmful result of the threatened wreck demands anticipatory action.<sup>82</sup>

Boarding, furthermore, would be preventive and thus allowable under the language of Article 24(1)(a) of the 1958 Convention for the 12-mile area contiguous to the coastal state. In addition, even though the location might be outside the 12-mile maximum for contiguous zones, the concepts of "necessity" and "proportionality" would justify boarding in certain situations.<sup>83</sup>

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<sup>81</sup> See authorities cited note 53 supra.

<sup>82</sup> This goes beyond the suggestion of the International Sub-Committee established by the International Maritime Commission which suggests that, for purposes of determining whether costs of protective measures are recoverable, the definition of protective measures includes "all measures taken after an incident has occurred and which appeared at the time to be reasonably necessary in order to prevent or minimize injury." See IMCO Rep. LEG II/WP.3, Nov. 17, 1967, at 15.

<sup>83</sup> Realism and technical considerations, of course, compel awareness of the fact



The precedent of prohibiting access to specified areas provides an opportunity for abuse by some coastal states, and this risk should not be minimized. The consequentiality of exposing entire coastlines to a high probability of contamination, however, must be balanced against unfettered access to areas containing navigational hazards that pose unacceptable risks. As Bowett says: "The principle of the freedom of the high seas cannot be of any greater sanctity than that of territorial integrity . . . ."<sup>84</sup> In order to reduce the threat to freedom of access to the high seas, it would be preferable to have such restrictions on navigation and access to specified areas and the establishment of navigational lanes prescribed inclusively by international agreement.<sup>85</sup>

#### D. *Within Territorial Waters*

The considerations that determine whether protective measures may be taken lawfully in contiguous waters also apply in territorial waters. In balancing the need to preserve freedom of navigation and the countervailing need of coastal states to protect the well-being of their citizens, it is necessary to restrict the unilateral prescription and application of authority of the coastal state over ships in international waters to reasonable limits, as determined under the concepts of "necessity" and "proportionality."<sup>86</sup> However, the proximity of events occurring in the territorial waters very likely will increase the imminence and potential harm of the threat. Shipping activities that might be tolerated in contiguous zones may justify the unilateral exercise of protective measures within the territorial waters because of the heightened necessity and intensification of adverse consequences owing to the greater proximity of the exposed coast.

The limiting factors of "necessity" and "proportionality" are consistent with the explicit terms of the 1958 Geneva Convention on the Territorial Sea and the Contiguous Zone. Article 17 provides:

Foreign ships exercising the right of innocent passage shall comply with the laws and regulations enacted by the coastal

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that surveillance and control present serious practical problems in executing such anticipatory protective measures. IMCO Rep. LEG/WG(I).I/2, Sept. 18, 1967, at 7.

<sup>84</sup> D. Bowett, *supra* note 53, at 66.

<sup>85</sup> Rienow & Rienow make the point forcefully:

Man's technology has flagrantly outrun his administrative capacity. He cannot supervise the sea lanes of the world with an assortment of 120 or more petty, land based authorities under loose, bickering agreement, and located higgledy-piggledy in every nation-state. The hapless sea is dying because it is essentially *res nullius*, a thing belonging to no one. If it must wait for voluntary relief from the technical advances of a highly cutthroat industry, or from the hearty cooperation of envious nations whose actions are controlled by near-pirates, Neptune may as well walk his own plank.

Rienow & Rienow, *supra* note 63, at 115, col. 3.

<sup>86</sup> See M. McDougal & W. Burke, *supra* note 55, at 231.

State in conformity with these articles and other rules of international law and, in particular, with such laws and regulations relating to transport and navigation.

Article 17 thus follows long-established international practice whereby coastal states have prescribed regulations applying to vessels in the territorial sea.<sup>87</sup> The language of Article 17, however, is general, and it neither expressly states what regulations the coastal state may enact nor describes what measures a coastal state may take to secure compliance with its regulations. Within this context, it is submitted that those measures supported by necessity and proportionality, including, in certain cases, visitation and search, would be lawful.<sup>88</sup>

In addition to protective measures such as boarding, the protection of the coastal state may require limitations on navigation and even access to specified areas in the territorial seas just as in contiguous zones. However, the allowance of such regulation or prohibition of access to territorial waters could result in a significantly greater interference with freedom of navigation than regulation of access to areas beyond the territorial sea. It is thus appropriate to consider whether the coastal state may lawfully enact regulations prohibiting access to certain areas of the territorial waters to specified categories of vessels.

Article 17 of the 1958 Convention specifically authorizes regulations "relating to transport and navigation," without further delimitation. Article 14(1), however, requires that "ships of all states . . . shall enjoy the right of innocent passage through the territorial sea" and Article 16(1) states that "[t]he coastal state may take the necessary steps in its territorial sea to prevent passage which is not innocent." Article 14(4) provides that passage is innocent only as long as it is not "prejudicial to the peace, good order or security of the coastal State."<sup>89</sup> Thus, although this article does not define precisely what interests of the coastal state are subsumed under the "good order" of the coastal state, certainly it is reasonable to conclude that passage resulting in oil contamination such as that in the *Torrey Canyon* situation is "prejudicial to the . . . good order . . . of the coastal state" and thereby subject to preventive regulation.

Because of the seriousness attaching to the denial of access to a portion of the territorial sea, the coastal state must carry a heavy

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<sup>87</sup> See *id.* at 290.

<sup>88</sup> Article 5 of the 1930 Conference for Codification of International Law provided: "The right of passage does not prevent the Coastal State from taking all necessary steps to protect itself in the territorial sea against any act prejudicial to the security, public policy or fiscal interests of the State. . . ." Reproduced in H. Briggs, *supra* note 48, at 346-48.

<sup>89</sup> For a discussion of the considerable debate as to what general terms should be included in Article 14(4) to describe coastal interests to be protected, see M. McDougal & W. Burke, *supra* note 55, at 247-69.

burden in justifying any such action. Professors Burke and McDougal state the position cogently:

[T]he coastal state should, reasonably, be required to demonstrate that the actual effects, or realistically apprehended effects, are not merely incidental or slight, but rather embody a deprivation of substance. Such a deprivation need not be severe or drastic, for this would be an undue restriction of coastal competence to protect local value processes, but it also should not be of minimal consequence.<sup>90</sup>

If the use of a particular passage by oil tankers, such as through the Seven Stones Reef, raised the reasonable expectation of consequential damage to the interests of the coastal state through oil contamination, it is reasonable to conclude that regulations prohibiting such passage would be lawful under Articles 14(4), 16(1), and 17 of the 1958 Convention. Accordingly, the coastal state may take such protective measures to enforce those regulations as are necessary and proportional to the harm threatened.<sup>91</sup>

#### IV. CONCLUSION—A NEED FOR INTERNATIONAL ACTION

In summary, reason and a good deal of international practice suggest that the coastal state may lawfully take such unilateral protective measures in either territorial waters or adjacent high seas as are necessary and proportional to protect itself from consequential adverse impacts that reasonably can be expected to cause significant damage to the coastal state. The most desirable approach, however, is to anticipate situations such as the *Torrey Canyon* incident by reducing the likelihood of their occurrence through international agreement on navigational aids, traffic routes, and restoration measures.

The Inter-Governmental Maritime Consultative Organization is studying what steps need to be taken to improve maritime safety in general, including such problems as: the establishment and enforcement of sea lanes; whether large ships carrying particular cargoes should be prohibited completely in certain areas and on certain routes; whether ships carrying noxious or hazardous cargoes should be required to have additional navigational aids; what shore-to-radio in-

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<sup>90</sup> *Id.* at 232.

<sup>91</sup> Article 17 does not specifically state that the coastal state may enforce, but to say that vessels "must comply" with the laws and regulations of the coastal state without giving the coastal state the power to enforce those regulations would be nonsensical. See *id.* at 272-73. Professor Gross states that the "right to enforce these enactments, [is] implicitly recognized in Article 17." Gross, *The Geneva Conference on the Law of the Sea and the Right of Innocent Passage Through the Gulf of Aqaba*, 53 *Am. J. Int'l L.* 564, 592 (1959).

stallations are required; whether particular types of ships within specified distances from land or in areas of high traffic density should be subject to speed restrictions; whether ship-borne navigational equipment should be subject to periodic testing; and whether it is appropriate to prescribe internationally the standards for training and qualification of officers and crew upon ships carrying hazardous or noxious cargoes.<sup>92</sup> They are also studying the conditions for use of automatic navigational equipment, the routes used by large ships carrying noxious or hazardous products in order to chart navigational hazards, and the need to enforce look-out systems, "particularly at night or in areas of high traffic density, with a view to the formulation of international standards or recommendations."<sup>93</sup> In regard to restoration measures, IMCO has been asked to study (1) procedures "whereby States, regionally or inter-regionally where applicable, can co-operate at short notice to provide manpower, supplies, equipment and scientific advice to deal with the discharge of oil or other noxious or hazardous substances. . . ."<sup>94</sup> and (2) "[p]revention of such pollution by mechanical or scientific devices . . ."<sup>95</sup> and (3) "[m]ethods of destroying the polluting agent without damage to flora and fauna."<sup>96</sup>

These are matters of urgent international concern and can be met adequately only by international, inclusive action by the seafaring nations of the world.<sup>97</sup> However, until effective international action is undertaken, coastal states will be forced to continue to act unilaterally to protect themselves from damage and the threats of damage of the *Torrey Canyon* type. A basic factor influencing the coastal state in its decision as to whether or not to take unilateral action is its assessment "as to the possibilities of effective decision-making by the organized world community—the dependability, in other words, of reliance upon world community intervention."<sup>98</sup> The dependability of the world community and therefore the reliance that may be placed upon it in a *Torrey Canyon* situation is very low indeed, in the current state of international development. Unfortunately, there is considerable truth in the assertion that "[t]he hapless sea is dying [from oil pollution] because it is essentially *res nullius*, a thing belonging to no one."<sup>99</sup>

Studies and work such as that undertaken by the Inter-Governmental Maritime Consultative Organization are urgently needed so that a recurrence of the *Torrey Canyon* disaster may be avoided

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<sup>92</sup> IMCO Rep. C/ES.III/5, May 8, 1967, at 1-4.

<sup>93</sup> *Id.* at 3.

<sup>94</sup> *Id.* at 3-4.

<sup>95</sup> *Id.* at 4.

<sup>96</sup> *Id.*

<sup>97</sup> See Richey, *One-Way Routing in the Channel to Avert Collisions at Sea*, *The Times* (London), Aug. 3, 1967, at 9, col. 5-7.

<sup>98</sup> M. McDougal, *Studies in World Public Order* 285 (1960).

<sup>99</sup> Rienow & Rienow, *supra* note 63, at 115, col. 3.

through international action, but until that day littoral states will be obliged to take unilaterally such measures as are necessary to protect themselves from injury caused by oil or other noxious or hazardous substances emanating from ships damaged off their coasts.