CHAPTER 6
ANALYSIS OF THE EXTENT TO WHICH INCIDENTAL DISCHARGES ARE CURRENTLY SUBJECT TO REGULATION UNDER FEDERAL LAW OR A BINDING INTERNATIONAL OBLIGATION OF THE UNITED STATES

As discussed in Chapter 1, Congress directed EPA, in consultation with the U.S. Coast Guard and other interested federal agencies, to conduct a study of discharges incidental to the normal operation of all fishing vessels and nonrecreational vessels less than 79 feet in length (study vessels). Among other things, the study's charge directed EPA to include an "analysis of the extent to which the discharges are currently subject to regulation under federal law or a binding international obligation of the United States" (Public Law (P.L.) 110-299 § 3(b)(6)). This chapter and accompanying tables present that analysis. Note, however, that as discussed in Chapter 1, this chapter includes some discussion of treaties and statutes that pertain to nonstudy vessels for information purposes. In accordance with P.L. 110-299, this study does not include significant discussion about discharges of sewage or ballast water.[1]

This chapter is organized into four sections. Section 6.1 offers brief overviews of the international obligations addressing vessel discharges, while Section 6.2 summarizes applicable federal statutes and regulations. Section 6.3 includes a brief overview of other international and federal laws that do not directly regulate discharges incidental to the normal operation of a vessel, but which the Agency felt merited some discussion. Finally, Section 6.4 provides tables identifying which applicable laws apply to specific incidental discharges.

6.1 INTERNATIONAL AGREEMENTS

6.1.1 The International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)

The International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78), is the primary international instrument for regulating and preventing pollution from vessels. A total of 150 countries are Parties to

[1] As of the writing of this report, ballast water discharges are regulated by the U.S. Coast Guard under the National Invasive Species Act of 1996 (NISA), by EPA under Section 402 of the Clean Water Act, and by several states under state law. NISA is discussed briefly in this analysis to the extent that it addresses invasive species from sources other than ballast water. Furthermore, the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention), adopted by the International Maritime Organization (IMO) in 2004, establishes ballast water discharge standards. The Convention has not yet attracted the requisite number of Parties necessary for its entry into force. For further discussion, see Standards for Living Organisms in Ships' Ballast Water Discharged in U.S. Waters (74 FR 44,631 (Aug. 28, 2009)).

MARPOL. MARPOL includes six annexes, covering six categories of vessel discharges: oil (Annex I), noxious liquid substances (Annex II), harmful packaged substances (Annex III), sewage (Annex IV), garbage (Annex V), and air emissions (Annex VI).

Before entering into force, the Convention required ratification by 15 member states, with a combined merchant fleet of not less than 50 percent of the total world shipping fleet, measured by gross tonnage. To ratify the convention, member states are required to ratify only Annexes I and II; the remaining annexes are optional. The United States has ratified Annexes I, II, III, V, and VI (the United States has not ratified Annex IV, which regulates sewage discharges from ships; the United States regulates sewage under Section 312 of the Clean Water Act, which is discussed in Section 6.2, Federal Laws).

In the United States, MARPOL is primarily implemented through the Act to Prevent Pollution from Ships (APPS), 33 U.S.C. §§ 1901–1915. APPS implements Annexes I, II, V, and VI. Annex III of MARPOL is implemented through the Hazardous Materials Transportation Act, 49 U.S.C. § 5101 *et seq*. These implementing statutes are discussed in depth in Section 6.2, Federal Laws.

6.1.1.1 MARPOL Annex I: Prevention of Pollution by Oil

MARPOL Annex I establishes requirements for the control of oil pollution from vessels. As previously discussed in this report, small to large amounts of oil can be found in numerous vessel discharges, including bilgewater, deck runoff, and engine effluent. The requirements of this Annex apply to all ships operating in the marine environment, unless expressly provided otherwise.

Every oil tanker of 150 gt and above and every other ship of 400 gt and above is required to undergo a series of surveys to ensure that the ship's structure, equipment, systems, fittings, arrangements, and material are in full compliance with all applicable Annex I requirements and do not pose "an unreasonable threat of harm to the marine environment" (Annex I, Regulations 6.1 and 6.4.1). The surveys are required before the ship is put in service (or before an International Oil Pollution Prevention Certificate [IOPP Certificate], explained below, is issued for the first time); for IOPP Certificate renewal purposes; at certain intervals surrounding the anniversary date of the ship's IOPP Certificate; and after certain repairs or renewals are completed (Annex I, Regulation 6).

Oil tankers of 150 gt and above and ships of 400 gt and above that travel to ports or offshore terminals under the jurisdiction of other Parties to Annex I are required to have an IOPP Certificate, which indicates completion of and compliance with Annex I's inspection requirements. These certificates are issued or endorsed by the government of the state, or any persons or organizations authorized by it, under whose authority the ship is operating (Annex I,

Regulation 7). The IOPP Certificate shall not be issued for a time period exceeding five years, subject to various survey provisions contained in the Annex (Annex I, Regulation 10).

Annex I prohibits the discharge of oil or oily mixtures into the sea, except under the following circumstances:

- Ships of 400 gt and above, whether inside or outside a special area where:
  - The ship is proceeding *en route*.
  - The oily mixture is processed through area-appropriate oil filtering equipment (under Regulation 14).
  - The oil content of the effluent without dilution does not exceed 15 parts per million (ppm).
  - The oily mixture does not originate from cargo pump-room bilges on oil tankers.
  - The oily mixture, in case of oil tankers, is not mixed with oil cargo residues.

- Ships of less than 400 gt, whether inside or outside a special area where:
  - The ship is proceeding *en route*.
  - The ship has in operation equipment of a design approved by the government under whose authority the ship is operating, that ensures that the oil content of the effluent without dilution does not exceed 15 ppm.
  - The oily mixture does not originate from cargo pump-room bilges on oil tankers.
  - The oily mixture, in the case of oil tankers, is not mixed with oil cargo residues (Annex 1, Regulation 15).

- Discharges of oil or oily mixtures from cargo areas of oil tankers outside special areas where:
  - The tanker is more than 50 nautical miles from the nearest land.
  - The tanker is proceeding *en route*.
  - The instantaneous rate of discharge of oil content does not exceed 30 liters per nautical mile.
  - For tankers delivered on or before December 31, 1979, the total quantity of oil discharged into the sea does not exceed 1/15,000 of the total quantity of the particular cargo of which the residue formed a part, or for tankers delivered after December 31, 1979, 1/30,000 of the total quantity of the particular cargo of which the residue formed a part.
  - The tanker has in operation an oil discharge monitoring and control system and a slop tank arrangement (under Regulations 29 and 31). (Annex 1, Regulation 34).

Discharges of oil or oily mixtures from the cargo area of an oil tanker while in a special area are prohibited (Annex 1, Regulation 34).

Discharging oil or oily mixtures from any ship in the Antarctic area is expressly prohibited. No discharge into the sea may contain substances in quantities or concentrations that are hazardous to the marine environment or substances introduced for the purpose of circumventing the conditions of discharge specified in Annex 1 (Annex 1, Regulation 15).

The prohibition against the discharge of oil and oily mixtures does not apply where the discharge is necessary for the purpose of securing the safety of a ship or saving life at sea. The prohibition also does not apply where the discharge resulted from damage to the ship or its equipment, provided that all reasonable precautions were taken after the occurrence of the damage or discovery of the discharge and the damage was not caused intentionally or recklessly with knowledge that damage would probably result. Ships may discharge substances containing oil when those substances are being used to combat specific pollution incidents in an effort to minimize damage from the pollution, subject to relevant governments' approvals (Annex I, Regulation 4).

Every oil tanker of 150 gt and above and every other ship of 400 gt and above must maintain an Oil Record Book Part I.[2] The Oil Record Book Part I must be completed whenever any of the following machinery-space events occur: ballasting or cleaning of oil fuel tanks; discharge of dirty ballast water or cleaning water from oil fuel tanks; collection and disposal of oil residues; discharge overboard or disposal otherwise of bilgewater that has accumulated in machinery spaces; bunkering of fuel or bulk lubricating oil; accidental or other exceptional discharge of oil; and failure of oil filtering equipment. The Oil Record Book Part I must be readily available for inspection. A Party to Annex I may request inspection of the Oil Record Book Part I while any ship to which this Annex applies is in its port or offshore terminal and require the master of the ship to certify that any copies made of the Oil Record Book Part I are true. (Annex I, Regulation 17).

Oil tankers of 150 gt and above and all other ships of 400 gt and above must carry onboard a shipboard oil pollution emergency plan approved by the government under whose authority the tanker is operating. The plan must include the procedures for ship operators to follow to report an oil pollution incident, the list of authorities or people to be contacted in the event of an oil pollution incident, a detailed description of the actions to be taken immediately to reduce the discharges of oil following an incident, and a contact onboard responsible for coordinating with authorities to combat the pollution. This plan may be combined with the emergency response plan required by MARPOL Annex II (discussed below). Oil tankers of 5,000 tons deadweight or more must have prompt access to computerized damage stability and residual structural strength calculation programs (Annex I, Regulation 37).

Governments of Parties to Annex I must ensure that there are adequate reception facilities for discharging oil and oily residues and comply with various requirements related thereto, including capacity and location requirements (Annex I, Regulation 38).

[2] Oil tankers must also maintain an Oil Record Book Part II (Annex I, Regulation 36).

Although ballast water falls outside the scope of P.L. 110-299, the Agency notes that Annex I includes regulations governing ballast water. These regulations establish when ships must have segregated ballast tanks and under what circumstances ballast water may be carried in oil fuel tanks or cargo tanks (Annex I, Regulations 16 and 18).

In addition to the requirements discussed above, Annex I includes a number of requirements applicable to oil tankers alone. Since oil tankers would not generally be expected to be study vessels, EPA has omitted an in-depth discussion of these requirements, which include:

1. New-build protective cargo tank arrangements (including double-hull/double-bottom requirements) for certain tankers (Annex I, Regulations 19–20).
2. Double-bottom pump-room requirements for oil tankers of 5,000 tons deadweight and above constructed on or after January 1, 2007 (Annex I, Regulation 22).
3. Requirement that oil tankers delivered on or after January 1, 2010, be built in such a way that if they are damaged, oil will not spill from them at a rate greater than MARPOL allows (Annex I, Regulations 23-25).
4. Limitations on the size and arrangement of cargo tanks for oil tankers of 150 gt and above, depending on delivery date (Annex I, Regulation 26).
5. Subdivision, damage stability, and intact stability criteria (Annex I, Regulations 27–28).
6. Cargo tank cleaning requirements, including requirements relating to slop tanks (Annex I, Regulation 29).
7. Pumping, piping, and discharge arrangement regulations governing the discharge of dirty ballast water or oil-contaminated water (Annex I, Regulation 30).
8. Oil discharge monitoring and control system requirements, including requirements for effective government-approved oil/water interface detectors (Annex I, Regulations 31–32).

Also outside the scope of this study, but worth noting, is that Annex I includes requirements applicable to fixed or floating platforms. Specifically, fixed or floating platforms must comply with the requirements of the Annex applicable to ships of 400 gt and above, other than oil tankers, except that they shall be equipped only to the extent practicable relating to tanks for oily residue and oil filtering equipment. Records involving oil or oily mixture discharges must be kept in a form approved by the government under whose authority the vessel is operating, and the discharge of oil or oily mixtures to the sea is prohibited except when the oil content of the discharge without dilution does not exceed 15 ppm (Annex I, Regulation 39).

6.1.1.2 MARPOL Annex II: Control of Pollution by Noxious Liquid Substances in Bulk

MARPOL Annex II addresses pollution caused by "noxious liquid substances" (NLS) carried in bulk. Substances regulated as NLS under MARPOL are categorized into four categories[3] based on their potential to cause harm:

- Category X: Substances that, if discharged into the sea from tank cleaning or deballasting operations, present a major hazard to either marine resources or human health and therefore justify the prohibition of the discharge into the marine environment.
- Category Y: Substances that, if discharged into the sea from tank cleaning or deballasting operations, present a hazard to either marine resources or human health or cause harm to amenities or other legitimate uses of the sea and therefore justify a limitation on the quality and quantity of the discharge into the marine environment.
- Category Z: Substances that, if discharged into the sea from tank cleaning or deballasting operations, will present a minor hazard to either marine resources or human health and therefore justify less stringent restrictions on the quality and quantity of the discharge into the marine environment.
- Other Substances: Substances that fall outside of categories X, Y, or Z because they are considered to present no harm to marine resources, human health, amenities, or other legitimate uses of the sea when discharged into the sea from tank cleaning or deballasting operations. The discharge of bilge or ballast water or other residues or mixtures containing these substances are not subject to any requirements under MARPOL Annex II. (Annex II, Regulation 6).

All ships certified to carry one or more of these substances in bulk must follow the requirements established in Annex II unless the discharge is necessary for the purpose of securing the safety of a ship or saving life at sea (Annex II, Regulations 2–3). The Annex's requirements also do not apply where the discharge resulted from damage to the ship or its equipment, provided that reasonable precautions were taken after the occurrence of the damage or discovery of the discharge, and the damage was not caused intentionally or recklessly with knowledge that damage would probably result. Discharges of other substances may also be exempted from Annex II's requirements if they are government-approved (by both the government under whose authority the ship is operating and any government in whose

[3] This categorization scheme was developed when Annex II was revised; it entered into force in January 2007. The United States Coast Guard's implementing regulations, discussed below, have not yet been revised to reflect this new scheme.

jurisdiction the discharge will occur) and being used to combat specific pollution incidents in an effort to minimize damage from the pollution (Annex II, Regulation 3). Regulation 4 of Annex II provides for a number of other specific exemptions to the Annex's requirements.

Ships intending to carry NLS in bulk to other Parties to MARPOL must obtain an International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk ("Certificate"). The Certificate records the results of the various inspections to which NLS-carrying ships are subject. The government under which the ship is registered is typically responsible for issuing the Certificate, using a form provided in Appendix 3 to Annex II (Annex II, Regulation 9). Certificates are issued for a period of time not to exceed five years (Annex II, Regulation 10).

Prior to and at periodic intervals after a ship is issued a Certificate, it is subject to a complete inspection of its structure, equipment, systems, fittings, arrangements, and materials to ensure compliance with Annex II. The government of the country under whose authority a ship is operating is responsible for having these inspections conducted. If a ship or its equipment is found to not correspond substantially with the particulars of the Certificate, corrective action must be taken. If corrective action is not taken, the ship's Certificate should be withdrawn. Conformity with these MARPOL requirements is necessary to ensure that the ship does not pose an unreasonable threat of harm to the marine environment (Annex II, Regulation 8).

Ships that are certified to carry NLS in bulk that are identified in chapter 17 of the International Bulk Chemical Code must generally ensure that their design, construction, equipment, and operation are in conformance with the requirements of that Code (Annex II, Regulation 11).

Ships constructed prior to July 1, 1986, must have a pumping and piping arrangement ensuring that each tank certified to carry substances in Category X or Y does not retain more than 300 liters of residue in the tank and its associated piping. Each tank certified to carry substances in Category Z must not retain more than 900 liters in the tank and its associated piping (Annex II, Regulation 12(1)). Ships constructed on or after July 1, 1986, but before January 1, 2007, must not retain residue greater than 100 liters for Category X or Y substances or 300 liters for Category Z substances in the tank and its associated piping (Annex II, Regulation 12(2)). Ships constructed after January 1, 2007, must not retain residue in a quantity greater than 75 liters in the tank or its associated piping for Category X, Y, or Z (Annex II, Regulation 12(3)).

Ships certified to carry Category X, Y, or Z substances, except ships constructed before January 1, 2007, and certified to carry Category Z substances, must have at least one underwater discharge outlet, which must be located within the cargo area in the vicinity of the turn of the bilge and arranged to avoid the re-intake of residue/water mixtures by the ship's seawater intakes. The residue/water mixture discharged into the sea must not pass through the ship's boundary layer (Annex II, Regulation 12 (6)-(9)).

Ships are prohibited from discharging into the sea residues of Category X, Y, or Z substances or ballast water, tank washings, or other mixtures containing these substances unless the discharges fully comply with the applicable operational requirements of Annex II. Specifically, 1) the ship must be proceeding en route at a speed of at least 7 knots in the case of self-propelled ships or at least 4 knots for other ships, 2) the discharge must be made below the waterline through the underwater discharge outlets at a rate not to exceed what the outlet was designed for, and 3) the discharge must be made no less than 12 nautical miles from the nearest land and in water not less that 25 meters deep (Annex II, Regulation 13(1)-(2)). For Category Z substances on ships not required to have an underwater discharge outlet, the requirement that discharges occur below the waterline does not apply. Annex II also sets out requirements for the discharge of NLS residues (Annex II, Regulation 13(6)–(7)). Any discharge of NLS or mixtures into the Antarctic area is prohibited (Annex II, Regulation 13(8)).

Every ship certified to carry Category X, Y, or Z substances must have a government approved Manual onboard. The Manual is meant to inform the ship's officers of the physical arrangements and operational procedures necessary to comply with Annex II (Annex II, Regulation 14). Ships must also carry with them a Cargo Record Book to record where NLS substances were loaded and unloaded and the circumstances of the loading and unloading. If any accidental or emergency discharges occur, those must also be recorded in the Cargo Record Book (Annex II, Regulation 15).

Ships certified to carry NLS in bulk that weigh 150 gt or above must carry onboard a marine pollution emergency plan for NLS. The plan must be government approved and must include the procedures for ship operators to follow to report an NLS pollution incident, the list of authorities and people to be contacted in the event of an NLS pollution incident, a detailed description of the actions to be taken immediately to reduce the discharges of NLS following an incident, and a contact onboard responsible for coordinating with authorities to combat the pollution (Annex II, Regulation 17).

The Government of each Party to MARPOL must ensure that its ports and terminals have adequate NLS reception facilities for the ships utilizing those ports and terminals to meet the requirements of Annex II (Annex II, Regulation 18).

6.1.1.3 MARPOL Annex III: Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form

MARPOL Annex III establishes requirements for preventing pollution caused by harmful substances that are carried in packaged form. "Harmful substances" are defined as those substances that are identified as marine pollutants in the International Maritime Dangerous Goods Code (IMDG Code). "Packaged form" is defined as the forms of containment specified for harmful substances in the IMDG Code (Annex III, Regulation 1(1)). Although the requirements of this Annex do not directly regulate discharges incidental to the normal operation

of a vessel, they play a critical role in preventing harmful substances from entering into such discharge streams.

Annex III prohibits the carriage of harmful substances from all ships unless the requirements of the Annex are followed (Annex III, Regulation 1(2)). Empty packages that were previously used to carry harmful substances and contain harmful residue are themselves considered harmful substances and must be treated as such (Annex III, Regulation 1(4)). Additionally, the Government of each Party to MARPOL is required to issue detailed requirements on packing, marking, labeling, documentation, stowage, quantity limitations, and exceptions for preventing or minimizing pollution of the marine environment by harmful substances (Annex III, Regulation 1(3)).

The Annex requires that packages containing harmful substances be adequate to minimize the hazard to the marine environment, having regard to their specific contents (Annex III, Regulation 2). They must be durably marked with the correct technical name (trade names alone are prohibited), must indicate that the substance is a marine pollutant, and should be supplemented where possible by other means (e.g., use of the relevant United Nations number). The durability of both the package and the markings must be considered because the Annex requires that the markings be able to withstand at least three months immersed in the sea (Annex III, Regulation 3).

In all documents relating to the carriage of harmful substances at sea, the correct technical name of each substance must be used, and the substance must be identified with the words “MARINE POLLUTANT.” The shipping documents provided by the shipper must be accompanied by a signed certificate declaring that the shipment is properly packaged and marked and in proper condition for carriage to minimize the hazard to the marine environment. Every ship must keep, both onboard and onshore, a list or manifest detailing the harmful substances onboard and where they are stowed (Annex III, Regulation 4).

Packages containing harmful substances must be stowed and secured so as to minimize the hazards to the marine environment, without impairing the safety of the ship and the people onboard (Annex III, Regulation 5). Some harmful substances may face restrictions, for sound scientific and technical reasons, as to the quantity that can be carried onboard, and in some cases, carrying them might be prohibited altogether. These determinations will take into account the size, construction, and equipment of the ship, as well as the packaging and nature of the substance (Annex III, Regulation 6).

Except where necessary to protect the ship or saving life at sea, the jettisoning of harmful substances carried in packaged form is prohibited (Annex III, Regulation 7).

6.1.1.4 MARPOL Annex IV: Prevention of Pollution by Sewage from Ships

Annex IV of MARPOL establishes requirements for the prevention of pollution caused by sewage from ships. The discussion of discharges of sewage from vessels was specifically excluded from the scope of this study; therefore, the summary of this section is omitted. See P.L. 110–299, § 3(c)(2). It should also be noted that, as mentioned above, the United States is not a party to Annex IV and is therefore not obligated to follow its requirements.

6.1.1.5 MARPOL Annex V: Prevention of Pollution by Garbage from Ships

Annex V of MARPOL regulates garbage pollution from ships. Under the Annex, "Garbage" is defined as all kinds of victual, domestic, and operational waste (excluding fresh fish and fish parts) generated during the normal operation of the ship and liable to be disposed of continuously or periodically (Annex V, Regulation 1(1)). Although the requirements of this Annex do not directly regulate discharges subject to this report ("garbage" is not subject to the former NPDES permit exclusion at 40 CFR 122.3(a)), they play a critical role in preventing garbage from entering into and contaminating discharge streams subject to this report.

The Annex establishes different disposal requirements depending on the type of garbage being disposed of. Disposal into the sea of dunnage—lining and packing materials that will float—is prohibited if the ship is closer than 25 nautical miles from the nearest land. The disposal of food wastes and all other garbage, including paper products, rags, glass, metal, bottles, crockery, and similar refuse is prohibited less than 12 nautical miles from the nearest land; however, it may be permitted if it has passed through a comminuter or grinder, is small enough that it can pass through a screen with openings no greater than 25 mm, and is disposed of as far as practicable from the nearest land (but no closer than 3 nautical miles). The disposal of plastics, including but not limited to synthetic ropes, synthetic fishing nets, and plastic garbage bags, is prohibited. Where garbage is mixed, the more stringent requirements will apply (Annex V, Regulation 3). Additional special requirements are in place for discharges into certain defined areas.[4]

None of the disposal regulations described above apply where: 1) the disposal was necessary for the purpose of securing the safety of the ship or those onboard or saving life at sea; 2) the garbage escaped as the result of damage to the ship (provided all reasonable precautions were taken before and after the incident to prevent or minimize the escape); or 3) disposal was the result of an accidental loss of synthetic fishing nets (provided that all reasonable precautions were taken to prevent the loss) (Annex V, Regulation 6).

[4] For the purposes of Annex V, the special areas are the Mediterranean Sea area; the Baltic Sea area; the Black Sea area; the Red Sea area; the "Gulfs" area; the North Sea area: the Antarctic area; and the wider Caribbean region, including the Gulf of Mexico and the Caribbean Sea (although the rules have not entered into force with respect to all of these areas yet). For the specific requirements, see Annex V, Regulation 5.

The Parties to the Annex must ensure that ports and terminals have adequate facilities for the reception of garbage (Annex V, Regulation 7).

Each ship 12 meters or more in length must display placards that notify those onboard of the various disposal requirements. The placards must be written in the working language of the ship's personnel and, for ships engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention, shall also be in English, French, or Spanish (Annex V, Regulation 9(1)).

Every ship 400 gt and above and every ship certified to carry 15 or more people must carry a garbage management plan for the crew to follow. The plan must describe procedures for collecting, storing, processing, and disposing of garbage, including the use of equipment onboard. It must be written in the working language of the crew and identify the person in charge of carrying out the plan (Annex V, Regulation 9(2)). Ships of this size or certification that travel to ports or offshore terminals under the jurisdiction of other countries party to MARPOL, and every fixed and floating platform engaged in exploration and exploitation of the seabed, must also carry a Garbage Record Book onboard. The Garbage Record Book must include a record of every discharge operation or incineration, including the date and time of the discharge, the position of the ship, a description of the garbage, and the estimated amount discharged or incinerated. Any escapes or accidental losses must also be noted in the Garbage Record Book, along with a description of the circumstances of the loss (Annex V, Regulation 9(3)).

6.1.1.6 MARPOL Annex VI: Prevention of Air Pollution from Ships

Annex VI of MARPOL regulates air emissions from ships. Air emissions are outside the scope of this study, therefore, the summary of this Annex has been omitted.

6.1.1.7 MARPOL Summary

The earlier chapters of this study describe a number of pollutants detected by EPA in incidental vessel discharges that have the potential to pose a risk to human health or the environment. Of these pollutants of concern, it appears that oil and grease are the only pollutants found in incidental discharges that would be directly regulated by MARPOL, through Annex I. However, MARPOL may indirectly regulate other pollutants found in incidental discharges, such as metals, to the extent that they are found in any of the noxious liquid substances categorized under Annex II or garbage under Annex V and prevented from entering incidental discharge streams . In all cases, the requirements of MARPOL only apply to those vessels that are large enough to meet the size thresholds established in the treaty.

6.1.2 The International Convention on the Control of Harmful Anti-Fouling Systems on Ships

The International Convention on the Control of Harmful Anti-Fouling Systems on Ships was adopted by the IMO on October 5, 2001, and entered into force on September 17, 2008. The

U.S. Senate gave its consent to ratify the Convention on September 26, 2008; however, the United States will not deposit its instrument of ratification with the IMO until Congress adopts the necessary implementing legislation. Implementing legislation was introduced on September, 24, 2009. See Clean Hull Act of 2009, H.R. 3618, 111th Congress (1st Session 2009). If passed, this new legislation would replace the Organotin Anti-Fouling Paint Control Act of 1988 (OAPC), discussed below.

Parties to the Convention are required to take steps to reduce or eliminate adverse effects on the marine environment and human health caused by antifouling systems. Under the Convention, an "antifouling system" is any coating, paint, surface treatment, surface, or device used on a ship to control or prevent the attachment of unwanted organisms (Article 2(2)).

The Convention applies to any ship entitled to fly the flag of a Party; ships not entitled to fly the flag of a Party but that operate under the authority of that Party; and ships that enter a port, shipyard, or offshore terminal of a Party but do not fall under one of the earlier categories. Warships, naval auxiliary, or other ships owned or operated by a Party are exempted when used only for noncommercial government service. However, each Party must ensure that these exempted ships operate in a manner consistent with the Convention, where reasonable and practicable. Parties must also ensure that favorable treatment is not given to ships registered to countries that are not Parties to the Convention (Article 3).

Under the Convention, Parties must prohibit and/or restrict the application, re-application, installation, or use of environmentally harmful antifouling systems on ships registered under them, as well as on ships that enter its ports, shipyards, or offshore terminals (Article 4). As of January 1, 2008, ships are prohibited from having any organotin compounds on their hulls that act as biocides, unless the compounds have been sealed so that no leaching occurs (Annex I).

Parties to the Convention must take measures to require that wastes generated by the application or removal of an antifouling system are collected, handled, treated, and disposed of in a safe and environmentally sound manner (Article 5). In the United States., this provision would be implemented through the Solid Waste Disposal Act, 33 U.S.C. §§ 6901–6992, and the Clean Water Act, 33 U.S.C. §§ 1251–1387.

Any Party can propose an amendment to the Convention, including proposals to prohibit antifouling systems other than organotins. The process for proposing an amendment, and subsequently considering and adopting it, is described in Articles 6, 7, and 16.

Parties must take appropriate measures to promote and facilitate scientific and technical research on the effects of antifouling systems, as well as monitoring these effects. The research should include observation, measurement, sampling, evaluation, and analysis of the effects of

antifouling systems. Parties should share the information learned in these studies with other Parties to the Convention when requested (Article 8).

The Convention requires Parties to report to the IMO a list of all surveyors and organizations that are authorized to act on behalf of that Party in administration of matters relating to the control of anti-fouling systems. Parties must also annually report information regarding any antifouling systems that were approved, restricted, or prohibited under domestic law. For antifouling systems that were approved, registered, or licensed by a Party, that Party must provide to other Parties upon request relevant information on which that decision was made (alternatively, a Party could require the manufacturers of approved, registered, or licensed antifouling systems to provide this information) (Article 9).

A Party must ensure that ships entitled to fly under its flag or operate under its authority are surveyed and certified in accordance with the requirements of Annex 4 (Article 10). Annex 4 requires that ships of 400 gt and above that are engaged in international voyages be surveyed before the ship is put into service and whenever the antifouling systems are changed or replaced. The survey is intended to ensure the ship's antifouling system fully complies with the Convention (Annex 4, Regulation 1). At the conclusion of the survey, the ship will be issued an International Anti-Fouling System Certificate (Annex 4, Regulation 2). Ships less than 400 gt and 24 meters or more in length and that are engaged in international voyages must carry a Declaration, signed by the owner or his agent, declaring that the antifouling system used on the ship complies with the requirements of the Convention (Annex 4, Regulation 5).

Ships to which the Convention applies may be inspected in any port, shipyard, or offshore terminal of a Party. Unless there are clear grounds for believing that a ship is in violation of the Convention, the inspection is limited to: 1) verifying that, where required, there is a valid International Anti-Fouling System Certificate or Declaration onboard; and/or 2) a brief sampling of the ship's antifouling system, taking into account IMO guidelines. If there are clear grounds to believe that a ship is in violation of the Convention, a more thorough inspection is permitted, taking into account IMO guidelines. Additionally, a Party may take steps to warn, detain, dismiss, or exclude from its ports any ship that is found to be in violation but must immediately notify the country under whose flag the ship is registered (Article 11).

Parties must, through domestic laws, prohibit violations of the Convention and establish sanctions severe enough to discourage violations.[5] If a violation occurs within the jurisdiction of a Party, that Party must either cause proceedings to be taken in accordance with its domestic laws or furnish any information or evidence it has showing a violation has occurred to the government under whose authority the ship concerned is operating. If that government finds the

[5] For vessels larger than 79 feet, EPA has prohibited the discharge of tributyltin and other organotins under the Agency's Vessel General Permit (see Section 6.2.3).

evidence sufficient to enable proceedings to be brought, it must do so as soon as possible, in accordance with its laws, and notify both the IMO and the reporting Party that it has done so. If the government does not take action within one year after receiving the information, it must so inform the Party that reported the alleged violation (Article 12).

Parties must make every effort to avoid unduly detaining or delaying ships while conducting inspections or investigating potential violations. If a ship is unduly detained or delayed, it is entitled to compensation for any loss or damage suffered (Article 13).

The Convention does not prejudice the rights or obligations of any country under customary international law as reflected in the United Nations Convention on the Law of the Sea (Article 15).

Presently, the International Convention on the Control of Harmful Anti-Fouling Systems on Ships only regulates the use of organotin tributyling (TBT) in antifouling coatings. Effective January 2003, new applications of antifouling coatings containing TBT were prohibited by the treaty, and as of January 2008, all vessels with an existing TBT antifouling coating on their hulls are required to apply a protective coating over the TBT to prevent leaching.

Since the use of TBT has been prohibited, vessel operators have turned to anti-fouling systems that contain other potentially harmful pollutants, such as copper. Copper is not currently regulated under the International Convention on the Control of Harmful Anti-Fouling Systems on Ships; however, the treaty provides a system whereby Parties may propose that a specific anti-fouling system be regulated under the treaty. Through this mechanism, copper may one day be regulated under the treaty if parties to the treaty determine it is necessary.

6.1.3 International Convention for the Safety of Life at Sea (SOLAS)

The International Convention for the Safety of Life at Sea (SOLAS) is considered the most important international treaty concerning the safety of merchant ships. The first version was adopted in 1914 in response to the *Titantic* disaster and has been amended many times since then, most recently in 1974. The primary objective of SOLAS is to establish minimum standards for the construction, equipment, and operation of ships, in consideration of their safety. The responsibility for ensuring compliance rests with the individual flag states, although contracting governments do have limited authority to inspect ships of other contracting governments if there are clear grounds for believing the SOLAS requirements are not being met. For additional information on SOLAS, please see the IMO's discussion of the Convention at www.imo.org

While SOLAS does not directly regulate vessel discharges, it does provide environmental benefits through its regulations and through adoption of the International Safety Management (ISM) Code, all of which assist in preventing spills and other accidental discharges. The ISM Code provides an international standard for safely managing and operating ships and for

preventing pollution. In addition to other requirements, under the Code, companies or individuals responsible for operating vessels must establish a safety and environmental-protection policy and ensure that the policy is implemented and maintained at all levels of the organization, both ship-based and shore-based. These operators must also create a safety management system, which is a structured and documented system that enables company personnel to effectively implement the company's safety and environmental protection policy (ISM Code, Part A).

SOLAS could be used to address any of the pollutants of potential concern identified by EPA though this study, to the extent that the individual policies adopted by vessel operators address specific pollutants found in incidental discharges.

6.1.4 Boundary Waters Treaty

The Boundary Waters Treaty is an agreement the United States and Canada entered into in 1919 to govern the management of boundary waters. Among other things, the treaty provides that "boundary waters" – defined as "waters from main shore to main shore of the lakes and rivers and connecting waterways, or the portion thereof, along with the international boundary" between the U.S. and Canada - "and waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other" (Preliminary Article and Article IV.2).

The Treaty established the International Joint Commission (IJC), composed of three commissioners from each country, to assist in the resolution of boundary water issues (Article III). Since 1919, the IJC has addressed a variety of water-use and water-quality issues. The Treaty is a foundational backdrop for other bilateral agreements between the United States and Canada, such as the Great Lakes Water Quality Agreement.

As a foundational agreement, the Boundary Waters Treaty does not directly regulate specific pollutants, which means it does not directly regulate specific pollutants in incidental discharges.

6.1.5 Great Lakes Water Quality Agreement

The Great Lakes Water Quality Agreement, first signed in 1972, and revised in 1978 and 1987, expresses the commitment of both the United States and Canada to restore and maintain the chemical, physical, and biological integrity of the waters of Great Lakes Basin Ecosystem. It also reaffirms the rights and obligations of both countries under the Boundary Waters Treaty. The Great Lakes Water Quality Agreement is primarily implemented through Section 118 of the Clean Water Act.

One of the stated policies in the Agreement is the prohibition of discharges of toxic substances in toxic amounts and the virtual elimination of discharges containing any or all persistent toxic substances (Article II). The general objectives of the agreement are to ensure that the waters in the Great Lakes System are free from pollutants resulting from human activity,

such as substances that will settle to form sludge deposits or harm aquatic life or waterfowl; floating materials (e.g., debris, oil, scum, other immiscible substances); materials or heat that produce color, odor, taste, or other conditions that will interfere with beneficial uses or are toxic or harmful to human health or the environment; and nutrients that create growths of aquatic life that interfere with beneficial uses (Article III).

Vessel discharges are directly addressed through Annexes 4 (discharges of oil and hazardous polluting substances from vessels), 5 (discharges of vessel wastes), and 6 (review of pollution from shipping sources) of the Agreement. In all of these annexes, "vessel" is defined as "any ship, barge or other floating craft, whether or not self-propelled" (Annex 4(1)(e), Annex 5(1)(e)).

Annex 4 addresses discharges of oil and hazardous polluting substances from vessels. Within this annex, the term "discharge" includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, or dumping; it does not include unavoidable direct discharges of oil from a properly functioning vessel engine (Annex 4(1)(a)). The annex requires that each country adopt regulations to prevent discharges of harmful quantities of oil and hazardous substances from vessels into the Great Lakes System. Specifically:

- Discharges of harmful quantities of oil or hazardous substances, including those contained in ballast water, must be prohibited and made subject to appropriate penalties.
- As soon as any person in charge, including a vessel owner/operator, becomes aware of a discharge, or probable discharge, of harmful quantities of oil or hazardous substances, he/she must immediately notify the appropriate agency in the jurisdiction where the discharge occurred. Failure to give this notice must be subject to appropriate penalties (Annex 4(2)).

A "harmful quantity of oil" is defined as "any quantity of oil that, if discharged from a ship that is stationary into clear calm water on a clear day, would produce a film or a sheen upon, or discoloration of, the surface of the water or adjoining shoreline, or would cause a sludge or emission to be deposited beneath the surface of the water or upon the adjoining shoreline" (Annex 4(1)).

Annex 4 also requires both countries to adopt regulations for the design, construction, and operation of vessels, as well as programs to ensure that merchant vessel personnel are trained in the use, handling, and stowage of oil and abatement of oil pollution, thereby preventing the discharge of harmful quantities of oil or hazardous polluting substances. For oil, the regulations must ensure that each vessel has a suitable means for containing spills of oil and oily wastes and retaining those wastes onboard for off-load at a reception facility. Oil loading, unloading, and bunkering systems must be suitably designed to minimize the possibility of failure (Annex 4(3)).

For hazardous polluting substances, each country must adopt programs and measures to prevent discharges of harmful quantities of hazardous polluting substances carried as cargo. Such regulations include ensuring that all vessels have a suitable means of containing onboard spills caused by loading or unloading operations and have the capability of retaining onboard wastes accumulated during vessel operation for off-loading to a reception facility. The regulations must also provide for the identification of vessels carrying cargos of hazardous substances and for the identification in vessel manifests of all the hazardous substances those vessels are carrying (Annex 4(4)). A list of hazardous polluting substances and potential hazardous polluting substances can be found in Appendices 1 and 2 to Annex 10.

Additionally, under Annex 4, both countries must ensure that there are adequate facilities for the reception, treatment, and subsequent disposal of oil and hazardous polluting substances from all vessels (Annex 4(5)).

Annex 5 addresses discharges of vessel wastes, including garbage, sewage, and waste water. "Garbage" is defined as "all kinds of victual, domestic, and operational wastes, excluding fresh fish and parts thereof generated during the normal operation of the ship and liable to be disposed of continually or periodically." "Wastewater" encompasses any water combined with other substances, "including ballast water and water used for washing cargo hold, but excluding water in combination with oil, hazardous polluting substances, or sewage" (Annex 5(1)).

The agreement requires both countries to adopt regulations that will:

- Prohibit the discharge of garbage from vessels and make such discharges subject to appropriate penalties.
- Prohibit the discharge of wastewater in harmful amounts or concentrations and make such discharges subject to appropriate penalties.
- Ensure that each vessel operating in boundary waters, and that has toilet facilities, is equipped with a device to contain, incinerate, or treat sewage to an adequate degree. Appropriate penalties must be provided for failure to comply (Annex 5(2)).

Within the Great Lakes System, certain critical use areas may be designated where the discharge of wastewater or sewage will be limited or prohibited (Annex 5(3)). Both countries must take measures to ensure there are adequate facilities for the reception, treatment, and subsequent disposal of garbage, wastewater, and sewage from vessels (Annex 5(5)).

Annex 6 calls on both the Canadian and U.S. Coast Guards to review "services, systems, programs, recommendations, standards, and regulations relating to shipping activities for the purpose of maintaining or improving Great Lakes water quality" (Annex 6(1)). The two Coast Guards must meet at least annually to consult on implementing the Agreement (Annex 6(2)).

Of the pollutants of potential concern identified by EPA earlier in this study, oil and grease are the pollutants most directly addressed under the Great Lakes Water Quality

Agreement. The Agreement also addresses wastewater, which may include some incidental discharges. Under the Clean Water Act, the Great Lakes National Program Office is tasked with developing and implementing specific action plans to carry out the responsibilities of the U.S. under the Great Lakes Water Quality Agreement. (33 U.S.C. § 1268(c)(1)(A)). EPA might be able to address incidental discharges through these action plans to the extent those discharges are "wastewater" as that term is defined in the Agreement.

Annex I lists a number of chemicals and pollutants that are specific objectives of the agreement, including metals such as arsenic, cadmium, chromium, copper, and nickel, among others. Annex I also provides standards for the concentration of total dissolved solids, hydrogen sulfide, phosphorus, and other pollutants in the Great Lakes.

6.1.6 St. Lawrence Seaway Regulations

In 1954, the United States statutorily created the Saint Lawrence Seaway Development Corporation to construct, operate, and maintain the section of the St. Lawrence Seaway between the Port of Montreal and Lake Erie that falls within the territorial limits of the United States (33 U.S.C. § 981). The mission of the wholly government-owned corporation, which is under the direction and supervision of the Department of Transportation, is to improve the operation and maintenance of a deep-draft waterway in cooperation with a Canadian counterpart.[6]

The Department of Transportation's regulations governing the Seaway can be found at 33 CFR Part 401. The regulations define the St. Lawrence Seaway as the "the deep waterway between the Port of Montreal and Lake Erie and includ[ing] all locks, canals and connecting and contiguous waters that are part of the deep waterway, and all other canals and works, wherever located, the management, administration and control of which have been entrusted to the Corporation or the Manager" (33 CFR § 401.2(j)).

While the regulations are primarily geared toward maintaining and using the Seaway, they do include provisions designed to lessen the impacts of vessel pollution to the Great Lakes, including a provision that prohibits the discharge of garbage, ashes, ordure, litter, or other materials into the Seaway (33 CFR § 401.59(d)). The regulations also prohibit any vessel from emitting sparks or excessive smoke, or from blowing boiler tubes (33 CFR § 401.59(a)). In addition, the regulations contain a blanket requirement that no discharge is allowed that is not in

[6] In addition to the authorities under its enabling statute, 33 U.S.C. § 981 et seq., the St. Lawrence Seaway Development Corporation has authority to "operate, maintain, improve or expand vessel traffic services consisting of measures for controlling or supervising vessel traffic or for protecting navigation and the marine environment" pursuant to the Ports and Waterways Safety Act of 1978, at 33 U.S.C. 1223–1225, 1229. The U.S. Coast Guard has this authority in all other navigable waters of the United States, except for the area under the jurisdiction of the Corporation.

conformity with all applicable U.S. and Canadian regulations, except within certain areas of the Welland Canal, where no discharges are allowed at all (33 CFR § 401.59(b)).

Although ballast water is not a focus of this study, it should be noted that the St. Lawrence Seawater Regulations also include provisions relating to ballast water, including a recently passed regulation requiring all oceangoing vessels entering the Seaway to conduct saltwater flushing (Seaway Regulations and Rules: Periodic Update, Various Categories, 73 FR 9950 (February 25, 2008)).

The St. Lawrence Seaway Regulations only regulate specific pollutants to the extent they are found in ballast water.

6.2 FEDERAL LAWS

6.2.1 Act to Prevent Pollution from Ships (APPS)

The Act to Prevent Pollution from Ships (APPS) is the United States law implementing Annexes I, II, V, and VI of MARPOL (Annex III is implemented through the Hazardous Materials Transportation Act). The U.S. Coast Guard has the primary authority to implement and enforce the majority of provisions within APPS. EPA was also given specific authorities in certain sections of APPS, the most extensive of which relate to MARPOL Annex VI. The Coast Guard's implementing regulations, found at 33 CFR Part 151, are addressed below.

APPS applies to U.S.-registered ships regardless of where in the world they are operating. With respect to the implementation of Annexes I and II, APPS additionally applies to all foreign-flagged ships operating in navigable U.S. waters. The implementation of Annex V applies to all U.S.-registered ships, as well as all foreign-flagged ships in navigable U.S. waters or the exclusive economic zone of the United States (33 U.S.C. § 1902(a)). Warship, naval auxiliary, and ships owned by the United States that are engaged in noncommercial service are exempted from the requirements of APPS, except for certain provisions implementing Annex V.[7] Ships that are specifically exempted from MARPOL, or the Antarctic Protocol, are also exempted from the requirements of APPS.

In addition to implementing the requirements of MARPOL, described above, APPS establishes a number of administrative requirements regarding inspections, penalties for violations, procedures for legal actions, and public education requirements (33 U.S.C. §§ 1907, 1908, 1910, and 1915).

[7] However, all surface ships and submersibles owned or operated by the Department of the Navy are required to comply with the special area requirements of Annex V. Unique vessels that cannot fully comply with the requirements of Annex V are permitted to discharge some types of garbage without regard to the requirements of Annex V. See 33 U.S.C. § 1902(d)(2).

6.2.1.1 U.S. Coast Guard Implementing Regulations

The U.S. Coast Guard implements APPS through its regulations at 33 CFR Part 151. These regulations apply to every ship required to comply with Annex I, II, or V of MARPOL (33 CFR § 151.03).[8]

6.2.1.1.1 Annex I Implementation—Prevention of Oil Pollution

The requirements of Annex I of MARPOL, pertaining to the prevention of oil pollution from ships, are implemented by the U.S. Coast Guard though its regulations at 33 CFR §§ 151.09–151.29. This section of the regulations, with the exception of the oil pollution emergency plan requirements,[9] is applicable to ships that are operated under the authority of the United States and that engage in international voyages, are certificated for ocean service, are certificated for coastwise service beyond three nautical miles from land, or are operated at any time seaward of the outmost boundary of the territorial seas of the United States. The regulations also apply to ships operated under the authority of another country while in the navigable waters of the United States or while at a port or terminal under U.S. jurisdiction (33 CFR § 151.09(a)). The regulations do not apply to warships, naval auxiliary, or other ships owned or operated by a country when engaged in noncommercial service; Canadian or U.S. ships operating exclusively on the Great Lakes or their connecting tributary waters or on any internal waters of the United States or Canada; or any ships specifically excluded by MARPOL.

The Coast Guard's requirements for oil discharges from ships other than oil tankers[10] are very similar to Annex I's requirements. The Coast Guard's regulations apply to the same size ships regulated under MARPOL; however, the Coast Guard also distinguishes vessels depending on how far off shore they are operating:

- When more than 12 nautical miles from the nearest land, any discharge of oil or oily mixtures must meet the following conditions:
  - The discharge must not originate from cargo pump room bilges.
  - The discharge must not be mixed with oil cargo residues.
  - The ship must not be within a special area.

[8] On December 18, 2009, EPA finalized regulations to implement the air emission requirements of APPS (which themselves implement MARPOL Annex VI). The final rule is not scheduled to appear in the Federal Register until the end of February 2010. To see a pre-publication copy of the rule, please visit EPA's website at http://www.epa.gov/OMS/oceanvessels.htm#regs.

[9] The shipboard oil pollution emergency plan requirements at 33 CFR §§ 151.26-151.29 apply to all U.S.- and foreign-operated oil tankers of 150 gt and above and all other ships of 400 gt and above. The same exceptions described in the text apply, with the additional exception that barges or other ships constructed or operated in such a manner that no oil in any form can be carried aboard are also exempted from the requirements (33 CFR § 151.09(c)–(d)).

[10] The requirements for oil tankers are found in a separate section of the regulations (33 CFR Part 157).

  - The ship must be proceeding *en route*.[11]
  - The oil content of the effluent without dilution must be less than 15 ppm.
  - The ship must be operating oily-water separating equipment, a bilge monitor, a bilge alarm, or a combination of the three (33 CFR § 151.10(a)).

- When within 12 nautical miles from the nearest land, any discharge of oil or oily mixtures must meet all of the above requirements, with the additional requirement that the oily-water separating equipment be equipped with a U.S. government- or IMO-approved 15 ppm bilge alarm (33 CFR § 151.10(b)).

Ships of 400 gt or above and oil tankers are prohibited from discharging oil or oily mixtures while operating in a special area, as defined in 33 CFR § 151.13(a). However, if the discharge is of processed bilgewater from machinery space bilges, ships of this size may discharge in special areas if all of the above requirements are met and the ship is equipped with an automatic shut-off device that will engage when the oil content of the effluent exceeds 15 ppm (33 CFR § 151.13). Ships of 400 gt or less, other than oil tankers, may discharge in special areas only if the undiluted oil content of their effluent is 15 ppm or less. If a ship cannot meet the discharge requirements, the oily mixtures must be retained onboard or discharged to a reception facility (33 CFR § 151.10(f)).

As with MARPOL, these discharge requirements do not apply where the discharge is necessary to secure the safety of the ship or save life at sea, or if the discharge results from damage to the ship (provided reasonable precautions were taken after the occurrence of the damage or discovery of the discharge to prevent or minimize the discharge, and the owner or master of the ship did not act with intent to cause damage, or recklessly and with knowledge that damage would probably result) (33 CFR § 151.11).

The regulations also implement the reporting, survey, certification, inspection and enforcement, recordkeeping, and planning requirements of Annex I, described above (33 U.S.C. §§ 151.15, 151.17, 151.19, 151.23, 151.25–151.28).

6.2.1.1.2 Annex II Implementation—Prevention of Pollution from Noxious Liquid Substances

The requirements of Annex II of MARPOL, pertaining to the discharges of noxious liquid substances from ships, are implemented by the U.S. Coast Guard primarily through its regulations at 33 CFR §§ 151.30–151.49, although some requirements are also at 46 CFR Parts

[11] A ship not traveling *en route* may discharge oil and oily mixtures, provided it is equipped with a U.S. government-or IMO-approved 15 ppm bilge alarm and complies with other requirements of 33 CFR § 151.10. 33 CFR § 151.10(d).

151 and 153.[12] Which regulations are applicable to a particular vessel depends on the specific substance(s) the ship is carrying (33 CFR § 151.31).

The primary regulations at 33 CFR §§ 151.30–151.49 are applicable to the same ships subject to the implementing regulations for Annex I (i.e., all ships operated under the authority of the United States that are engaged in international voyages, certificated for ocean service, certificated for coastwise service beyond 3 nautical miles from land, or operated seaward of the outermost boundary of the territorial sea of the United States). These requirements also apply to ships operated under the authority of another country while in U.S. waters or while at a port or terminal under U.S. jurisdiction (33 CFR § 151.30(a)). The same exemptions that apply to Annex I's implementing regulations also apply here, with an added exemption for tank barges whose certificates are endorsed by the Coast Guard for a limited short protected coastwise route if the barge is constructed and certificated primarily for service on inland routes (33 CFR § 151.30(b)).

U.S. oceangoing ships are prohibited from carrying certain Category C and D NLS, identified at 33 CFR §§ 151.47–151.49, in cargo tanks unless those tanks have been endorsed through a Certificate of Inspection to carry those substances. Foreign ships and ships traveling to foreign destinations must meet additional certification requirements (33 CFR §§ 151.33–151.35). Ships carrying Category C or D oil-like substances must also meet additional operating requirements, such as having monitoring and control equipment installed and meeting damage stability requirements (33 CFR § 151.37).

To discharge NLS residue to the sea, the ship must be at least 12 nautical miles from the nearest land. Additional depth restrictions and maximum rates of discharge also apply for particular types of residue (46 CFR § 153.1128). Discharges of NLS residue from slop tanks are also subject to additional restrictions (46 CFR § 153.1126). If a ship cannot meet these discharge requirements, the NLS residue must be retained onboard or discharged to a reception facility. If the NLS cargo or residue is being transferred at a port or terminal of the United States, the operator of the ship must notify the port or terminal at least 24 hours in advance of the name of the ship and the name, category, and volume of the NLS cargo that will be unloaded (33 CFR § 151.43).

6.2.1.1.3 Annex V Implementation – Prevention of Garbage Pollution from Ships

The requirements of Annex V of MARPOL, pertaining to garbage pollution from ships, are implemented by the Coast Guard through regulations found at 33 CFR §§ 151.51–151.77. These regulations apply to all ships of U.S. registry or nationality, all ships operated under the authority of the United States (including recreational and uninspected vessels), and all ships

[12] Coast Guard regulations currently implement a prior version of Annex II. Parts 151 and 153 are currently under revision to implement revised Annex II, dated November 1, 2004. Navigation and Vessel Inspection Circular No. 03-06 contains guidance on the Coast Guard's implementation of revised Annex II.

operating in the navigable waters or the Exclusive Economic Zone of the United States. They do not apply to warships, naval auxiliary, other ships owned or operated by the United States when engaged in noncommercial service, or any ship specifically excluded by MARPOL (33 CFR § 151.51).

The regulations prohibit the discharge of garbage into the navigable waters of the United States by any person onboard any ship unless the requirements of MARPOL are followed. Commercial ships are permitted to discharge bulk dry cargo residues into the Great Lakes provided certain requirements are met (33 CFR § 151.66). As with Annex V, the discharge of plastic or garbage mixed with plastic into the sea or navigable waters of the United States is flatly prohibited (33 CFR § 151.67).

The Coast Guard's regulations also implement the recordkeeping, waste management plan, placard, inspection for compliance and enforcement, and reporting requirements of MARPOL (33 CFR §§ 151.55, 151.57, 151.59, 151.61, and 151.65).

As with MARPOL, oil and grease are pollutants of potential concern found in incidental discharges that would be directly regulated by APPS and the relevant implementing regulations. Like MARPOL, APPS and its relevant implementing regulations may indirectly regulate other pollutants found in incidental vessel discharges, such as metals, to the extent that they are found in any of the noxious liquid substances or garbage categorized under Annex II and Annex V or the Coast Guard's implementing regulations and are prevented from entering incidental discharge streams. As with MARPOL, APPS and the relevant implementing regulations only apply to those vessels that meet the size thresholds established in MARPOL.

6.2.2 Clean Water Act (CWA) §§ 311, 312/Oil Pollution Control Act

6.2.2.1 CWA § 311, Oil and Hazardous Substances

Clean Water Act (CWA) § 311 (Oil and Hazardous Substances Liability) states that it is U.S. policy that there should be no discharges of oil or hazardous substances into waters of the U.S., adjoining shorelines, into or upon the waters of the contiguous zone, and in certain other specified instances, except where permitted under MARPOL/APPS or where in quantities the president has, by regulation, determined not to be harmful (33 U.S.C. §§ 1321(b)(1)–(b)(3)). The term "discharge" excludes discharges in compliance with a National Pollutant Discharge Elimination System (NPDES) permit under CWA § 402; discharges anticipated in the NPDES permitting process; and discharges incidental to mechanical removal authorized by the president to remove or mitigate a discharge (33 U.S.C. § 1321(a)(2)). A list of hazardous substances EPA has designated under the CWA can be found at 40 CFR § 116.1.[13]

[13] EPA's regulations implementing § 311 are located at 40 CFR § 110–117.

Any person in charge of a vessel or onshore facility must immediately notify the appropriate federal agency upon discovering any harmful discharge of oil or hazardous substance from the vessel or facility under their control. The federal agency will then notify appropriate state agencies. Any person in charge of a vessel or onshore facility who discharges in violation of the CWA and fails to provide immediate notification to the appropriate federal agency shall, upon conviction, be fined or imprisoned, or both (33 U.S.C. § 1321 (b)(5)). Owners or operators must respond immediately to any discharge or threat of discharge of oil (33 U.S.C. § 1321 (c)(5)).

This section of the CWA also requires the president to prepare and publish a National Contingency Plan (NCP) for the removal of oil and hazardous substances (33 U.S.C. § 1321(d)(1)). The NCP must include:

- an assignment of duties and responsibilities among federal departments and agencies;
- identification, procurement, maintenance, and storage of equipment and supplies;
- establishment of Coast Guard strike teams; a system of surveillance and notice;
- establishment of a national center to provide coordination and direction for operations in carrying out the plan;
- procedures and techniques to be employed in identifying, containing, dispersing, and removing oil and hazardous substances;
- a schedule of which chemicals and dispersants may be used in which waters to mitigate any spills;
- a system for states affected by a discharge to act to remove the discharge; establishment of criteria and procedures to ensure immediate and effective federal identification of and response to discharges or threats of discharges that will endanger public health;
- establishment of procedures and standards for removing a worst case discharge of oil;
- designation of federal officials to act as on-scene coordinators; establishment of procedures for the coordination of activities; and a fish and wildlife response plan (33 U.S.C. § 1321(d)(2)). The full text of the NCP can be found at 40 CFR Part 300.

6.2.2.2 Oil Pollution Control Act

The Oil Pollution Control Act of 1990 (OPA), 33 U.S.C. §§ 2701–2762, was passed as an almost immediate response to the *Exxon Valdez* tanker accident, which caused more than 11 million gallons of crude oil to spill into Alaska's Price William Sound. The OPA expanded the

federal government's authority to respond to oil spills, provided the money and resources necessary for the government to exercise its authority, and required revisions to the National Oil and Hazardous Substances Pollution Contingency Plan to broaden coordination and preparedness planning requirements. The OPA also increased penalties for regulatory noncompliance, broadened the response and enforcement authorities of the federal government, and preserved state authority to establish laws governing oil spill prevention and response. Additionally, the OPA created the Oil Spill Liability Trust Fund to help fund some of the cleanup costs and repair damage resulting from oil discharges (discussion on the exact requirements of the Fund has been omitted). The requirements of the OPA apply to all vessels, onshore facilities, offshore facilities, deepwater ports, and pipelines.

The OPA is implemented by both EPA and the U.S. Coast Guard. EPA regulations on oil spill prevention and response are found in 40 CFR Parts 112 and 300. U.S. Coast Guard regulations regarding oil spill prevention and response plans are located at 33 CFR §§ 155.1010–155.2230 and 49 CFR §§ 130.1–130.33.

6.2.2.3 CWA § 312, Marine Sanitation Devices

The CWA also requires EPA, in consultation with the Coast Guard, to promulgate federal performance standards for marine sanitation devices. These standards must be designed to prevent the discharge of untreated or inadequately treated sewage into or upon the navigable waters from vessels (33 U.S.C. § 1322(b)). Both the EPA and Coast Guard have promulgated regulations implementing this provision. The Coast Guard's regulations can be found at 33 CFR Part 159, while EPA's can be found at 40 CFR Part 140.

Because discharges of sewage were exempted by Congress from this study, as such discharges are not incidental to the normal operation of a vessel, an in-depth discussion of this provision and its implementing regulations has been omitted.

6.2.3 Organotin Antifouling Paint Control Act

The Organotin Antifouling Paint Control Act of 1988, 33 U.S.C. §§ 2401–2410, prohibits the use of antifouling paints containing organotin such as tributyltin (TBT) on vessels that are 25 meters or less in length, unless the vessel hull is aluminum or the paint is applied to an outboard motor (33 U.S.C. § 2403(b)). The term vessel is defined to include "every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water" (33 U.S.C. § 2402(11)).

The Act also prohibits the sale, purchase, and application of antifouling paint containing organotin unless the paint has been approved by EPA as being a qualified antifouling paint. Under the Act, "antifouling paint" includes any "coating, paint, or treatment that is applied to a vessel to control fresh water or marine fouling organisms" (33 U.S.C. § 2402(2)). A qualified

antifouling paint is one that has a release rate of not more than 4.0 micrograms per square centimeter per day (33 U.S.C. § 2402(6)).

As noted in Section 6.1.2, in September 2008 the United States Senate gave its advice and consented to ratification of the International Convention on the Control of Harmful Anti-Fouling Systems on Ships. However, the United States will not deposit its instrument of ratification with the IMO until Congress adopts the necessary implementing legislation. Implementing legislation is pending. See Clean Hull Act of 2009, H.R. 3618, 111th Congress (1st Session 2009). EPA has already canceled all U.S. FIFRA registrations for TBT antifouling paints. The last cancellation became effective December 31, 2005. Any current use of these products is dwindling because there are very limited or no stocks of the products remaining on the market. Also, the International Convention has made it difficult and undesirable for vessel owners/operators to use TBT antifouling paints.

Additionally, as discussed above, EPA has prohibited the use of TBT or other organotins as biocides on any vessel covered by the Vessel General Permit.

The Organotin Antifouling Paint Control Act only regulates the use of organotin, it does not extend to other pollutants of potential risk that may be present in antifouling hull coatings. Although the Act banned new applications of antifouling hull coatings containing organotin, organotin may still be present in residual quantities on older vessels.

6.2.4 National Invasive Species Act

The primary purpose of the National Invasive Species Act of 1996 (NISA), which reauthorized and amended the Non-Indigenous Aquatic Nuisance Prevention and Control Act of 1990, is to prevent, monitor, and control the unintentional introduction and dispersal of nonindigenous species into waters of the United States through ballast water and other pathways (16 U.S.C. § 4701(b)). The voluntary guidelines and mandatory regulations required by NISA apply, with only few exceptions, to all vessels equipped with ballast water tanks that operate in waters of the United States.[14]

Because ballast water was specifically exempted from this study by P.L. 110–299, an in-depth discussion of the ballast water requirements of NISA has been omitted.[15] In addition to ballast water guidelines, however, NISA requires the development of guidelines to prevent the spread of nonindigenous species from other vessel operations, such as hull fouling.

[14] The Act requires that the Coast Guard and the Department of Defense implement ballast water management programs for seagoing vessels under their control (16 U.S.C. § 4713).
[15] For the ballast water requirements, see the text of the Act at 16 U.S.C. §§ 4701–4751 as well as the Coast Guard's regulations at 33 CFR Part 151, subparts C and D.

For example, the Coast Guard's regulations require that all vessels equipped with ballast water tanks that operate in the waters of the U.S. have fouling organisms removed from their hulls, piping, and tanks on a regular basis, and that any removed substances be disposed of in accordance with local, state, and other federal regulations (33 CFR § 151.2035(a)(6)).

The National Invasive Species Act does not directly regulate any of the pollutants of potential concern discussed in this study; the Act is focused solely on preventing the spread of nonindigenous species.

6.2.5 Hazardous Materials Transportation Act

The Hazardous Materials Transportation Act, 49 U.S.C. §§ 5101 *et seq.*, regulates the transportation of hazardous material in interstate, intrastate, and foreign commerce. The Act, which implements MARPOL Annex III, includes registration, reporting, and recordkeeping requirements and applies to any vessel involved in transporting hazardous material in commerce.

The Act, and its implementing Hazardous Materials Regulations (HMR), 49 C.F.R. parts 171-180, apply to anyone who transports hazardous material in commerce, causes hazardous material to be transported in commerce, is involved in any way in the design and manufacture of containers used to transport hazardous material, prepares or accepts hazardous material for transport in commerce, is responsible for the safety of transporting hazardous material in commerce, or certifies compliance with any requirement under the Act (49 U.S.C. § 5103(b)).

Anyone transporting a hazardous material (including a hazardous waste) by vessel must file a registration statement with the Department of Transportation (49 U.S.C. § 5108), and must also follow requirements addressing personnel and personnel training, inspections, equipment, and safety procedures (49 U.S.C. § 5106).

The Hazardous Materials Transportation Act does not directly regulate the discharge of any pollutants of potential concern. Instead, the requirements of the Act ensure that hazardous materials are transported safely and securely, thereby lessening the likelihood that hazardous pollutants will contaminate incidental vessel discharges.

6.2.6 National Marine Sanctuaries Act

The National Marine Sanctuaries Act, 16 U.S.C. § 1431 et seq., authorizes the Secretary of Commerce to designate and protect areas of the marine environment that are of special national significance because of their conservation, recreational, ecological, historical, scientific, educational, cultural, archeological, or esthetic qualities (16 U.S.C. § 1431(a)). The Act is implemented by the National Oceanic and Atmospheric Administration (NOAA) through its regulations at 15 CFR Part 922.

The National Marine Sanctuary Program currently consists of 13 national marine sanctuaries and one marine national monument: Thunder Bay (Great Lakes), Stellwagen Bank (Massachusetts), *Monitor* (an archeological site off the coast of Virginia), Gray's Reef (Georgia), the Florida Keys, Flower Garden Banks (Gulf of Mexico), Fagatele Bay (American Samoa), Hawaiian Islands/Humpback Whale, Papahānaumokuākea National Monument, Channel Islands, Monterey Bay (California), Gulf of the Farallones (California), Cordell Bank (California), and the Olympic Coast (Washington).

Additional restrictions and requirements may be imposed on vessel owners/operators who operate in or around these areas. For example, NOAA's regulations pertaining to the Hawaiian Islands/Humpback Whale National Marine Sanctuary prohibit the discharge or deposition of any material or other matter in the sanctuary, or outside the sanctuary if the discharge or deposit will subsequently enter and injure a humpback whale or humpback whale habitat, unless that discharge or deposition is carried out according to the terms or conditions of a federal or state permit (15 CFR § 922.184(a)(5)). Vessels operating in this area must also avoid coming within 100 yards of any humpback whale (except when authorized under the Marine Mammal Protection Act and Endangered Species Act) (15 CFR § 922.184(a)(1)).

The National Marine Sanctuaries Act does not directly regulate by name the discharge of any of pollutants of potential concern. However, the additional restrictions and requirements developed for many of the specific sanctuaries include direct prohibitions on the discharge of certain materials. For example, the regulations specific to the Channel Islands National Marine Sanctuary prohibit the discharge or deposition of "any material or other matter" except fish or fish parts, and water and "other biodegradable effluents incidental to vessel use." (15 CFR § 922.72(a)(2)). The regulations governing the Gulf of the Farallones National Marine Sanctuary prohibit the discharge "from within or into the Sanctuary, other than from a cruise ship, any water or other matter except: … clean vessel deck wash down, clean vessel engine cooling water, clean vessel generator cooling water, clean bilge water, or anchor wash." (15 CFR § 922.82(a)(2)(iii)).

6.2.7 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901–6992k, was enacted in 1976 to amend the Solid Waste Disposal Act of 1965. RCRA was designed to minimize the hazards of waste disposal; conserve resources through waste recycling, recovery, and reduction; and ensure that waste management practices are protective of human health and the environment. The RCRA requirements apply to vessels to the extent that they create, carry, or dispose of solid or hazardous wastes.

By regulation, a "hazardous waste" under RCRA is one that falls on any number of lists EPA has created, or one that exhibits at least one of the following characteristics: ignitibility, corrosivity, reactivity, or toxicity (40 CFR § 261.3). A "solid waste" is any material that has been

discarded; including any material that has been abandoned or recycled or is inherently waste-like (40 CFR § 261.2).

Subtitle C of RCRA establishes a "cradle-to-grave" system that addresses hazardous waste management from the moment of generation through ultimate disposal. The provisions of Subtitle C apply to all generators and transporters of hazardous waste (42 U.S.C. §§ 6921–6939). A "generator" is someone "whose act or process produces hazardous waste…or whose act first causes a hazardous waste to become subject to regulation" (40 CFR § 260.10). A "transporter" is anyone "engaged in the offsite transportation of hazardous waste by air, rail, highway, or water" (40 CFR § 260.10). A generator of a hazardous waste is subject to the requirements of subtitle C on packaging, labeling, marking, placarding, storage, recordkeeping, and inspection (40 C.F.R. part 262, subpart C). Additionally, both generators and transporters are required to use a manifest system to ensure that all hazardous waste subject to transport arrives at the designated treatment, storage, or disposal facility (42 U.S.C. §§ 6922(a)(5), 6923(a)(3)).

Hazardous waste generated on public vessels (i.e., those vessels owned or chartered by the United States and engaged in noncommercial service) is not subject to the storage, manifest, inspection, or recordkeeping requirements of RCRA until the waste is transferred to a shore facility, unless the waste is stored on the vessel for more than 90 days after the vessel is no longer in service or the waste is transferred to another public vessel within the territorial waters of the United States and is stored on that vessel for more than 90 days after the date of transfer (42 U.S.C. § 6939d). In addition, any "industrial discharges which are point sources subject to [NPDES[permits" are excluded from the definition of solid waste under RCRA (42 U.S.C. § 6903(27)).

RCRA's primary effect on study vessel discharges is indirect; RCRA's extensive requirements concerning the handling of any hazardous waste generated, stored or transported onboard the vessel ensure that such wastes do not make their way into the study discharges. However, because study vessel discharges are not subject to NPDES permitting, they would not qualify for the "industrial point source discharge exclusion" and, thus, could be subject to applicable RCRA requirements.

6.2.8 Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. § 136–136y, provides the basis for the regulation, sale, distribution, and use of pesticides in the United States. FIFRA authorizes EPA to review and register pesticides for specified uses, as well as suspend or cancel the registration of a pesticide if subsequent information shows that continued use would pose unreasonable risks.

One of FIFRA's primary requirements is that pesticides be registered by EPA before they may be sold or distributed in the United States. To obtain a registration, a pesticide manufacturer

must submit a registration application to EPA that includes a proposed label containing specific directions for use of the pesticide. The application must also include or cite scientific data sufficient to support an EPA finding that the pesticide, when used according to label directions, will not cause unreasonable adverse effects on the environment (a risk benefit standard that takes into account the social, economic, and environmental costs and benefits associated with use of the pesticide). It is a violation of FIFRA to use a pesticide in a manner inconsistent with its label.

Pesticides may be registered as either general use or restricted use. A general use pesticide may be applied by anyone, while a restricted use pesticide may only be applied by certified applicators (applicators specifically certified by EPA or a state to apply restricted use pesticides) or persons working under the direct supervision of a certified applicator.

Vessels that use FIFRA-registered products onboard or as antifouling compounds must follow all FIFRA labeling requirements.

FIFRA governs the use of pesticides, including those applied aboard vessels in the United States. Although FIFRA does not directly regulate vessel discharges, the requirements of FIFRA require that pesticides are used in accordance with their label instructions, which may indirectly limit the quantity of pesticide related pollutants that end up in incidental vessel discharges.

6.3 ADDITIONAL INTERNATIONAL AND FEDERAL LAWS

EPA has identified a number of international and federal laws that fall outside the scope of this study, but which merit mentioning for information purposes.

6.3.1 International Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter

The International Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, commonly referred to as the London Convention, entered into force in 1975. The London Convention prohibits the dumping of certain hazardous material and requires a permit for other identified materials and wastes. In 1996, the IMO adopted a more stringent protocol, which took effect in 2006. The United States is a party to the original London Convention but has not ratified the 1996 protocol. The United States implements the original London Convention through the Marine Protection, Research and Sanctuaries Act, 33 U.S.C. §§ 1401–1445. The London Convention and Protocol do no apply, however, to the disposal into the sea of matter incidental to or derived from the normal operation of vessels.

6.3.2 International Convention on Oil Pollution, Preparedness, Response and Cooperation

To emphasize the importance of effective preparation for combating oil spills, in 1990 the IMO adopted the International Convention on Oil Pollution, Preparedness, Response and Cooperation (OPRC). The OPRC, which entered into force in 1995 and has been ratified by the United States, establishes a global framework for international cooperation in responding to oil pollution. OPRC includes requirements such as onboard oil pollution emergency plans, the reporting and prompt investigation of spills, and coordinated response actions.

6.3.3 International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties

The International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Causalities was adopted by the IMO in 1969. The Convention entered into force in 1975 and has been ratified by the United States. The purpose of the Convention is to affirm the right of coastal states to take such measures on the high seas as may be necessary to prevent, mitigate, or eliminate danger to their coastlines or related interests from spills of oil and other substances following marine accidents.

6.3.3.1 Intervention on the High Seas Act

The Intervention on the High Seas Act, 33 U.S.C. §§ 1471–1487, authorizes the Coast Guard to intervene whenever there is a ship collision, stranding, or other incident or occurrence that creates a grave and imminent danger to the coastline or related interests of the United States. This Act implements the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties.

6.3.4 Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601–9675, regulates the release or substantial threat of release of hazardous substances (or those dangerous to public health or welfare) into the environment. The liability provisions of CERCLA are expressly applicable to releases from vessels. Additionally, CERCLA requires any person in charge of a vessel to immediately notify the National Response Center as soon as he has knowledge of any release of a hazardous substance from that vessel in a quantity equal to or greater than a reportable quantity (42 U.S.C. §§ 9602, 9603(a)).

6.3.5 CWA § 402, National Pollutant Discharge Elimination System (NPDES)

In December 2008, EPA issued an NPDES general permit, pursuant to CWA § 402, that is applicable to all vessels operating in a capacity as a means of transportation (except recreational vessels as defined in CWA § 502[25] and study vessels (except for their ballast water discharges) that have discharges incidental to their normal operations into waters of the United States. The permit establishes technology-based effluent limits for 26 different types of vessel discharges in the form of best management practices (BMPs), as well as water quality-based effluent limitations. The permit also includes inspection, monitoring, reporting, and recordkeeping requirements.

For study vessels, coverage under the general permit is limited to ballast water discharges. For that reason, a lengthy discussion of the permit falls outside the scope of P.L. 110–229. For more information about this permit, please visit: www.epa.gov/npdes/vessels.

6.3.6 Title XIV of the Consolidated Appropriations Act, 2001—Certain Alaskan Cruise Ship Operations

Title XIV sets standards for sewage and graywater discharges from large cruise ships (those authorized to carry 500 passengers or more for hire) while operating within certain waters in Alaska. The law prohibits these large cruise ships from discharging untreated sewage while operating in particular waters, but allows the discharge of treated sewage and graywater if certain conditions are met.

6.3.7 Toxic Substances Control Act

The Toxic Substances Control Act (TSCA), 15 U.S.C. §§ 2601–2695, was enacted in 1976 to provide EPA authority to collect information regarding chemical substances and to regulate unreasonable risks from the manufacture, import, processing, distribution in commerce, or use or disposal of chemical substances in the United States. EPA implements TSCA through its regulations at 40 CFR Parts 700–766.

TSCA addresses the production, importation, distribution in commerce, use, and disposal of chemical substances and mixtures of chemical substances generally, and also specifically regulates the following chemical substances: polychlorinated biphenyls (PCBs), asbestos, radon, lead, and mercury. TSCA requires EPA to maintain an inventory of each chemical substance manufactured or processed in the United States. Chemical substances as defined under TSCA do not include substances regulated under other specified laws, such as food additives, pesticides, drugs, cosmetics, tobacco, nuclear material, and munitions. Chemical substances listed on the inventory are considered "existing," and those not listed are considered "new." Existing substances are subject to any regulations or orders the Agency has issued for those substances.

New substances are subject to premanufacture notice requirements, described in Section 5 of TSCA.

EPA can collect information on chemical substances and chemical mixtures under TSCA, and EPA has the authority to regulate the use or disposal of chemicals or chemical mixtures if EPA finds that activity presents an unreasonable risk of injury to health or the environment. TSCA would allow EPA to regulate chemicals contained in incidental discharges were the Agency to find it meets this standard.

6.4 APPLICATION OF LEGAL AUTHORITIES TO DISCHARGES INCIDENTAL TO THE NORMAL OPERATION OF STUDY VESSELS

The preceding subsections discussed a number of international treaties and domestic laws that have been adopted to address the environmental impacts of vessel discharges. These subsections also include a summary of how each of the described treaties, statutes, and regulations would regulate specific incidental vessel discharges and specific vessels. The following tables provide additional information, in greater specificity, regarding the applicability of each of the international treaties and domestic laws to incidental vessel discharges.

Table 6-1 shows which international treaties and federal laws apply to the types of incidental discharges that might occur on study vessels. The purpose of this table is to summarize the preceding discussion and make clear which incidental discharges are regulated or potentially regulated by existing international and domestic laws.[16]

Table 6-2 shows which treaties, statutes, and regulations apply to certain size vessels. This table is not meant to imply that each class of vessel shown is covered by a particular statute/treaty in all instances. Whether a particular law/treaty applies to a particular vessel depends on vessel-specific circumstances, such as the vessel's size and class, as well as where that vessel is operating and what it is discharging. In many instances the treaties/laws shown classify vessels by weight rather than length. For the purposes of this table, EPA estimated the length that would correspond with a given vessel weight.

[16] Note that for many of the authorities listed, application may depend on vessel- or discharge-specific circumstances (e.g., at what concentration certain substances are present in the discharge).

Table 6. 1. International Treaties and Federal Laws Applicable to Discharges Incidental to the Normal Operation of Vessels

	Deck Washdown and Runoff & Above Water Line Hull Cleaning	Bilgewater	Shaft Packing Gland Effluent	Ballast Water[1]	Antifouling Leachate from Antifouling Hull Coatings	Aqueous Film-Forming Foam (AFFF)	Boiler /Economizer Blowdown	Cathodic Protection	Chain Locker Effluent	Controllable Pitch Propeller and Thruster Hydraulic Fluid and Other Oil to Sea Interfaces	Distillation and Reverse Osmosis Brine	Elevator Pit Effluent	Firemain Systems	Fresh-Water Layup	Gas Turbine Water Wash	Graywater	Motor Gasoline and Compensating Discharge	Non-Oily Washwater	Refrigeration and Air Condensate Discharge	Seawater Cooling Overboard Discharge	Seawater Piping Biofouling Prevention	Boat Engine Wet Exhaust	Sonar Dome Discharge	Underwater Ship Husbandry Discharges	Welldeck Discharges	Graywater Mixed with Sewage	Exhaust Gas Scrubber Washwater Discharge	Fish Hold Refrigerated Seawater Cooling Systems and/or Ice Slurry Discharges
International Convention for the Prevention of Pollution from Ships (MARPOL)	b, c, d	b, c	b, c	b			b		b	b		b, c			B	b	b	c		b		b	b		b, c	b, h	b	b
International Convention on the Control of Harmful Anti-Fouling Systems on Ships	e				e																e							
International Convention for the Safety of Life at Sea (SOLAS)*																												

(*) SOLAS includes the ISM Code, which calls for a management system to minimize pollutants in vessel discharges. The specifics of each management system vary by vessel.

Table 6.1. International Treaties and Federal Laws Applicable to Discharges Incidental to the Normal Operation of Vessels

Boundary Waters Treaty / Great Lakes Water Quality Agreement †																												
St. Lawrence Seaway Regulations	d																											
Act to Prevent Pollution from Ships (APPS)	b, c, d	b, c	b, c	b			b		b	b		b, c			B	b	b			b		b	b		b, c	b	b	b
CWA § 311: Oil & Hazardous Substances / Oil Pollution Control Act	b	b	b	b			b		b	b		b		b	B	b	b			b		b	b		b	b	b	b
Organotin Antifouling Paint Control Act	e				a, e																a, e							
Hazardous Materials Transportation Act	f	f	f						f			f						f							f			
National Marine Sanctuaries Act	g	g	g	g	g	g	g	g	g	g	g	g	g	g	G	g	g	g	g	g	g	g	g	g	g	g	g	g
Resource Conservation and Recovery Act (RCRA)	f	f	f	f		f			f	f	f	f		f	F		f	f	f	f	f	f	f	f	f			
Toxic Substances Control Act (TSCA)	f	f	f	f		f			f	f	f	f		f	F		f	f	f	f	f	f	f	f	f			
Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)					a				a												a							

Key for Table 6.1:
a = regulates pesticide constituents that may be found in discharge
b = discharge regulated by law/treaty to the extent that it contains oil
c = discharge regulated by law/treaty to the extent that it prevents contamination by noxious liquid substances
d = discharge regulated by law/treaty to the extent that it prevents contamination from garbage
e = regulates antifouling constituents that may be found in discharge
f = regulates toxic substances that may be found in discharge
g = application of law/treaty dependent on requirements specific to the vessel's location
h = the discharge is regulated by this treaty, but the United States has not ratified the relevant annex

† The Boundary Waters Treaty protects the boundary waters of the United States and Canada from pollution generally.

Table 6.2. International Treaties and Federal Laws Applicable to Vessels (by Length)

	Study Vessels Less Than 79 Feet in Length	**Study Vessels Greater Than 79 Feet in Length**	**Nonstudy Vessels Greater Than 79 Feet in Length**
International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)*			
Annex I	Xx	x*	x
Annex II	Xx	x	x
Annex III	X	x	x
Annex V	Xx	x	x
International Convention on the Control of Harmful Anti-Fouling Systems on Ships	X	x	x
International Convention for the Safety of Life at Sea (SOLAS)			
Boundary Waters Treaty / Great Lakes Water Quality Agreement	X	x	x
St. Lawrence Seaway Regulations	X	x	x
Act to Prevent Pollution from Ships (APPS)	Xx	x	x
CWA § 311: Oil & Hazardous Substances	X	x	x
CWA § 312: Marine Sanitation Devices	X	x	x
Oil Pollution Control Act (OPA)	Xx	x	x
Organotin Antifouling Paint Control Act	X		
Hazardous Materials Transportation Act	X	x	x
National Marine Sanctuaries Act	X	x	x
Resource Conservation and Recovery Act (RCRA)	X	x	x
Toxic Substances Control Act (TSCA)	X	x	x
Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)	X	x	x

Key for Table 6.2:
x = law/treaty applicable to this vessel size
xx = law/treaty applicable, but generally fewer requirements than for larger vessels

* MARPOL treats oil tankers separately—those of 150 gt and above are subject to all of the requirements of the treaty, while those smaller than 150 gt have less stringent requirements. About half of the tankers weighing 150 gt are larger than 79 feet.