



**Vessel Discharge and
Maintenance
Guidelines For Owners,
Masters And Agents**

2013

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1. INTRODUCTION

1.1 Abu Dhabi Ports Company

Abu Dhabi Ports Company ("ADPC") has a responsibility under Abu Dhabi legislation to control the conditions under which vessels are permitted to use its ports.

1.2 Purpose

These Vessel Discharge and Maintenance: Guidelines for Owners, Masters and Agents ("ADPC Vessel Discharge Guidelines") have been prepared to assist owners, masters and agents providing information on prohibited, and allowable, vessel discharges and maintenance activities within ADPC Ports. These ADPC Vessel Discharge Guidelines are not intended to be a complete or comprehensive review of all statutory and other requirements relating to vessel discharge into port waters. It is the responsibility of the individual vessel master, owner and agent to ensure compliance with applicable law as it may apply to its activities.

1.3 Background

With some 37,000 square kilometres of the territorial seas of the United Arab Emirates and 2,390 kilometres of coastline along the mainland and islands of the southern Arabian Gulf, a variety of habitats occur in the marine and coastal environment of Abu Dhabi. These include sand dunes, beaches, islands, coral reefs, seagrass beds, mangrove stands and tidal inlets. In addition to their intrinsic value and role in maintaining biodiversity, they provide goods and services to society through biological productivity, recreational use and protection against coastal erosion. Furthermore, the marine and coastal environment forms the basis of the natural and cultural heritage of the nation. Protection of this resource from pollution is an overarching policy for ADPC.

Discharges from vessels contribute to water pollution in port. Modern maritime operations typically involve large vessels that use a variety of potentially toxic materials such as petroleum products, metallic and organic anti-fouling and anti-corrosion substances, and paints. They also discharge particulates into the air, and produce human wastes and refuse.

1.4 Coming Into Force

These ADPC Vessel Discharge Guidelines come into force on 1 October 2013.

2. LEGISLATION

2.1 Introduction

Water-related activities in ADPC ports are controlled by an overlapping network of international, regional, federal and Amiri laws and standards. Such laws and standards are published primarily by, in order, the International Maritime Organization (IMO), the Regional Organization for the Protection of the Marine Environment (ROPME), the Government of the United Arab Emirates (UAE) and the Government of the Emirate of Abu Dhabi.

2.2 International Law

The International Convention for the Prevention of Pollution from Ships (MARPOL) is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. MARPOL currently includes six technical Annexes with strict controls on operational discharges included in most. The Arabian Gulf, which includes all Abu Dhabi port waters, is designated a MARPOL Special Area under Annex I and Annex V.

The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWC), once in force, will be an internationally binding instrument to address the transfer of harmful aquatic organisms and pathogens in ships' ballast water. In the interim, it is ADPC policy to apply the broad principles of the Convention to port operations.

The International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS) came into force on 17 September 2008. Under the terms of the Convention, the use of harmful anti-fouling systems on ships is prohibited and / or restricted. The specific anti-fouling systems prohibited or controlled are listed in an Annex to the Convention

In addition, the IMO has adopted a number of Resolutions and other guidance in relation to the above Conventions including:

- Resolution MEPC.208(62): - 2011 Guidelines For Inspection Of Anti-Fouling Systems On Ships;
- Resolution MEPC.207(62): - 2011 Guidelines For The Control And Management Of Ships' Biofouling To Minimize The Transfer Of Invasive Aquatic Species; and
- Circular AFS.3/Circ.3: - Guidance On Best Management Practices For Removal Of Anti-Fouling Coatings From Ships, Including TBT Hull Paints.

2.3 Regional Law

The Kuwait Regional Convention for Co-Operation on The Protection of The Marine Environment from Pollution is the basic legal instrument binding the eight States of the Region¹ to coordinate their activities towards protection of their common marine environment.

ROPME, as defined in Article XVI of the above Convention, was established to implement the Kuwait Action Plan (KAP), as well as the Kuwait Convention and its Protocols. These Protocols and related Regulations make the Kuwait Regional Convention more specific and have had an important role in harmonizing the policies of Contracting States concerning protection of the environment under the national jurisdiction of each State and that of the Region.

The Second Regional Steering Committee Meeting of ROPME was convened in the Kingdom of Bahrain on 4 and 5 November 2008 to discuss ballast water management in the ROPME Sea Area.

Taking into consideration the provisions of the regulation B-4 of the Ballast Water Management Convention, the Steering Committee decided as follows:

- Vessels arriving from outside the ROPME Sea Area should undertake ballast water exchange en route in water over 200 nautical miles from the nearest land and in water at least 200 metres depth.
- If this is not possible for safety reasons, then vessels should be expected to make minor deviations to areas within the 200 nautical miles limit that can be identified as discharge area, so long as such areas are more than 50 nautical miles from the nearest land in waters at least 200 metres depth.
- If this is not achievable, then the ship should provide the respective authority with the reason why she has not done so, and further ballast water management measures may be required, consistent with the Ballast Water Management Convention and other international laws.

These requirements took effect on 1 November 2009.

2.4 Federal Law

The principal law governing vessel discharge and maintenance activities in ADPC ports is Federal Law No. (24) of 1999 concerning Protection and Development of the Environment, as amended, which prohibits the discharge of pollutants.

Other UAE legislation of relevance includes:

¹ Bahrain, I.R. Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia and the UAE.

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- Council of Ministers Decree No. (23) of 2001 concerning the protection of ports, shores, and maritime territory from oil pollution incidents
- Council of Ministers Decrees No. (37) of 2001 and No. (12) of 2006 concerning the Executive Order of Federal Law No. (24) of 1999 which includes Regulations in relation to:
 - Handling of Hazardous Substances;
 - Hazardous Wastes; and
 - Protection of the Marine Environment.

2.5 Amiri Law

Legislation implemented by the Government of the Emirate of Abu Dhabi relating to vessel discharge and maintenance activities includes:

- Law No. (16) of 2005 concerning the Responsibilities of the Environment Agency of Abu Dhabi. Law; and
- Law No. (21) of 2005 for Waste Management in Abu Dhabi Emirate.

3. DISCHARGE POLICY AND REQUIREMENTS

3.1 Introduction

Every vessel ultimately needs to discharge a range of commodities as part of its normal operations, including maintenance, for example liquid waste generated by passengers or crew.

The following sections identify some of the discharges from vessels that may occur into port waters, detailing ADPC requirements and Best Management Practices that should be followed, as summarised in Table 1 below.

It is important to note that any discharge from a vessel into port waters that contains pollutants or materials potentially harmful to water quality, fish, plant life, mammals, or bird life is an offence. Such discharges should be immediately terminated and reported to ADPC.

Table 1

Activity	ADPC Policy	Comments
<i>Acquatic Nuisance Species</i>		
Discharge of ballast water	Permitted with restrictions	Vessels intending to discharge ballast water must notify ADPC in advance and comply with ROPME regulations
Discharge of chain locker effluent	Permitted with restrictions	Chain locker effluent may only be discharged into port waters if the vessel does not leave port waters
Discharges from seawater piping biofoul prevention	Prohibited	No pesticides or chemicals may be discharged into port waters
Discharges from anti-fouling hull coatings	Permitted with restrictions	Hull coatings must conform to the requirements of the AFS Convention
Underwater hull cleaning	Permitted with restrictions	Only if the cleaning is essential to ensure vessel safety or efficiency. Waste should be secured and disposed of by an ADPC licensed waste contractor

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Activity	ADPC Policy	Comments
Maintenance and Related Discharges		
Deck washdown	Permitted with restrictions	Deck washdowns only permitted in an emergency or if the vessel does not leave port waters. Run off should not enter the water
Above water hull cleaning and painting	Permitted with restrictions	Only if the cleaning or painting is essential. Paint drips or other residues should not fall into the water or onto land
Sandblasting	Prohibited	Sandblasting may be available in an ADPC licensed ship repair facility
Propeller polishing	Permitted with restrictions	Only if the cleaning is essential to ensure vessel safety or efficiency. Waste should be secured and disposed of by an ADPC licensed waste contractor
Discharge of aqueous film forming foam (AFFF)	Permitted with restrictions	The discharge of AFFF only permitted in an emergency or if the vessel does not leave port waters and is required to perform a statutory equipment test
Operation of cathodic protection	Permitted with restrictions	Where possible, ICCP systems should be used
Engine Room and Contact Discharges		
Bilgewater discharge	Prohibited	Bilgewater should be retained onboard the vessel or discharged to an ADPC licensed waste contractor
Operation of boiler / economizer blow-down	Permitted with restrictions	Only permitted for safety reasons prior to repair
Discharge of elevator pit effluent	Prohibited	Elevator pit effluent should be retained onboard the vessel or discharged to an ADPC licensed waste contractor

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Activity	ADPC Policy	Comments
Discharge of gas turbine wash water	Prohibited	Gas turbine wash water should be retained onboard the vessel or discharged to an ADPC licensed waste contractor
Gasoline and compensating discharge	Prohibited	Gasoline and compensating discharge should be retained onboard the vessel or discharged to an ADPC licensed waste contractor
Welldeck discharge	Permitted with restrictions	Welldeck cleaning only permitted in an emergency or if the vessel does not leave port waters. Run off should not enter the water. Waste should be collected and discharged to an ADPC licensed waste contractor
Exhaust gas scrubber washwater discharge	Permitted with restrictions	Discharges must not contain any pollutants. Waste should be collected and discharged to an ADPC licensed waste contractor
Operation of engines with wet exhaust	Permitted with restrictions	Should be used only by boats required for vessel or crew safety
Discharge of distillation or reverse osmosis brine	Prohibited	Distillation or reverse osmosis brine should be retained onboard the vessel or discharged to an ADPC licensed waste contractor
Operation of fire main systems	Permitted with restrictions	Discharges from fire mains only permitted in an emergency or if the vessel does not leave port waters and is required to perform a statutory equipment test
Discharge of refrigeration and air condensate discharge	Permitted	Clean condensate may be discharged
Discharge from seawater cooling	Permitted	Seawater discharges should be minimized in port waters

Activity	ADPC Policy	Comments
<i>Passenger or Crew Waste</i>		
Graywater discharge	Prohibited	Graywater should be retained onboard the vessel or discharged to an ADPC licensed waste contractor
Discharge of untreated or treated sewage (blackwater)	Prohibited	Blackwater, untreated or treated, should be retained onboard the vessel or discharged to an ADPC licensed waste contractor
Discharge from waste incinerators	Prohibited	Incinerator waste should be retained onboard the vessel or discharged to an ADPC licensed waste contractor

3.2 Aquatic Nuisance Species

3.2.1 Ballast Water

Issue: Vessels may take on, discharge, or redistribute ballast water during cargo loading and unloading, or if they encounter rough seas. As ballast is transferred from one location to another, so are organisms that are taken into the tanks along with the water. This process transfers organisms in ways that regular ocean currents would not. These organisms can establish themselves in new locations that have lower interspecies competition or predation and can have severe ecological, economic, and human health impacts in the receiving environment.

ADPC Policy: Other than for safety reasons, which should be documented, ballast water must not be discharged in port waters unless the water has been exchanged in accordance with ROPME requirements (see Section 2.3 above).

Required Action: At least forty eight (48) hours prior to port arrival, a ROPME Ballast Water Declaration must be submitted to ADPC by the vessel master, owner or agent.

Best Management Practices: The following Best Management Practices should be implemented by vessels using ADPC ports:

- Discharge only the minimal amount of ballast water in port waters essential to operations.
- Minimise discharge and uptake of ballast water in marine sanctuaries, marine preserves, marine parks, or coral reefs.

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- Minimise or avoid uptake of ballast water in:
 - Areas with known infestations of non-indigenous organisms.
 - Areas near a sewage outfall.
 - Areas for which the master has been informed of the presence of a toxic algal bloom.
 - Areas of poor tidal flushing or high turbidity.
 - Periods of darkness when bottom dwelling organisms may rise up in the water column.
 - Areas where sediments have been disturbed, for example near dredging operations.
- Clean ballast tanks regularly in mid-ocean waters or in drydock.

3.2.2 Chain Locker Effluent

Issue: Chain locker effluent is water that collects in the below-deck storage area during anchor retrieval. A sump collects the liquids and materials that enter the chain locker and discharges it overboard or into the bilge tank. Chain locker effluent can contain marine organisms and residue such as rust, paint chips, grease, and zinc.

ADPC Policy: For vessels that leave UAE waters at least once per month, chain lockers must not be rinsed or pumped out within port waters unless required for safety, which should be documented.

For vessels that generally remain in port waters, chain locker effluent with visible pollutants must not be discharged into port waters.

3.2.3 Seawater Piping Biofoul Prevention

Issue: Vessels that utilize seawater cooling systems introduce anti-fouling compounds, for example sodium hypochlorite, in their interior piping and component surfaces to inhibit the growth of fouling organisms. These anti-fouling compounds are then typically discharged overboard.

To prevent biofouling of seawater cooling systems, small amounts of biocidal substances are sometimes injected near the seawater intakes to prevent biofouling by any organisms that may have been drawn in along with the cooling water. Seawater that has been discharged after being treated with chlorinating substances will contain free chlorine and reaction products (halamines, free bromine, and halogenated organics).

ADPC Policy: No pesticides or chemicals banned for use in the Emirate of Abu Dhabi shall be discharged into port waters². This includes any substance or material harmful to fish, plant life, mammals, or bird life.

Best Management Practices: The minimum amount of biofouling chemicals needed to keep fouling under control should be used. Fouling organisms should be removed from seawater piping on a regular basis and disposed of as hazardous waste.

3.2.4 Anti-Fouling Leachate from Anti-Fouling Hull Coatings

Issue: Vessel hulls are often coated with anti-fouling compounds to prohibit the attachment and growth of aquatic life. Coatings are formulated for different conditions and purposes, and many contain biocides. Those that contain biocides prevent the attachment of aquatic organisms to the hull by continuously leaching substances that are toxic to aquatic life into the surrounding water. While a variety of different ingredients may be used in these compounds, the one most commonly used is copper. Copper can inhibit photosynthesis in plants and interfere with enzyme function in both plants and animals in concentrations as low as 4 µg/l. Additional releases of these substances are caused by hull cleaning activities, particularly if hulls are cleaned within the first 90 days following application. A second metal-based biocide is organotin-based, typically tributyltin (TBT), which was historically applied to vessel hulls but is now prohibited by the AFS Convention although it may still be found on older vessels, or on vessels operating between countries that have not ratified the AFS Convention. TBT and other organotins cause deformities in aquatic life, including deformities that disrupt or prevent reproduction. TBT and other organotins are also stable and persistent and resist natural degradation in water bodies.

ADPC Policy: All vessels in port waters must comply with the relevant requirements of the IMO AFS Convention. The application of anti-fouling paint containing TBT or other organotins is strictly prohibited in port waters other than in an ADPC licensed ship repair facility.

Required Action: If a vessel has previous hull coatings containing TBT, this should be covered by a non-organotin-based product prior to entering port.

Best Management Practices: While ADPC does not apply any specific restrictions on the type of anti-fouling coatings acceptable for use (other than prohibiting organotin based coatings), if a vessel spends considerable time in port waters (defined as more than 30 days per year), or use an ADPC port as its home port, the owner / operator should consider using antifouling coatings that rely on a rapidly

² See 'Standard Operating Procedures for Permitting of Chemicals and Hazardous Materials in Abu Dhabi' published by the Environment Agency Abu Dhabi.

biodegradable biocide or another alternative rather than copper-based coatings.

If after consideration of alternative biocides, vessel operators continue to use copper-based anti-foulant paints, they should document how this decision was reached.

At the time of initial application or scheduled reapplication of anti-fouling coatings, vessel operators should give consideration, as appropriate for vessel class and vessel operations, to the use of hull coatings with the lowest effective biocide release rates, rapidly biodegradable components (once separated from the hull surface), or non-biocidal alternatives, such as silicone coatings.

3.2.5 Underwater Hull Cleaning

Issue: Underwater hull cleaning is the grooming, maintenance, and repair activities of hulls or hull appendages, for example engine room seawater intakes, completed while the vessel is located in the water, including hull cleaning, hull repair, fibreglass repair, welding, sonar dome repair, non-destructive testing, masker belt repairs, and painting operations. Such cleaning is considered incidental to the normal operation of a vessel if it is maintained in proper operating order and the cleaning is done on a reasonable schedule.

Fouling consists of organisms that attach or associate with the submerged portions of a vessel. These include physically attaching species, as well as mobile organisms that take shelter among attached organisms, such as worms, juvenile crabs, and amphipods (shrimp-like animals). When vessels move from port to port, fouling communities are transported along with their "host" structure. They may, therefore, be introduced to a new environment disrupting the local ecosystem.

ADPC Policy: The underwater cleaning of vessel hulls in port waters is permissible only where this is essential to ensuring vessel safety and / or maintaining efficient operation in fulfilment of IMO regulatory requirements.

Required Action: The consent of the Harbour Master must be secured prior to undertaking any underwater hull cleaning operation, who will determine the conditions to be applied to any permit granted. Granting of a permit for underwater hull cleaning will normally only be considered if the vessel is at anchor and has been engaged on voyages within the Arabian Gulf region; underwater hull cleaning alongside will be permitted strictly for emergencies only, for example seawater intakes. It should be noted that a number of separate permits may be required for the activity. A fee will be payable.

Best Management Practices: Vessel owners who remove fouling organisms from hulls while the vessel is waterborne should employ

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methods that ensure there is no discharge of anti-fouling hull coatings and / or organisms. These include:

- Selection of appropriate cleaning brush or sponge rigidity.
- Limiting the use of hard brushes and surfaces to remove hard growth.
- Use of vacuum control technologies to recover dislodged organisms and / or materials.

3.3 Maintenance and Related Discharges

3.3.1 Deck Washdown and Runoff

Issue: Deck runoff occurs as a result of precipitation and / or deck cleaning. Constituents of deck runoff may include oil, grease, cleaner or detergent residue, paint chips, and general debris (e.g., paper, wire).

ADPC Policy: Deck washdowns are not permitted in port waters unless essential to vessel safety or are the result of precipitation.

Required Action: For programmed activities, the consent of the Harbour Master must be secured prior to commencing any deck washdown, who will advise the specific conditions to be complied with. A fee will be payable. Under no circumstances will the use of high pressure water jets be permitted.

Should precipitation occur, vessels should take appropriate steps to prevent the discharge of the following as a result of runoff:

- Refuse, including garbage, deck debris, etc.
- Chemicals, including grease, fuel, hydraulic fluid, caustics, detergents, etc.
- Metals.
- Paint droplets or other debris occurring as a result of deck and/or hull cleaning.

Best Management Practices: The following Best Management Practices should be used to minimise the potential for pollutants to reach port waters as the result of deck runoff:

- Clear decks of debris, garbage, cargo residue and spills before:
 - Deck washdowns.
 - Entering and leaving port.
- If fitted, use perimeter spill rails and scuppers.
- Drain machinery drip pans for proper disposal or periodically wiped and cleaned.
- If washing down the deck, use cleaners and detergents that are:

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- Non-toxic.
- Phosphate free.
- Biodegradable.
- Minimally caustic or non-caustic.

3.3.2 Above Water Line Hull Cleaning and Painting

Issue: Above water line hull cleaning and associated discharges occur when areas of the hull or other exterior portions of the vessel undergo maintenance. Constituents of above water line hull cleaning may include grease, paint chips, paint droplets, and other associated materials.

ADPC Policy: Hull cleaning and painting above the water line in port waters is not permitted unless this is essential to vessel operations or undertaken in an ADPC licensed ship repair facility.

Required Action: The consent of the Harbour Master must be secured prior to commencing above water hull cleaning or painting, who will advise the specific conditions to be complied with. A fee will be payable. Under no circumstances will the use of high pressure water jets or spray painting be permitted unless undertaken in a controlled repair facility.

Best Management Practices: For maintenance cleaning of the hull above the water line (above the antifouling coating boundary):

- Only use soft brushes and ensure that any debris is captured and discarded on land.
- Cleaning materials should be non-toxic, biodegradable, and phosphate-free.
- Discarded material that contains any potentially hazardous materials should be handled appropriately.

For vessel painting:

- Painting should occur in dry conditions only.
- Paint and solvent mixing should take place in a contained location either onshore or on the vessel to ensure no spillage into the water or storm drains.
- Store materials such as paints, tools, and ground cloths indoors or in a covered area when not in use.
- Painting to be performed from a proper raft, suspended from the deck of the vessel, designed for the purpose of vessel painting.
- Raft should be held as tight as possible against the side of the vessel.

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- Protective canvas overhanging the sides of the raft should be deployed, should any drops fall from the rollers.
- If painting from the wharf or jetty, ensure protective canvas is properly installed to contain drips.
- Only one half-full paint drum (10 litres max) should be allowed on the suspended raft.
- Task should be carried out by fully qualified, experienced, able seamen only.
- Raft personnel should be in VHF Radio contact with Port Control.
- Spill equipment should be ready at vessel bunkering station.

3.3.3 Sandblasting

Issue: Sandblasting is the operation of forcibly propelling a stream of abrasive material against a surface under high pressure to make it smoother, remove surface contaminants, or roughen it. When the activity occurs on vessels, sandblasting can remove paints, oil, metals, or other pollutants that are prohibited from entering Port waters. Due to the nature of sandblasting, it can be difficult to fully contain the spray and materials being cleaned.

ADPC Policy: Sandblasting of vessels is not permitted unless undertaken in an ADPC licensed ship repair facility.

3.3.4 Propeller Polishing and Maintenance of Other Machinery Below the Waterline

Issue: Oil to sea interfaces include any mechanical or other equipment where seals or surfaces may release small quantities of oil to the sea. Examples include controllable pitch propellers (CPPs). Hydraulic oil can leak from CPPs if the protective seals are worn or defective, and large amounts may be discharged during maintenance and repair.

ADPC Policy: Vessel maintenance below the waterline in port waters is permissible only where this is essential to ensuring vessel safety and / or maintaining efficient operation in fulfilment of IMO regulatory requirements.

Required Action: The consent of the Harbour Master must be secured prior to commencing propeller polishing or other in-water maintenance, who will advise the specific conditions to be complied with. It should be noted that a number of separate permits may be required for the activity. A fee will be payable.

Best Management Practices: Regular maintenance of oil to sea interfaces is recommended to ensure all parts are in good working order, to reduce the potential for leaks. Significant vessel maintenance relating to the propeller and related parts should take place only in an ADPC licensed ship repair facility.

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In the event that crew and / or vessel safety is of concern, the following should be followed to minimize the potential for the release of pollutants:

- Vessel owner/operators should apply lubricants and maintain all seals so that discharges do not result in a visible sheen or are otherwise harmful.
- Before being placed in service, and after periodic lubrication, wire ropes or cables and other equipment should be thoroughly wiped down to remove excess lubricant.
- If maintenance or emergency repair should occur on stern tubes or other oil-to-sea interfaces that have a potential to release oil in quantities that may be harmful, appropriate spill response resources (e.g. oil booms) should be used to contain any oil leakage.
- Operators of the vessel should have ready access to any spill response resources to clean any potential oil spills.
- Use of an environmentally preferable lubricant, including vegetable oil, synthetic ester, or polyalkylene glycol as a base for these applications is recommended, when feasible.
- Use of an environmentally preferable lubricant does not authorize the discharge of any lubricant in a quantity that may be harmful or cause a visible sheen as these oils still cause many undesirable environmental impacts.

3.3.5 Aqueous Film Forming Foam (AFFF)

Issue: AFFF is a synthetic fire fighting agent consisting of fluorosurfactants and / or fluoroproteins. It serves as an effective fire fighting agent by forming an oxygen-excluding barrier over an area. In order to produce AFFF, a concentrated solution of the foam-forming agent is injected into the water stream of a fire hose. Vessels equipped with AFFF equipment should periodically (annually or semi-annually) test the equipment for maintenance, certification, or training purposes resulting in discharge overboard or onto the deck. The constituents of AFFF can vary by manufacturer but can include ingredients that are persistent, bio-accumulative, and non-biodegradable.

ADPC Policy: The discharge of AFFF into port waters is allowable only during an emergency or where the testing of fire fighting equipment in port is essential to comply with statutory requirements.

Required Action: Other than in an emergency, the consent of the Harbour Master must be secured prior to operating any equipment discharging a synthetic fire fighting agent into port waters, who will advise the specific conditions to be complied with. A fee will be

payable. In the case of an emergency discharge, this should be reported to ADPC with an explanation for the reason.

For all vessels that sail outside of UAE territorial sea more than once per month, maintenance and training discharges of fluorinated AFFF in port will not be authorised. If fire fighting equipment should be operated for regulatory certification and inspection purposes, authorisation may be granted subject to using a substitute foaming agent, i.e., non-fluorinated.

For vessels that do not leave the UAE territorial sea more than once per month, if maintenance and training discharges are required, authorisation may be granted subject to the AFFF being collected and stored for onshore disposal if technologically feasible. If not feasible, a non-fluorinated substitute should be used.

3.3.6 Fire Main Systems

Issue: The fire main system on a vessel draws in water through the sea chest or potable supplies to supply fire hose stations, sprinkler systems, or AFFF distribution stations. Fire main stations can be pressurised or non-pressurised and are often used for secondary purposes onboard vessels, for example deck and equipment washdowns, machinery cooling water, ballast tank filling. Fire main water can contain a variety of constituents, including copper, zinc, nickel, aluminium, tin, silver, iron, titanium, and chromium. Many of these constituents can be traced to the corrosion and erosion of the fire main piping system, valves, or pumps.

ADPC Policy: Discharges from a vessel fire main system within port limits are allowable only during an emergency or where the testing of fire fighting equipment in port is essential.

Required Action: Other than in an emergency, the consent of the Harbour Master must be secured prior to operating a vessel fire main system, who will advise the specific conditions to be complied with. A fee will be payable. In the case of the emergency discharge of a fire main, this should be reported to ADPC with an explanation for the reason.

For all vessels that sail outside of UAE territorial sea more than once per month, maintenance and training discharges from a fire main will not be authorised unless required for regulatory certification and inspection purposes.

3.3.7 Cathodic Protection

Issue: Vessels use cathodic protection systems to prevent steel hull or metal structure corrosion. The two types of cathodic protection are sacrificial anodes and impressed current cathodic protection (ICCP). Using the first method, anodes of zinc, magnesium, or aluminium are 'sacrificed' to the corrosive forces of the seawater, which creates a flow of electrons to the cathode, thereby preventing the cathode from

corroding. These sacrificial metals are then released to the aquatic environment. Using ICCP, a DC electrical current is passed through the hull such that the electrochemical potential of the hull is sufficiently high enough to prevent corrosion. The discharge from either method of cathodic protection is continuous whenever the vessel is waterborne.

ADPC Policy: Only ICCP systems should be used on vessels operating in port waters.

Best Management Practices: For sacrificial anode systems, it is recommended that vessel operators select the least toxic anode material that is practicable, in the order of preference of magnesium, then aluminum, then zinc.

Sacrificial anodes should be used in conjunction with corrosion control coatings to minimize the release of dissolved metals. Furthermore, sacrificial anodes should not be used more than is necessary to adequately prevent corrosion of the vessel's hull, sea chest, rudder, and other exposed vessel areas. Vessel operators should appropriately clean and/or replace anodes in periods of maintenance (such as drydocking), so that release of these metals to waters is minimized.

3.4 Engine Room and Contact Discharges

3.4.1 Bilgewater

Issue: Bilgewater consists of water and other residue that accumulates in the hull of a vessel. The source of bilgewater is typically drainage from interior machinery, engine rooms, and deck drainage. Constituents of bilgewater include seawater, oil, grease, volatile and semi-volatile organic compounds, inorganic salts, and metals.

ADPC Policy: Bilgewater must not be discharged into port waters.

Required Action: Bilgewater should only be discharged from a vessel to an ADPC licensed waste disposal contractor.

Best Management Practices: Bilgewater generation can be reduced by practising proper maintenance of vessel and equipment. Routine cleaning and maintenance activities associated with vessel equipment and structures are considered to be the normal operation of a vessel.

3.4.2 Boiler / Economizer Blow-Down

Issue: Boiler blow-down occurs on vessels with steam propulsion or a steam generator to control anti-corrosion and anti-scaling treatment concentrations, and to remove sludge from boiler systems. The blow-down involves releasing water from the boiler system, usually below the waterline. The constituents of boiler blow-down discharge vary according to the types of feedwater treatment used but may include pollutants such as antimony, arsenic, cadmium, copper, chromium,

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lead, nickel, selenium, thallium and zinc. Discharge volumes are typically less than 1000 litres, but the discharge, which consists of steam, water and sludge, occurs under high pressure (up to 1200 psi) and at a high temperature (up to 190° C).

ADPC Policy: Vessels are prohibited from blowing-down a boiler in port waters, except when the vessel should conduct blow-down immediately prior to entering an ADPC licensed ship repair facility or for safety purposes.

Required Action: The consent of the Harbour Master must be secured prior to undertaking any boiler blow-down, who will advise the specific conditions to be complied with. A fee will be payable.

3.4.3 Elevator Pit Effluent

Issue: Large vessels with multiple decks are often equipped with elevators to facilitate the transportation of maintenance equipment, people, and cargo between decks. The pit at the bottom of an elevator shaft collects liquids and debris from operations and may include oil and hydraulic fluid.

ADPC Policy: Discharges of elevator pit effluent are prohibited within port waters.

Required Action: Elevator pit effluent should only be discharged from a vessel to an ADPC licensed waste disposal contractor.

3.4.4 Gas Turbine Wash Water

Issue: Gas turbines may be used on vessels for propulsion and electricity generation. Occasionally, they should be cleaned to remove by-products that can accumulate and affect their operation. These by-products include salts, lubricants, and combustion residuals. The wastewater from the cleaning process may also include cleaning compounds. Due to the nature of the materials being cleaned, there is a higher probability of heavy metal concentrations.

ADPC Policy: Gas turbine washwater must not be discharged into port waters.

Required Action: Gas turbine washwater should only be discharged from a vessel to an ADPC licensed waste disposal contractor.

3.4.5 Gasoline and Compensating Discharge

Issue: Gasoline is transported on vessels to operate vehicles and other machinery. As the fuel is used, ambient water can be added to the fuel tanks to replace the weight. This ambient water is discharged when the vessel refills the tanks with gasoline or when maintenance is performed and can contain residual oils.

ADPC Policy: The discharge of gasoline and compensating effluent that comes into contact with oil is prohibited in port waters.

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Required Action: Gasoline and compensating effluent should only be discharged from a vessel to an ADPC licensed waste disposal contractor.

3.4.6 Weldeck Discharges

Issue: The weldeck is a floodable platform used for launching or loading small vessels, vehicles, and cargo. Weldeck discharges may include water from precipitation, weldeck and storage area washdowns, equipment and engine wash-downs, and leaks and spills from stored machinery. Potential constituents of weldeck discharges include fresh water, firemain water, graywater, air-conditioning condensate, sea-salt residues, paint chips, wood splinters, dirt, sand, organic debris and marine organisms, oil, grease, fuel, detergents, combustion by-products, and wood treatment chemicals.

ADPC Policy: Weldeck discharges must not contain any pollutants including graywater, oil or garbage.

Best Management Practices: Vessel operators should practice good housekeeping to ensure that no garbage or wastes that can cause a visible sheen are discharged from weldecks. Should these wastes be present, the vessel operator should retain the discharge to an ADPC licensed waste disposal contractor.

3.4.7 Exhaust Gas Scrubber Washwater Discharges

Issue: Exhaust gas scrubber washwater discharge occurs as a result of operating or cleaning the exhaust gas cleaning systems for marine diesel engines. While many of the captured contaminants are transferred to the vessel's sludge tank, the constituents of scrubber washwater discharge can include residues of nitrogen oxides, sulphur oxides, and particulate matter emissions captured by the scrubbers.

ADPC Policy: Sludge generated from exhaust gas scrubber washwater discharge must not be discharged into port waters. Exhaust gas scrubber washwater discharge may only be discharged in port waters if free from pollutants.

Required Action: Any exhaust gas scrubber sludge should be discharged from a vessel to an ADPC licensed waste disposal contractor.

Best Management Practices: Operators of vessels with exhaust gas cleaning systems that generate washwater discharges should follow the guidelines set out in the IMO Resolution MEPC.170(57) 'Guidelines for Exhaust Gas Cleaning Systems'

3.4.8 Boat Engine Wet Exhaust

Issue: Wet exhaust can contain nitrogen oxides, sulphur dioxide, hydrocarbons and other organic compounds, carbon monoxide, and particulates.

ADPC Policy: Vessels generating wet exhaust should be used in port waters only for activities relating to vessel safety and / or crew.

Required Action: Vessels generating wet exhaust should be maintained in good operating order, well-tuned, and functioning according to manufacturer specifications. Low sulphur or alternative fuels should be used, where available, to reduce the concentration of pollutants in the discharge.

Best Management Practice: Operators are encouraged to use only 4-stroke engines.

3.4.9 Distillation and Reverse Osmosis Brine

Issue: Discharges of brine can occur from onboard plants that distil seawater or utilize reverse osmosis to generate fresh water. Distillation effluent may be at elevated temperatures and may contain anti-scaling treatment, acidic cleaning compounds, or metals. Onboard distillation and reverse osmosis systems discharge is essentially concentrated seawater with the same constituents of seawater, including dissolved and suspended solids and metals. Anti-scaling treatments and anti-foaming and acidic cleaning compounds may be injected into the distillation system.

ADPC Policy: Brine from a vessel distillation system and / or reverse osmosis water that comes in contact with machinery or industrial equipment, toxic or hazardous materials, or wastes must not be discharged in port waters. Distillation and reverse osmosis brine that has not come in contact with machinery or industrial equipment, toxic or hazardous materials, or wastes may be discharged in port waters in small quantities.

Required Action: General release of brine should only occur where it can be appropriately diluted by the receiving water. Contaminated brine may only be discharged from a vessel to an ADPC licensed waste disposal contractor.

3.4.10 Refrigeration and Air Condensate Discharge

Issue: Condensation from cold refrigeration or evaporator coils of air-conditioning systems drips from the coils and collects in drip troughs that typically channel to a drainage system. Condensate discharge may contain detergents, seawater, food residue and trace metals.

ADPC Policy: Clean condensation discharge is permitted in port waters.

Required Action: If condensate is discharged, it should not come into contact with oily or toxic materials.

3.4.11 Seawater Cooling Discharge

Issue: Seawater cooling systems use ambient water to absorb heat from heat exchangers, propulsion systems, and mechanical auxiliary systems. The water is typically circulated through an enclosed system

that does not come in direct contact with machinery but may still contain sediment from water intake, traces of hydraulic or lubricating oils, and trace metals leached or eroded from the pipes within the system. Cooling water also can reach high temperatures, with the thermal difference between seawater intake and discharge typically ranging from 5°C to 25°C, with maximum temperatures reaching 140°C.

ADPC Policy: Seawater cooling discharge should be minimised in port waters and should not contain any trace metals or oils.

3.5 Passenger or Crew Waste

3.5.1 Sewage

Issue: Human sewage (blackwater) discharged from vessels contains bacteria, chemicals and nutrients that can degrade local water and can overload confined, poorly flushed waterways. Vessel sewage carries microorganisms that can contaminate water and sediment, leading to unsafe levels of bacteria. Further, sewage can also contain chemical products used in onboard marine sanitation devices such as chlorine and formaldehyde.

ADPC Policy: The discharge of untreated sewage (blackwater) in port waters is prohibited.

Required Action: Sewage (blackwater) should be retained onboard or may be discharged to an ADPC licensed waste disposal contractor.

3.5.2 Graywater

Issue: Graywater means drainage from dishwasher, showers, baths, sinks, and laundry facilities, but does not include drainage from toilets, urinals, hospitals, or cargo spaces. Graywater can contain high levels of pathogens, nutrients, soaps and detergents, and organics. Untreated graywater is much more likely to cause environmental impact when it is generated in large volumes, for example from cruise ships.

ADPC Policy: The discharge of untreated graywater into port waters is prohibited unless no onboard storage facility is available. Where no storage facility is provided, the discharge of graywater must comply with the Best Management Practices detailed below.

Best Management Practices: These Best Management Practices are designed to reduce the impact graywater has on the marine environment:

- The introduction of kitchen oils should be minimized to the graywater system.
- When cleaning dishes, as much food and oil residue as practicable should be removed prior to rinsing.

ADPC Vessel Discharge Guidelines Issue 1

- Oils used in cooking should not be added to the graywater system.
- Phosphate-free and non-toxic soaps and detergents should be used where the graywater will be discharged into port waters.

Note: Graywater mixed with sewage (treated or untreated) should be considered as sewage, the provisions of Section 3.5.1 above applying.

3.5.3 Waste Incinerators

Issue: Many vessels, particularly large passenger vessels, are equipped with incinerators to dispose of waste material generated onboard. These incinerators are predominantly designed for intermittent operation, hand fired and fed by hand. The ash or vapour may be hazardous.

ADPC Policy: The discharge of waste (ash) generated by vessel incinerators into port waters is prohibited.

Required Action: Incinerator waste should be retained onboard or discharged to an ADPC licensed waste disposal contractor