



# Vessel Incidental Discharge Act (VIDA)

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The U.S. Regulatory Framework for  
Discharges from Commercial Vessels:

# Disclaimer

The following EPA and USCG presentation is intended to provide information to the public on currently in-force statutes, permits and regulations for several vessel discharges. Neither the slide presentation nor remarks of the participants represent final agency decisions regarding implementation of VIDA. Specific questions related to the content of this presentation should be referred to the appropriate Agency.



# Ballast Water



# Ballast Water

## Basis for VIDA Regulations

### Considerations:

- VIDA ballast water-specific requirements
- Existing USCG Regulations:
  - 33 CFR Part 151 (Ballast Water Management)
    - Subpart C (Great Lakes and Hudson River), and
    - Subpart D (Waters of the United States)
  - 46 CFR Part 162 (Ballast Water Mgmt Systems)
- Vessel General Permit (2013 VGP)
  - 2<sup>nd</sup> Circuit Court Decision



# Ballast Water

## 2nd Circuit Decision on 2013 VGP

- The 2<sup>nd</sup> Circuit Court ruled on a petition filed by environmental groups finding the ballast water technology-based effluent limits in the 2013 VGP to be arbitrary and capricious:
  - EPA relied on IMO standards without adequately explaining why standards higher than the IMO Standard should not be used given available technology.
  - EPA failed to adequately consider on-shore treatment in choosing the IMO standard.
  - EPA inappropriately exempted existing (pre-2009) lakers from treatment requirements.



# Ballast Water

## Discussion Outline:

- Applicability & Exemptions
- Mandatory Best Management Practices (BMPs)
- Interim Management Measures
- Discharge Standards, Compliance Date, and Exceptions
- Regional Requirements
- Monitoring, Reporting and Recordkeeping



# Ballast Water

## Applicability & Exemptions

### Applicability

- Non-recreational and non-armed forces vessels, including small vessels and fishing vessels, equipped with ballast tanks.

### VIDA exemptions (*CWA §312(p)(6)(B)*):

- Certain vessels with flow-through ballast water systems;
- Certain vessels of the National Defense Reserve Fleet;
- Vessels that meet applicable requirements of the Safe Drinking Water Act;
- Vessels that carry all permanent ballast water in sealed tanks that are not subject to discharge;
- Vessels that only discharge ballast water into a reception facility.



# Ballast Water

## Mandatory Best Management Practices (BMPs)

- Avoid discharge/uptake of ballast water in “protected waters” (2013 VGP Appendix G).
- Minimize or avoid uptake of ballast water in:
  - Areas known to have ... harmful organisms and pathogens, near sewage outfalls and dredging operations, where tidal flushing is ... poor or tidal stream is ... turbid, in darkness, where propellers may stir up the sediment, areas with pods of whales, convergence zones, and boundaries of major currents.
- Clean the ballast tanks regularly to remove sediments in mid-ocean or under controlled arrangements in port, or at drydock.
- Minimize the discharge of ballast water essential for vessel operations while in the waters of the U.S.



# Ballast Water

## Mandatory Best Management Practices (BMPs)

### 2013 VGP Only

- Where feasible, use the **high sea suction** to reduce sediment intake if the clearance is less than 5 meters (approximately 15 feet) to the lower edge of the sea chest or if the vessel is dockside.
- When feasible and safe, use **ballast water pumps** instead of gravity draining to empty ballast water tanks.



# Ballast Water

Mandatory BMPs for Lakers

2013 VGP only:

Specifies Lakers must either meet the ballast water discharge standard or implement additional BMPs:

- Develop a **sediment removal policy** as part of the BWMP
- **Remove sediment** as necessary and retain records of sediment removal/disposal (including facility name/location and all invoices)
- When practicable and safe, **minimize ballast water taken up dockside**
- Perform annual **inspections of sea chest screens** to ensure that the screens are fully intact, there is no deterioration which has resulted in wider openings or holes in the screen
- **Repair or replace any sea chest screens** not operating as designed with the expectation that the repair will last for at least one year.



# Ballast Water

## Ballast Water Management Plan (BWMP)

- Develop, maintain, and implement a **vessel-specific BWMP**
- Make the BWMP **available upon request** to EPA, USCG, or authorized representative
- The **plan must include:**
  - Detailed safety procedures
  - Actions for implementing the mandatory BWM requirements and practices
  - Detailed fouling maintenance and sediment removal procedures
  - Procedures for coordinating the shipboard BWM strategy with USCG authorities
  - Identification of the designated officer(s) in charge of plan implementation
  - Reporting requirements/procedures for ports/places where may visit in the U.S.
  - Translate plan into English, French, or Spanish (vessel's working language).



# Ballast Water

## Discharge Standard

Parameter	Limit (Instantaneous Maximum)
<b>Biological Parameters</b>	
Organisms $\geq$ 50 micrometers (minimum dimension)	< 10 living organisms /m <sup>3</sup>
Organisms > 10 and $\leq$ 50 micrometers (minimum dimension)	< 10 living organisms/ml
Toxicogenic Vibrio cholera (serotypes O1 and O139)	< 1 colony forming unit (cfu)/100 mL
Escherichia coli	<250 cfu/100 mL
Intestinal Enterococci	<100 cfu/100 mL
<b>Biocide Parameters<sup>1</sup></b>	
Chlorine Dioxide	200 $\mu$ g/L
Total Residual Oxidizers	100 $\mu$ g/L
Peracetic Acid	500 $\mu$ g/L
Hydrogen Peroxide	1000 $\mu$ g/L
Other Biocides and derivatives	NRWQC <sup>2</sup>

VIDA specifies that, conditionally, a vessel need only meet standards applicable at time of Ballast Water Management System installation. CWA §312(p)(6)(C)

<sup>1</sup> Biocide parameters – 2013 VGP only.

<sup>2</sup> EPA's National Recommended Water Quality Criteria.



# Ballast Water Organism Viability

## *CWA §312(p)(6)(D)*

- VIDA requires USCG to identify any test methods based on organism viability that can be used for testing systems.
- VIDA defines the terms ‘live’ and ‘living’ shall not include an organism that has been rendered nonviable; or preclude the consideration of any method of measuring the concentration of organisms in ballast water that are capable of reproduction.
- Today’s discussion is focused on standards and the implementing regulations, not on the VIDA viability policy letter.



# Ballast Water

## Vessels Exempt from Discharge Standard

Examples of vessels exempt in 2013 VGP/USCG regulations:

- Operate between ports/places in one COTP Zone
- Operate between ports/places in more than one COTP Zone but takes on/discharges ballast water exclusively in a single COTP Zone
- Do not travel more than 10 nm and crosses no physical barriers or obstructions (e.g., locks).
- Unmanned, unpowered barges
- Non-seagoing vessels
- Seagoing vessels  $\leq 1600$  GRT (3000 GT) that operate in more than one COTP Zone, but not outside of EEZ
- Inland and Seagoing Vessels  $< 1600$  GRT (3000 GT)
- Vessel in the USCG Shipboard Technology Evaluation Program (STEP)
- “Lakers” operating exclusively on the Laurentian Great Lakes and built before January 1, 2009



# Ballast Water

## Discharge Standard Compliance Dates

	Vessel's Ballast Water Capacity	Date Constructed	Vessel's Compliance Date
New vessels		After 1 Dec 13	On delivery
Existing vessels	Less than 1500 m <sup>3</sup>	Before 1 Dec 13	1 <sup>st</sup> scheduled drydocking after 1 Jan 16
	1500-5000 m <sup>3</sup>	Before 1 Dec 13	1 <sup>st</sup> scheduled drydocking after 1 Jan 14
	Greater than 5000 m <sup>3</sup>	Before 1 Dec 13	1 <sup>st</sup> scheduled drydocking after 1 Jan 16

- USCG regulations provide for extensions to the compliance date where the master, owner, operator, agent, or person in charge of a vessel can document that, despite all efforts, compliance with the requirement is not possible. 33 CFR §151.2036.
- EPA issued an Enforcement Response Policy (ERP) for the 2013 VGP that specifies how EPA will consider it a low enforcement priority for vessels with USCG extensions but otherwise in compliance with the permit.



# Ballast Water

## Compliance Options

- Install and operate a ballast water management system (BWMS)
- Use only water from a U.S. public water supply
  - 2013 VGP also allows use of Canadian public water supply
- Discharge to an onshore reception facility
- Do not discharge



# Ballast Water

## Compliance with the Discharge Standard

- Comply with the ballast water discharge standard using a ballast water management system (BWMS) either:
  - USCG type-approved BWMS, or
  - Foreign-approved and USCG-accepted *Alternate Management System* (AMS), for up to five years after the expiration of the vessel's compliance date, including an extended compliance date.
- Install, operate, and maintain the BWMS.
- For any BWMS that uses a *biocide*, use only a *biocide* that is a “pesticide” within the meaning of FIFRA and that has been registered for ballast water treatment use under FIFRA.



# Ballast Water

## Interim Management Measures (prior to compliance date)

- Vessels subject to the discharge standard must meet the exchange and flushing requirements **prior to the compliance date of the discharge standard**. Once a vessel is required to install and operate a ballast water management system, exchange and flushing requirements no longer apply.
- Oceangoing Voyages - Any vessel that carries ballast water taken on in areas less than 200 nm from any shore that will subsequently operate outside the *EEZ* and more than 200 nm from any shore must:
  - Conduct *ballast water exchange* in waters outside the EEZ and not less than 200 nm from any shore prior to discharging that ballast water into waters of the U.S.
  - Commence *ballast water exchange* and not less than 200 nm from any shore as early in the vessel voyage as practicable.



# Ballast Water

## Interim Management Measures (prior to compliance date)

2013 VGP:

- Vessels with any Ballast Water Tanks that are **Empty or have Unpumpable Residual Water** bound for a port or place of destination subject to the jurisdiction of the U.S. shall, prior to arriving at that port or place of destination either:
  - Seal the tank so that there is no discharge or uptake and subsequent discharge of ballast water into waters of the U.S., or
  - Conduct saltwater flushing of such tanks in an area more than 200 nm from any shore by taking on as much mid-ocean water as is safe for the vessel and crew prior to the discharge or uptake and subsequent discharge of any ballast water.



# Ballast Water

Interim Management Measures (prior to compliance date)

*VIDA CWA §312(p)(6)(B) – Exchange/flushing for empty ballast tanks.*

- Exchange/flushing for any empty ballast tanks bound for a port in the U.S:
  - not <200 nm from any shore for a voyage originating outside the EEZ
  - not <50 nm from any shore for a voyage originating within the EEZ.
- Exceptions apply if:
  - Residual waters/sediments **treated through a type-approved BWMS**
  - Residuals sourced in same port/place or contiguous portions of a single COTP
  - Complying would compromise the safety of the vessel
  - Design limitations of the vessel prevent an exchange or saltwater flush
  - Vessel operates exclusively in internal waters of the U.S. or Canada.



# Ballast Water

## Great Lakes Seagoing Vessels

### USCG 33 CFR §151 Subpart C

- Applies to vessels after operating on the waters beyond the EEZ during any part of its voyage, enter the Snell Lock, or navigates north of the George Washington Bridge on the Hudson River, regardless of other port calls in the U.S. or Canada during that voyage, except as exempted.
- BW Management Options:
  - Exchange beyond EEZ, in an area more than 200 nm from any shore, and in waters more than 2,000 meters deep...unless the vessel is required to employ a BWMS.
    - An AMS may also be used, so long as it was installed on the vessel prior to the date that the vessel is required to comply with the ballast water discharge standard.
  - Retain ballast water on board the vessel.
  - Install and operate a BWMS that has been approved by the Coast Guard
  - Use only water from a U.S. public water system.

2013 VGP requires these vessels with a BWMS to also perform an exchange or flushing if vessel took on ballast with a salinity of < 18 parts per thousand from a coastal, estuarine, or freshwater ecosystem within the previous month (30 days).



# Ballast Water

## Great Lakes Seagoing Vessels

VIDA CWA §312(p)(10)(A)

Establishes permanent ballast exchange for vessels entering the St. Lawrence Seaway via the mouth of the St. Lawrence River.

- Not less than 200 nm from any shore for a voyage originating outside the U.S./Canadian EEZ.
- Not less than 50 nm from any shore for a voyage originating within the U.S./Canadian EEZ.
- Exempted if:
  - Complying with the requirement would compromise the safety of the vessel; or is otherwise prohibited by any law (including regulations) pertaining to vessel safety;
  - Design limitations of the vessel prevent an exchange in accordance with the requirement;
  - The vessel is certified by the Secretary as having no residual ballast water or sediments onboard; or retains all ballast water while in waters subject to the requirement; or
  - Empty ballast tanks on the vessel are sealed and certified by the Secretary such that discharge or uptake occurs; and any subsequent discharge of ballast water is subject to the requirement.



# Ballast Water

## Pacific Region

### *2013 VGP*

- Pacific nearshore voyages with ballast water taken on in areas <50 nm from any shore must carry out an exchange of ballast water before discharging if the vessel travels through more than one COTP zone or the vessel crosses international boundaries.
- Pacific nearshore voyages with unpumpable ballast water/residual sediment must seal tanks or conduct saltwater flushing 50 nm from any shore and in waters at least 200 meters deep prior to the discharge or uptake and subsequent discharge.

### *VIDA CWA §312(p)(10)(C)*

- Exchange/flushing requirements in the Pacific Region, including more specific requirements for vessels operating in low salinity waters.



# Ballast Water

## Discharge of ballast water in extraordinary circumstances

### USCG 33 CFR §151.2040

- The USCG will waive exchange requirements if vessel cannot practicably meet the ballast water discharge requirements, either because its voyage does not take it into waters 200 nm from any shore for a sufficient length of time or for safety or stability concerns:
  - Provided vessel not required to have a USCG-approved BWMS per the implementation schedule.
  - Only that amount of ballast water operationally necessary to ensure the safety of the vessel for cargo operations is allowed.
  - Ballast water records must be available to the local COTP upon request.
  - Excludes vessels on a voyage to the Great Lakes or the Hudson River north of the George Washington Bridge. These vessels must exchange ballast consistent with direction from the COTP.
- If the installed BWMS stops operating properly during a voyage or the vessel's ballast water management method is unexpectedly unavailable, this must be reported to the nearest COTP or District Commander as soon as practicable.



# Ballast Water

## Monitoring

2013 VGP

Ballast water discharges must be monitored on vessels using a BWMS to achieve the numeric discharge standards.

Applicable Vessels	Frequency	Analytes
Vessels using a BWMS	1/mo.	Equipment functionality
	1-4/yr., dependent on type of system	Biological indicators
Vessels using a BWMS w/ active substances	3-5 times during first 10 discharges, 2-4/yr. thereafter dependent on type of system	Biocides and residuals of treatment



# Ballast Water

## Recordkeeping

Types of records to be retained include:

- Records necessary to prepare the ballast water management report required to be submitted to NBIC.
- Details on the sampling and analysis performed for any discharge monitoring, including the analytical methods used.
- The ballast water treatment system used, any type approval certificate, and records of whether the system meets the 2013 VGP high quality data criteria



# Ballast Water

## Reporting

- Vessels bound for ports/places in the U.S. regardless of whether operated outside the EEZ must submit a ballast water report to the National Ballast Information Clearinghouse (NBIC).
  - Timing dependent on destination.
- All vessels covered under the 2013 VGP are required to submit an annual report using EPA's electronic Notice of Intent (eNOI) system.



# Ballast Water

## Reporting

Ballast water reports/annual reports include information such as:

- Ballast water information: total ballast water capacity, total number of ballast water tanks, total volume of ballast water onboard, total number of ballast water tanks in ballast, and the identification of ballast water management method used.
- Information on ballast water tanks that are to be discharged into the waters of the U.S. or to a reception facility.
- Discharge of sediment. If sediment is to be discharged into a facility within the jurisdiction of the United States, include the location of the facility where the disposal will take place.
- Certification of accuracy of information.



# Ballast Water Reporting

VIDA modifies *Section 1102(f)((2) of NANPCA* to establish ballast water reporting requirements for vessels and the USCG.

- Clarifies timing and details of ballast water management reporting
- Provides authority for U.S. states to specify how ballast water reports are to be shared.
- The National Ballast Information Clearinghouse shall:
  - Immediately submit electronic ballast water management report to interested States; or as soon as practicable for non-electronic reports.
  - Make the data in the report fully and readily available to the public in a searchable and fully retrievable electronic format not later than 30 days after the date of receipt.



# Exhaust Gas Cleaning Systems



# Exhaust Gas Cleaning System (EGCS)

## (EGS – Exhaust Gas Scrubber in the 2013 VGP)

- MARPOL Annex VI (2008, rev.) includes standards to control engine emissions from oceangoing vessels.
- One option for meeting these new sulfur emission standards (SO<sub>x</sub>) is the use of an exhaust gas cleaning system (i.e., scrubbers)
- Scrubber washwater from EGCS is one of the 2013 VGP regulated discharges.
- Significant increase in EGCS use onboard ships.



Source: <https://cdn.wartsila.com/docs/default-source/product-files/egc/product-guide-o-env-sox-scrubber-tech.pdf>

# Exhaust Gas Cleaning System (EGCS) Washwater: Basic Framework of the 2013 VGP (Part 2.2.26)

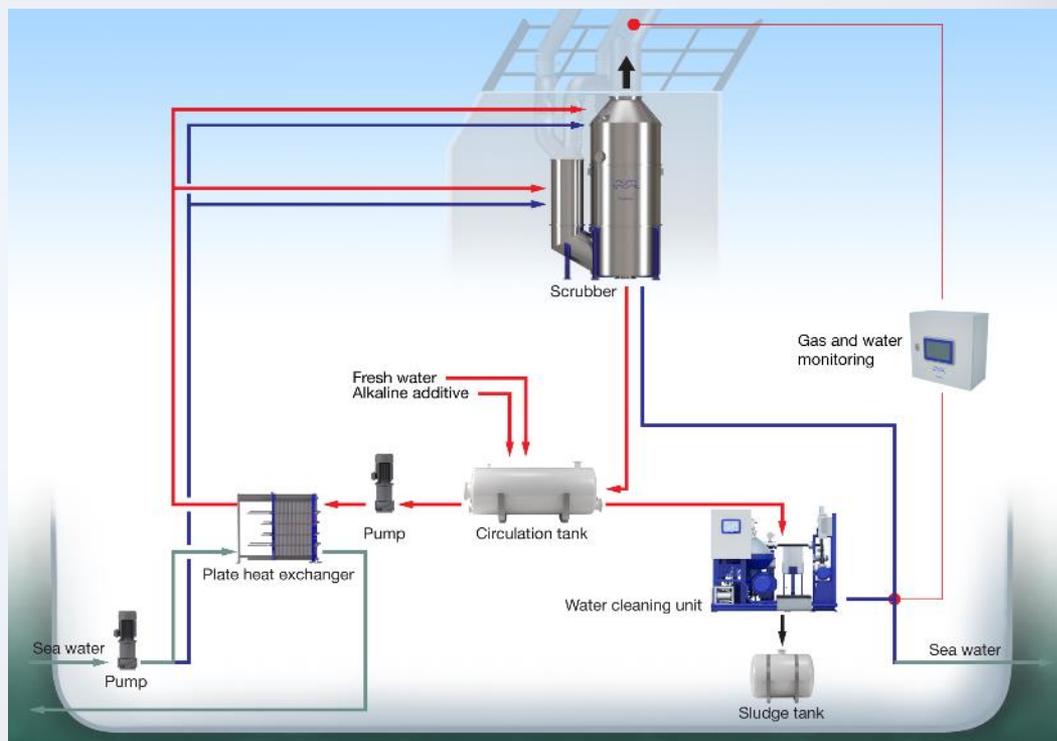
2013 VGP EGCS washwater discharge restrictions:

- Based on the *2009 Guidelines for Exhaust Gas Cleaning Systems* (IMO Annex 9, Resolution MEPC.184(59), adopted July 17, 2009)
- Key differences from IMO Guidelines include:
  - pH Limit
  - Monitoring and Reporting Requirements



# Exhaust Gas Cleaning System (EGCS) Washwater: General Restrictions under the VGP

- EGCS discharges must not contain oil or oily mixtures as specified Clean Water Act regulations in 40 CFR 110, *Discharge of Oil*
- Sludge or residues from treating EGCS washwater must not be discharged and must be delivered to on-shore reception facilities.



Source: <https://www.alfalaval.com/microsites/puresox/technology/#Resources>

# EGCS Washwater VGP Standards: Other than pH

## *Identical to 2009 IMO Guidelines*

- **PAHs (Polycyclic Aromatic Hydrocarbons):** No greater than 50 µg/L PAH<sub>phe</sub> (phenanthrene equivalence) above inlet water; limit is adjusted based on washwater flow rates; exceedances up to 100 percent are allowed during startup (§2.2.26.1.2)
- **Turbidity:** Minimize suspended particulate matter; maximum turbidity must not exceed 25 FNU (formazin nephelometric units) or 25 NTU (nephelometric turbidity units) of inlet water (rolling average over 15 mins); provisions exist for short exceedances (§2.2.26.1.3)
- **Nitrates/Nitrites:** Remove nitrates associated with 12% NO<sub>x</sub> removal, or nitrates/nitrites above 60 mg/l, whichever is greater; limit is adjusted based on flow rates (2.2.26.1.4)



# EGCS Washwater VGP Standards: pH

- **pH:** No less than 6.0 measured at the overboard discharge; an inlet/outlet difference of up to 2.0 pH units is allowed during maneuvering and transit (§2.2.26.1.1)

2009 IMO Guideline Provides two options:

- (i) pH of no less than 6.5 measured at the overboard discharge; an inlet/outlet difference of up to 2.0 pH units is allowed during maneuvering and transit.
- (ii) pH equal to that needed to achieve a pH of 6.5 a distance of 4 meters from the hull (as determined during commissioning of the unit(s) after installation while at rest in the harbor)



# EGCS Washwater: VGP Monitoring Requirements

- **Continuous Monitoring:** For pH, PAH (as available), turbidity, and temperature; upkeep and performance of equipment is also specified (§2.2.26.2.1)
- **Analytical Monitoring:** Must collect and analyze two samples in the first year; one sample each subsequent year (§2.2.26.2.2)
  - **Locations (3):** Inlet, after scrubber (before treatment), and discharge.
  - **Recordkeeping:** Must retain on-board for 3 years.
  - **Analytes:** Dissolved and total metals (9), PAHs (15), nitrate/nitrite, and pH using standard methods as listed (§2.2.26.2.3)
  - **Reporting:** Must submit all monitoring data annually to EPA electronically; can submit data with annual report (2.2.26.2.4)



# 2013 VGP EGCS Annual Reporting (p. 1)

## Annual Report: Exhaust Gas Scrubber Discharge Monitoring Supplemental Addendum (VGP Exhaust Gas Scrubber Discharge Monitoring Report)

### Exhaust Gas Scrubber Analytical Monitoring (provide information for all that apply)

Sample Date: \_\_\_\_\_ Sample Type (inlet water, water after the scrubber, discharge water): \_\_\_\_\_ Facility Identifier (i.e., NOI number): \_\_\_\_\_

Sample #: \_\_\_\_\_ (Please provide a separate page for each sampling event)

Parameter	Analytical Method <sup>a</sup>	Sample Date(s) <sup>b</sup> (MM/DD/YYYY)	Sample Result(s)	Units	Flow Rate	Discharge Location (Lat/Long) <sup>c</sup>	Was the Sample Taken in U.S. Waters?
Nitrate-Nitrite							
pH							
Arsenic							
Cadmium							
Chromium							
Copper							
Lead							
Nickel							
Selenium							
Vanadium							
Zinc							
Acenaphthylene							
Acenaphthene							
Anthracene							
Benz[a]anthracene							
Benzo[ghi]perylene							
Benzo[a]pyrene							
Benzo[b]fluoranthene +							
benzo[k]fluoranthene							
Chrysene							
Dibenz[a,h]anthracene							
Fluoranthene							
Fluorene							
Indeno[1,2,3-c,d]pyrene							
Naphthalene							
Phenanthrene							
Pyrene							

Sample Type (inlet water, water after the scrubber, discharge water):

### Additional Detail:

pH Probe Value (at same time sample collected): \_\_\_\_\_

PAH Probe Value (at same time sample collected): \_\_\_\_\_

Turbidity Probe Value (at same time sample collected): \_\_\_\_\_

Maximum continuous rating or 80 percent of the power rating of the fuel oil combustion unit in MWh: \_\_\_\_\_

Sampling performed downstream of the water treatment equipment but upstream of washwater dilution (or other reactant dosing) prior to discharge?  Yes

No

a) Part 2.2.26.2.3 of the permit discusses appropriate methods for monitoring. Please select methods that correct for matrix interference.

b) Part 2.2.26.2.2 of the permit provides the required sampling schedule. If you collected multiple samples during the calendar year, list the samples and corresponding results in order of date collected.

c) Provide latitude and longitude of discharge location during sampling.



# 2013 VGP EGCS Annual Reporting (p. 2)

## Exhaust Gas Scrubber Continuous Monitoring (provide information for all that apply)

Month: \_\_\_\_\_ (Please provide a separate page for each month of the discharge)

Parameter	Units <sup>a</sup>	Minimum Monthly Measured Value	Average Monthly Measured Value	Maximum Monthly Measured Value	Did You Operate in US Waters this Month?
pH	Standard Units				
PAH (if available)	µ/L PAHphe				
Turbidity					
Temperature					

### Additional Details:

pH probe calibration date: \_\_\_\_\_

PAH probe calibration date (if available): \_\_\_\_\_

Turbidity probe calibration date: \_\_\_\_\_

Temperature probe calibration date: \_\_\_\_\_

Maximum continuous rating or 80 percent of the power rating of the fuel oil combustion unit in MWh: \_\_\_\_\_

Sampling performed downstream of the water treatment equipment but upstream of washwater dilution (or other reactant dosing) prior to discharge?  Yes  No

Exhaust gas scrubber treatment system additives (names of any additives and dosage (if available) used, i.e., coagulant, flocculant, reaction water): \_\_\_\_\_

a. Units for turbidity are either FNU or NTU, and units for temperature are either °C or °F.



# 2013 VGP Electronic Annual Reporting

	A	B	C	D	E	F	G	H	I
1	* Vessel Name	* EGS Unit Descriptor	* List any exhaust gas scrubber treatment system additive(s) and dosage(s)	Parameter	* Units	* Probe Calibration Date	January		
2							* Min	* Avg	* Max
3	text A(1) - A(500)	text A(1) - A(500)	text A(1) - A(500)	fixed	fixed (2) or drop down (2)	date [MM/DD/YYYY]	up to 5.3 digits	up to 5.3 digits	up to 5.3 digits
4				pH	S.U.				
5				PAH	ug/l PAHphe				
6				Turbidity					
7				Temperature					
8				pH	S.U.				
9				PAH	ug/l PAHphe				
10				Turbidity					
11				Temperature					
12				pH	S.U.				
13				PAH	ug/l PAHphe				
14				Turbidity					
15				Temperature					



# Oil-to-Sea Interfaces



# Oil-to-Sea Interfaces: Description of Category (VGP §2.2.9)

Full title of this category in the VGP is:

***“Controllable Pitch Propeller and Thruster Hydraulic Fluid and Other Oil-to-Sea Interfaces Including Lubrication Discharges from Paddle Wheel Propulsion, Stern Tubes, Thruster Bearings, Stabilizers, Rudder Bearings, Azimuth Thrusters, Propulsion Pod Lubrication, and Wire Rope and Mechanical Equipment Subject to Immersion” (§2.2.9)***



# Oil-to-Sea Interfaces: Definition

Oil-to-sea interfaces include any mechanical or other equipment on board a vessel where seals or surfaces may release quantities of oil and are subject to immersion in water. The VGP specifically identifies several types of equipment that have the potential for lubrication discharges from oil-to-sea interface, including:

- Controllable Pitch Propeller
- Thrusters
- Paddle Wheel Propulsion
- Stern Tubes
- Thruster Bearings
- Stabilizers
- Rudder Bearings
- Azimuth Thrusters
- Propulsion Pod Lubrication
- Wire Rope
- Mechanical equipment subject to immersion (e.g., dredges, grabs, etc).

In addition, there may be other types of equipment that could be considered an oil-to-sea interface that were not specifically mentioned in the VGP.



# Oil-to-Sea Interfaces: VGP Requirements—General

- Equipment with oil-to-sea interfaces must be maintained in good operating order
- No discharges of oil in harmful quantities as defined in 40 CFR Part 110
- Conduct maintenance activities in drydock if possible
- Minimize maintenance activities on stern tube seals outside of drydock
- Use appropriate spill response equipment (e.g., oil booms) to contain oil leakage in quantities defined as harmful under 40 CFR 110 during maintenance and emergency repair
- Ensure ready access to spill response resources
- Wipe equipment down after applying lubricants to remove excess unless deemed unsafe by the Master of the vessel



# Oil-to-Sea Interfaces: VGP Requirements for Environmentally Acceptable Lubricants (EALs)

- Must use EALs in all oil-to-sea interfaces unless technically infeasible
  - “Environmentally acceptable lubricants” means lubricants that are either: (1) “biodegradable” and “minimally-toxic” and “not bioaccumulative” as defined in Appendix A or (2) labeled under one of several labeling programs (e.g., European Ecolabel).
  - “Technically infeasible” means that no approved EAL products have OEM approval, exist for a particular application, are available in a particular port, or can be deployed in-water
- Must keep records and document use of non-EALs
- No discharges of EALs in quantities defined as harmful in 40 CFR 110
- EPA recommends use of seawater-based systems for stern tube lubrication in new builds



# Graywater



# Graywater Requirements

- General Discharge Requirements
  - Treatment Requirements
  - Oils, Soaps, and Detergents
  - Nutrient-Impaired Waters
- Additional Discharge Requirements
  - Vessels Greater than 400 Gross Tons (GT)
    - Treatment Standards
  - Great Lakes
  - Medium and Large Cruise Ships
  - Large Ferries
  - Monitoring
    - Medium and Large Cruise Ship monitoring



# General Graywater Requirements

- **Defined as:** galley, bath, and shower water, as well as wastewater from lavatory sinks, laundry, and water fountains.
- All vessels must **minimize** the discharge of graywater while in port.
  - For example, delaying laundry, scullery activities, and restricting length of showers
- Vessels with storage capacity shall not discharge in Appendix G waters.



# General Graywater Requirements: Oils, Soaps, and Detergents

For purposes of discharge...

## Kitchen Oils and Food Residue

- Introduction of kitchen oils to the graywater system must be minimized.
- Remove as much food and oil residue as practicable before rinsing dishes.
- Excess oils used in cooking shall not be added to the graywater system.
- Under no circumstances may oil from the galley and scullery be discharged in quantities that may be harmful as defined in 40 CFR Part 110.

## Soaps and Detergents

- Phosphate-free
- Minimally-toxic
- Free from toxic or bioaccumulative compounds
- Not lead to extreme shifts in receiving water pH (outside of 6.0-9.0).



# General Graywater Requirements: Nutrient-Impaired Waters

- Vessels with storage capacity shall not discharge
- Vessels without storage capacity must:
  - Minimize production and discharge in these waters
  - Discharge must occur while underway in areas with significant circulation and depth to the extent feasible



# Graywater Treatment Standards

## Treatment Standards (Parts 5.1 and 5.2)

- The discharge must satisfy the minimum level of effluent quality specified in 40 CFR §133.102;
- The geometric mean of the samples from the discharge during any 30-day period may not exceed 20 fecal coliform/100 milliliters (ml) and not more than 10 percent of the samples exceed 40 fecal coliform/100 ml; and
- Concentrations of total residual chlorine may not exceed 10.0 micrograms per liter ( $\mu\text{g/l}$ ).



# Additional Graywater Requirements: Vessels Greater than 400 GT

- Regularly travel more than 1 nm from shore:
  - With adequate storage capacity: discharge greater than 1 nm from shore and while the vessel is underway, or meet the treatment standards and other requirements in Parts 5.1.1 and 5.1.2 or 5.2.1 and 5.2.2 of this permit
  - Without storage capacity: No additional requirements.
- Do not regularly travel more than 1 nm from shore:
  - Minimize the discharge of graywater
  - With Storage capacity: dispose of graywater onshore if appropriate facilities are available and such disposal is economically practicable and achievable, or meet the treatment standards and other requirements in Parts 5.1.1 and 5.1.2 or 5.2.1 and 5.2.2 of this permit. Also, minimize the discharge of graywater when the vessel is not underway.



# Additional Graywater Requirements: Great Lakes

Any vessel operating on the Great Lakes that is not a “commercial vessel” as defined in CWA section 312(a)(10)

Either:

- Hold all graywater for onshore discharge to an appropriate shoreside facility;

*OR*

- Discharge graywater with no more than:
  - Fecal coliform - 200 cfu/100mL
  - Suspended solids - 150 mg/L



# Additional Graywater Requirements: Medium and Large Cruise Ship

- Pierside Limits –
  - Available facilities:
    - Must be used unless the vessel treats graywater to the standards in Part 5.1.1.1.2.
  - No available facilities AND no treatment capability:
    - Hold until underway and not in waters subject to the permit.
- Operational Limits –
  - Within 3 nm from shore, discharges are prohibited unless they meet the effluent standards in Part 5.1.1.1.2.

*Note: Certain exemptions apply for medium cruise ships constructed before December 19, 2008, and are not included here*



# Additional Graywater Requirements: Medium and Large Cruise Ships

## Nutrient-Impaired Waters

- Must not discharge unless the length of voyage in nutrient-impaired waters exceeds the vessel's holding capacity; and
- Minimize the discharge of any graywater into nutrient-impaired waters; and
- If your vessel's holding capacity for graywater is exceeded, treat such excess graywater to the standards in Part 5.1.1.1.2 prior to;

*OR*

- Dispose of the graywater at an onshore facility.

## “Other Materials”

- Additional requirements for toxic materials, as well as waste from mercury-containing products, dry cleaners or dry cleaner condensate, photo processing labs, medical sinks or floor drains, chemical storage areas, and print shops



# Additional Graywater Requirements: Large Ferries

- Pierside Limits –
  - Available facilities:
    - Must be used, if available and their use is economically achievable, unless the vessel treats graywater to the limits found in Part 5.1.1.1.2 of the permit.
  - No available facilities:
    - Hold graywater if the vessel has the holding capacity and discharge the effluent while the vessel is underway.
- Operational Limits – Within 3 nm from shore, discharges must be made while underway at 6+ knots, if feasible. If not feasible, document why in recordkeeping documentation.



# Additional Graywater Requirements: Monitoring (Applicability)

- Vessels that discharge graywater and meet one of the following conditions:
  - The vessel was constructed on or after December 19, 2013, has a maximum crew capacity greater or equal to 15, and provides overnight accommodations to those crew; or
  - The vessel operates on the Great Lakes and is not a “commercial vessel” as defined in CWA section 312(a)(10)



# Additional Graywater Requirements: Monitoring (Requirements)

- Collect and analyze 2 samples per year, collected at least 14 days apart, and report the results in the Annual Report
  - Biochemical Oxygen Demand (BOD), fecal coliform (or *E. coli*), suspended solids, pH, and total residual chlorine
- Records of monitoring information must be maintained, including details of the sampling and the analytical techniques used, amongst other information
- Vessels must also indicate whether the monitored graywater is:
  - Treated or untreated
  - Mixed with another effluent type



# Additional Graywater Requirements: Cruise Ship Monitoring

Applicability: Medium and Large cruise ships intending to discharge treated graywater within 3 nm from shore

Requirements:

- Initial monitoring:
  - Collect and analyze five samples on different days over a 30-day period for BOD, fecal coliform, suspended solids, pH, total residual chlorine, *E. coli*, total phosphorous, ammonia, nitrate/nitrite, and Total Kjeldahl Nitrogen
  - Collected the later of: 1st 90 days of permit coverage, within 90 days of treatment installation, or before vessels discharge into VGP waters
- Maintenance monitoring
  - Collect and analyze one sample per quarter for the same constituents
- Records must be maintained estimating quantity and quality of discharges



# Anti-Fouling Hull Coatings and Hull Coating Leachates & Underwater Ship Husbandry and Hull Fouling



# Definitions

- **“Fouling Organisms”** means any aquatic flora and/or fauna which attach to, associate with, and/or grow on or in the vessel.
- **“Hull Coating Leachate”** means the constituents that leach, dissolve, ablate, or erode from the paint on the hull into the surrounding seawater.
- **“Underwater Ship Husbandry Discharges”** means the materials discharged during the inspection, maintenance, cleaning, and repair of hulls or hull appendages performed while the vessel is waterborne.



# Anti-Fouling Hull Coatings and Hull Coating Leachates (VGP §2.2.4)

- All anti-fouling coatings subject to this permit must meet the requirements of the **Clean Hull Act of 2010**.
- All anti-fouling hull coatings subject to registration under **FIFRA** must be registered, sold or distributed, applied, maintained, and removed in a manner consistent with applicable requirements on the coatings' FIFRA label.
- For anti-fouling hull coatings not subject to **FIFRA** registration, hull coatings must not contain any biocides or toxic materials banned for use in the United States.
- At the time of initial application or scheduled reapplication of anti-fouling coatings, you must give consideration...to the use of hull coatings with **the lowest effective biocide release rates**, rapidly biodegradable components...or non-biocidal alternatives, such as silicone coatings.



# Anti-Fouling Hull Coatings and Hull Coating Leachates

- The discharge of **Tributyltin (TBT)** from any source or any other organotin compound used as a biocide is prohibited by this permit ... If the vessel has previously been covered with a hull coating containing TBT ...or any other organotin compound used as a biocide, vessels must be effectively overcoated so that no TBT or other organotin leaches from the vessel hull or the TBT or other organotin coating must have been removed from the vessel's hull.
- When used as a catalyst, an **organotin compound** other than TBT...is not to be present above 2500 mg total tin/kg of dry paint. Furthermore, the coating shall not be designed to slough or otherwise peel from the vessel hull. Incidental amounts of coating discharged by abrasion during cleaning or after contact with other hard surfaces...are not prohibited.



# Anti-Fouling Hull Coatings and Hull Coating Leachates

- Some ports and harbors are impaired by **copper**, a biocide used commonly in anti-foulant paints...When vessels spend more than 30 days a year in these waters, or use these waters as their home port, vessel owners/operators shall consider using anti-fouling coatings that rely on a rapidly biodegradable biocide or another alternative rather than copper-based coatings.
- If after consideration of alternative biocides, vessel operators continue to use **copper-based antifoulant paints**, they must document in their recordkeeping documentation how this decision was reached.



# Underwater Ship Husbandry and Hull Fouling

- Vessel owners/operators must minimize the **transport of attached living organisms** when traveling into U.S. waters from outside the U.S. economic zone or between Captain of the Port zones.
- Management measures to minimize the transport of attached living organisms include selecting an appropriate anti-foulant management system and maintaining that system, in water inspection, cleaning, and maintenance of hulls, and thorough hull and other niche area cleaning when a vessel is in drydock.



# Underwater Ship Husbandry and Hull Fouling

- Whenever possible, rigorous hull-cleaning activities should take place in drydock, or at a land-based facility where the removal of fouling organisms or spent antifouling coatings paint can be contained.
- If water-pressure-based systems are used to clean the hull and remove old paint, you must use facilities which treat the washwater prior to discharging to waters subject to this permit in order to remove the antifouling compound(s) and fouling growth from the washwater.
- If mechanical means...are used to clean the hull and remove old paint, the materials removed from the hull during that process must be collected and disposed of properly... These materials must not be allowed to contaminate nearby waters.



# Underwater Ship Husbandry and Hull Fouling

- Vessel owners/operators who remove fouling organisms from hulls while the vessel is waterborne must employ methods that minimize the discharge of fouling organisms and antifouling hull coatings. These shall include:
  - Use of appropriate cleaning brush or sponge rigidity to minimize removal of antifouling coatings and biocide releases into the water column;
  - Limiting use of hard brushes and surfaces to the removal of hard growth; and
  - When available and feasible, use of vacuum or other control technologies to minimize the release or dispersion of antifouling hull coatings and fouling organisms into the water column.



# Underwater Ship Husbandry and Hull Fouling

- Vessel owners/operators must minimize the release of **copper-based antifoulant paints** during vessel cleaning operations. Cleaning of hull surfaces coated with copper-based antifoulant paint must not result in any visible cloud or plume of paint in the water; if a visible cloud or plume of paint develops, shift to a softer brush or less abrasive cleaning technique.
- A **plume** or **cloud of paint** can be noted by the presence of discoloration or other visible indication that is distinguishable from hull growth or sediment removal. Production of a plume or cloud of sediment or hull growth is normal in some cases during vessel hull cleaning, but this plume or cloud must be substantially paint free.
- When feasible, attempts must be made to minimize the release of fouling organisms and antifouling systems into surrounding waters.



# Underwater Ship Husbandry and Hull Fouling

- Vessels that use **copper-based anti-fouling paint** must not clean the hull in copper-impaired waters within the first 365 days after paint application unless there is a significant visible indication of hull fouling...If you clean before 365 days after paint application in copper-impaired waters, you must document in your recordkeeping documentation why this early cleaning was necessary.



# Contact Information

- **EPA**

- EPA Vessels, Marinas, and Ports Homepage
- Email: [VGP@epa.gov](mailto:VGP@epa.gov)

- **USCG**

- USCG Operating and Environmental Standards Homepage
- USCG Marine Safety Center Homepage
- Email: [Environmental\\_Standards@uscg.mil](mailto:Environmental_Standards@uscg.mil)



# Public Input

- Are there any requirements under the 2013 Vessel General Permit (VGP), U.S. Coast Guard regulations, or other regulations and guidelines that you recommend the agencies be mindful of, or consider altering, in the development of national standards of performance and corresponding implementing regulations under VIDA?



# Public Input

- Are there new technologies or practices that the agencies should be aware of in the development of future national standards of performance and corresponding implementing regulations under VIDA?

