EnviroMail 064

April 2023

INTRODUCTION TO VESSEL DISCHARGE WATER ANALYSIS

INTRODUCTION

Intaking and discharging marine water across the global regions is often required in Vessel operation. To avoid the growing environmental impact to the marine native species and ecosystem, the vessel is required to test the discharge water after treatment and comply with the related regulations, such US EPA VGP 2013, before discharging to the sea.

As an accredited lab, ALSHK have provided sampling and testing service for the different testing schemes. The Four (4) main types of water samples are recognized as **Ballast water, Gray water Bilgewater and Gas Scrubber Washwater.**

BALLAST WATER

Ballast water is the water held in tanks of ship to increase stability and maneuverability during transit.

Analyte Description	Method Reference	Limit of Reporting
Heterotrophic Plate Count	APHA 9215: A & B	1 CFU/mL
Enterococci	USEPA 1600	1 CFU/100mL
Escherichia coli	APHA 9223B	2.2 MPN/100mL
Total Residual Chlorine - Field test	APHA 4500 Cl: G	0.1 mg/L

GRAY WATER

Gray water refers to the wastewater generated from lavatory sinks, laundry, and water fountains. Below parameters is included but not limited for gray water testing.

Analyte Description	Method Reference	Limit of Reporting
Biochemical Oxygen Demand	APHA 5210 B	2 mg/L
Faecal coliforms	APHA 9222D / DoE Section 7.8 & 7.9	1 CFU /100ml
Escherichia coli	APHA 9223B	2.2 MPN/100ml
Total Suspended Solids	APHA 2540D	2 mg/L
pH Value - Field test	APHA 4500 H: B	0.1 pH unit
Total Residual Chlorine- Field test	APHA 4500 Cl: G	0.1 mg/L

BILGE WATER

Oily bilgewater is the mixture of water, oily fluids, lubricants and grease, cleaning fluids and other wastes that accumulate in a vessel from mechanical and operational machinery.

Analyte Description	Method Reference	Limit of Reporting
HEM (Oil and Grease)	APHA 5520B	5 mg/L
Hydrocarbon Oil Index (Total Petroleum Hydrocarbon C10-C36)	USEPA 8015	C10-C14: 20 ug/L C15-C28: 50 ug/L C29-C36: 100 ug/L

EnviroMail 064

April 2023

GAS SCRUBBER WASHWATER

Vessel with a wet exhaust gas scrubber system is required to collect and analyze exhaust gas scrubber sample. During each sampling event at least each of the inlet and outlet samples is required as compassion. The analysis is listed as below.

Analyte Description	Method Reference	Limit of Reporting
Dissolved & Total Heavy Metals*	USEPA 6020	0.1- 5 µg/L
Nitrate as N	APHA 4500NO3: I	0.01 mg/L
Nitrite as N		0.01 mg/L
16 PAHs**	USEPA 8270C	0.5 -1 µg/L

*Heavy metals include Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Thallium Vanadium and Zinc
**16 PAHs include Acenaphthylene, Acenaphthene, Anthracene, Benz(a) anthracene, Benzo[g,h,i]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

Due to Hong Kong law restriction, client will collect the scrubber water samples outside the border, with the sampling kit provided by ALSHK in advance.

SAMPLING BOTTLES and STANDARD TURNAROUND TIME

Sample types	Label Color	Container (Preservative)
Ballast Water	Grey	1x 250ml Sterile Plastic ($Na_2S_2O_7$)
Gray Water	Green Grey	1x 1L Plastic (none) 1x 250ml Sterile Plastic ($Na_2S_2O_7$)
Bilge Water	Purple Orange	1x 500ml Amber glass (H_2SO_4) 1x 500ml Amber glass (none)
Gas Scrubber Washwater	Red/Green Green Orange	1x 180ml plastic (none) 1x 250ml plastic (none) 1x 500ml Amber glass (none)

Our standard laboratory turnaround time (TAT) will be 7 working days for testing performed in ALSHK. ALSHK also provide the other testing parameters such as Trihalomethane (THMs), Haloacetic acid (HAA) to meet the US EPA VGP 2013 requirement.

REFERENCES

1) United States Environmental Protection Agency
VESSEL DISCHARGE SAMPLE COLLECTION & ANALYTICAL MONITORING - A How-To Reference for EPA's 2013 Vessel General Permit (VGP) (2014)
2) International Maritime Organization (IMO)
https://www.imo.org/en/ourwork/environment/pages/ballastwatermanagement.aspx

For More Information

Please email to: cs_env.alshk@ALSGlobal.com
or call us at +852 2610 1044
Address:
11/F, Chung Shun Knitting Centre,
1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong