

## Environmental Sampling

### Background:

Sampling of treated waste streams is done as due diligence to verify performance of equipment and where required for compliance with regulations.

The Company has drawn a fleet sampling agreement with an external vendor (e.g. SGS)

The effectiveness of the sampling has not been very high including but not limited to: samples have been taken that are not really necessary, no follow up of the results received, inadequate tracking of due samplings (e.g. for USA VGP)

### References:

- 1) VMS: [EMM](#) > [various waste stream sections]
- 2) VMS: [EMM](#) > 6.0 Waste Stream Management Practices and Procedures

## ACTIONS REQUIRED

*The below does not refer to public health related samplings, like such of potable water (micro-biological, legionella etc) but only to environmental ones*

### Shipboard commands:

- 1) Please track due dates and plan for the following samples:
  - a) Annual (one event) treated bilge water for hydrocarbon oil and grease – to compare vs OCM (Oil Content Meter) reading, must be within +/- 5 ppm.
 

Note: This should be ideally de-phased with 6 months from the annual (verification of) calibration of OCMs
  - b) For ships with IMO Sewage Treatment Plants /STP (which are not categorized as Advanced Wastewater Treatment Plants/Systems, AWWTP/S) – annual sampling (one event) of treated sewage/black water (and/or mixed with grey if entering together the STP) – for a limited number of parameters (like fecal coliforms, biological oxygen demand BOD<sub>5</sub>, total suspended solids TSS, total residual chlorine TRC, pH)
    - For Alaska going ships – more samples may be required in and out of state of Alaska
  - c) For ships with AWWTP/S (like Scanship, Marinfloc etc and especially those going to USA) – annually 5 sampling events within 30 days, each on a different day, of treated effluent (treated grey mixed with treated black water) for a number of parameters including the above and many more (sampling of the untreated influent is also required)
    - For Alaska going ships – more samples may be required before the season and when trading there

- d) For ships equipped with USCG approved Ballast Water Treatment Systems (BWTS)
  - During first year of installation – two samples min. 14 days apart (for bacteria)
  - During next years – once (one event) per year

*Follow the type approval conditions by the USCG for your specific BWTS – like min. holding time of ballast onboard (for UV systems typically 72 hrs), min UV light intensity, min/max temperatures etc)*

- e) For ships with incinerators – annual sampling (one event) of incinerator ash for heavy metals / toxic substances for profiling whether hazardous waste or not

- 2) If you are approached directly for sampling events by the vendor (e.g. SGS or other) please always copy **shoreside**- your VOTech fleet cell and [stanislavk@silversea.com](mailto:stanislavk@silversea.com)

- 3) Before and during the sampling (event):

- a) Ensure, as applicable, the treatment equipment is in good working order, without overdue maintenance and operating within its type approval / manufacturer recommended limits
- b) Do good flushing, at least 10-15 times the amount of sample to be taken
- c) Disinfect the area of the sampling valve/line- with heat, alcohol etc
- d) Take a sample that best represents the treated waste (close to the overboard discharge, where acceptable in recirculation, with the proper load of persons onboard, time etc)
- e) Use vendor's kits (where available). Some of them contain dark glass containers with preservative liquid/pill inside. Where possible the qualified technician should take the sample  
It is important that:
  - Fill the containers as much as possible as otherwise the accuracy of the sample criteria is lesser

***Do not place bare fingers inside***

*Use PPE as appropriate*

- Use seals and Chains of Custody Forms (CoC)
- For samples with limited holding times (e.g. for fecal coliforms the time to reach the lab is 6 hrs)- have the sample cooled down

*Ensure that the vendor cools the sample (especially of wastewaters – grey / black) / places it in a cooler box with ice or gel packs*

- 4) Advise **shoreside** (as above) of the sample taken/sent
- 5) Upon receipt of results, request interpretation by **shoreside** and any actions to follow up
- 6) File the results onboard and update your plan for next sampling event accordingly

■ ■ Completed ■ ■