

Review of the GVHA Emissions Inventory Report

Summary

The GVHA [Emissions Inventory report](#), prepared by Synergy, was posted on the GVHA website on Wednesday, 16th October 2019.

The James Bay Neighbourhood Association (JBNA) has reviewed the report and requests that Mayor and Council review the comments below prior to meeting with GVHA.

Several concerns are raised below but the principal issue is that no emission measurements occurred at Ogden Point. This should have been stated prominently and clearly in the Executive Summary.

All the cruise ship emission figures within the Synergy report are theoretical and derived from industry tables.

Source of the report data

None of the report figures are from actual emission measurements at Ogden Point. The figures presented are estimates based, amongst other factors, on:

- a "vessel power demand", and
- an "emission factor" calculated from an assumption of the type of fuel burned.

Not until page 11 is there an indication that all the cruise data presented is a theoretical estimate. It would have been candid and more transparent if a clear note to this effect had been included in the Executive Summary.

Does the report reflect reality?

Other than for Sulphur Dioxide (SO₂), there is no local data available to substantiate the "Critical Air Contaminants (CACs)" emission quantities listed in the report.

The CACs listed in the report are: Particulate Matter, Carbon Monoxide, Sulphur Dioxide and Nitrogen Oxides.

The theoretical analysis hinges on two assumptions which are questionable, namely:

- **The assumption that no air violations occurred in 2018**

In Alaskan ports cruise ships are inspected, emissions are monitored, and fines are levied where appropriate. Government inspections do not occur in Victoria.

In 2018 ten cruise ships that visited both Alaska and Victoria received either water (9 ships) or air (6 ships) violation notices. These same ships visited Victoria 100 times during 2018 representing 41% of the 243 total cruise ship visits.

Is it reasonable to assume that no violations occurred in Victoria, a jurisdiction where government monitoring is absent?

Please refer to Appendix #1; and

- **The assumption that the CAC emissions from all ships in 2018 was equal to that emitted by ships burning 0.1% sulphur fuel, regardless of the fuel in use.**

In addition to reducing SO₂ scrubbers also reduce other CAC emission. However, they may be less effective in reducing the smallest particles (<0.1µm) which are the most hazardous to health.

Please refer to Appendix #2, #3 & #4

Appendix

#1 – 2018 Alaskan Port Violations

This table lists those cruise ships which were issued air and wastewater violations in Alaskan ports in 2018 and visited Victoria in that year.

Ship Name	Air Violation	Water Violation	# of Victoria Visits
Amsterdam	x		18
Emerald Princess	x	x	20
Eurodam	x	x	22
Golden Princess	x	x	1
Nieuw Amsterdam	x	x	1
Regatta		x	9
Ruby Princess		x	23
Seven Seas Mariner		x	4
Star Princess		x	1
Westerdam	x	x	1
Total			100

Included in the Alaskan "[Air Violation](#)" report is the statement:

"The increase in public complaints coincides with an increase in the number of ships operating Exhaust Gas Cleaning Systems (EGCSs or Scrubbers). Complaints show a weekly trend with certain vessels reporting excess smoke, smell of exhaust and a blue haze settling over downtown Juneau"

This extract details a \$US37,500 fine paid by Norwegian Cruise Lines; an additional three 2018 pending settlements are listed in the report:

"2018 Action: NOV issued September 7, 2018 on the Norwegian Jewel for July 11, 2018 noncompliance in Ketchikan. Demand Letter of Stipulated Penalties issued October 5, 2018. Stipulated penalties of \$37,500 paid by NCL"

There were 243 cruise ship visits to Victoria in 2018 of which 100 (41%) visits were by ships which had, in the same year, violated Alaskan air or water environmental regulations.

#2 - Use of low sulphur fuel or scrubbers

Regulations, which came into effect on 1st January 2015, lowered the maximum allowable sulphur content of fuel from 1% to 0.1% for ships travelling within the North American Emission Control Area (NAECA). However, alternatives, which would allow the use of high sulphur fuel, may be permitted if they result in sulphur dioxide (SO₂) emissions equivalent to that of the low sulphur fuel.

Although scrubbers will achieve a reduction in particulate matter there is no evidence that equivalency is achieved (#4 below).

The majority, if not all, of the ships arriving in Victoria are fitted with scrubbers and may continue to burn high sulphur fuel while in port.

#3 - In the real world scrubber malfunctions and operator “errors” occur

The report relies on theoretical “best case” emission figures and assumes that the scrubbers work as designed. Below are two extracts from articles related to the recent prosecution of Carnival Cruises.

“Incidents outlined in the 205-page report included more than 30 violations related to scrubbers, most arising from unexpected shutdowns. For example, Carnival Ecstasy experienced multiple scrubber shutdowns in May, July and October 2017 due to equipment malfunctions. This resulted in the ship burning heavy fuel oil in Emission Control Areas without an exhaust gas clearing system online” (ref)

“While on probation, according to court filings, Carnival Corp. and its subsidiary cruise lines have sought to avoid unfavorable findings by preparing ships in advance of court-ordered audits, falsified records, dumped plastic garbage into the ocean and illegally discharged gray water into Glacier Bay National Park in Alaska” (ref)

#4 - Evidence of high ultrafine particulate matter discharge from cruise ship scrubber exhausts

[“An investigation of air pollution on the decks of 4 cruise ships”](#) is an undercover report by the Bloomberg School of Public Health of the Johns Hopkins University.

Included in the report is the statement:

“Very small particles, classified as ultrafine particles or UFPs (100 nanometers or 0.1 µm), and even smaller nanoparticles (less than 100 nanometers) can cause airway inflammation and immunological reactions in the lungs and can travel through the bloodstream to affect other organs. The PM emitted from ship engines burning diesel fuel or heavy fuel oil is primarily composed of particles spanning from a few nanometers to less than one micron (0.001 µm–1.0 µm).”

“The findings of this study demonstrate that a source of PM—likely, in part from the ship’s exhaust system—is contributing to poorer air quality in the stern areas of these cruise ships. Concentrations of PM on the decks of these ships are comparable to concentrations measured in polluted cities, including Beijing and Santiago”

And from [the Maritime Executive](#):

*“All four ships in the study have scrubbers installed that allow them to burn heavy fuel oil inside most of the North American and Caribbean Emissions Control Areas. In California, where **scrubbers are banned within 24 miles from shore, ships are required to switch to a cleaner-burning fuel.**”*

Two of the four ships included in the report, Amsterdam (18 visits) and Emerald Princess (20 visits), visited Victoria in 2018.

The Amsterdam travelled from Vancouver to Los Angeles, wholly within the NA ECA. The Emerald Princess was on a round trip, Los Angeles/Santa Barbara/Ensenada, Mexico/Los Angeles - mostly within the NA ECA.

Submitted for City of Victoria Council’s consideration.



Marg Gardiner
President, JBNA



Bob Vander Steen
Quality of Life Committee, JBNA