

CHEMICALS



Hg NESHA P Report
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Atch #1 of 3

INTEROFFICE / LAKE CHARLES

TO R. J. Samelson

DATE February 18, 1983

FROM A. P. Plauche
APP

SUBJECT EPA Request for Hg Emissions
Information

Enclosed is the completed EPA questionnaire on Hg emissions standards which you requested that Lake Charles complete. If you have any questions or need more information, please call me at 4814.

/ap

SL 025789

3. Please provide a basic process flow diagram for each facility identifying major processes, technology, and emission control systems. See Attachments III/V

What is the annual production capacity of the mercury cells for each facility?

<u>Facility</u>	<u>Capacity (t/day chlorine)</u>
<u>Lake Charles, La.</u>	<u>700</u>
<u>New Martinsville, W.V.</u>	<u>208</u>
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Please provide information or answer the questions in this section for the Lake Charles, La. facility only.

1. What is the strength (percent by weight) of caustic produced at this facility? To what extent is evaporation used to concentrate the caustic? The strength of the caustic produced at this facility is 50%. No evaporation is utilized to achieve this concentration.
2. What are the end uses of the hydrogen gas at this facility? The H₂ gas produced is sold for use as a boiler fuel to a PPG powerhouse and to a neighboring ammonia plant as a raw material.
3. Please briefly describe the treatment of the chlorine gas stream after it leaves the cell. How is the chlorine stored and shipped? See Attachment IV

4. Please provide a basic diagram showing the emission control systems for the end-box ventilation and hydrogen stream with main components described by type, manufacturer, date of installation, design mercury removal efficiency, and typical operating conditions.

Please include under operating conditions the following types of information for each control system.

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Cooling and mist elimination: Temperatures
Cooling medium

Chemical scrubbing: Inlet gas temperature and flow rate
Scrubbing medium
Liquid flow rate
Pressure drop

Activated carbon adsorption: Inlet gas temperature and flow rate
Type of carbon impregnation
Bed depth
Typical bed life
Method of recovery of mercury from bed or disposal of spent carbon

Molecular sieve adsorption: Inlet gas temperature and flow rate
Typical bed life
Recycle-regeneration system

5. Please provide flow rates for the following ventilation systems.

a. Cell room (scfm)

Design: 1,500,000 CFM @ 20-97° F

Maximum: Not available

Typical: Not available

b. End-box (scfm)

Design: 3000 SCFM

Maximum: 3000 SCFM

Typical: ~1500 SCFM

c. Hydrogen by-product stream (scfm)

Design: 5350 SCFM

Maximum: 5350 SCFM

Typical: 5200 SCFM

6. Please specify the type of ventilation system used in the cell room. Convection type contouramic air mover

7. Please provide a list of cell room housekeeping practices if your practices differ from those recommended by the Environmental Protection Agency. PPG's housekeeping practices include all those recommended by the EPA.

8. What method and frequency of monitoring is used to measure the concentration of mercury in the air in cell rooms?

An ultra-violet absorption Hg vapor monitor is used to monitor the air in our cell rooms twice/week at 36 locations each time.

How are monitoring results used to locate mercury leaks in the cell room? All above-standard readings are immediately traced to their source and reported to the Operations Supervisor. The cause of the over-standard is eliminated that day. Follow-up monitoring is performed to insure that the problem was corrected.

What concentrations have been measured? (Please indicate time period for which measurements are provided.) Results shown cover all measurements made during 1980-81 (1982 numbers not yet summarized)

Maximum, mg/m³: 1.1
 Average, mg/m³: 0.21
 Range: <0.01 mg/m³ to 1.1 mg/m³

9. Please briefly describe the waste water treatment system used at this facility. Include a list of the sources of mercury-contaminated wastewater. See Attachment VI

10. Please briefly describe the solid waste disposal methods used at this facility. Include a list of the sources of mercury-contaminated solid wastes. The sources of Hg-contaminated solid waste are: 1) mercury sulfide filter; 2) cell renewal; 3) mercury NaOH filter; 4) misc. solids contaminated with Hg (lumber, pipe, filter leaves, etc.). All mercury contaminated solid waste is placed into 30 yd³ closed top bulk boxes (designed to transport hazardous waste solids) and transported to an off-site EPA approved hazardous waste disposal facility by EPA-approved transporters.

Is mercury recovery of solid wastes practiced? ☒ No ☐ Yes
 If yes, please briefly describe the process and provide mercury emission rates, if available.

D. Cost of Compliance With the Mercury Emission Standard

1. Please provide the following data related to the cost of compliance for those control systems described in Section C. If cost break-downs are not available, please provide total costs as indicated.

Control system identification	FUME SYSTEM	'A' ELIMIN.	MIST SIEVE	'B' ADSOR.	MOL. CARBON	'C' ADSORP.
Year installed	<u>1967</u>	<u>1971</u>	<u>1974</u>	<u>1976</u>		

- 8-2. Copies of emissions test results and supporting reports for the initial determination of compliance in 1974-75 are given in Attachment II-A. Since the middle of 1976, however, the H₂ stream has changed from an "emissions source" to a "product stream", being sold to an adjacent company for use in manufacturing ammonia, or alternatively, being used as a fuel for our powerhouse boiler. The hydrogen stream is vented to the atmosphere only during infrequent shutdown situations.

PPG has performed additional tests since 1975 to insure the continuing effective operation of control equipment for both product quality control reasons and to assure ourselves that we will remain in compliance when the need to vent H₂ arises. The method used for these "in-house" tests is not the method specified for official "compliance tests", but is a method which PPG feels gives substantially accurate results (a description of the method used is given in Attachment II-B).

Because PPG's housekeeping practices include all those practices recommended by the EPA, we are making the assumption (per EPA regulations) that emissions from the Cell Room total 1300 grams Hg/day. This leaves 1000 grams Hg/day of allowable emissions from our End Box Fume System and the H₂ system combined.

The attached laboratory analysis (Attachment II-C) report and calculations dated 3/14/78 for the "Mercury Cell End Box Vent System for Mercury" indicate that an assumption of 50 grams Hg/day for this system is reasonable. This leaves 950 grams Hg/day of allowable emissions from our H₂ system alone.

Results of tests performed on the inlet and exit of the Pura-Siv unit in 1980, given in Attachment II-D. [In the event hydrogen must be vented to the atmosphere upstream of the Pura-Siv unit (2408 grams Hg/day rate), Mercury Cell operating procedures require shutdown of the plant before the allowable mercury emission limit is exceeded.]

Additionally, analysis of the H₂ product after the HGR carbon bed is performed routinely five days per week for product quality control. These analyses verify that the 950 grams Hg/day emission limit would not be exceeded should the H₂ need to be vented at this location. The analysis results of this stream for the time period of 12/25/82 to 1/4/83 show a range of <0.4 grams Hg/day to 0.7 grams Hg/day Hg in hydrogen.