



Technical Memorandum

Research Project No. 605-81-350-2

To Michael L. Alden

From E. L. Sones

Date April 16, 1981

Subject ANALYSES OF EFFLUENT WATERS FROM THE LAKE CHARLES REFINERY

Conoco Inc.
Research and Development Department
Research Services Division
Ponca City, Oklahoma

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Summary

No organic priority pollutants were found present in these samples above the concentration level of 10 ppb. Those toxicants detected and their estimated concentrations are summarized in Table I.

Dissolved metals analyses are given in Table II. Several values for specific toxic metals in the Outfall 001 sample are above the previously determined concentrations as reported in TM 603-79-350-2.

Additional data for inorganic ions by ion chromatography and total surfactants by MBAS are given in Table III.

Discussion

The samples were delivered to Ponca City on 27 January 1981 by a chartered airplane. The waters were sampled and shipped in containers provided by the ~~Refinery Technical Service Laboratory~~. No additional samples for total phenols and cyanides determinations were apparently taken.

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The samples were received still adequately packed in ice and below 4°C. On receipt, the samples were stored in a cold room at 4°C until analyzed. Extraction of the samples for concentration of the nonvolatile organic components was performed within four days, and the extracts were preserved under refrigeration until the GC-MS analyses were performed. Analyses of the two VOA samples by purge-and-trap GC-MS were likewise accomplished the same week as received.

No refinery operating conditions or sampling information accompanied the samples. The Tenax trap samples from air sampling during this period which accompanied the water samples have not been analyzed to date.

Individual reports of the analyses (as summarized in this report) and additional metals data are included as attachments.


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BW

Attachments

Copies to: RSJ ROG CBH JWW BCT CLS

MCD 000002669

TABLE I

TOXIC ORGANIC POLLUTANTS IN
LAKE CHARLES REFINERY EFFLUENT WATERS

Component	Concentrations in ppb			
	Outfall 001 ¹		Outfall 003 ²	
	Method 624	Method 625	Method 624	Method 625
Methylene Chloride	1		3	
Chloroform	1		5	
Benzene	0.01		0.1	
1,2-Dichloroethane	0.08		---	
Ethylbenzene		1		---
Diethyl Phthalate		7		---
Fluoranthene		4		---
Chrysene		3		---
Di-(2-ethylhexyl)phthalate		6		2
Benzofluoranthene		4		---

¹Outfall 001 is the primary effluent from the continuous-flow treatment lagoons, submitted as PC1371.

²Outfall 003 is the effluent from the intermittent-flow storm water retention pond, submitted as PC1375.

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TABLE II

TOXIC METAL POLLUTANTS IN
LAKE CHARLES REFINERY EFFLUENT WATERS

	Concentrations in mg/liter					
	Outfall 001 ¹		Outfall 003 ²		Sludge Unit 2N ³	
	ICAP	AA	ICAP	AA	ICAP	AA
Antimony	<0.25		<0.25		<0.25	
Arsenic		0.004		<0.002		<0.002
Beryllium	<0.005		<0.005		<0.005	
Cadmium	<0.015		<0.015		<0.015	
Chromium	0.21		0.036		0.26	
Copper	0.061		<0.015		<0.015	
Lead	<0.25		<0.25		<0.25	
Mercury		<0.013		<0.013		<0.013
Nickel	0.10		<0.075		<0.075	
Selenium		0.003		<0.002		<0.002
Silver	<0.03		<0.03		<0.03	
Thallium	<0.5		<0.5		<0.5	
Zinc	0.36		0.032		0.27	

¹Outfall 001 submitted as PC1374

²Outfall 003 submitted as PC1378

³Activated Sludge Unit 2N sample submitted as PC1381.

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TABLE III

INORGANIC ANIONS AND SURFACTANTS IN
LAKE CHARLES REFINERY EFFLUENT WATERS

	Concentrations in ppm	
	Outfall 001	Outfall 003
Chloride	1320	280
Fluoride	0.6	0.2
Bromide	8.	1.
Nitrate	<0.5	<0.5
Sulfate	630	94
Phosphate	<1.	<1.
Surfactants	1.9	0.23

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