

JOB REPORT

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Project No. MP-1-R-2 Date June 1, 1960.
Project Name: Industrial Waste Control in Region MP-1.
Period Covered: April 1, 1959 through April 1, 1960. Job No. F3-11

Bio-Assay and Chemical Analysis of Texas Company Refinery Waste Waters,
Port Neches, Texas, Plant.

Objectives: (1) Determine the effects of the waste waters on marine life;
(2) Encourage corrections to pollution problems.

Procedures: (1) Collect waste water samples from refinery's outfall and
analyze for toxic compounds; (2) Run bio-assay to determine the effects of
the wastes on fish life.

Findings: The small Texas Company Refinery at Port Neches should not be
confused with its large parent Texas Company Refinery at Port Arthur. The
Port Neches refinery manufactures mostly asphalt products.

Approximately 1000 gallons of waste waters per minute are discharged into
the Neches River by the Texas Company Refinery. Most of the oils are removed
from the waste before it reaches the Neches River. The waste water was black
in appearance and had a strong hydro-carbon odor. Although chemical analysis
revealed no specific toxic compound in very high concentrations, fish only
survived a few minutes in low concentrations of the waste. See Tables 1 and 2
for chemical and toxilogical data.

Comments: Texas Company pledged their full co-operation with the state
in pollution control work. Pollution work in other areas prevented us from
making a more thorough survey of the Texas Company Refinery. We feel the
Texas Company will be more cautious of their pollution problems in the future.

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Accepted by: Howard T. Lee
Howard T. Lee

Date 27 September 1960

REFERENCES

American Public Health Association, American Water Works Association, Federation
of Sewage and Industrial Wastes Association. Standard Methods for the
Examination of Sewage and Industrial Wastes. 10th Edition, 1955.

American Petroleum Institute. Methods for Sampling and Analysis of Refinery
Wastes. Vol. IV, Second Edition, Copyright, 1957.

Table 1
Industrial Waste Analysis

Location:	Texas Company Outfall, Port Neches.
Date:	April 1, 1959.
Type Sample:	Grab
Collected by:	Warden R.Z. Finchum.
Oils -----	15 ppm
Total Sulfides -----	1.0 ppm
Chemical Oxygen Demand -----	120 ppm
pH -----	6.7
Color -----	Black
Odor -----	Strong hydrocarbon and sulfide.

Table 2

Bio-Assay on Texas Company's Waste Waters, Port Neches Plant
May 14, 1959

Type Test Animal: Silverside (Menidia beryllina).

No. test animals per concentration: Three (3).

Concentration	Physiological Observations
Control	All test animals alive and healthy after 48 hrs.
1%	Fish became nervous after 2 min. Swam in circles. All animals survived 48 hours.
2%	Fish showed signs of discomfort almost immediately. Respiration increased. Fish tried to jump out of jars. 1 death in 2 hours. Other 2 survived 48 hours.
3%	Fish became violent immediately. Tried to jump out of test jars. Loss of equilibrium within 1 hour. All dead within 3 hours.

Analysis of Waste Waters:	Phenols	1.5 ppm
	Oxygen Consumed	301 ppm
	pH	6.5
	Oils	32