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INSTITUTE FOR FISHERIES RESEARCH
DIVISION OF FISHERIES
MICHIGAN DEPARTMENT OF CONSERVATION
COOPERATING WITH THE
UNIVERSITY OF MICHIGAN

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TOXICITY TEST OF AMERICAN BOX BOARD PAPER COMPANY
EFFLUENT BEING DISPOSED INTO MANISTEE LAKE

By

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FISH DIVISION

On June 1, 1950 men from the Water Resource Commission delivered a one-gallon jug filled with effluent from the American Box Board Paper Company. The Institute for Fisheries Research was requested to run toxicity tests on the effluent to determine its effect on fish. This effluent was believed to have caused the mortality of fish in Manistee Lake.

The following method was used:

Bluntnose minnows which had been purchased from a local bait dealer were used as test fish. The minnows were purchased about 24 hours before the test was started and the dilution water was allowed to stand for the same time in the room in which the test was made. One-gallon wide mouth jars with plastic covers were used as test containers. A total of 3,000 ml. (3 liters) of the solution was used at varying concentrations which were aerated for 5 minutes before three minnows were placed into each jar. The solution was aerated throughout the test which ran for 72 hours or until all three fish in a jar were dead.

See "Pollution" file in ... Manistee Lake

The first run was started on June 6 using the following concentrations: 100,000 p.p.m., 70,000 p.p.m., 50,000 p.p.m., 20,000 p.p.m. and control (the dilution water). All fish except in the 100,000 p.p.m. lived for the 72 hours. In the 100,000 p.p.m. all three minnows were dead within 20 hours.

The second run was started June 12 using the following concentrations: 100,000 p.p.m., 90,000 p.p.m., 80,000 p.p.m., 70,000 p.p.m., and a control. In the 100,000 p.p.m. all test fish were dead in 41 hours, in the 90,000 p.p.m. 2 minnows were dead in 41 hours and the other lived to the termination of the test. In the 80,000 p.p.m. 2 fish were dead in 26 hours and the other lived to the end of the test, in the 70,000 p.p.m. 1 fish was dead in 69 hours and the other 2 fish lived to the end of the test. All of the control fish lived throughout the 72 hour test.

The above findings indicate that the effluent tested is not very toxic to fish. However, it was not tested for biological oxygen demand. In the test made at the Institute for Fisheries Research the addition of air before and during the test period eliminated the oxygen demand of the effluent. The effluent probably has a high biological oxygen demand and if tests were run without aeration very different results probably would be obtained.

INSTITUTE FOR FISHERIES RESEARCH

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Report approved by A. S. Hazzard

Report typed by B. Zatalokin

Table 1

First run

Hours	Control	20,000	50,000	70,000	100,000
20	3 alive	3 alive	3 alive	3 alive	3 dead
72	3 alive	3 alive	3 alive	3 alive	

Table 2

Second run

Hours	Control	70,000	80,000	90,000	100,000
17	3 alive	3 alive	3 alive	3 alive	1 dead
19	3 alive	3 alive	1 dead	3 alive	1 belly up
22	3 alive	3 alive	2 alive	3 alive	1 dead
24	3 alive	3 alive	1 belly up	3 alive	1 alive
26	3 alive	3 alive	1 dead	3 alive	1 alive
41	3 alive	3 alive	1 alive	2 dead	1 dead
65	3 alive	1 belly up	1 alive	1 alive	
69	3 alive	1 dead	1 alive	1 alive	
72	3 alive	2 alive	1 alive	1 alive	