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PRELIMINARY TOXICITY TESTS ON FISH OF A NEW  
CUTTING FLUID FROM THE FORD PLANT

by

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Experiments were undertaken to determine the toxicity of the new cutting fluid, Lusol, proposed for use by the Ford Motor Co., under controlled laboratory conditions as requested by the Stream Control Commission.

Creek chubs, Semotilus a. atromaculatus, ranging in total length from 3.1 to 4.2 averaging 3.5 inches were used as test fish. The fish were obtained from a commercial bait dealer in Ann Arbor. Ann Arbor City tap water which had been aerated for 24 hours was used as dilution water.

The experimental test equipment consisted of one-gallon glass jars with plastic covers and provided with individual air dispensers from the laboratory compressed-air line by means of rubber and glass tubing.

Each test jar was filled with 3,000 ml. of the various dilutions. The dilutions were obtained by measuring the dilution water by volume

and adding the required volume of Lusol by means of a buret. The dilution was then aerated for 10 minutes before the test fish were added. Following the introduction of three fish to each jar, aeration was continued for a period of 96 hours (duration of the test) or as long as any fish remained alive in the test medium. Three creek chubs placed in similar jars filled with the treated tap water were used as controls. All the fish in the control jars lived to the termination of the test but during the first run all the control fish showed sign of distress during the first four hours.

Two runs were made to determine the tolerance limit of creek chubs to Lusol. The test fish for the first run were in poor shape and three of them died during the tempering period of 24 hours. The room temperature during the night apparently rose too high and the water in the test jars was 85° F. when the fish were added the next morning. Dilutions of 0.1 percent (1,000 p.p.m.), 0.05 percent (500 p.p.m.), and 0.01 percent (100 p.p.m.) by volume were used. Within one hour after adding the test fish, they were all dead. In the second run the same dilutions were tested on creek chubs in water temperature of about 60° F. Within eight hours all fish in the 0.1 percent, 0.05 percent and one of the three fish in the 0.01 percent were dead. The remaining fishes in the lowest dilution lived throughout the 96-hour period and appeared to be as lively as the control fish.

It is regrettable that a shortage of creek chubs in Ann Arbor terminated the experiment. It is recommended that several tests be made on Lusol, the new cutting fluid, when chubs of proper size can be obtained from local minnow dealers.

From preliminary laboratory tests it can be estimated that about 0.2 ml. of Lusol in 3,000 ml. of water or 67 p.p.m. can be considered the maximum concentration which will not cause mortality on creek chubs. The creek chub is considered to be a moderately resistant fish -- about the same as most of the warm-water game and pan fish.

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