



# The University of Michigan

SCHOOL OF PUBLIC HEALTH  
DEPARTMENT OF ENVIRONMENTAL  
AND INDUSTRIAL HEALTH

109 OBSERVATORY STREET  
ANN ARBOR, MICHIGAN 48109-2029  
U.S.A.

## Acute Toxicity Evaluation of SWR with the Fathead Minnow (Pimephales promelas)

An aquatic toxicity study was conducted by the Institute of Environmental and Industrial Health, School of Public Health at The University of Michigan to determine the potential toxic effect on fish when exposed to SWR.

The U.S. EPA protocol, as listed in EPA 600/4-90-027 was followed in exposing the fathead minnow (Pimephales promelas) to various concentrations of SWR. Moderately hard synthetic laboratory water was employed in the preparation of the designated exposure concentrations and as a laboratory control.

The results were derived from separate 96 hour experiments. The degree of toxicity, expressed in the form of an  $LC_{50}^1$  value, was comparable between the four trials and ranged from 169 ppm to 180 ppm. However, an estimated concentration of 125 ppm<sup>2</sup> or lower of "used" SWR in the discharge water would not adversely affect the aquatic community.

SWR is employed at a 10% strength and may be diluted by a factor from 5,000 to 10,000 prior to elimination. This will result in an estimated discharge concentration of 10 to 20 ppm, which is considerably lower than the estimated "no effect level" of 125 ppm.

Based upon the toxicity data derived by the Institute and the intended application of the product for oil removal, SWR concentrations in the discharge water would not adversely affect the components of the aquatic community.

*Peter G. Meier, Ph.D.*

<sup>1</sup>LC<sub>50</sub> value represents the statistically calculated concentration that causes 50% mortality in the exposed population.

<sup>2</sup>125 ppm - Mean C<sub>1</sub> value statistically derived from acute experiments. The C<sub>1</sub> concentration is employed for estimating the "no effect level" (NOEL) obtained from chronic exposures.