Technical Data

Propylene Glycol Ethers

Environmental Aspects Report
Comparative Aquatic Toxicity of PG Ethers

Introduction

Propylene glycol ethers have a low order of aquatic toxicity. Aquatic toxicity tests may be employed as useful indicators of potential impact on the aquatic environment. Specifically, LC-50s for selected species are used to assess aquatic toxicity. LC-50s represent the concentration of the chemical in water that is lethal to 50 percent of the aquatic species to which it is exposed (usually for periods of two to four days). Aquatic toxicity data for glycol ethers were found in several sources including:

1) online databases such as 'AQUIRE' and 'OHM/TADS'
2) hardcopy references such as Verschueren (1983)
3) unpublished reports from manufacturers of glycol ethers

The data from these sources is summarized in the accompanying table. The 'spottiness' of the data is evident, as is the lack of test results for certain species and the fact that no single laboratory appears to have tested propylene and ethylene glycol ethers at same time with same protocol. Nonetheless, the results do suggest certain trends. The glycol ethers, in general, whether ethylene- or propylene-based, show a low degree of aquatic toxicity. The U.S. Fish and Wildlife Service has published a severity rating system for LC-50s. According to this system, chemicals with LC-50s between 10 and 100 mg/L are 'slightly toxic'; those between 100 and 1,000 mg/L are 'practically non-toxic'; and those above 1,000 mg/L are 'relatively harmless.' The table clearly shows that most of the LC-50s are above 1,000 mg/L (relatively harmless) and only a few are between 100 and 1,000 mg/L (practically non-toxic).

LC-50s (mg/L)							
Glycol Ether	Daphnia Magna	Blue Gill	Fathead Minnow	Rainbow Trout	Guppy	Goldfish	Lamprey Eel
PM	23,000	N/D	20,800	N/D	N/D	N/D	N/D
PMA	408	N/D	161	N/D	N/D	N/D	>5,000
PE	N/D	N/D	N/D	N/D	N/D	N/D	>5,000
PNP	>3,600	N/D	3,420	N/D	N/D	N/D	N/D
PNB	>1,000	N/D	N/D	N/D	560	N/D	>5,000
PTB	>1,000	>1,000	N/D	>1,000	N/D	N/D	N/D
PPh	370	N/D	280	N/D	N/D	N/D	N/D
DPM	1,919	N/D	>10,000	N/D	N/D	N/D	N/D
DPNB	>1,000	N/D	N/D	N/D	841	N/D	N/D
TPM	>10,000	N/D	11,600	N/D	N/D	N/D	N/D
TPNB	>1,000	N/D	N/D	N/D	564	N/D	N/D
EM	>10,000	>10,000	N/D	16,000	17,400	>5,000	N/D
EE	N/D	>10,000	N/D	N/D	16,400	>5,000	N/D
EB	835	1,490	2,137	N/D	983	1,700	N/D

N/D = No Data Located

References

AQUIRE, 1994. Online environmental data base available through the Chemical Information System (CIS), Baltimore.
OHM/TADS (Oil and Hazardous Materials/Technical Assistance Data System), 1994. Online environmental data base available through the Chemical Information System (CIS), Baltimore.
U.S. Fish and Wildlife Services, Research Information Bulletin No. 84-78, August, 1984.
Verschueren, K. 1983. 'Handbook of Environmental Data on Organic Chemicals, Second Edition.' Van Nostrand Reinhold, NY.

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