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OTS DOCUMENT CONTROL OFFICE

Document Control Officer (TS-790)
(Attn.: Section 8(e) Coordinator)
Information Management Division
Office of Toxic Substances
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Dear Sir or Madam:

This notice is being submitted in accordance with Section 8(e) of the Toxic Substances Control Act. Information in this notice has been obtained from designed, controlled studies on 1-octanol. These studies were conducted as part of our research and development work in toxicology and were designed to provide information on 1-octanol.

The experimental design was as follows:

> Two exposures to 1-octanol were performed using two groups of 10 rats (5 males and 5 females) each. The rats were exposed via inhalation to 1-octanol vapor for either one hour at 6,400 mg/m^3 or for four hours at 5,600 mg/m^3. The 1-octanol was heated to 300° C and the animals were exposed to the resulting vapors. The rats were held for up to seven days, sacrificed, and the lungs removed and processed for histological examination.

Three of ten rats exposed to 1-octanol (5,600 mg/m^3) for four hours died within two days following the exposure.

Microscopic examination of the lungs of exposed animals was conducted. No microscopic abnormalities were seen at any of the sacrifice periods in the lungs of the animals exposed to 1-octanol for one hour (6,400 mg/m^3), with the exception of minimal alveolar hemorrhage in one of the exposed males. However, several treatment-related lesions were present in the lungs of the animals exposed to 1-octanol for four hours (5,600 mg/m^3). These included bronchial epithelial necrosis, alveolar edema, accumulation of alveolar macrophages, congestion, alveolar hemorrhage, bronchial epithelial regeneration and alveolar epithelial hyperplasia. Severe epithelial necrosis was seen in the bronchi of all lung lobes, while alveolar edema and alveolar macrophage accumulation were either diffuse or multifocal in

distribution and generally of mild severity. No necrosis of the bronchiolar or alveolar epithelium was observed.

The incidence of lung lesions (sexes combined) in the 4-hour exposure animals in relation to the day of death or post-exposure sacrifice was as follows:

LESION	DAY 1	DAY 2	DAY 5	DAY 6
Alveolar edema	2/2	3/3	0/2	3/3
Accumulation of alveolar macrophages	2/2	3/3	2/2	3/3
Bronchial epithelial necrosis	2/2	3/3	1/2	0/3
Bronchial epithelial regeneration	0/2	0/3	2/2	3/3
Congestion	0/2	3/3	0/2	0/3
Alveolar hemorrhage	1/2	0/3	0/2	1/3
Alveolar epithelial hyperplasia	0/2	0/3	0/2	1/3

Examination of these data indicated that the initial lung lesion following 1-octanol exposure consisted of necrosis of the bronchial epithelium with alveolar edema and accumulation of alveolar macrophages. These changes were generally seen one to two days after exposure. The predominant lesions seen five and six days post-exposure were regeneration of the bronchial epithelium and residual alveolar edema with multifocal alveolar macrophage accumulation. The epithelial regeneration and macrophage accumulation are indicative of reparative and resolution processes, respectively: the regenerative epithelium replaced the necrotic epithelium and the macrophages removed the residual edema.

We interpret these results to indicate that exposure to very high concentrations of 1-octanol vapor for an extended period of time is capable of producing temporary lung damage. However, to produce the vapors used in this study, it was necessary to heat the sample to approximately 300° C (the boiling point of 1-octanol is 196° C). Given that the boiling point of 1-octanol is so high, the potential for human exposure to the massive concentrations used in this study is unlikely. Also, in rats an exposure of greater than one hour was required to produce the effects seen; it is also unlikely that humans would be exposed for such a long duration.

We are submitting these results for your information. Please call Dr. John P. Bennington at 312/856-5792 if you have any questions regarding this notice.

Sincerely,

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JCK/JPB/JDJ