

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

December 23, 1992

To: Hydrazine sulfate file (CAS # 10034-93-2)

From: Gary Butterfield

Subject: IRSL for Hydrazine sulfate

A quantified risk assessment for hydrazine sulfate is included in the EPA IRIS evaluation of hydrazine (CAS # 302-01-2). In that documentation, exposures to both materials were considered in development of a potency factor. Exposures by the inhalation route were made with hydrazine, while exposures by the oral route were made with hydrazine sulfate. The IRIS document concluded that both hydrazine and hydrazine sulfate are carcinogens. The IRIS oral potency is based on a gavage study where hydrazine sulfate increased liver tumors, as well as, pulmonary tumors in mice, Biancifiori (1970). The IRIS inhalation potency, $4.9E-03 (\mu\text{g}/\text{m}^3)^{-1}$ which results in $0.0002 \mu\text{g}/\text{m}^3$ being associated with a one in a million risk level for hydrazine exposures, was based on the increased incidence of rat nasal cavity adenomas and adenocarcinomas following inhalation of hydrazine, as reported by MacEwen et al (1981). Although the oral studies are based on hydrazine sulfate, it is considered more appropriate to use the hydrazine inhalation value in establishing the IRSL. Use of the hydrazine inhalation data avoids the need for route-to-route extrapolation, which may be questionable because absorption rates are likely to be different for hydrazine and hydrazine sulfate. The inhalation hydrazine value can be adjusted to a hydrazine sulfate value, by multiplying by a factor of 130/32 based on a ratio of molecular weights, to account for hydrazine sulfates additional weight from sulfate. The resultant one in a million risk level is calculated as $0.0002 \times 130/32 = 0.0008 \mu\text{g}/\text{m}^3$ for hydrazine sulfate.

The IRSL and SRSL for hydrazine sulfate is based on the data contained within EPA's IRIS hydrazine/hydrazine sulfate documentation, with adjustment of hydrazine inhalation value to account for the sulfate portion of hydrogen sulfate. Therefore the IRSL for hydrazine sulfate is $0.0008 \mu\text{g}/\text{m}^3$, with annual averaging.

References:

Biancifiori. 1970. Hepatomas in CBA/Cb/Se mice and liver lesions in golden hamsters induced by hydrazine sulfate. J N C I 44:943.

EPA. 1992. IRIS database.

MacEwen et al. 1981. Chronic inhalation toxicity of hydrazine: oncogenic effects. Air Force Aerospace Medical Research Laboratory, Wright—Patterson AFB. Available from NTIS, Springfield, VA.