

duce minimal lesions, 1000 ppm to produce injury requiring hospitalization.⁽³⁾

Supplementary animal toxicity data relative to developing a TLV showed that the highest concentrations that still produced no damage to the guinea pig eye, the most sensitive target site, were 135 ppm for 15 min., 90 ppm for one hr., 20 ppm for eight periods of one hr. each and 20 ppm for five days of eight periods of one hr. each. Brief exposures to high concentrations were productive of greater injury than lower concentrations for longer periods. The LC₅₀ values for guinea pigs for exposures of 1, 4 and 8 hours were respectively 300, 95 and 26 ppm. Lung function tests were always normal if corneal damage was absent. The latent period of ophthalmologic changes was 16 hours for

serious involvement, up to three days for mild involvement. All corneal damage was reversible.⁽³⁾

Based on a re-evaluation of the above data, a reduction in the TLV to 1 ppm, with a STEL of 5 ppm, is recommended.

References:

1. Smyth, H.F. Jr., Carpenter, C.P., Weil, C.S.: *Arch. Ind. Hyg. & Occup. Med.* 4:119 (1951).
2. Smyth, H.F. Jr.: Communication to TLV Committee member (February 1967).
3. Frant, R., Groot Wesseldyk, A. Th., Vernhuuren, H.G.: Med. Dept. Philips, Eindhoven, & State Institute for Pub. Health, Utrecht, unpublished report.

α-METHYL STYRENE



TLV, 50 ppm (≈ 240 mg/m³)

STEL, 100 ppm (≈ 485 mg/m³)

α-Methyl styrene is a polymerizable liquid with a molecular weight of 118 and a specific gravity of 0.9062. It has a boiling point of 165.4° C, a vapor pressure of 1.9 mm Hg at 20° C and a closed cup flash point of 129° F. It is insoluble in water.

It is used as a polymerization monomer. During storage it is frequently stabilized with tert-butyl catechol as inhibitor.

The 100 ppm value was based on the following report of the Dow Chemical Company:^(1,2)

"Groups of rats, guinea pigs, rabbits, mice and monkeys were given repeated exposures seven hours daily, five days per week at a concentration of 200 ppm of α-methylstyrene vapor for periods of about six months. As judged by growth, mortality, gross appearance and behavior, organ weight studies and gross and microscopic examination of the tissues, this vapor concentration had no adverse effect upon any of the species studied. On the other hand, four

human subjects exposed to a concentration of 200 ppm of α-methylstyrene reported definite unpleasant odor and slight eye irritation after about two minutes. These experiments with human subjects indicated that concentrations of about 200 ppm are distinctly disagreeable. We suggest, therefore, an Industrial Hygiene Standard of 200 ppm based on toxicity. For engineering purposes, we suggest that the vapor concentration be controlled to 100 ppm α-methylstyrene in order to minimize complaints of exposed persons."

A complete review of the toxicity and mode of action of methyl styrene is presented by Gerarde.⁽³⁾

A TLV of 50 ppm and a STEL of 100 ppm, comparable to that of styrene seems logical, on the basis of the limited data presently available.

Other recommendations: West Germany, 100 ppm; USSR, 1 ppm.

References:

1. Dow Chemical Company: Communication to TLV Committee member (1955).
2. Wolf, M.A., Rowe, V.K., McCollister, D.D., Hollingsworth, R.J., Oyen, F.: *Arch. Ind. Health* 14:387 (1956).
3. Gerarde, H.W.: *Toxicology & Biochemistry of Aromatic Hydrocarbons*, p. 129, Elsevier Pub. Co., NY (1960).

MICA



TLV, 20 mppcf

Mica is a colorless, odorless, nonflammable, nonfibrous silicate occurring in plate form, containing less than 1% quartz, and includes nine different species. Muscovite and phlogopite are the major micas of commerce. The former is a hydrated aluminum potassium silicate, often called white mica, which as a molecular weight of 797 and a vapor pressure of 0 mm Hg at 20° C. Phlogopite, an aluminum potassium magnesium silicate, is sometimes called amber mica. Other forms include biotite, lepidolite, zimmwaldite and roscoelite. Mica is insoluble in water.

At one time mica was considered to be in the nuisance dust category, on the basis of its inert reaction when in-

jected intraperitoneally in guinea pigs.⁽¹⁾ Dreessen and co-workers,⁽²⁾ however, found evidence of pneumoconiosis in 8 of 57 workers exposed to dust associated with mica-scrap grinding. Of five workers exposed at less than 10 mppcf, none had pneumoconiosis; cases were found in three men exposed at 18 mppcf for 18, 20 and 26 years, respectively; three cases resulted from exposure at 40 mppcf for 10, 17 and 23 years; and two cases were found in workers exposed at 50 ppm for 24 and 46 years. Only one of six workers exposed more than 10 years at concentrations in excess of 25 mppcf failed to show evidence of pneumoconiosis.

Although the signs and symptoms in these cases resembled those of silicosis, the x-ray pattern of the lung field markings differed somewhat, and tuberculosis was not a complication in any of the mica cases. No cases were found among workers exposed to mica dust in concentrations averaging 3 mppcf.