

*Recommendation from Scientific Expert Group*  
*on Occupational Exposure Limits*  
*for Dimethyl Ether*

8 hour TWA	:	1000 ppm (1920 mg/m <sup>3</sup> )
STEL	:	-
Additional classification	:	-

Substance:

Dimethylether

Synonyms : DME, methyl ether, oxybismethane

CH<sub>3</sub>OCH<sub>3</sub>

EINECS N° : 204-065-8

EEC N° : 603-019-00-8      Classification: F; R13

CAS N° : 115-10-6

MWt : 46.07

Conversion factor (20°C, 101kPa) : 1.92 mg/m<sup>3</sup> = 1 ppm

Occurrence/use:

Dimethylether (DME) is a colourless, highly flammable, gas with a slight sweetish odour similar to that of diethylether. It has a MPt of -138.5°C, a BPt of -23.7° C and a vapour pressure of 520 kPa at 20°C.

It has a production rate in the European Community greater than 1000 tonnes per annum. One of

the main uses of DME is as a propellant in aerosol sprays as a substitute for fully halogenated chlorofluorohydrocarbons.

### Health Significance:

The SEG discussed the MAK document, which showed a lack of availability of contemporary human data, in particular in relation to CNS changes such as neurobehavioural disturbances.

The SEG considered that the experimental evidence available for evaluation had not demonstrated that DME was a genotoxic, carcinogenic, or a reproductive toxicant.

Studies in human subjects, dating from the 1920s demonstrated acute CNS effects from short-term exposures to extremely high levels of DME, in the range of 5 to 20% (96 to 384 g/m<sup>3</sup>). Animal studies have confirmed the low toxicity. A well-conducted chronic inhalation study in rats demonstrated no observable adverse effect, including to the CNS, at a level of 2000 ppm (3840 mg/m<sup>3</sup>), although 10000 ppm (19200 mg/m<sup>3</sup>) produced an adverse effect on weight-increase and lifespan.

The available data thus indicate that DME is of generally low toxicity and at high concentrations the critical target organ is the CNS.

### Recommendation

The Du Pont study, establishing a NOAEL of 2000 ppm (3840 mg/m<sup>3</sup>), was considered to be an adequate basis for setting the exposure limit, allowing a safety factor of 2 to compensate for the lack of adequate human data. The recommended 8 hour TWA is 1000 ppm (1920 mg/m<sup>3</sup>). No STEL was considered necessary.

At the level recommended no measurement difficulties are foreseen.

## Bibliography

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