

# Addendum to Xylene (all isomers)

## BAT Value Documentation

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## Abstract

In 2015 the German Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area has re-evaluated the biological tolerance value at the work place (BAT value) for xylene and its isomers [1330-20-7], considering xylene in blood and methylhippuric (toluric) acid (all isomers) to characterise the internal exposure. Xylene can easily pass through the skin, so biological monitoring is necessary for a valid individual risk assessment.

Xylene shows a fast elimination in the blood compartment. Thus, the concentration of xylene in blood is halved 30 minutes after the end of exposure. Therefore, sampling should be performed directly at the end of exposure. This is, however, difficult to realize in practice. Therefore, the BAT value for xylene (all isomers) in blood was withdrawn. Methylhippuric (toluric) acid in urine is available as a diagnostically specific parameter. The BAT value for methylhippuric acid is confirmed.

## Keywords

xylene; dimethylbenzene; occupational exposure; biological tolerance value; BAT value; toxicity

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## BAT (1984, 2000)

**2000 mg methylhippuric acid  
(toluric acid) (all isomers)/l urine**

Sampling time: end of exposure or end  
of shift

## MAK (1983)

**100 ml/m<sup>3</sup>  $\triangleq$  440 mg/m<sup>3</sup>**

Absorption through the skin (1998) H

Carcinogenicity –

For xylene (all isomers), BAT values (biological tolerance values) were established in 1984 for the parameters xylene in blood and methylhippuric acid (toluric acid) in urine. These were confirmed after re-evaluation in 2000 (see BAT Documentation 1986, translated; BAT Documentation 2001, translated).

Xylene is rapidly eliminated from the compartment blood, so that the xylene level drops to half its original value within 30 minutes after the end of exposure (Tardif et al. 1991). Sampling must, as far as possible, be carried out immediately after the end of exposure. In practice, this is often difficult to realize. Therefore, the determination of xylene in blood has proven to be less suitable in practice.

With the analysis of methylhippuric acid (toluric acid) in urine, a specific parameter with a longer half-life is available for exposure assessment. Therefore,

**the BAT value for the parameter xylene in blood is withdrawn.**

## References

Tardif R, Laparé S, Plaa GL, Brodeur J (1991) Effect of simultaneous exposure to toluene and xylene on their respective biological exposure indices in humans. *Int Arch Occup Environ Health* 63: 279–284

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