

MEGA evaluations for the preparation of REACH exposure scenarios for cresols

1 Introduction

The measured data for workplace exposure evaluated in the following have been gathered and documented in accordance with the principles of the measurement system of the German social accident insurance institutions for exposure assessment (MGU¹, formerly BGMG). The quality of the MGU is upheld by a quality management system that in essence satisfies the requirements of DIN EN ISO 9001. The test laboratories are operated in accordance with DIN EN ISO 17025 “General requirements for the competence of testing and calibration laboratories”.

To measure o-, m- and p-cresol exposure at the workplace, a defined volume of air is sucked by a suitable pump through a silica gel tube. The cresols contained in the air are adsorbed by the silica gel. For analysis, the silica gel is extracted with diethyl ether. Qualitative and quantitative analysis are performed by gas chromatography with a flame ionization detector. For quantitative evaluation, the method of the internal standard is used. The quantification limit is 0.5 mg/m³ with a sample air volume of 40 L. Source: Phenol, o-, m- and p-cresol, naphthalene (ref. no. [8330](#)). In: IFA-Arbeitsmappe Messung von Gefahrstoffen. 46. Lfg. XII/2010. Ed.: Deutsche Gesetzliche Unfallversicherung (DGUV), Berlin. Erich Schmidt, Berlin 2011 – loose-leaf edition.

All the surveyed data in the MGU are brought together in the MEGA exposure database (measured data on exposure to hazardous substances at the workplace). The MEGA^{Pro} software developed by the IFA makes it possible to statistically analyse the data of the MEGA exposure database on the basis of various selection criteria and evaluation strategies.

¹ Gabriel, S.; Koppisch, D.; Range, D.: The MGU – a monitoring system for the collection and documentation of valid workplace exposure data. Gefahrstoffe – Reinhalt. Luft 70 (2010) No. 1/2, pp. 43-49
<http://www.dguv.de/ifa>, Webcode [m200066](#)

2 Data situation and evaluation strategy

2.1 Overview of the measured values collected in the MGU, data period 2000 to 2011

o-, m-, p-cresol and cresol (all isomers)

Information on the sampling systems can be found in the IFA work folder (IFA-Arbeitsmappe, in German).

There is no workplace limit for o-, m- und p-cresol in Germany.

General description	Number of measured values (%)
Total	693 Cresol (all isomers): 127 (until 2007) o-cresol: 228 m-cresol: 177 p-cresol: 161
Type of sampling: Stationary	431 (62.2 %)
Type of sampling: Personal	262 (37.8 %)
Sampling time \geq 1 h and exposure time \geq 6 h (comparable to shift measurements)	595 (85.9 %)
Number of data < quantification limit	684 (98.7 %)
Examples: Exposure conditions	
Without mechanical ventilation	198
With mechanical ventilation	399
No details	86
Without local exhaust ventilation	222
With local exhaust ventilation	340
No details	125
General description of measurements of o-, m-, p-cresol and cresol (all isomers) in: 60 branches of industry and 138 work areas	

2.2 Criteria for inclusion of measured data in the evaluation

- Measured data relating to exposure

2.3 Evaluation strategy

No statistical evaluation was performed, since, of the 693 measured values, 684 (98.7%) are below the analytical quantification limit.

3 Abbreviations and indices

There is no list, as no statistical evaluation has been performed.

4 Statistic evaluations for industry groups

No statistical evaluation has been performed.

5 Statistical evaluations for work area groups

No statistical evaluation has been performed.

6 Statistical evaluations for the assignment of work area and industry groups

No statistical evaluation has been performed.

7 Overview lists

7.1 The most frequently documented industries

Industry groups	Number of measured values
Iron foundry; steel foundry	155
Electrical engineering	120
Plastics industry; rubber products; manufacture and processing	71
Processing and treatment of metals	49
Non-ferrous metal foundry, mixed; light metal foundry	47
Processing of liquid coating materials; surface treatment and hardening	42
Processing and treatment of wood	30

7.2 The most frequently documented work areas

Work area groups	Number of measured values
Foundries: core shop, moulding shop, casting area, fettling	194
Surface coating, mechanical application and application with machines, and boiler pressure impregnation	141
Liquid paint coating: paint preparation, paintshop, other methods, dipping, pouring of coating materials	36
Manufacture of plastic sheets, tubes and profiles, and of semi-finished plastic products	24

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