

Focus on IFA's work

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Occupational exposure limits for hydrocarbon solvent mixtures (RCP)

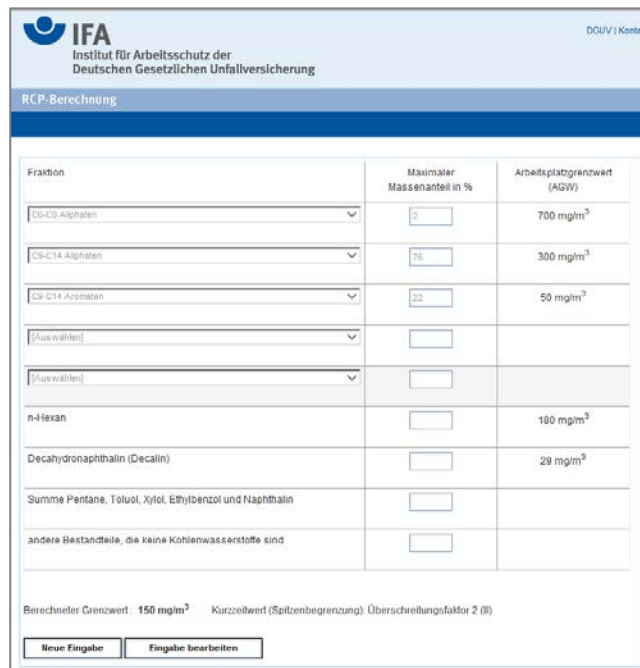
Problem

Hydrocarbon solvents are mixtures of substances similar to petrol. They are of major significance in numerous sectors of industry, for example for the degreasing of metal parts or for use as thinners for paints and lacquers. The German TRGS 900 technical rule for hazardous substances, which governs occupational exposure limits, specifies a particular method for such mixtures. In this method, larger numbers of chemically similar hydrocarbons are grouped together and exposure limits specified for the group as a whole. However, more recent toxicological findings concerning individual substances or mixtures increasingly casted doubt upon the validity of these limits.

Activities

DGUV research funding was used to task a consulting institute with compiling all available toxicological data on these substances. In coordination with a steering committee headed by the IFA, a strategy for reform was produced for Subcommittee III (UA III, responsible for hazardous substance assessment) of the AGS Committee for Hazardous Substances. This strategy also took into account the requirements of chemical/analytical monitoring and practical implementation.

The European Hydrocarbon Solvent Producers Association (HSPA) then organised a one-day international meeting between experts from the HSPA and members of the UA III at which the proposals were discussed.



| Fraktion | Maximaler Massenanteil in % | Arbeitsplatzgrenzwert (AGW) |
|----------------------------------------------------------|-----------------------------|-----------------------------|
| C5-C8 Aliphaten | 2 | 700 mg/m ³ |
| C9-C14 Aliphaten | 76 | 300 mg/m ³ |
| C9-C14 Aromaten | 22 | 50 mg/m ³ |
| [Auswählen] | | |
| [Auswählen] | | |
| n-Hexan | | 100 mg/m ³ |
| Decahydronaphthalin (Decalin) | | 29 mg/m ³ |
| Summe Pentane, Toluol, Xylol, Ethylbenzol und Naphthalin | | |
| andere Bestandteile, die keine Kohlenwasserstoffe sind | | |

Berechneter Grenzwert: 150 mg/m³ Kurzzeitwert (Spitzenbegrenzung): Überschreitungsfaktor 2 (0)

Online calculator for determining the limits

In order to resolve outstanding detail issues, the UA III formed a small expert group including several representatives of the DFG Senate Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (MAK Commission). The recommendations made by this group, which were formulated by consensus, were compiled by the IFA in a scientific criteria document (in German).

The IFA reported to the accident insurance institutions at regular intervals on the progress of the project, which ran for several years.

Results and use

Acknowledging the arguments presented, the UA III subcommittee adopted a new arrangement, whilst at the same time retaining the proven principle of group limits. Together with an edited text of TRGS 900 drafted by the IFA, the limits were adopted in the spring of 2017 by the AGS Committee for Hazardous Substances. Within this frame, the number of hydrocarbon groups was reduced from four to three and the discrete group guidance values were lowered. The occupational exposure limits, which are to be determined by means of the reciprocal calculation procedure (RCP), acquired binding force in Germany with their publication in the Joint Ministerial Gazette (GMBI).

In order to facilitate implementation of the revised body of rules, the IFA provides resources for the affected parties (see "Further information"). For calculation of the occupational exposure limits for hydrocarbon solvent mixtures, the IFA provides an online information page including a calculation module. The chemical/analytical detection methods have been adapted to the new terms of reference, and published.

User group

Manufacturers and users of hydrocarbon solvent mixtures, producers of material safety data sheets, accident insurance institutions, regional labour inspectorates, test bodies, initial and further training establishments, safety delegates, OSH professionals, OSH organisations, company physicians, worker representations, professional and business associations

Further information

- IFA, Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung: AGW für Lösemittelkohlenwasserstoffe.
www.dguv.de/ifa/rcp-rechner
- Nies, E.; Heine, K.; Jacobi, R.; Leibold, E.; Breuer D.; Csomor, A.; Pflaumbaum, W.; Werner, S.; Kalberlah, F.: Anpassung der Arbeitsplatzgrenzwerte für Kohlenwasserstoffgemische (Lösemittelkohlenwasserstoffe). Part 1: Ableitung der neuen Grenzwerte. Gefahrstoffe – Reinhalt. Luft (2018), submitted
- Pflaumbaum, W.; Csomor, A.; Werner, S.; Jacobi, R.; Breuer D.; Heine, K.; Kalberlah, F.; Leibold, E.; Nies, E.: Anpassung der Arbeitsplatzgrenzwerte für Kohlenwasserstoffgemische (Lösemittelkohlenwasserstoffe). Part 2: Anwendung der neuen Grenzwerte. Gefahrstoffe – Reinhalt. Luft (2018), submitted
- "Arbeitsplatzgrenzwerte für Kohlenwasserstoffgemische, additivfrei – RCP-Methode" (code 0514/2) and "Kohlenwasserstoffgemische – RCP" (code 7735). In: IFA-Arbeitsmappe Messung von Gefahrstoffen. Berlin: Erich Schmidt (loose-leaf).
www.ifa-arbeitsmappedigital.de

Technical enquiries

IFA, Institute management, central function hazardous substances

IFA, Division 1: Information technology – risk management

IFA, Division 2: Chemical and biological hazards

Literature enquiries

IFA, Central Division