

(aligning & uncertainty of) industrial
hygiene risk assessment in civil
liability claims & the public debate

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NVvA Conference Session K

April 10, 2019, 14:15 Room 24

the fact judge

Weighting the uncertainties in disease and the (proportional) relationship with victim's occupational exposure profile.

Industrial hygienist/exposure specialist contributes as an expert to establish the causal strength and to clarify uncertainties

NVvA 2018 mr. Elbert de Jong <https://lnkd.in/e29YZTp>

Admissibility of a exposure induced health claim

Based in the quality of

1. relation exposure <-> disease (theory)

- Causal strength
- Quantitative dose response => Effect Specific Limit Value/Att. Risk

2. Workers exposure profile (practice)

- Similar Exposure Group
- Nature, Level
- Duration(/task/day/year) => Exposure Pattern
- Co-exposure (other routes, private)

• Admissibility= Function{ES-LV/AR & SEG-EP}

• *Claim ontvankelijkheid= Functie{grenswaarde, blootstelling & 'politiek'}*

Limited role of Industrial Hygiene

Industrial hygiene is not able to give a consistent and transparent analysis of the exposure and health risk assessment, and its uncertainties

Causality strength health effect & exposure determinants (proposal)

Causal Strength hierarchy (proposal)	
high	Critical effects in OELV documents (Health Council, Doc-TLV, Scoel etc.)
	Evaluation of aggregated EU CLP notifications (Incl Joint Entries) , CLH & Science
Middle	Scientific evaluations of literature in high impact peer review journals
	EU harmonised DSD/CLP classification (CLH)
	REACH registration (full, 100+ t/y of CMR) https://www.echa.europa.eu/information-on-chemicals/registered-substances
	Scientific dose-response/effect publications
	Aggregated ECHA CLP notification (EU 1272/2008)
	(occupational) health casuistic
low	‘Chemiekaartenboek’; in-company studies, non-public, abstracts, conference presentation
	Hear say, social media (‘facebook’) or unknown

Cr(VI) causal strength

High (undisputed):

- IARC (2012) cancer: nose, nasal sinus, lung
- ATSDR (2012) skin contact: allergic eczema
- CLP notified & Harmonized (ID=024-017-00-8)
 - H350i Cancer inhalation
 - H317 Skin Sens. 1

Middle

- COPD, Rhinitus, astma through inhalation
- Stomach cancer, reproduction, development (route??)

TNO 2017 R10148

Quality of OELV

legal compliance limits

health based limits

may be higher (or lower) than the health based OELV due to technical and/or economical feasibility:

- EU BLV,
- TRGS900
- Fr VLEP
- OSHA PEL
- [UK WEL]
-

Scientific evaluation, health based only
DFG, SCOEL, DECOS (Gr/WGD), ACGIH-TLV (>1996)
NIOSH REL (\geq 2013), DMEL, RAC (?, 2018)

feasibility not excluded
AGS, NIOSH REL (<2013), EU IOLV, Corporate, ECETOC,
ORAS/WEEL, older (<1996) health based (WGD)

Default factor. Prescriptive, process based
DNEL, Dutch Health Council Gr2000-15/OSH

Hazard Banding
Kick-off levels, Control Banding concentration ranges, Generic Exposure Values

Modelling/correlation
read-across, single endpoint MTD & RD50, QSAR, structural activity TTC

expert judgment (Nano)

Epidemiology ->

Data rich ->

<-Data poor

TSAC, DOHSBase & The Global Landscape of Occupational Exposure Limits—Implementation of Harmonization Principles to Guide Limit Selection. M. Deveau, C-P Chen, G. Johanson, D. Krewski, A. Maier, K. J. Niven, S. Ripple, P. A. Schulte, J. Silk, J. H. Urbanus, D. M. Zalk & R. W. Niemeier, JOEH, 12:sup1, S127-S144, DOI: 10.1080/15459624.2015.1060327

Specificity of the OELV

Effect Specific OELV

- A limit value for a specific effect and a specified substance

In example

- Asbest & mesothelioma
- Vinylchloride Monomer and Heamangiosarcoma
- Benzene & Haemopoietic effects (Lead)
- 'Solvents' and 'CTE/OPS' (CS₂, Manganese, Hg, Pb)

CTE/OPS & Solvents

BK-Report
1/2018



DGUV

Deutsche Gesetzliche Unfallversicherung
Spitzenverband

BK 1317

Polyneuropathie oder Enzephalopathie
durch organische Lösungsmittel oder deren
Gemische

n-Heptan 142-82-5

n-Hexan 110-54-3

2-Butanon 78-93-3

2-Hexanon 591-78-6

Ethanol 64-17-5

Methanol 67-56-1

2-Methoxyethanol 109-86-4

Styrol 100-42-5

Toluol 108-88-3

Xylol (Gemisch, o-, m-, p-)

1330-20-7, 95-47-6

108-38-3 106-42-3

Dichlormethan 75-09-2

Tetrachlorethen 127-18-4

Benzol 71-43-2

1,1,1-Trichlorethan 71-55-6

Trichlorethen 79-01-6

Tabelle 28: Liste von [~60] nach REACH-Verordnung registrierten Kohlenwasserstoffgemischen

Exposure assessment strength

Exposure assessment strength for liability claims (long-term effects)

high

Long-term PAS/BM sampling programs (NvvA-BOHS 2011) and recording ([NVvA](#))

Incidental sampling (CEN 689 $n \geq 6$) combined with modelling (different approaches [Trexmo](#))

publications on exposure patterns of specific profiles in high impact peer review journals

middle

Exposure databases (MEGA, Solvex, NEDB, OSHA)

Incidental sampling (CEN 689 $N < 6$)

Modelling only

low

Conflicting exposure information based on interviews only

Exposure data libraries

- Large databases (**MEGA**, SCOLA, **Solvex**, COLCHIC, OSHA CEHD, NEDB)
- Numerous smaller databases (Health services, companies, consultants)
- Literature Kromhout (1993)/Symansky (2006)
- Tielemans (2006)

DGUV BK 1317 Tabelle 29: Anzahl von Messwerten für Kohlenwasserstoffgemische, additivfrei, im Datenzeitraum von 2003 von 2007, (s 76):

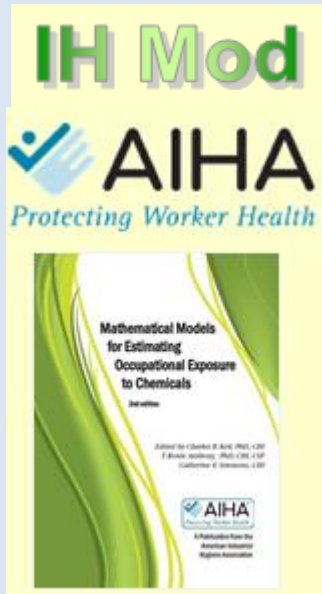
Branchen/Arbeitsbereichsgruppe	Anzahl Messwerte
Farbspritzern (Metallbe- und -verarbeitung sowie Maschinenbau)	186

<http://epicea.inrs.fr/solvex/Solvex.nsf/>



Exposure models

Predict location (GM/AM), hardly dispersion (GSD)



This block contains several logos and titles for exposure models and tools. At the top is the 'SEIRICH' logo, which includes the ILO logo and text: 'INTERNATIONAL LABOUR OFFICE', 'PROGRAMME ON SAFETY AND HEALTH AT WORK AND THE ENVIRONMENT', 'SAFework', 'ILO', 'CHEMICAL CONTROL TOOLKIT', and 'Évaluer le risque chimique'. Below this are logos for 'EMKG' (a stylized figure), 'The technical basis for COSHH essentials: Easy steps to control chemicals' (with COSHH logo), 'IFA' (with IFA logo), 'Stoffenmanager 6' (with a checkmark icon), 'chesar' (with a play button icon), 'ART ADVANCED REACH TOOL', and 'TREXMO'. At the bottom, it lists 'MEASE v.1.02.01, EMKG-EXPO-TOOL and EASE v.2.0.'.

Discussion

- Lack of quality & transparency contributes to IH's submissive role in liability claims & public debate on risk of chemical exposure.
- A guideline on ranking the Exposure assessment ** elements may be helpful
- Claim ontvankelijkheid= Functie{'blootstelling', 'grenswaarde' & 'politiek'}
- When working for one of the parties involved in a claim hygienist should be aware of there ethical, professional code.

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DEVELOPMENT OF EFFECT-SPECIFIC LIMIT VALUES (ESLVs) FOR SOLVENT MIXTURES IN PAINTING

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