DNELs for workplaces

Inspection of the GESTIS DNEL Database

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What are DNELs ?

REACH regulation:

"For each chemical substance levels of exposure have to be derived above which humans should not be exposed to"

→ Derived No-Effect Level ←
(DNEL)

Types of DNEL values

- A value is required for each **relevant population** (workers, consumers, population via the environment).
- DNELs must be derived for the most probable **exposure routes** (inhalative, dermal and oral) for **acute** or **long term** exposure.
- DNELs concern **local effects** (e.g. burnings, irritations) or **systemic effects** (e.g. remote organ damage after intoxication).
- **Relevant for OSH**: DNEL values for workers, local and/or systemic effects, inhalative long-term exposure

→ Workplace-related DNEL values ←

The DGUV DNEL Excel list

- Excel file with workplace-related DNEL values for approx. 3,250 substances including reaction mixtures, resins, fats and other items not precisely defined.

DNEL list of the DGUV — April 2014

	Name	Data Set	CAS Number	EG Number	DNEL Inhalation [mg/m³] local	DNEL Inhalation [mg/m³] systemic	Source	Remarks	Link
29	2-Acrylamido-2-methylpropanesulfonic acid	1	15214-89-8	239-268-0		1	Registr. Entry		Substance
30	Acrylic acid	1	79-10-7	201-177-9	30		Registr. Entry		
31	Acrylonitrile	1	107-13-1	203-466-5	1,8	2,7	Registr. Entry	carcinogenic	
32	cis-2-(Acryloyloxy)ethyl hydrogen cyhexane-1,2-dicarboxylate	1		478-080-5	0,32		Registr. Entry		
33	Activated Carbon - High Density Skeleton	1		931-328-0	3		Registr. Entry		Substance
34	Activated Carbon - Low Density Skeleton	1		931-334-3	2		Registr. Entry		Substance
35	Adipic acid	1	124-04-9	204-673-3	5	264	Registr. Entry		Substance
36	Adipic acid, compd. with 1,6-hexanediamine (1:1)	1	3323-53-3	222-037-3		10	Registr. Entry		Substance
37	Adipohydrazide	1	1071-93-8	213-999-5		8,6	Registr. Entry		Substance
38	Alanine	1	56-41-7 338-69-2	200-273-8 206-418-1		226,2	Registr. Entry		Substance
39	β-Alanine	1	107-95-9	203-536-5		23,509	Registr. Entry		
40	beta-Alanine, N-C8-18-alkyl derivs., monopotassium salts	1	90170-42-6	290-475-2		97,8	Registr. Entry		

Figure 1: Screenshot from the DNEL Excel list of the DGUV

The GESTIS DNEL database

- Searchable online database which provides workplace-related DNELs for about 2,400 chemically defined substances.

Figure 2: Search mask of the GESTIS DNEL Database

Substance datasheet from the GESTIS DNEL Database

- Substance datasheets with names and, synonyms, identification data and formula
- Quantitative comparison of the DNEL values with other limit values
- Information about legally binding German occupational exposure limits (AGW)
- Warning of carcinogenic substances
- Link to the GESTIS Substance Database

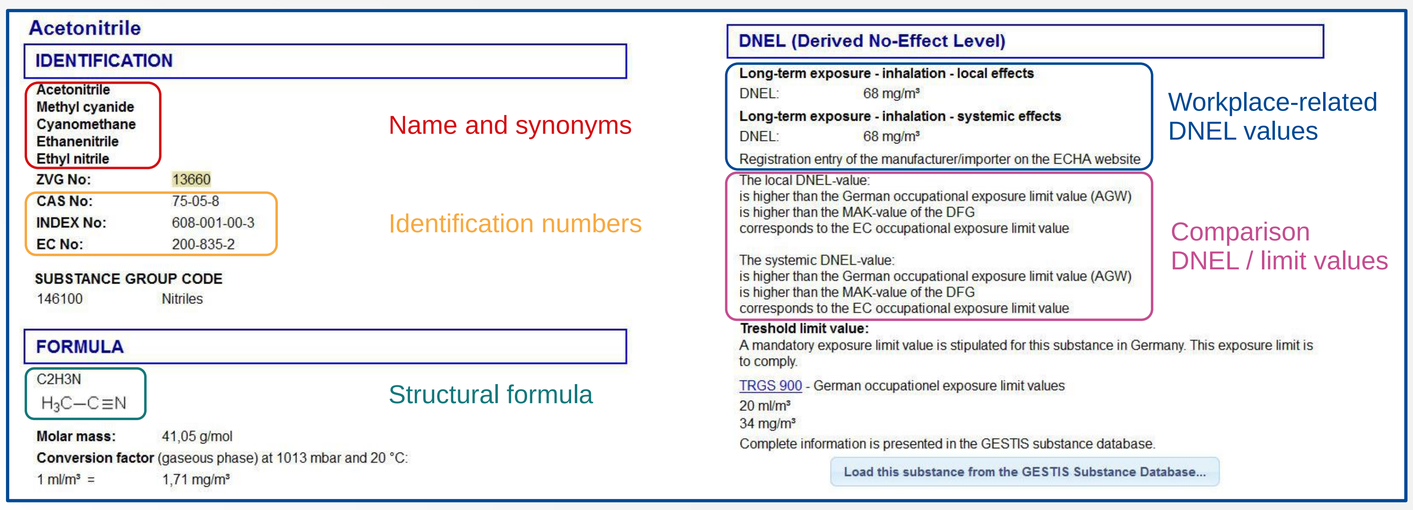

Figure 3: Substance datasheet from the GESTIS DNEL Database

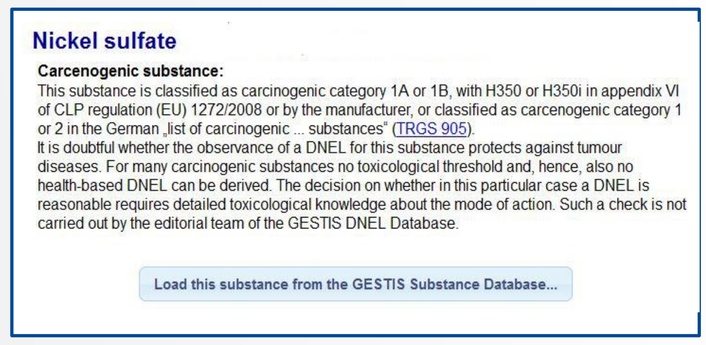

Figure 4: Warning of carcinogenic substances with a DNEL value

DNELs and limit values

- Comparison of DNEL values with the German AGW, MAK values of the DFG and IOELs of the European Commission

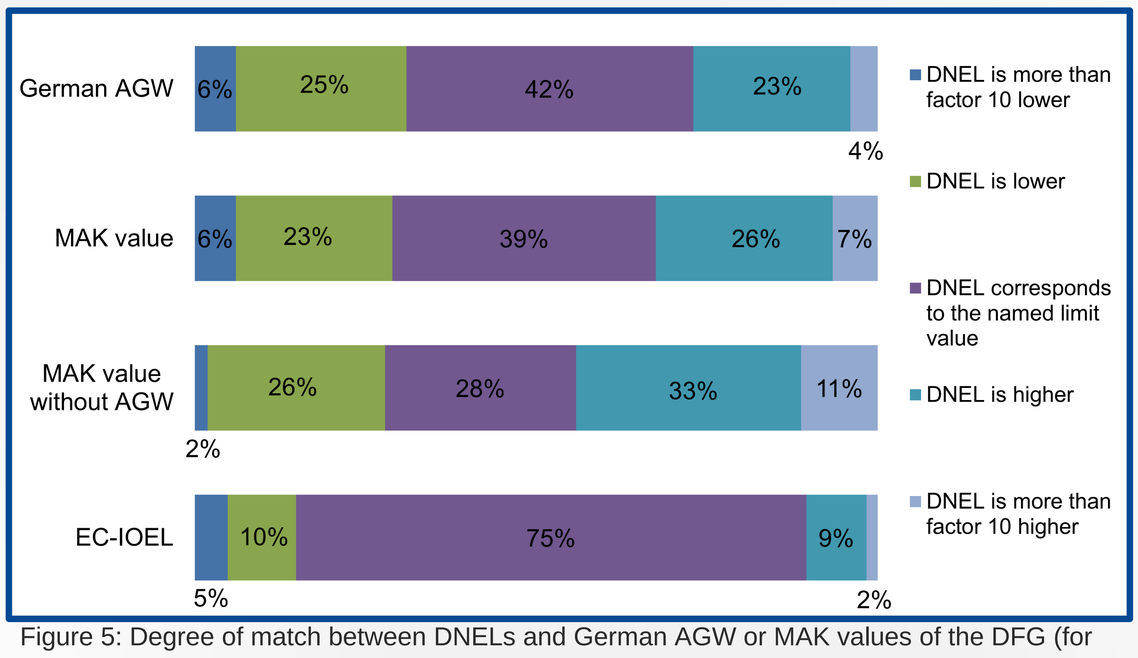

Figure 5: Degree of match between DNELs and German AGW or MAK values of the DFG (for all MAK substances or MAK substances that have no AGW) or the IOELs of the EC

DNELs for non classified substances

- Examples of very low DNEL values for substances not classified as hazardous to health

Substance	CAS number	DNEL [mg/m³]
Benzoin	119-53-9	0,1
Aluminum fluoride	7784-18-1	0,047
Dodecane-12-lactam	947-04-6	0,88

Table 1: Substances with very low DNELs not classified as harmful

Acknowledgement

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