Control Banding

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Control Banding

- Control banding (CB) is a risk management model used to assess and manage exposure to occupational health hazards

- Primarily intended for use by SME's that lack professional occupational hygiene or other relevant expertise to assess and manage exposure risk

- The intention is to provide a level of worker protection consistent with the level of protection that would be identified by skilled occupational hygiene professionals using more robust scientific based techniques

Why Consider a Control Banding System?

- Occupational disease has significantly worse human and financial impacts than acute-harm incidents
- Small medium enterprises particularly struggle with managing chemical exposure
- For larger businesses it can be used as an audit tool to assess whether current controls are adequate
- Tools used widely in Europe, some Asian countries, US, Australia. However, they are still not well known or widely used in NZ

How does it work?

- Principle many chemicals and only a few common controls
- Greater potential for harm = Higher level of control needed
- Factors used:
  - Toxicity of product (often as H phrase)
  - Ease of exposure
  - Type of work/process
  - Duration of exposure
  - Quantity used in task (simplified to small, medium , large amounts)
- Once done a control measure strategy is suggested based on the hazard band and risk

Control Banding – Advantages

- Easy way to assess risks
- Choose relevant control measures
- Can be used for substances that do not have an occupational exposure limit
- Cheap
- No monitoring required?

Control Banding - Disadvantages

- It has its limits
- No one system covers everything
- Needs to be validated
- Can be issues when generalising
  - eg objectionable odour from low toxic substance may require control not just opening a window
- Not enough data available or incorrect data on SDS

Stoffenmanager Use and Limitations

- Quantitative inhalation exposure assessment
- This route can be used to estimate exposure to powders, low-volatile and volatile substances to a wide range of activities.
- The model can also be used to estimate exposure to abrasive activities using wood (inhalable dust) and stone (inhalable and respirable dust).
- For other abrasive activities, like using plastic, glass or metal, the model has not been validated.
- Stoffenmanager® cannot be used to estimate inhalation exposure to fibres, gases and hot work techniques like welding, soldering and diesel exhaust.

Conclusion

- Control banding systems are useful tools when used alongside other methods

- Any CB system adopted will have their limits and are not a panacea to the challenges of working with hazardous substances. However, they are a big step forward in aiding SME's with improving their chemical exposures and reducing the long term occupational health burden

Occupational Exposure Banding

- Occupational Exposure Banding
  - Coming soon from NIOSH
  - Used where no OEL exists
  - Used where data is limited
  - 3 levels
    - Level 1 – H&S professionals
    - Level 2 – Occupational Hygienists
    - Level 3 – Toxicologists and experienced occupational hygienists
- Uses evaluation and selection of critical health criteria
- Will not supply control recommendations directly
- Can be used to make risk management and exposure control decisions

Health and Safety Executive

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COSHH Essentials

+ Direct advice sheets

COSHH e-tool

Frequently asked questions

Related links

- Nanotechnology
- Risk assessment
- New to health and safety?

Getting started

You have 2 choices...

Start a new assessment

You need the manufacturer's safety data sheet for either the Risk p
phrases) or Hazard statements (H-statements), whichever one is s
substance or product is a liquid, you will need the boiling point sho
sheet.

Stoffenmanager®8

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Log of

Dashboard | Inventory | Prioritisation | Assessment | Control | Communication | Modules

Quick navigation

Inhalation risk assessment | Job daily average | Assessment REACH

New risk assessment

explanation

There are no older versions available

Summary

Risk assessment name: *Not yet supplied*
Risk assessment location: *Not yet supplied*
Product used: *Not yet supplied*

Name

Product

Process

The EMKG is divided into eight steps.
Steps one to four are dealing with risks resulting from inhalation and step five to seven with risks resulting from dermal contact. The final step is to check the effectiveness of the chosen protective measures. To pass through these eight steps it is necessary to have information about the hazardous substance from the Safety Data Sheet (SDS) and task-related information that can be obtained by visiting/inspecting the workplace. Hereafter the eight steps of the EMKG will be shortly presented.

Step 1: Hazard Group (HG) Inhalation

Start by determining the hazard group (for substances:
by means of occupational exposure limit (OEL) or classification R-phrases/ H-statements and for mixtures by means of classification R-phrases/ H-statements).
See safety data sheet for information (SDS sections: 2, 8)

OEL according to TRGS 900		R- phrases, in case there is no OEL	HG	H-statements, in case there is no OEL
Solids (mg/m³)	Liquids (ppm)			
1 < OEL ≤ 10	50 < OEL ≤ 500	No R-phrase; R36, R37, R65, R67	A	No H-statement, H319, H335, H336, H304
0.1 < OEL ≤ 1	5 < OEL ≤ 50	R20, R22, R41, R68/20, R68/22	B	H302, H332, H318, H371
0.01 < OEL ≤ 0.1	0.5 < OEL ≤ 5	R23, R25, R29, R31, R34, R35, R40, R42, R42, R63, R68, R39/23, R39/25, R48/20, R48/22	C	H301, H311, H314, H334, H341, H351, H361f, H361d, H370, H373, EUH031
0.001 < OEL ≤ 0.01	0.05 < OEL ≤ 0.5	R26, R28, R32, R61, R39/26, R39/28, R48/23, R48/25	D	H300, H330, H360D, H372, EUH032
OEL ≤ 0.001	OEL ≤ 0.05	R45, R46, R49, R60	E	H340, H350, H350i, H360F

HAZARD INCREASE

Step 2: Release Group

Next, select the physical state (solid or liquid) and determine boiling point/vapor pressure for liquids or dustiness for solids.
See safety data sheet for this information (SDS section: 9)

	LOW	MEDIUM	HIGH
Solids (dustiness)	granules, pellets, wax	coarse powder (e.g. washing powder, sugar)	fine powder (e.g. flour, toner)
Liquids (boiling point* or vapor pressure)	more than 150°C	50 to 150°C	less than 50°C
	less than 0.5 kPa	0.5 to 25 kPa	more than 25 kPa

*applies to work done at room temperature

Step 3: Quantity Group

Estimate the quantity used per task.

LOW ml/g
MEDIUM l/kg
HIGH m³/t

Step 4: Control Strategy Inhalation

By combining the three parameters hazard, release and quantity group you can derive a control strategy represented by control guidance sheets that describe measures for typical working activities. Please note that the protective measures in series 1xx have the meaning of minimum standards, which must always be implemented also for level 2 and 3.

HAZARD GROUP | QUANTITY | RELEASE GROUP (LOW / MEDIUM / HIGH)
A: LOW, MEDIUM, HIGH
B: LOW, MEDIUM, HIGH
C: LOW, MEDIUM, HIGH
D: LOW, MEDIUM, HIGH
E: Expert advise

Level 1: General ventilation – Control Guidance Sheets (CGS) 1xx
Level 2: Engineering control – Control Guidance Sheets (CGS) 2xx
Level 3: Containment – Control Guidance Sheets (CGS) 3xx
Special expert advise

Step 1: Hazard Group Inhalation = (A) **Step 2:** Release Group = (MEDIUM) **Step 3:** Quantity Group = (MEDIUM) **Step 4:** A + MEDIUM + MEDIUM → Control Strategy (Level 1) Inhalation → CGS 1xx

EXAMPLE: Cleaning with acetone, OEL 500 ppm, liquid, boiling point 56°C, 2 litres used, R66 or EUH066, foreseen skin contamination only by spots, possibly long duration of skin contact

Step 5: Hazard Group Skin contact = (HA) **Step 6:** Effective area = (SMALL); Duration of skin contact = (long) **Step 7:** HA + SMALL + long → Control Strategy (Level 1) → CGS 120

Step 5: Hazard Group (HG) Skin contact

Determine the hazard group for skin contact by classification (R-phrase/H-statement).
If an employee works more than 2 hours in a moist environment or wears liquid-proof protective gloves or often cleans the hands intensively or disinfects them, please remember that this is „wet work" and therefore the control guidance sheet 250 has to be taken into account.

R-phrases	HG	H-statements
R66	HA	EUH066
R38	HB	H315
R21, R43, R48/21, R68/R21	HC	H312, H317, H371, H373
R24, R34, R40, R39/24, R48/24, R62, R63, R68	HD	H311, H314 (Skin Corr. 1B, 1C), H341, H351, H361, H370, H372
R24 and R34, R27, R35, R39/27, R45, R46, R60, R61	HE	H310, H314 (Skin Corr. 1A), H340, H350, H360

HAZARD INCREASE

Step 6: Contaminated area of skin contact

Estimate effective area that will be usually contaminated by the performed task.
When determining the effective area of skin contact, do not take protective gloves or other personal protective equipment into account!

Effective area SMALL spots, splashes
Effective area LARGE hands, forearms

Duration of skin contact
Short-term contact (less than 15 min/day) — short
Long-term contact (more than 15 min/day) — long

Step 7: Control Strategy Skin contact

The measures against skin contact as additional measures are described as low, extended or high

HG	Effective Area	Duration	Control Strategy Level
HA	SMALL	short / long	
	LARGE	short / long	
HB	SMALL	short / long	
	LARGE	short / long	
HC	SMALL	short / long	
	LARGE	short / long	
HD	SMALL	short / long	
	LARGE	short / long	
HE	SMALL	short / long	
	LARGE	short / long	

Level 1: Low need for measures: Basic safety precautions for skin contact, Control Guidance Sheet 120
Level 2: Extended need for measures: Extended safety precautions for skin contact, Control Guidance Sheet 250
Level 3: High need for measures: substitution, closed system

Step 8: Effectiveness check of protective measures

Implementation and effectiveness check of chosen control strategy:
- Control Guidance Sheets can be used as checklists
- Documentation of management and inspection results
- Functional capability of safety equipment and devices has to be checked on a regular basis

EMKG-products:
EMKG kompakt (pocket disc & hand card)
EMKG kompakt as smartphone app (Android and iOS)
EMKG software
More products and information on our web page www.baua.de/emkg

OEB v CB

- OEB
  - Uses on hazard based data (e.g. tox and epi studies)
  - Identifies overall hazard potential level
  - Associates airborne concentration ranges for chems with similar hazard profiles
  - Can be used to inform on risk management and exposure control decisions
  - Does not recommend specific controls directly
- CB
  - Groups workplaces into control categories
  - Combines hazard banding with exposure risk management
  - Exposure management to specific control measures
  - Can be used in concert with OEB
- https://wwwn.cdc.gov/niosh-oeb/Home/Index

Resources and more information

- UK http://coshh-tool.hse.gov.uk/
- Netherlands https://stoffenmanager.com/what-is-stoffenmanager/
- KOSHA Toolkit – South Korea
- CB Nanotool evaluation
- EMKG 2.0 – Germany
- Psychosocial Risk Management (PRIMA) Toolkit
- Japan
- https://www.cdc.gov/niosh/topics/ctrlbanding/
  https://ioha.net/control-banding/

Questions

"I would rather have questions that can't be answered than answers that can't be questioned"

Richard P Feynman