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Aansluiting REACH en Arbo – gaan SUMI's het gat dichten?

Een vergelijking met COSHH Direct Advice sheets en Stoffenmanager® RIE-WIKs bij het verspuiten van verf

Henri Heussen

NVvA symposium, 12 april 2018

Inhoud presentatie

REACH en Arbo

- ESDS, SUMI's, COSHH Direct advice sheets en Stoffenmanager® RIE WIKs
- ketencommunicatie

Internationale workshop: praktijktest 3 formats

- Verspuiten van verf: hoe, wat & resultaten

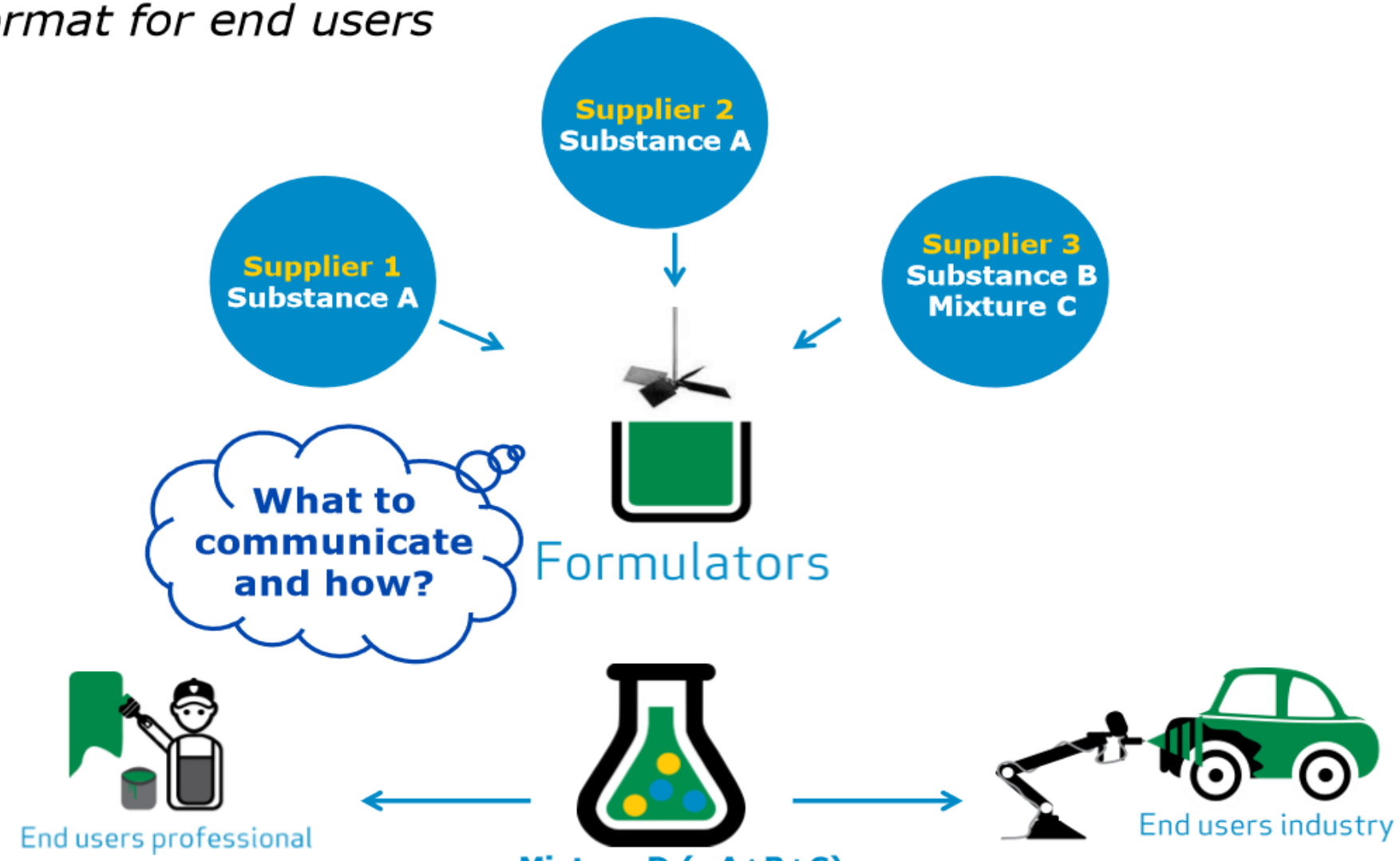
Uw mening?

- Nader inzoomen

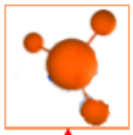
Conclusies en discussie

Formulator's challenges

Challenge: how to combine information and produce a useful format for end users



Tools to help



Registration Dossier

Public

ECHA and Member States

chesar

Registrants

ESCom XML and phrase catalogue

Exposure Scenarios: describing the conditions for safe use for **individual DU**

Use maps developed by **DU associations:**

- What are the uses relevant in one sector?
- Under which conditions do they take place?

Reference to mixture types

Harmonised format
Advice for substances

Harmonised format
Advice for mixtures
SUMI

Formulators

End users
Downstream users

Use map elements

Empty templates:

https://echa.europa.eu/csr-es-roadmap/use-maps/templates-and-submission

Library of available information:

https://echa.europa.eu/csr-es-roadmap/use-maps/use-maps-library

Use description

Workers

Workers: Sector-specific Worker Exposure Description (SWED)

⇔ OSH practice ⇔ OSH legislation

Consumers

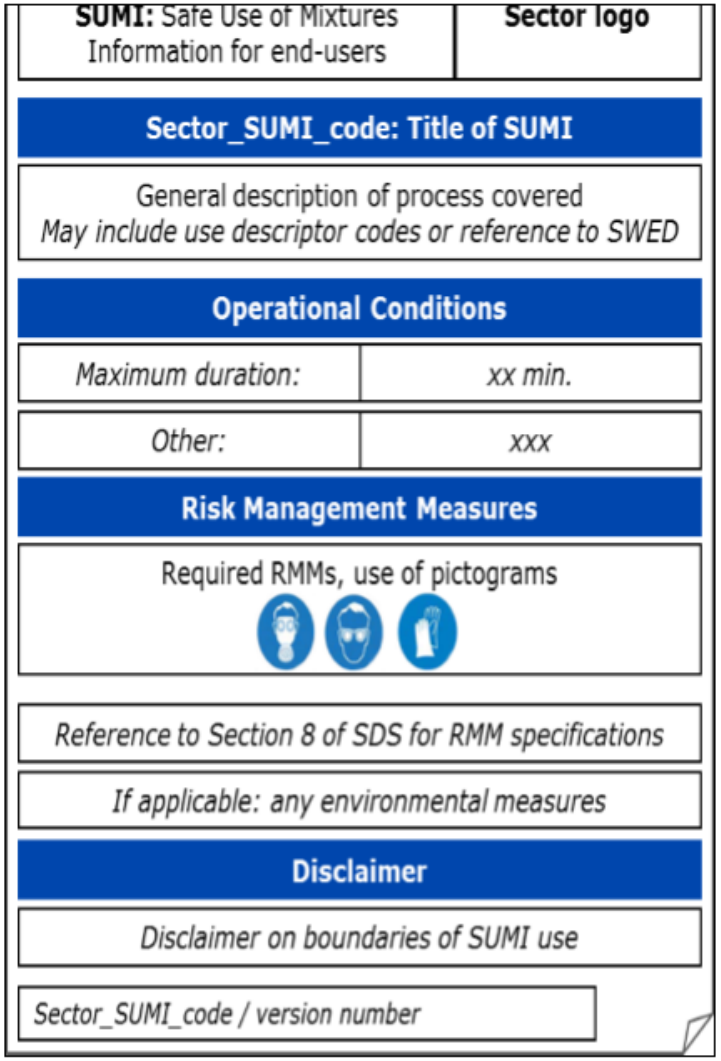
Consumers: Specific Consumer Exposure Determinant (SCED)

Environment

Environment: Specific Environmental Release Category (SPERC)

Safe use information of mixture (SUMI)

- Generated at sector level for common uses
- Simple 1-2 pages format for end users
- Harmonised content
- Use of pictograms



NIVA Workshop, mei 2017, Helsinki

Praktijktest: 3 formats

- 50 deelnemers: achtergrond divers
- verspuiten van lak
- u bent een bekwame HSE manager
- u heeft de Arbo RIE stoffen uitgevoerd
  - COSHH Direct Advice Sheets
  - Stoffenmanager® RIE WIKs
- u krijgt SUMI's onder REACH
- u moet een REACH Use Compliance Check uitvoeren
- vergelijk SUMI met Advise Sheets of RIE WIKs

- 1 Technical Data Sheet
- 3 SDS: ontvetter, lak, verharder
- 1 SUMI: Professional spray painting, near-industrial setting
- 4 COSHH Direct Advice Sheets
- 6 Stoffenmanager® RIE WIKs & schattingen

valspar
INDUSTRIAL MIX

Technical Data Sheet

EMEAI Valspar bv
Zuiveringweg 89
8243 PE Lelystad
The Netherlands
Tel. +31 (0) 320292200
www.valsparindustrialmix.com

CC710 HS420 Clear Coat Performance — CC710 / UK

Application Data

	**Preparation/ Cleaning:**	**All surfaces must be properly sanded and cleaned** Dry sanding: P320–P400 for Topcoat / P400–P500 for Basecoat Application Scuffing: Scuff pad (grey or gold) Wet sanding: P800 Cleaning: AD690 Solvent Degreaser Surface must be dry and free from any contamination, e.g. oil, grease	
	**Handling:**	**Before use/spraying:** 1. Add Activator and Reducer 2. Stir this mixture well with a mixing stick or a (pneumatic) stirrer	
	**Mixing ratio with Activator and Reducer:** (By volume)	CC710 HS420 Clear Coat Performance AU576 HS Activator fast (air-dry-version) or AU575 HS Activator Medium RS603 Universal Reducer Fast or RS605 Universal Reducer Medium or RS607 Universal Reducer Slow or RS609 Universal Reducer Ultra Slow	3 parts 1 part add 0 – 5%
	**Mix stick:**	Use the Mixing stick **M2 3:1** (74-202 = 3:1/4:1) or **M6 Universal cm-stick** (74-206 standard) / **M7** (74-207 large)	
	**Viscosity:** 18 – 20 sec. (DIN4/20°C)		
	**Gravity or Suction Feed:** Nozzle set Spray gun "High pressure" Spray gun "Reduce pressure" HVLP (Air cap pressure)	 1.2 – 1.4 mm (depends of the object size) 3.0 – 4.5 bar (42 – 65 psi) 1.5 – 2.5 bar (21 – 36 psi) 0.7 bar (10 psi) maximum	

SUMI: vast format – meertaligheid?

Verf & Inkt 46,
Maart 2018:
SUMIs in NL vertaald

SUMI
Safe Use of Mixtures
Information for end-users

Title: Professional spray painting, near-industrial setting CEPE_PW_01

This document is intended to communicate the conditions of safe use for the product and should always be read in combination with the product's Safety Data Sheet and labels.

General description of the process covered

Indoor spray painting by professionals with efficient ventilation such as spray booth or local exhaust ventilation

This safe use information is linked to SWED CEPE_PW_01

Operational Conditions

Indoor use
Maximum duration of individual exposure: covers daily use up to 8 hours, 225 days per year

Risk Management Measures

Contributing activity	Ventilation	Ventilation - air changes/hr
Preparation of material for application	Enhanced (mechanical) room ventilation	5-10
Loading of application equipment and handling of coated parts before curing	Enhanced (mechanical) room ventilation	5-10
Application	Local exhaust ventilation, spray booth or equivalent	Refer to relevant technical standards
Drying/curing	Enhanced (mechanical) room ventilation	5-10
Application equipment cleaning	Enhanced (mechanical) room ventilation	5-10
Waste management	Enhanced (mechanical) room ventilation	5-10

Contributing activity	Respiratory	Eye	Hands
Preparation of material for application	None	Use eye protection according to EN 166	Wear suitable gloves tested to EN374
Loading of application equipment and handling of coated parts before curing	None	Use eye protection according to EN 166	Wear suitable gloves tested to EN374
Application	Wear a respirator conforming to EN140 with an assigned protection factor of at least 10	Use eye protection according to EN 166	Wear suitable gloves tested to EN374
Drying/curing	None	None	None
Application equipment cleaning	None	Use eye protection according to EN 166	Wear suitable gloves tested to EN374
Waste management	None	Use eye protection according to EN 166	Wear suitable gloves tested to EN374

See chapter 8 of this Safety Data Sheet for specifications

Council Directive 92/58/EEC: white pictogram on a blue background (the blue part to take up at least 50 % of the area of the sign)

Disclaimer

The information in this Safe Use of Mixtures Information sheet is based on the data provided by the substance supplier for the substances in the product for which a chemical safety assessment has been carried out at the time of issue. It does not guarantee safe use of the product and does not replace any occupational risk assessment required by legislation. When developing workplace instructions for employees, SUMI sheets should always be considered in combination with the SDS and the label of the product.

No liability is accepted for any damage, no matter of what kind, which is the direct or indirect consequence of acts and/or decisions (partly) based on the contents of this document.

Disclaimer

……..It does not guarantee safe use of the product and does not replace any occupational risk assessment required by legislation. When developing workplace instructions for employees, SUMI sheets should always be considered in combination with the SDS and the label of the product……

HSE

Health and Safety Executive

MR2

COSHH essentials in motor vehicle repair

Spraying two-pack (2K) products in a spray booth or room

Control approach R

Respiratory protective equipment (RPE)

This information will help employers, the self-employed and franchisees to comply with the Control of Substances Hazardous to Health Regulations 2002 (COSHH), as amended, to control exposure to isocyanates and protect workers' health.

It is also useful for trade union and employee safety representatives.

This sheet describes good practice using air-fed RPE (breathing apparatus) and a dedicated extracted spray booth or room.

It covers the points you need to follow to reduce exposure to an adequate level.

It is important to follow all the points, or use equally effective measures.

'Isocyanate' means all isocyanate-based two-pack products. It may be described as 'prepolymer'. This still contains active isocyanate.

Main points

- **Spraying produces high levels of invisibly-fine isocyanate mist, the main source of exposure.**
- **Make sure the controls work and you know the 'clearance time'.**
- **Check the controls using biological monitoring - see sheet G408.**
- **Use health surveillance for asthma and dermatitis - see sheets G402 and G403.**
- **Also see sheet MR0.**

Hazard

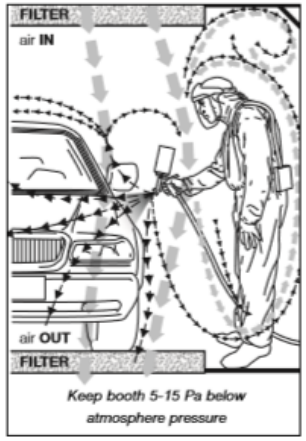
- ✓ Isocyanate can cause asthma by breathing in paint mist.
- ✓ Control exposure to stop occupational asthma developing. Even short-term exposures can cause harm. If an individual does develop occupational asthma, avoid further exposure.
- ✓ Isocyanate can cause dermatitis by skin contact.
- ✓ There is no evidence for cancer from isocyanate in paints.

Access and premises

- ✓ Only allow access to trained staff who are under health surveillance.
- ✓ Keep members of the public away from all work with two-pack products.
- ✓ Display the spray booth or room 'clearance time' clearly.

Equipment

- ✓ Provide 'compliant' spray guns that minimise paint mist.
- ✓ Use a spray booth or room that runs under slight negative pressure to prevent mist leaking into the workshop.
- ✓ Wire in the booth ventilation with the lighting circuit.
- ✓ Measure the clearance time - use a smoke generator.
- ✓ Fit a compressed air supply for breathing apparatus. Make sure the right amount of compressed air is always available, and that it is fit to breathe.
- ✓ Discharge filtered, extracted air outside the building, away from doors, windows and air inlets.



Caution: Never spray two-pack isocyanate products, primers or paints in the open workshop. Use the spray booth or room.

Voorbeeld Direct Advice Sheet / Control Guidance Sheet (pag. 1 van 4)

Vast format

Personal protective equipment (PPE)

Respiratory protective equipment (RPE)

- ✓ Air-fed breathing apparatus is always needed.
- ✓ You need equipment with an Assigned Protection Factor (APF) of 20 or higher. Use a LDM3 air-fed half-mask with a visor, or LDH3 air-fed visor with APF 40. See sheets R3 and R5.
- ✓ Can you use visor covers to protect the visor from spray?
- ✓ Make sure all breathing apparatus is properly fit-tested - get advice from your supplier.
- ✓ Keep RPE clean and store it in a clean place - not in the mixing area or booth.

Other PPE

- ✓ Provide disposable coveralls. Discard these at the end of a day's work.
- ✓ Provide chemical resistant gloves, eg nitrile. Single-use gloves are preferred.
- ✓ Throw away single-use gloves every time they are taken off.
- ✓ Skin creams are important for skin protection and help in washing contamination from the skin. After work creams help to replace skin oils.
- ✓ Where you have to use a strong hand cleaner, remind workers to wash off residues with soap and water.

Caution: 'Barrier creams' or 'liquid gloves' do not provide a full barrier. Never use thinners to clean skin.

Procedures

- ✓ Reduce exposure to isocyanate as far as possible.
- ✓ Set the booth extraction running before spraying or baking begins. Keep it running for at least the clearance time after spraying.
- ✓ Ensure that air-fed breathing apparatus is worn for spraying and that users check it works properly every time they use it.
- ✓ Workers must keep their breathing apparatus on until they have left the booth or room.

Maintenance, examination and testing

- ✓ Keep equipment in effective and efficient working order - follow instructions in user manuals.

Cosanta
Solutions for chemical risks

Workplace instruction card:	SUMI BOHS workshop - Loading of application equipment and handling of coated parts before curing
Product:	CC710 Clear Coat Performance

Location / department	Cosanta
Process	Mixing with pneumatic stirrer
Workplace	Mixing and spray gun cleaning room

Danger properties

Signal term: Warning	EUH066: Repeated exposure may cause skin dryness or cracking H226: Flammable liquid and vapour H336: May cause drowsiness or dizziness H412: Harmful to aquatic life with long lasting effects

Personal protection

Face shield with respiratory protection

Butylrubber

Working clothes

Follow the work instruction

Control measures	-
Protection worker	-
Room ventilation	General ventilation (mechanical)
Respiratory protection	-
Dilution with water	75% product, 25% water
General	Clean the working room daily. Report malfunctions or defects to your supervisor.

The work instruction applies for the situation below

Report abnormalities to your supervisor

Task	Use at low pressure, low speed and on medium-sized surfaces
Duration	120 minutes per day
Frequency	4-5 days a week
Distance to task	Inside the breathing zone
Number of workers	One worker
Period of evaporation, drying or curing after task	Product can be released (for example through evaporation, drying or curing)
Room volume	< 100 m³

First aid

General information	In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and seek medical advice.
Notes for physician	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Inhalation	Remove to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trainned personnel.
Skin contact	Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognised skin cleanser. Do NOT use solvents or thinners.
Eye contact	Remove contact lenses, irrigate copiously with clean, fresh water, holding the eyelids for at least 10 minutes and seek immediate medical advice.

Cosanta
Solutions for chemical risks

Ingestion	If swallowed, seek medical advice immediately and show the container or label. Keep person warm and at rest. Do NOT induce vomiting.

Incidents

Cleaning instructions	Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Preferably clean with a detergent. Avoid using solvents.
Extinguishing agents	Recommended: alcohol-resistant foam, CO2, powders, water spray.

RCR < 1

RIE WIK= veilige werkwijze:

- eigen praktijkinformatie
- klaar voor gebruik
- verder formatteren mogelijk
- 8 talen plus DK en IT (2018)

Generated with Stoffenmanager® on 22-02-2018
Stoffenmanager®7

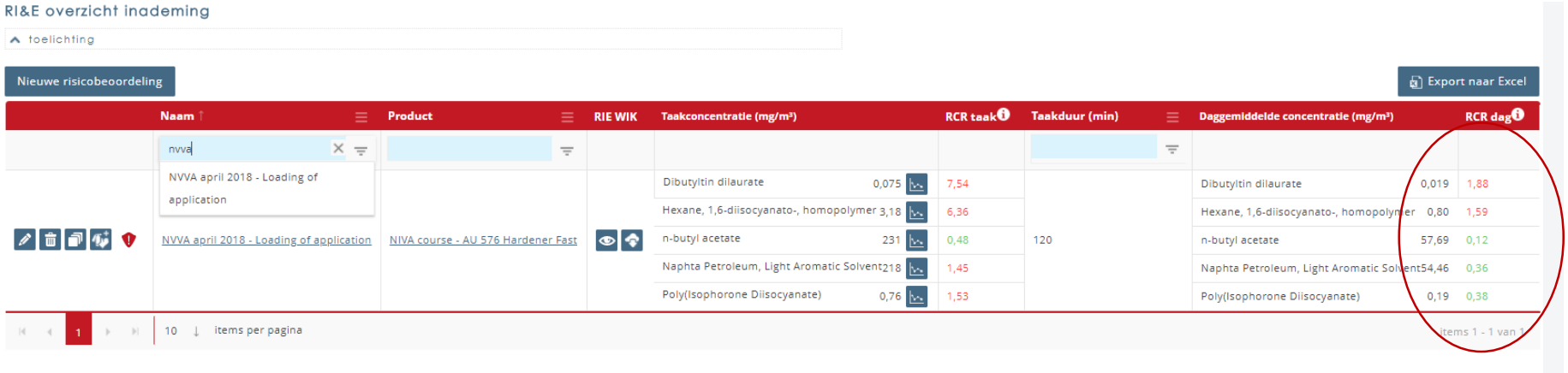
Feedback deelnemers

- Waardering idee SUMI, maar te algemeen
  - mist praktijk info
  - controle veilig gebruik niet mogelijk
- SUMI # COSHH Direct Advise Sheets (niet altijd)
- Stoffenmanager®:
  - mengen van verharder niet veilig
  - afhankelijk van taakduur
- Additie?

Uw mening?

Scenario	SUMI	RIE - WIK	COSHH
Preparation	One SUMI covers all scenarios	√	X
Mixing		√	√
Spraying		√	√
Cleaning equipment on completion		√	√

Uw mening?


RI&E overzicht inademing

toelichting

Nieuwe risicobeoordeling

Export naar Excel

	Naam	Product	RIE WIK	Taakconcentratie (mg/m³)	RCR taak	Taakduur (min)	Daggemiddelde concentratie (mg/m³)	RCR dag
	nvva							
	NVVA april 2018 - Loading of application							
	NVVA april 2018 - Loading of application	NIVA course - AU 576 Hardener Fast		Dibutyltin dilaurate 0,075	7,54		Dibutyltin dilaurate 0,019	1,88
				Hexane, 1,6-diisocyanato-, homopolymer 3,18	6,36		Hexane, 1,6-diisocyanato-, homopolymer 0,80	1,59
				n-butyl acetate 231	0,48	120	n-butyl acetate 57,69	0,12
				Naphta Petroleum, Light Aromatic Solvent 218	1,45		Naphta Petroleum, Light Aromatic Solvent 54,46	0,36
				Poly(Isophorone Diisocyanate) 0,76	1,53		Poly(Isophorone Diisocyanate) 0,19	0,38

1 | 10 items per pagina | Items 1 - 1 van 1

Mengen van verharder:

- RIE WIK - Stoffenmanager® 7.1: RCR > 1
- SUMI ECETOC-TRA v. 3: RCR <1

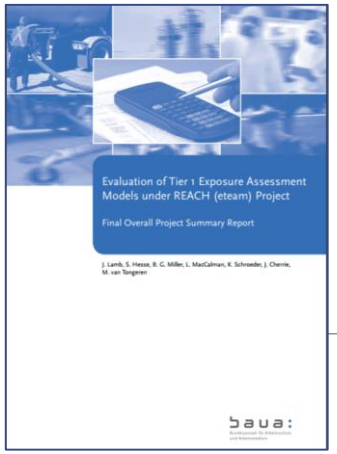
How Accurate and Reliable Are Exposure Models?

Wouter Fransman ✉

Annals of Work Exposures and Health, Volume 61, Issue 8, 1 October 2017, Pages 907–910,
https://doi.org/10.1093/annweh/wxx068
Published: 03 August 2017

In this issue of the *Annals of Work Exposures and Health*, several authors report on the validation of exposure assessment models. Since the introduction of the European regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH; European Parliament, 2006), various risk/exposure assessment tools have been developed and are currently widely used for chemical safety assessments. Between the start of the REACH Registration period in 2008 and September 2014, around 40000 substance dossiers had been submitted to ECHA. As noted by George Box in 1987 'essentially, all models are wrong, but some are useful' (Box *et al.*, 1987), and more recently it has been stated that models cannot and should not replace the collection of good quality exposure measurements (Kromhout, 2016). Nevertheless, the European occupational hygiene community...

"….. not relying on only a single validation study in a specific applicability domain, but to repeat validation studies over a wide range of different scenarios."



Comparison and Evaluation of Multiple Users' Usage of the Exposure and Risk Tool: Stoffenmanager 5.1

Hanna E. Landberg ✉, Peter Berg, Lennart Andersson, Ulf Bergendorf, Jan-Eric Karlsson, Håkan Westberg, Håkan Tinnerberg

The Annals of Occupational Hygiene, Volume 59, Issue 7, 1 August 2015, Pages 821–835, https://doi.org/10.1093/annhyg/mev027
Published: 09 April 2015 **Article history ▾**

International Journal of Occupational Safety and Ergonomics (JOSE), 2015
Vol. 21, No. 4, 471–479, http://dx.doi.org/10.1080/10803548.2015.1086183
Taylor & Francis

Application of predictive models for estimation of health care workers exposure to sevoflurane

Agnieszka Jankowska*, Sławomir Czerczak, Małgorzata Kucharska, Wiktor Wesołowski, Piotr Maciaszek and Małgorzata Kupczewska-Dobecka
Nofer Institute of Occupational Medicine (NIOM), Poland

Objectives. The aim of this study was to assess the potential use of predictive models to estimate professional exposure to chemicals in the workplace, such as the operating room, by simultaneous determination of the levels of exposure using a model and measurements. *Methods.* Measurements included determinations of sevoflurane (SEV) in the workplace air of 117 operating rooms of 31 hospitals in one Polish region. Measurements were carried out at the time of various surgical procedures during administration of anaesthetics by endotracheal intubation. The measurement results were compared with the ECETOC TRA esti-
ed to maintain a margin
on. The Stoffenmanager
ning tool for the assess-
results are of particular
e relevant occupational

Accuracy Evaluation of Three Modelling Tools for Occupational Exposure Assessment

Andrea Spinazzè, Filippo Lunghini, Davide Campagnolo, Sabrina Rovelli, Monica Locatelli, Andrea Cattaneo, Domenico M. Cavallo

Annals of Work Exposures and Health, Volume 61, Issue 3, 1 April 2017, Pages 284–298, https://doi.org/10.1093/annweh/wxx004
Published: 07 February 2017 **Article history ▾**

Validation of Lower Tier Exposure Tools Used for REACH: Comparison of Tools Estimates With Available Exposure Measurements

Martie van Tongeren ✉, Judith Lamb, John W Cherrie, Laura MacCalman, Ioannis Basinas, Susanne Hesse

Annals of Work Exposures and Health, Volume 61, Issue 8, 1 [illegible] 2017, Pages 921–938, https://doi.org/10.1093/annweh/wxx[illegible]
Published: 18 July 2017 **Article history ▾**

A Study of the Validity of Two Exposure Assessment Tools: Stoffenmanager and the Advanced REACH Tool

Hanna E. Landberg, Anna Axmon, Håkan Westberg, Håkan Tinnerberg

Annals of Work Exposures and Health, Volume 61, Issue 5, 1 June 2017, Pages 575–588, https://doi.org/10.1093/annweh/wxx008
Published: 11 March 2017 **Article history ▾**

The Use of Exposure Models in Assessing Occupational Exposure to Chemicals

Hanna Landberg

LUND UNIVERSITY

DOCTORAL DISSERTATION

by due permission of the Faculty of Medicine, Lund University, Sweden.
To be defended at Auditorium 302-1, Medicon Village, Lund, Lund University.
26th January 2018, at 09:15.

Faculty opponent
Professor Martie van Tongeren

Department of Occupational and Environmental Health, University of Manchester, Manchester, United Kingdom

Session 8: Exposure modelling, Biological Monitoring II and Bioaerosols I

Keynote

Evaluation of tier exposure assessment tools for use under REACH (Inhalation)

Eun Gyung Lee[1], Judith Lamb[2], Nenad Savic[3], Bojan Gasic[4], Christian Jung[5], Micha Martie Van Tongeren[2,7], David Vernez[3], Martin Harper[1]
[1] National Institute for Occupational Safety and Health (NIOSH/CDC), USA
[2] Institute of Occupational Medicine (IOM), United Kingdom

ART, Stoffenmanager, and TRA: A Systematic Comparison of Exposure Estimates Using the TREXMO Translation System

Nenad Savic ✉, Bojan Gasic, David Vernez

Annals of Work Exposures and Health, Volume 62, Issue 1, 15 December 2017, Pages 72–87, https://doi.org/10.1093/annweh/wxx079
Published: 27 September 2017 **Article history ▾**

Views ▾ PDF Cite Permissions Share ▾

Abstract
Several occupational exposure models are recommended under the EU's REACH legislation. Due to limited availability of high-quality exposure data, their validation is an ongoing process. It was shown, however, that different models

ECHA ENES ACTION 3.2: Consolidate the different workers exposure tools into a common framework

Aim (2)

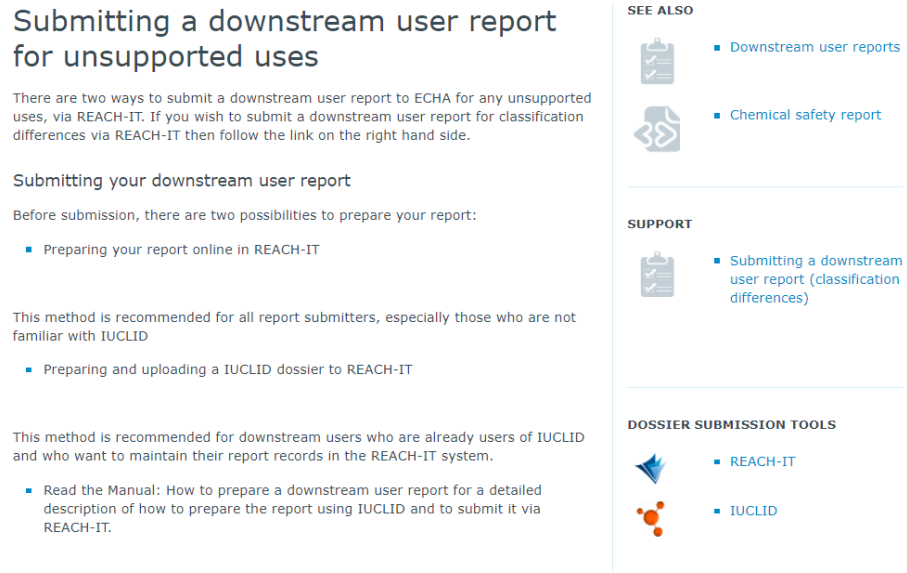
- Model performance literature review:
  - External validation
  - Between user reliability

REACH Use Compliance check Arbo was er eerder dan REACH

- REACH Use Compliance check – non compliant
  - pas werkzaamheden aan
  - communiceer upstream
  - zoek andere leverancier
  - dien zelf RIE stoffen in: down stream user report

  https://echa.europa.eu/support/dossier-submission-tools/reach-it/downstream-user-report

- Schatten? Stoffenmanager®:
  - meest robuust
  - 90 - percentiel conservatief



Submitting a downstream user report for unsupported uses

There are two ways to submit a downstream user report to ECHA for any unsupported uses, via REACH-IT. If you wish to submit a downstream user report for classification differences via REACH-IT then follow the link on the right hand side.

Submitting your downstream user report

Before submission, there are two possibilities to prepare your report:

- Preparing your report online in REACH-IT

This method is recommended for all report submitters, especially those who are not familiar with IUCLID

- Preparing and uploading a IUCLID dossier to REACH-IT

This method is recommended for downstream users who are already users of IUCLID and who want to maintain their report records in the REACH-IT system.

- Read the Manual: How to prepare a downstream user report for a detailed description of how to prepare the report using IUCLID and to submit it via REACH-IT.

SEE ALSO

- Downstream user reports
- Chemical safety report

SUPPORT

- Submitting a downstream user report (classification differences)

DOSSIER SUBMISSION TOOLS

- REACH-IT
- IUCLID

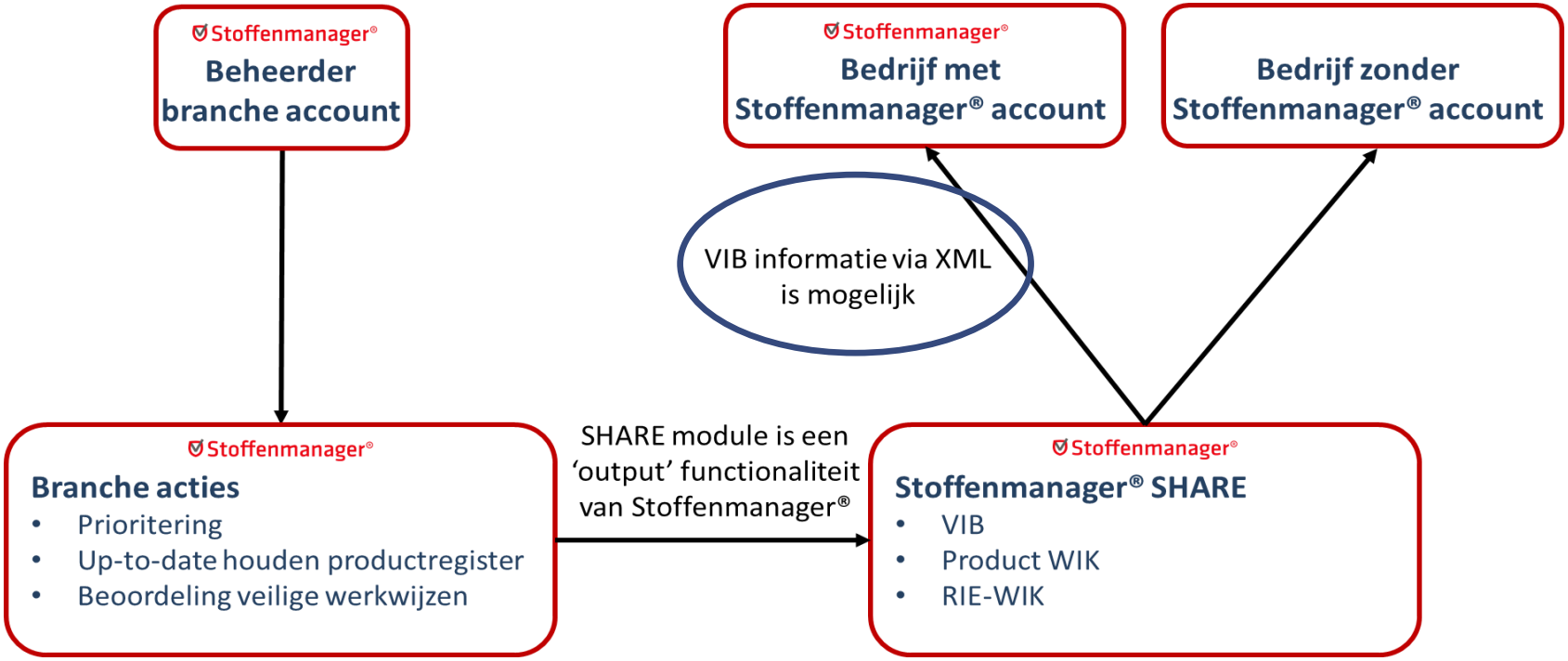
REACH Use compliance check - ketencommunicatie

Nog nauwelijks gebruikt:

- ESCom Standard Phrase Catalogue (ESDS)
http://www.cefic.org/Industry-support/Implementing-reach/escom/

- SDSComXML (Compleet SDS)
https://www.esdscom.eu/

Arbocatalogus communicatie veilige werkwijzen

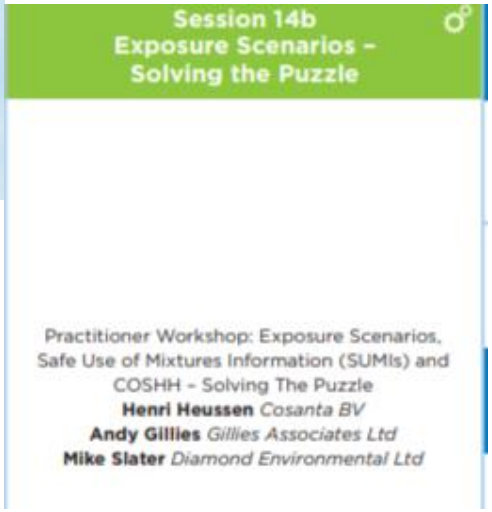


Conclusies

SUMI: Safe Use of Mixtures Information for end-users	**Sector logo**
Sector_SUMI_code: Title of SUMI	
General description of process covered *May include use descriptor codes or reference to SWED*	
Operational Conditions	
Maximum duration:	*xx min.*
Other:	*xxx*
Risk Management Measures	
Required RMMs, use of pictograms	
Reference to Section 8 of SDS for RMM specifications	
If applicable: any environmental measures	
Disclaimer	
Disclaimer on boundaries of SUMI use	
Sector_SUMI_code / version number	

Meer praktijktesten nodig

Discussies? Van harte welkom!



The 11th International Occupational Hygiene Association (IOHA) International Scientific Conference

September 24-26, 2018 | Washington, DC, USA | #IOHA2018USA

8th International Control Banding workshop – Control Banding and beyond…..

History, Implementation and Future of Control Banding

Evaluation of REACH tier I and 1.5 tools – the Eteam study: follow up by tool owners

Hazard banding / Occupational Exposure Banding

Evaluation of quantitative exposure models

Vragen?

Nederlandse Vereniging voor Arbeidshygiëne

Home Contact Nieuws Fotowedstrijd Aanmelden Zoeken

» Symposium » Vereniging » Agenda » Kennis

12.15		-	Lunch, informatiemarkt	Lees meer

Vijfde ronde sessies (N t/m P)

Tijdstip	Zaalnr	Sessienr	Omschrijving	
13.15	RPS (pl.)	N	De opkomst van sensortechnologie; een doorbraak in de arbeidshygiëne?	Lees meer
13.15	BaSyst. (25)	O	REACH/Mengselblootstelling	Lees meer
13.15	24	P	Over gevaren en oplossingen	Lees meer