

Follmann Chemie Group

Innovation | Appreciation | Sustainability

The Challenge: How to choose and communicate RMM

BAuA Workshop REACH2SDS 28.09.2021



The Challenge: How to choose and communicate RMM?

AGENDA

- **The Follmann Chemie Group**
- **Input process**
- **Assessment process**
- **Output process**
- **Process Issues**
- **Conclusion**

Follmann Chemie Group | OVERVIEW



Heinrich Follmann †
Founder

Dr Rainer Follmann
Founder

Dr Henrik Follmann
Managing partner

FOUNDING

1977

EMPLOYEES

> 800

TURNOVER IN €

> 200 M

PRODUCTION

> 60.000
tons

The key competences of the Follmann Chemie Group are the development, manufacturing and sales of:

- Speciality chemicals for the processing industry:
 - Printing inks
 - Adhesives
 - Coating systems for decorative and functional surface design
- Waterproofing systems, infrastructure solutions and marking materials for the construction sector

Follmann Chemie Group | GLOBAL PRESENCE



Triflex

- DE | Triflex Germany
- NL | Triflex Netherlands
- UK | Triflex UK
- CH | Triflex Switzerland
- AT | Triflex Austria
- BE | Triflex Belgium
- FR | Triflex France
- IT | Triflex Italy
- SG | Triflex Singapore
- PL | Triflex Poland
- RU | Triflex Russia
- CN | Triflex China

FOLMANN

- DE | Follmann Germany
- RU | Follmann Russia
- RU | Chemical Alliance
- CN | Follmann China
- PL | Follmann Poland
- UK | Sealock UK

Follmann Chemie Group | FOLLMANN | BUSINESS UNITS

PRINT + PACKAGING



Water-based printing inks and coatings for the printing and packaging industry

DESIGN + FUNCTION



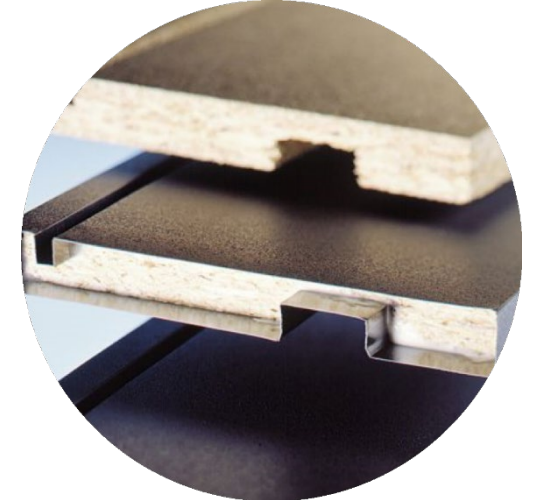
Decorative and functional coatings as well as pigment preparations for various applications

INDUSTRIAL BONDING



High-performance adhesives for a variety of adhesive applications

WOOD + FURNITURE



High-performance adhesives for the wood and furniture industry

Follmann Chemie Group | TRIFLEX | BUSINESS UNITS

SEALING
FLAT ROOFS | ROOF CONNECTIONS



SEALING
BALCONIES | TERRACES
WALKWAYS



SEALING
CONNECTIONS | JOINTS | DETAILS



SEALING
MULTISTOREY CAR PARKS |
UNDERGROUND CAR PARKS



INFRASTRUCTURE
RENEWABLE ENERGY



MARKING MATERIALS



Follmann Chemie Group | EMPLOYEES

>800
EMPLOYEES



>70
DEVELOPERS
IN SIX TECHNOLOGY
SECTORS

INFORMATION
TRAINING
FURTHER EDUCATION

35
TRAINEES AND
DUAL STUDENTS



The Challenge: How to choose and communicate RMM?

INPUT Process

The Challenge: How to choose and communicate RMM?

INPUT Process

Context to the „Regulations“

The **REACH Regulation** requires each downstream actor in a substance use chain to take specific action on receipt of an exposure scenario (ES) for a substance, which is used by that actor:

1. to adopt the operational conditions and risk management measures applicable to the actor's own use(s), to ensure the safe use to man and/or the environment.
2. to pass on to the next actor in the use chain all information relevant to the uses of the substance in the formulation.

ECHA guidance provides 3 options for formulators to pass on relevant information obtained via exposure scenarios (ESs) for substances which are contained in their formulations.

Option 1: Forward the ES(s) for the relevant substance(s) contained in the mixture, attached to the SDS for the mixture.

Option 2: Consolidate the ESs for the relevant substance(s) contained in the mixture and annex to the mixture SDS.


Option 3: Consolidate the ESs for the relevant substance(s) contained in the mixture and integrate complementary information in the mixture SDS main body.

The Challenge: How to choose and communicate RMM?

INPUT Process

Follmann-Chemie raw material portfolio

- 3000 raw materials over all
- 1500 raw materials used per year
 - Most of them are mixtures
 - Hazardous; Non hazardous
 - Standard SDS
- 150 single substances => **eSDS not all with an ES (10-15%)!**



Basis for the
assessment to
find out what
kind of RMMs
are needed

The Challenge: How to choose and communicate RMM?

INPUT Process

- SDS/ eSDS as standard in supply chain communication
- Obligation to read SDS/ eSDS because of the work safety regulation
- To fulfill the obligation under REACH, safe use, RMM communication (internal use, external use)

for preparing
the SDS for our
products

preparing the
german
„Betriebsanweisung
g“
(Safety
instructions)

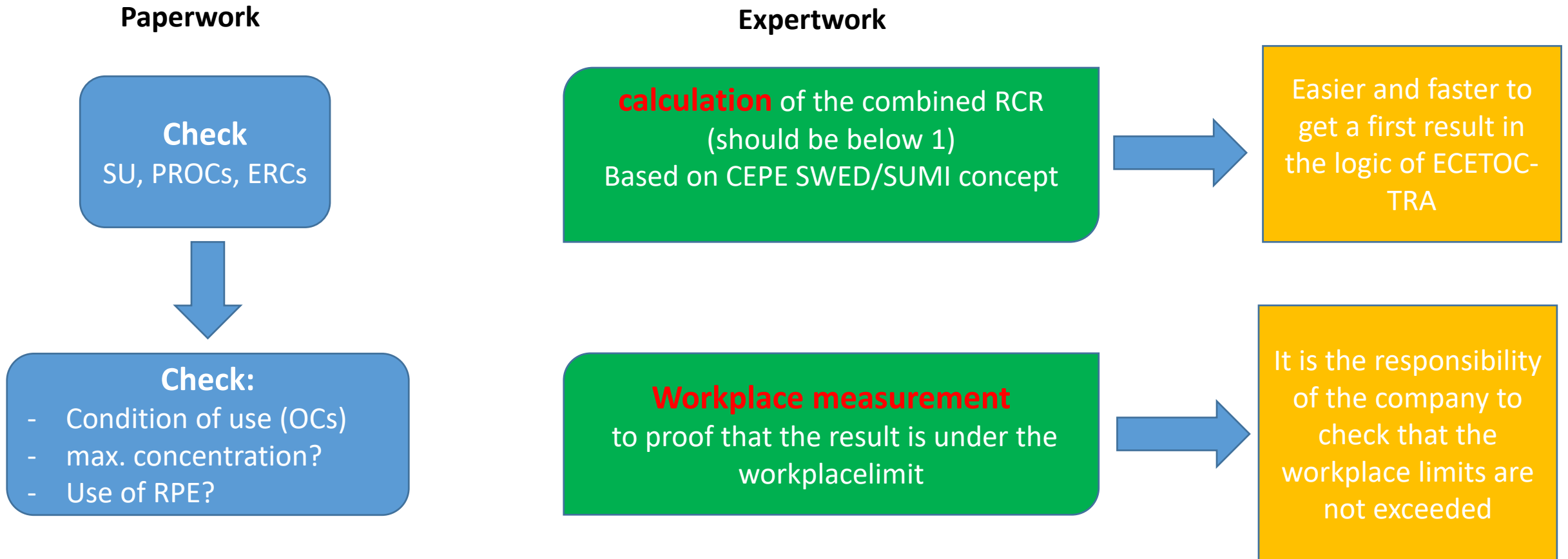
Communication of
RMMs in the SDS.

In near future to
make the
automatic EMKG-
Assessment in
batch process per
production area

The Challenge: How to choose and communicate RMM?

INPUT Process

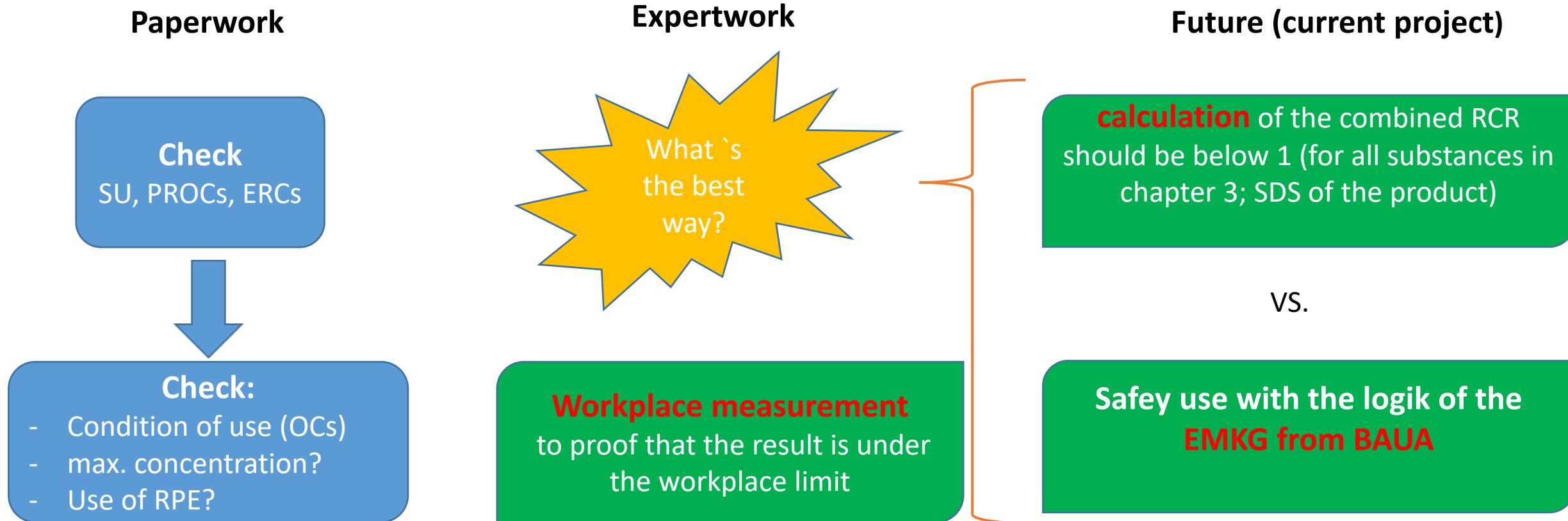
For internal use, raw material (industriell, indoor)



The Challenge: How to choose and communicate RMM?

INPUT Process

For external use of products (construction chemicals professional outdoor)



The Challenge: How to choose and communicate RMM?

Assessment Process

The Challenge: How to choose and communicate RMM?

ASSESSMENT Process

Documentation internal use

Information of the used ES

Relevant information for the comb. RCR calc

Expositionsbewertung Produktion

Expositionsbewertung

Stand des Expositionsszenarios

<i>Kurztitel des ES</i>	ES2: Formulierung von Zubereitungen
<i>Datum ES</i>	08.12.2015; 12.01.2017
<i>Version ES</i>	6.7; 2.1
<i>Einsatzbereich:</i>	H23
<i>maximale Einsatzkonzentration 100%</i>	ja
<i>Bearbeiter Kürzel</i>	bom
<i>Datum der Prüfung (ES)</i>	23.09.2019
<i>Kurztitel des ES</i>	ES7: Polymerherstellung, Nasspolymerisation, Emulsionspolymerisation
<i>Datum ES</i>	08.12.2015; 12.01.2017
<i>Version ES</i>	6.7; 2.1
<i>Einsatzbereich:</i>	H42+44
<i>maximale Einsatzkonzentration 100%</i>	ja
<i>Bearbeiter Kürzel</i>	bom
<i>Datum der Prüfung (ES)</i>	23.09.2019

Stoffdaten für BEA

<i>Molekulargewicht [g/mol]</i>	100,121
<i>DNEL Langzeit Inhaliv</i>	208 mg/m ³
<i>DNEL Langzeit Dermal</i>	13,67 mg/kg KG/Tag
<i>Bewertung Dampfdruck ECETOC (high, medium, low, very low)</i>	medium

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ASSESSMENT Process

Documentation **internal use**

The „technical“ Situation in the production area

Bedingungen pro Produktionsbereich, industrielle Verwendung (SU3, SU10)

<i>Einsatzbereich (Halle)/Abluftreinigung/Kläranlage</i>	23/TNV/nein
<i>Luftwechselrate 93% (Follmann Chemie Default)</i>	Lokale Absaugung sowie Hallenlüfter sind in der Produktionshalle vorhanden.
<i>Verwendungsdauer eingeschränkt (<8h, PROC angeben)</i>	nein
<i>Atemschutz laut ES notwendig</i>	nein
<i>Halle 23 EX PROC 5,8a/b,9,15</i>	Alle Prozesskategorien (PROCs) sind im ES aufgeführt. Das beschriebene Expositionsszenario entspricht den örtlichen Gegebenheiten des Produktionsbereichs. comb. RCR <1 gem. interner BEA
<i>Einsatzbereich (Halle)/Abluftreinigung/Kläranlage</i>	42+44/nein/ja
<i>Luftwechselrate 93% (Follmann Chemie Default)</i>	Lokale Absaugung sowie Hallenlüfter sind in der Produktionshalle vorhanden.
<i>Verwendungsdauer eingeschränkt (<8h, PROC angeben)</i>	nein
<i>Atemschutz laut ES notwendig</i>	nein
<i>Halle 42+44 Poly PROC 3,8b,9,15</i>	Das beschriebene Expositionsszenario entspricht den örtlichen Gegebenheiten des Produktionsbereichs. Alle Prozesskategorien (PROCs) sind im ES aufgeführt. comb. RCR <1 gem. interner BEA

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ASSESSMENT Process

Documentation **internal use**

Information from work safety department

beitragende Maßnahmen aus intern. Arbeitsschutz

Atemschutz

nein, Kriterien aus dem Arbeitsschutz (CLP H330 bis H334) sind nicht gegeben.

Handschuhe

Gefährdungsbeurteilung wurde durchgeführt. Handschuhe gemäß gültigem Handschuhplan. kurzzeitiger Kontakt

Augenschutz

Schutzbrillenpflicht besteht in allen Anwendungsbereichen von Chemikalien.

Meßbericht AGW liegt vor

Ergebnis der AGW Messung unter: F:\Umwelt\Arbeitssicherheit\Arbeitsplatzgrenzwerte_AGW\AGW-Messplan

The Challenge: How to choose and communicate RMM?

ASSESSMENT Process

Calc. of the combined RCR below 1

Substance data entry sheet for BEA

Enter data here for a substance used in the production site Follmann Chemie
 Note: only substances contributing to the human health classification need be checked

Substance name/ID (for your records):

Molecular weight:

Fugacity (see tables to right)

Concentration in mixture

Inhalative DNEL*, mg/m³ = ppm
 ↑
 If you already have a DNEL in ppm, you can enter it directly here & overwrite the formula
 (otherwise it will be calculated from the mg/m³ value)

Dermal DNEL*, mg/kg bw/d

* long-term systemic, workers

Fugacity ranges ECETOC TR114,2.2.4

LIQUIDS: vapour pressure at 20°C (in Pa)			
very low	low	medium	high
< 0.01	0.01 - 500	500 - 10000	> 10000

hPa in Pa = x 100

Overview of Validation Results

Production site	RCR		
	inhalative	dermal	combined
WBC Produktion	✓ #NV	✓ #NV	✓ #NV
EX Produktion	✓ #NV	✓ #NV	✓ #NV
PVC Produktion	✓ #NV	✓ #NV	✓ #NV
Polymerisation	✓ #NV	✓ #NV	✓ #NV
SK Produktion	✓ #NV	✓ #NV	✓ #NV
KT Produktion	✓ #NV	✓ #NV	✓ #NV
ABUCO (15min-1h)	✓ #NV	✓ #NV	✓ #NV
Kläranlage (15 min-1h)	✓ #NV	✓ #NV	✓ #NV
UFP I-II (15 min-1h)	✓ #NV	✓ #NV	✓ #NV
Entsorgungsplatz (15min-1h)	✓ #NV	✓ #NV	✓ #NV

The Challenge: How to choose and communicate RMM?

Output Process

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OUTPUT Process

Intergrated calculation table per production area

Substance data entry sheet for BEA

Enter data here for a substance used in the production site Follmann Chemie
 Note: only substances contributing to the human health classification need be checked

Substance name/ID (for your records):

Molecular weight:

Fugacity (see tables to right)

Concentration in mixture

Inhalative DNEL*, mg/m³ = ppm
↑

Dermal DNEL*, mg/kg bw/d

Fugacity ranges ECETOC TR114,2.2.4

LIQUIDS: vapour	
very low	low
< 0.01	0.01 - 500

hPa in Pa = x 100

If you already have a DNEL in ppm, you can enter it directly here & overwrite the formula
 (otherwise it will be calculated from the mg/m³ value)

* long-term systemic, workers

Overview of Validation Results

Production site	RCR		
	inhalative	dermal	combined
WBC Produktion	0,07	0,007	0,08
EX Produktion	0,07	0,02	0,09
PVC Produktion	0,07	0,02	0,09
Polymerisation	0,07	0,00	0,07
SK Produktion	0,30	0,10	0,40
KT Produktion	0,07	0,20	0,27
ABUCO (15min-1h)	0,07	0,35	0,42
Kläranlage (15 min-1h)	0,07	0,07	0,14
UFP I+II (15 min-1h)	0,07	0,07	0,14
Entsorgungsplatz (15min-1h)	0,07	0,07	0,14



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Output Process

Calculation Example: comb RCR >1

Substance data entry sheet for BEA

Enter data here for a substance used in the production site Follmann Chemie
 Note: only substances contributing to the human health classification need be checked

Substance name/ID (for your records):

Molecular weight:

Fugacity (see tables to right)

Concentration in mixture

Inhalative DNEL*, mg/m³ = ppm
↑
 If you already have a DNEL in ppm, you can enter it directly here & overwrite the formula
 (otherwise it will be calculated from the mg/m³ value)

Dermal DNEL*, mg/kg bw/d

* long-term systemic, workers

Fugacity ranges ECETOC TR114,2.2.4

LIQUIDS: vapour pressure at 20°C (in Pa)			
very low	low	medium	high
< 0.01	0.01 - 500	500 - 10000	> 10000

hPa in Pa = x 100

Overview of Validation Results

Production site	RCR		
	inhalative	dermal	combined
WBC Produktion	33,44	0,004	33,45
EX Produktion	0,06	0,00	0,06
PVC Produktion	33,44	0,00	33,45
Polymerisation	28,67	0,00	28,67
SK Produktion	143,33	0,02	143,35
KT Produktion	33,44	0,00	33,45
ABUCO (15min-1h)	40,13	0,04	40,17
Kläranlage (15 min-1h)	40,13	0,04	40,17
UFP I+II (15 min-1h)	40,13	0,04	40,17
Entsorgungsplatz (15min-1h)	40,13	0,04	40,17

Look closer to find a solution for safe use!

Occupational workplace measurement?

The Challenge: How to choose and communicate RMM?

Output Process

Documentation internal use

Result of the assessment

Bewertung Gesundheit

Einsatzbereich:

H23 H42+44

Bewertung

Sichere Verwendung unter den gegebenen Bedingungen gewährleistet.

Beschränkungen

Keine Maßnahmen erforderlich.

Bewertung Umwelt

Einsatzbereich:

H23

Gewässer/ Abwasser

Eine Einleitung in ein Gewässer/ Abwasser ist nicht gegeben.

Luft

Die Abluft wird über die TNV geleitet.

Boden

Ein Eindringen in den Boden ist aufgrund von baulichen Maßnahmen nicht gegeben.

Einsatzbereich:

H42+44

Gewässer/ Abwasser

Einleitung in die betriebsinterne Abwasseraufbereitung ist gegeben. Restmonomer konnte mittels GC-FID in der Klärphase der Abwasseraufbereitung nicht nachgewiesen werden.

Luft

Der Messwert an der Emissionsquelle des Reaktors wurde eingehalten.

Boden

Ein Eindringen in den Boden ist aufgrund von baulichen Maßnahmen nicht gegeben.

The Challenge: How to choose and communicate RMM?

Output Process

Documentation external use

Result of the assessment

- ✓ Only check the SU, PROC, ERC, condition of use (OCs), concentration, Use of RPE
- ✓ Put information in Chapter 8 of the SDS: gloves material, breakthrough time, goggles, RPE information
- ❖ Development of a standard communication/ documentation based on eSDS information is in progress (projekt is startet)!

additional

- ✓ Occupational exposure limit measurements to get a feeling for compliance with the limit values!
- ✓ In cooperation with customers!

The Challenge: How to choose and communicate RMM?

Process issues

Problems from the paperwork view:

- Some raw material suppliers send no eSDS for a single substance or send an eSDS for a mixture or a polymer!
- Most of the eSDS especially the ESs have a poor structure that you have to check all pages to find the relevant information. Sometimes the ESs have a structure that does not comply with the regulations.
- The version number of the SDS is the same as for the ESs. If you get a new eSDS and there are only minor changes in words you are not able to detect them and you have to check all pages again.
- Sometimes the names of the ES are not clear. To find the correct SU, PROC, ERC is challenging!
- Sometimes the DNEL values are incorrect and do not correspond with the ECHA database!
- Some information is not clearly formulated. Example: **Acrylic Monomer**

- *Umweltschutzmaßnahmen*

- *Wasser*

Bei Entleerung in eine Hauskläranlage ist keine Abwasserbehandlung vor Ort notwendig.

Geschätzte Entfernung der Substanz aus Abwasser durch Kläranlage vor Ort: 90 %

translation: When emptying in a domestic sewage treatment plant, no wastewater treatment is necessary

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Process issues

Examples for not useful information from a practical view:

Some RMM are excessive (?): ES: “wear RPE“ for prof. use, outdoor ,SU22, PROC 10.

Practical view: In workplace measurements under named conditions, Outdoor, 8h, conc. 0-25% the workplace limit values are not exceeded!

result: It could be that we pass on RMM (use RPE) to our customers, which are a burden for the employees, if we limit ourselves to the information in the ES. In this case it is not necessary to wear RPE, on the contrary it is not allowed according to Occupational health and safety rules!

The supplier gives the following information for professional use of the formulation: outdoor, conc. 100 %, SU22, PROC10

ES: Use lokal ventilation!

Practical view: That does not make sense! Outdoor is regarded as 30% default and therefore we need the conditions of use.

result: Additional communication with the supplier is needed. The formulator have to make a self assessment to show safe use under real conditions to get a quick result for his product.

The Challenge: How to choose and communicate RMM?

CONCLUSION

The legislation and the basic material manufacturers and the supply chain must ensure that the reader of the eSDS can easily understand it without additional information and research.

- ✓ Good structure!
- ✓ Qualitative data!
- ✓ Easy language!

This would be a good solution and helpful for all parties in the supply chain and a real contribution to occupational health and safety.

MANY THANKS

