

Die Umweltexpositionsbewertung an einem praktischen Beispiel

REACH für Anwender

Update-Veranstaltung der BAuA, Berlin, 22.04.2010

Nannett Aust

**Umweltbundesamt
Fachgebiet Chemikalien
Wörlitzer Platz 1
06844 Dessau-Roßlau**



Nannett Aust, REACH für Anwender - Update-Veranstaltung, 22.04.2010, BAuA Berlin

1

Art. 14: Stoffsicherheitsbericht, Absatz (1)

(1) Stoffsicherheitsbeurteilung (Chemical Safety Assessment: CSA)

- durchzuführen für alle registrierungspflichtigen Stoffe > 10 t/a je Registrant
- für den Stoff selbst
- den Stoff als Komponente eines Gemisches (Art. 14 Abs. (2) definiert Ausnahmen hierzu)
- den Stoff in einem Erzeugnis

Stoffsicherheitsbericht (Chemical Safety Report: CSR)

- dokumentiert die Stoffsicherheitsbeurteilung gem. Art. 14 Absätze 2 bis 7 und Anhang I

Nannett Aust, REACH für Anwender - Update-Veranstaltung, 22.04.2010, BAuA Berlin

2

Art. 14: Stoffsicherheitsbericht, Absatz (3-4)

(3) Schritte der Stoffsicherheitsbeurteilung

- Ermittlung schädlicher Wirkungen auf die Gesundheit des Menschen
- Ermittlung schädlicher Wirkungen durch phys.-chem. Eigenschaften
- Ermittlung schädlicher Wirkungen auf die Umwelt (u. a. PNEC)
- Ermittlung der PBT-, vPvB-Eigenschaften

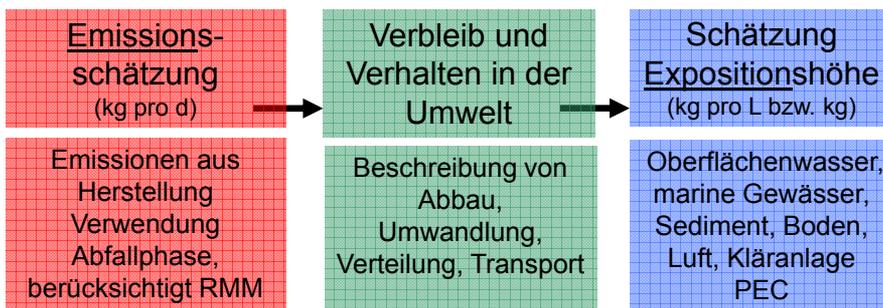
(4) zusätzliche Schritte der Stoffsicherheitsbeurteilung

wenn aus Schritt a) – d) folgt, dass Stoff als **gefährlich einzustufen** ist oder es sich um **PBT-, vPvB-Stoff** handelt, sind für alle identifizierten Verwendungen zu erstellen:

- Expositionsbeurteilung** inkl. Entwicklung eines oder mehrerer Expositionsszenarien und Expositionsabschätzung (PEC)
- Risikobeschreibung

Umweltexpositionsbeurteilung

- Wann: lt. Art. 14 (4) immer wenn Stoff als gefährlich eingestuft oder PBT-Eigenschaften besitzt
- Wie:



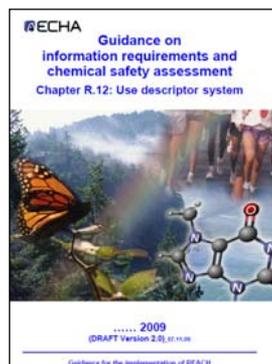
- Womit: verschiedene Softwaretools

Use Descriptor System

- SU: Sector of use
- PC: Produktkategorie
- PROC: Prozesskategorie
- AC: Artikelkategorie
- **ERC: Environmental Release Category**

Environmental release category - ERC

- Beschreiben weite Verwendungsbedingungen
- Default Emissionsfaktoren für Emissionen in Wasser, Luft, Boden
- Spiegeln die folgenden Verwendungscharakteristiken wider:
 - Lebensphase
 - Grad der Geschlossenheit
 - Technischer Nutzen der Substanz in der Verwendung
 - Verbreitung der Verwendung
 - Indoor oder outdoor Verwendung
 - Freisetzungsfördernde Bedingungen



ERC	Life cycle Stage	level of containment	technical fate	Dispersiveness	indoor / outdoor	release
1	Manufacture	open-closed		Industrial	Indoor	n.a
2	Formulation	open-closed	not included into matrix	Industrial	Indoor	n.a.
3	Formulation	open-closed	Inclusion into/onto matrix	Industrial	Indoor	n.a.
4	End use	open-closed	processing aid, not becoming part of arti.	Industrial	Indoor	n.a.
5	End use	open-closed	Inclusion into/onto matrix	Industrial	Indoor	n.a.
6a	End use	open-closed	Intermediate	Industrial	Indoor	n.a.
6b	End use	open-closed	reactive processing aid	Industrial	Indoor	n.a.
6c	End use	open-closed	monomers for polymers	Industrial	Indoor	n.a.
6d	End use	open-closed	monomers for rubbers or thermosets	Industrial	Indoor	n.a.
7	End use	closed system	processing aid	Industrial	Indoor	n.a.
8a	End use	open-closed	processing aid	wide disperse	Indoor	n.a.
8b	End use	open-closed	reaction on use	wide disperse	Indoor	n.a.
8c	End use	open-closed	Inclusion into/onto matrix	wide disperse	Indoor	n.a.
8d	End use	open-closed	processing aid	wide disperse	Outdoor	n.a.
8e	End use	open-closed	reaction on use	wide disperse	Outdoor	n.a.
8f	End use	open-closed	Inclusion into/onto matrix	wide disperse	Outdoor	n.a.
9a	End use	closed system	processing aid	wide disperse	Indoor	n.a.
9b	End use	closed system	processing aid	wide disperse	Outdoor	n.a.
10a	Service life	open	Inclusion into/onto matrix	wide disperse	Outdoor	Low
10b	Service life	open	Inclusion into/onto matrix / removal proc.	wide disperse	Outdoor	High
11a	Service life	open	Inclusion into/onto matrix	wide disperse	Indoor	Low
11b	Service life	open	inclusion into/onto matrix / removal proc.	wide disperse	Indoor	High
12a	Service life	open-closed	Losses from matrix during article processing	Industrial	Indoor	Low
12b	Service life	open-closed	Losses from matrix during article processing	Industrial	Indoor	High

Nannett Aust , REACH für Anwender - Update-Veranstaltung, 22.04.2010, BAuA Berlin

7

Environmental release category - ERC



No	ERC	Default release factors resulting from the conditions of use described in the ERCs.		
		to air	to water (no STP)	to soil
1	Manufacture of chemicals	5%	6%	0.01%
2	Formulation of preparations	2.5%	2%	0.01%
2	Formulation in materials	30%	0.2%	0.1%
4	Industrial use of processing aids	100%	100%	5%
5	Industrial inclusion into or onto a matrix	50%	50%	1%
6A	Industrial use of intermediates	5%	2%	0.1%
6B	Industrial use of reactive processing aids	0.10%	5%	0.025%
6C	Industrial use of monomers for polymerisation	5%	5%	0%
6D	Industrial use of auxiliaries for polymerisation	35%	0.005%	0.025%
7	Industrial use of substances in closed systems	5%	5%	5%
8A	Wide dispersive indoor use of processing aids, open	100%	100%	n.a.
8B	Wide dispersive indoor use of reactive substances, open	0.10%	2%	n.a.
8C	Wide dispersive indoor use, inclusion into or onto a matrix	15%	1%	n.a.
8D	Wide dispersive outdoor use of processing aids, open	100%	100%	20%

Nannett Aust , REACH für Anwender - Update-Veranstaltung, 22.04.2010, BAuA Berlin

8

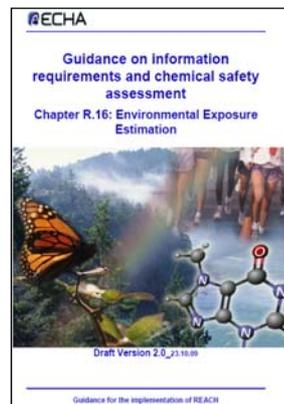
Special Environmental Release Category - SPERC

- Zur Verfeinerung der ERC-basierten Emissionsschätzung
- Basieren auf guter Praxis, Information von Verbänden, Handelsorganisationen, Informationen aus Emission Scenario Documents (ESDs)
- Enthalten:
 - typische Emissionfaktoren
 - typische Risikomanagementmaßnahmen
 - Effektivitäten von Risikomanagementmaßnahmen
 - sichere Verwendungsmengen
- SPERCs sind in SPERCs fact sheets dokumentiert
- Werden auf der Website von CEFIC verfügbar sein

Verbleib und Verhalten in der Umwelt

- Substanzspezifisch
- Verteilungsprozesse in Guideline R.16 beschrieben
- für verschiedene Umweltkompartimente

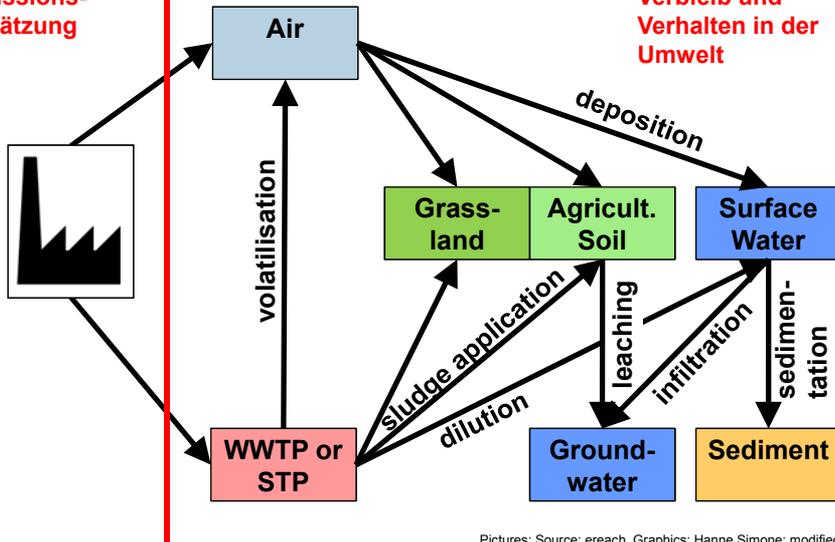
		Luft direkt	Wasser inkl. Sediment via STP	Wasser inkl. Sediment direkt	Boden direkt
local scale	industrial setting	X	X	N	N
local scale	wide dis- persive use	N	X	N	N
regional scale	industrial setting	X	X	X	X
regional scale	wide dis- persive use		(80 %)	(20%)	



Lokale Expositionsbeurteilung: Indudrieszenario

Emissions-
schätzung

Verbleib und
Verhalten in der
Umwelt

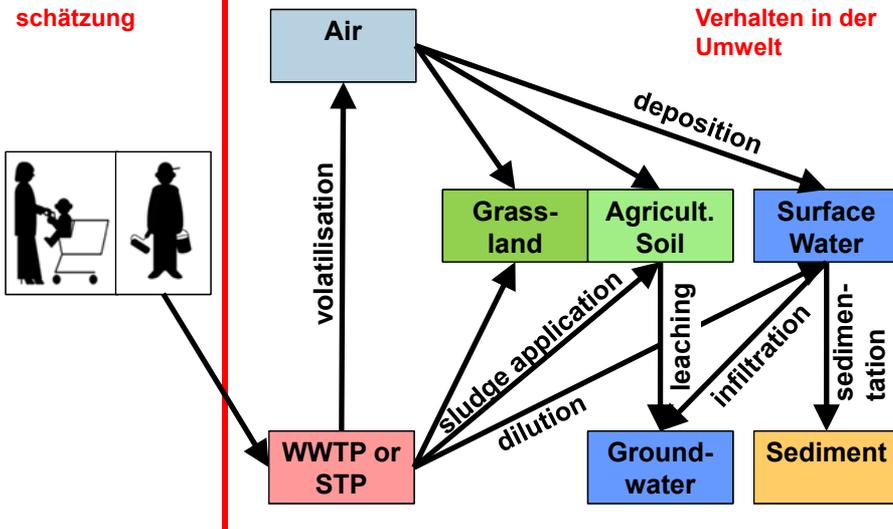


Pictures: Source: ereach, Graphics: Hanne Simone; modified

Lokale Expositionsbeurteilung: Wide dispersive use

Emissions-
schätzung

Verbleib und
Verhalten in der
Umwelt



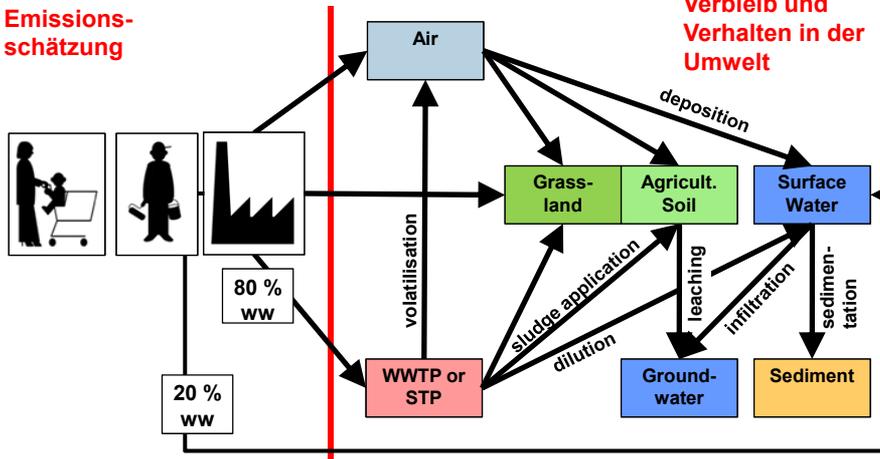
Regionale Expositionsbeurteilung: wide dispersive use und Industrieszenario

10 % tonnage at EU level for wide dispersive use

100 % tonnage at EU level for industrial use

Emissions-
schätzung

Verbleib und
Verhalten in der
Umwelt



Pictures: Source: ereach, Graphics: Hanne Simone; modified

Nannett Aust, REACH für Anwender - Update-Veranstaltung, 22.04.2010, BAuA Berlin

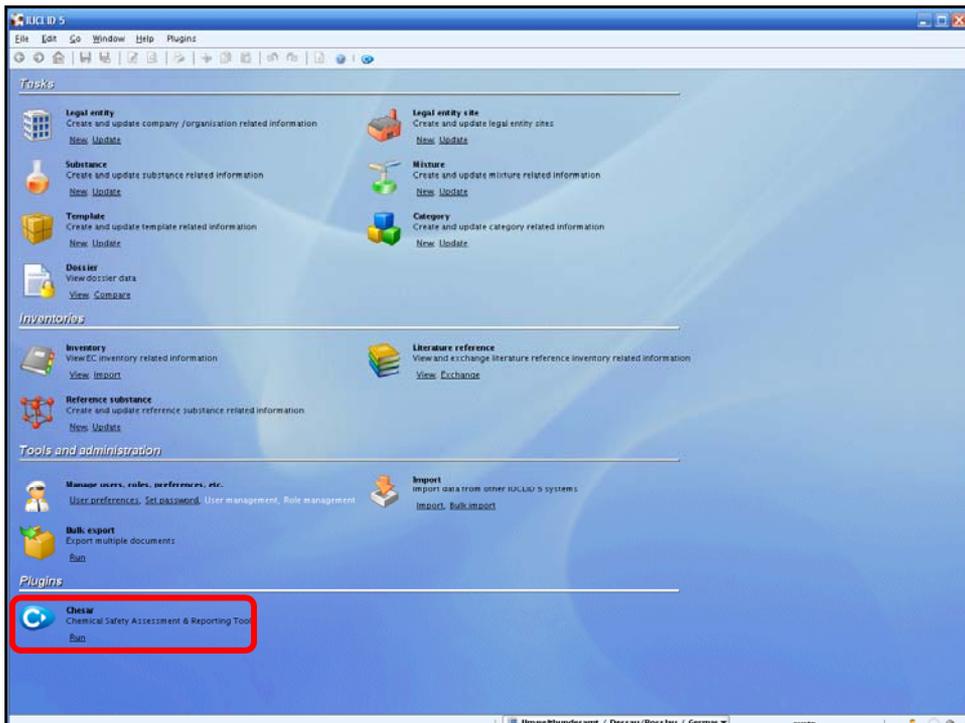
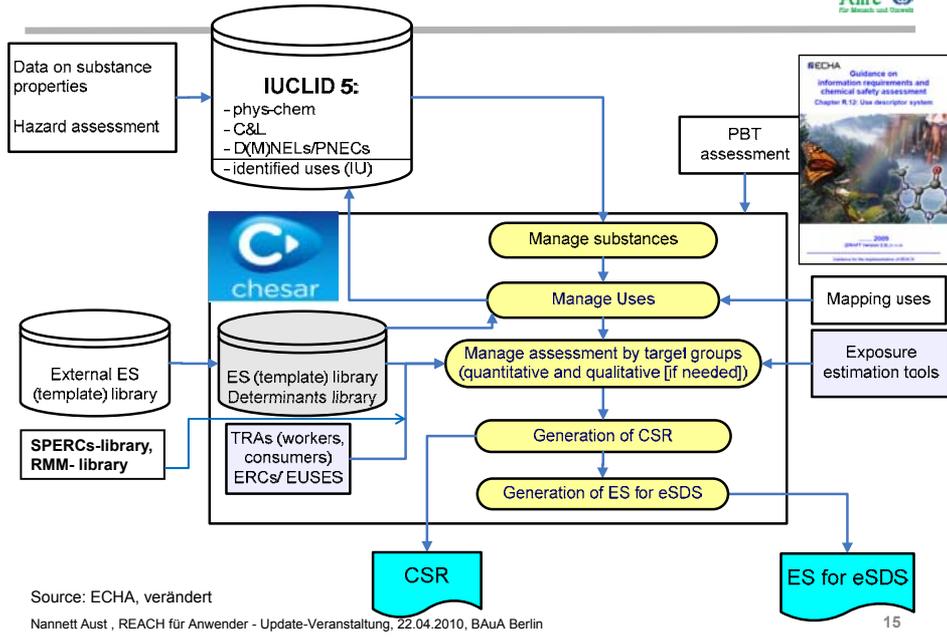
13

Instrumente zur Expositionsbeurteilung

- Chesar inkl. EUSES 2.1
- ECETOC TRA version 2



Chesar-Tool



C:\chesar 20100322_1619 - example 1

File Edit Window Import-Export Help

chesar

Administrative Data | Phys.-Chem. Prop. / PAF | Phys.-Chem. Hazard | Environmental Hazard | Human Health Hazard | HET/JobK

Identity of Substance and Legal entity

Chemical name: example 1 CAS number:

Reference substance: test IUPAC name:

EC number: Legal entity: European Chemicals Agency

Remarks

Status Information

CSA status: UIUD CSA:

CSA date: UIUD IU/CLD Substance: IUCS-19020v1f-br34-491d-b015-1c11200b-4102

CSA date (created): 2010-04-09 10:29:24

CSA Statistics / Progress

Number of uses assessed:

Percentage of uses assessed:

Number of exposure scenarios:

Deadline for CSR submission:

Substance List

Chemical name	Reference substance	EC number	CAS number	Legal entity	CSA status	CSA date (created)	Remarks
Test_chesar 02	Test-chesar 2		294-56-7	Umwelt Bundesamt		31.03.2010	
example 1	test			European Chemicals Agency		09.04.2010	

Import Substance

1. Manage Substance

C:\chesar 20100322_1619 - example 1

File Edit Window Import-Export Help

chesar

Administrative Data | Phys.-Chem. Prop. / PAF | Phys.-Chem. Hazard | Environmental Hazard | Human Health Hazard | HET/JobK

IUCLID data

Physical Form: liquid

Molecular Weight: 132.2 g/mol

Melting Point: 190 K at 101325 Pa

Boiling Point: 444 K at 101325 Pa

Relative Density:

Vapour Pressure: 2400 Pa at 298 K

Partition Coefficient(Log Kow): 1.1 at 20 °C

Water Solubility: 110 mg/L at 293 K

Solubility in standard fat:

Solubility in Organic Solvents:

Surface Tension:

Autoflammability/Self-ignition temperature:

Flammability:

Explosiveness:

Oxidising Properties:

Oxidation Reduction Potential:

Discolouration Constant:

Viscosity:

Input parameter for

TRA workers

EUSES 2.1, TRA workers

EUSES 2.1

EUSES 2.1

EUSES 2.1, TRA workers

EUSES 2.1

EUSES 2.1

Internal remarks

Degradation rate constant with OH radicals:

Half-life in Air (phototransformation):

Half-life for Hydrolysis:

Half-life in Water (photolysis):

Half-life in Soil (phototransformation):

Biodegradation in Water: screening tests: readily biodegradable

EUSES 2.1

EUSES 2.1

EUSES 2.1

EUSES 2.1

Substance List

Chesar 20100322_1619 - example 1

File Edit Window Import-Export Help

chesar

Administrative Data | Phys-Chem Prop / Fate | Phys-Chem Hazard | Environmental Hazard | Human Health Hazard | PBT/vPvB

PNECs: C&L No Env. Hazard Env. Key Values

Water

	Type	Value	Assessment factor	Extrapolation method
Freshwater: Pelagic	PNEC AQUA (freshwater)	10 mg/L	1000	assessment factor
Freshwater: Sediment	PNEC sediment (freshwater)	20 mg/kg sediment dw		
Marine water: Pelagic	PNEC AQUA (marine water)	1 mg/L		
Marine water: Sediment	PNEC sediment (marine water)	2 mg/kg sediment dw		
Food chain (predator)	PNEC oral	20 mg/kg food		
Sewage treatment plant (STP)	PNEC STP	30 mg/L		

Soil

	Type	Value	Assessment factor	Extrapolation method
Agricultural soil	PNEC soil	10 mg/kg soil dw		

Other

	Type	Value	Assessment factor	Extrapolation method
Water: Intermittent releases				

Substance List

Chesar 20100322_1619 - example 1

File Edit Window Import-Export Help

chesar

Administrative Data | Phys-Chem Prop / Fate | Phys-Chem Hazard | Environmental Hazard | Human Health Hazard | PBT/vPvB

Overall result

Substance is regarded as PBT/vPvB

Substance is not regarded as PBT/vPvB

Overall conclusions on PBT/vPvB assessment for the substance

Results of detailed PBT/vPvB assessment

Delete these results Hide details

Assessed substance: Substance itself

Persistence

Screening criteria

Not P and not vP based on: readily biodegradable

Not P and not vP based on: inherently biodegradable under valid conditions

Criteria based on Annex XIII of REACH

Not P based on

T_{1/2} < 60 days in marine water

T_{1/2} < 40 days in fresh- or estuarine water

Substance List

Chesar 20100322_1619 - example 1

Life Cycle Tree

- Manuf. Imp. Manufacture / Import
 - Manuf. Manufacture stage [edit]
 - Process during manufacturing [edit]
 - Market Sec. Market Sector [edit]
 - Form. Formulation stage [edit]
 - Use related to formulation [edit]
 - Ind. Industrial end-use stage [edit]
 - Industrial use [edit]
 - Prof. Professional end-use stage [edit]
 - Professional use [edit]
 - Cons. Consumer end-use stage [edit]
 - Consumer use [edit]
 - Serv. Life (Cons.) Service life stage (consumers)

■ Life cycle “stage” level
 ► ”use” level

```

    graph TD
      A[Manufacture (production) of a substance] --> B[Formulation of a preparation or product]
      B --> C[Private / consumer use]
      B --> D[Industrial use Professional use]
      C --> E[Service life of product]
      D --> E
  
```

2. Manage Uses: Build life cycle tree

Chesar 20100322_1619 - example 1

Life Cycle Tree

Life Cycle	PC	PROC	Environment Label	ERC	SU	AC	Tonnage	Remark
Manuf. Imp. Manufacture / Import							3000	
Manuf. Dyestuff		Closed process		ERC 1			1000	
Process during manufacturing [edit]							0	
Market Sec. Market Sector [edit]							0	
Form. Formulation stage [edit]							0	
Use related to formulation [edit]							0	
Ind. Industrial end-use stage [edit]							0	
Industrial use [edit]							0	
Prof. Professional end-use stage [edit]							0	
Professional use [edit]							0	
Cons. Consumer end-use stage [edit]							0	
Consumer use [edit]							0	
Serv. Life (Cons.) Service life stage (consumers)							0	

Edit Dyestuff - Manufacturing stage

Manufacture label: Dyestuff
 Environment Label: Closed process
 Environmental Release Category (ERC): ERC 1: Manufacture of substances
 Further specification (environment): Production takes place in a closed system, exposure expected only for wastewater because of cleaning and maintenance operations.
 Tonnage p.a. manufactured (tonnes/year): 1000
 Remark:

Add / Edit Manufacturing stage

Chesar 20100322_1619 - example 1

File Edit Window Import-Export Help

chesar

Life Cycle Tree: **Market View** | Consumer View | Environment View

Life Cycle	PC	PROC	Environment Label	ERC	SU	AC	Tonnage	Remark
Manuf. Inp. Manufacture/Import							3000	
Manuf. Dyestuff			Closed process	ERC 1			3000	
Process during manufacturing [edit]								
Market Sec. Textile dyes	PC 34						750	
Form. Formulation stage [edit]							0	
Use related to formulation [edit]							0	
Ind. Industrial end-use stage [edit]							0	
Industrial use [edit]							0	
Prof. Professional end-use stage [edit]							0	
Professional use [edit]							0	
Cons. Consumer end-use stage [edit]							0	
Consumer use [edit]							0	
Serv. Life (Cons.) Service life stage (consumers)							0	

Edit Textile dyes - Market sector

Market Sector Label: Textile dyes

Chemical Product Category (PC): PC 34: Textile dyes, finishing and impregnating produ...

Further specification on the market sector:

Tonnage p.a. supplied (tonnes/year): 750

Remark:

OK Cancel

Add / Edit Market Sector

Chesar 20100322_1619 - example 1

File Edit Window Import-Export Help

chesar

Life Cycle Tree: **Market View** | Consumer View | Environment View

Life Cycle	PC	PROC	Environment Label	ERC	SU	AC	Tonnage	Remark
Manuf. Inp. Manufacture/Import							3000	
Manuf. Dyestuff			Closed process	ERC 1			3000	
Process during manufacturing [edit]								
Market Sec. Textile dyes	PC 34						750	
Form. Liquid dyestuff			Closed batch process	ERC 2			750	
Use related to formulation [edit]							0	
Ind. Industrial end-use stage [edit]							0	
Industrial use [edit]							0	
Prof. Professional end-use stage [edit]							0	
Professional use [edit]							0	
Cons. Consumer end-use stage [edit]							0	
Consumer use [edit]							0	
Serv. Life (Cons.) Service life stage (consumers)							0	

Edit - Formulation stage

Life cycle stage label: Liquid dyestuff

Environment Label: Closed batch process

Environmental Release Category (ERC): [select]

Further specification (environment):
 ERC 2: Formulation of preparations
 ERC 3: Formulation in materials

Tonnage (tonnes/year): 7500

Remark:

OK Cancel

Add / Edit Formulation stage

Chesar 20100322_1619 - example 1

File Edit Window Import-Export Help

chesar

Life Cycle Tree: Worker View | Customer View | Environment View

Life Cycle	PC	PROC	Environment Label	ERC	SU	AC	Tonnage	Remark
Manuf. Imp. Manufacture / Import							1000	
Manuf. Dyestuff			Closed process	ERC 1			1000	
Process during manufacturing [edit]								
Market Sec. Textile dyes	PC 34						750	
Form. Liquid dyestuff			Closed batch process	ERC 2			750	
Mixing		PROC 5						
Transfer of preparation for vessel at non-dedicate...		PROC 8a						
Ind. Industrial end-use stage [edit]							0	
Industrial use [edit]								
Prof. Professional end-use stage [edit]							0	
Professional use [edit]								
Cons. Consumer end-use stage [edit]							0	
Consumer use [edit]								
Serv. Life (Cons.) Service life stage (consumers)							0	

Edit Transfer of preparation for vessel at non-dedicated facilities - Use for ...

Use label: Transfer of preparation for vessel at non-dedicated facilities

Process Category (PROC): PROC 8a: Transfer of substance or preparation (charg...
 PROC 8a: Transfer of substance or preparation (chargin...
 PROC 9: Transfer of substance or preparation into small...
 PROC 10: Roller application or brushing
 PROC 11: Non industrial spraying
 PROC 12: Use of blowing agents in manufacture of foam
 PROC 13: Treatment of articles by dipping and pouring
 PROC 14: Production of preparations or articles by table...

OK Cancel

Add / Edit Uses

Chesar 20100322_1619 - example 1

File Edit Window Import-Export Help

chesar

Life Cycle Tree: Worker View | Customer View | Environment View

Life Cycle	PC	PROC	Environment Label	ERC	SU	AC	Tonnage	Remark
Manuf. Imp. Manufacture							10000	
Manuf. Continuous, closed system			Continuous, closed system	ERC 1			15000	
Closed continuous manufacture		PROC 2						
Transfer of raw material		PROC 8b						
Market Sec. Paints and Coatings	PC 9a						2000	
Form. Formulation of paints and coatings			Formulation of liquid preparations	ERC 2			2000	
Storage of packed raw material and products		PROC 1						
Waste handling and storage		PROC 3						
Mixing in closed batch process		PROC 3						
Multistage batch process		PROC 5						
Cleaning and maintenance of machinery		PROC 6b						
Receipt, storage and manual transfer of bulk raw material to as...		PROC 6b						
Filling product into containers for retail		PROC 9						
Ind. Industrial application of coatings			processing into article, low-release	ERC 5			1000	worstcase tonnage, no differentiation possible
Preparation of material for application, fully enclosed		PROC 1						
Equipment cleaning in situ, enclosed		PROC 3						
Storage of waste prior to removal for off site treat		PROC 3						
Equipment cleaning onsite and offline, open		PROC 5						
Preparation of material for application, batch, open		PROC 5						
Cleaning and maintenance of equipment		PROC 6a						Possibly PROC 13 (dipping) would fit better
preparation of material for application, loading of application ...		PROC 6b						
Transfer of process waste to storage containers		PROC 6b						
Online applications by roller, spreader, trow coating, printing		PROC 10						
Dipping including fluidized bed		PROC 13						
Prof. Professional end-uses of coatings				ERC 6f			1000	break down between professional and consumer uses ...
Professional use [edit as appropriate]								
Cons. Consumer end-use stage [edit as appropriate]				ERC 6f			1000	split between professional and consumer not possible.
Consumer use [edit as appropriate]	PC 9a							
Market Sec. Printing Inks	PC 18						1000	particularly outdoor posters/advertisements
Market Sec. Plastic compounds and masterbatches	PC 32						7000	
Form. Formulation of plastic compounds and masterbatches			Formulation of preparation in solid matrix	ERC 3			7000	no data available on real market share of outdoor, wor...
Serv. Life (Cons.) Outdoor Plastic Construction products			Articles exposed the weathering	ERC 10b			3500	no data available on real market share of outdoor, wor...
Indoor plastic articles			Indoor low-release articles	ERC 11a			1000	volume estimate, no hard figure
Larger indoor plastic articles								
Small plastic articles							AC 13	

26

Chesar 20100322_1619 - example 1

File Edit Window Import-Export Help

chesar

Life Cycle Tree | Worker View | Consumer View | Environment View

Manuf. Inp. Manufacture 10000

Manuf. Continuous, closed Continuous, closed system... ERC 1 15000

Market Sec. Paints and Form. Formulation of paints

Form. Formulation of paints Formulation of liquid prep... ERC 2 2000

Ind. Industrial application processing into article, low... ERC 5 1000 wors...

Worker Assessment Consumer Assessment Environment Assess... Min Via Environment Assess

Environment

Water

Fresh Water

Pelagic

Sediment

Marine Water

Pelagic

Sediment

FoodChain

Fresh Water Food Chal...

Marine Food Chain (pr...

Marine Food Chain (to...

SewageTreatmentPlant

Effluent

Air

Soil

Agricultural Soil

Worker Assessment

Method Exposure RCR

Worker

Inhalation

Acute, Local

Acute, Systemic

Long term, Local

Long term, Systemic

Dermal

Acute, Local

Acute, Systemic

Long term, Local

Long term, Systemic

Create new Assessment

Name:

Method: TRA workers

Affected

External exposure estimation tool

Measured data

Supportive Exposure

Worker/TRA workers

Worker/Inhalation/ACuteSystemic

Worker/Inhalation/LongtermLocal

Worker/Inhalation/LongtermSystemic

Worker/Dermal/ACuteLocal

Worker/Dermal/ACuteSystemic

Worker/Dermal/LongtermLocal

OK Cancel

3. Manage Assessment

Chesar 20100322_1619 - example 1

File Edit Window Import-Export Help

chesar

Life Cycle Tree | Worker View | Consumer View | Environment View

Manuf. Inp. Manufacture 10000

Manuf. Continuous, closed Continuous, close... ERC 1 15000

Market Sec. Paints PC 9a 2000

Form. Formulation of paints Formulation of liq... ERC 2 2000

Ind. Industrial application processing into a... ERC 5 1000 worstcase toona...

Worker Assessment Consumer Assessment Environment Assessment Min Via Environment Assessment

Environment

Water

Fresh Water

Pelagic

EUSES 2.1 EUSES 2.1 6.93 mg/L 0.693

Sediment

EUSES 2.1 EUSES 2.1 5.2 mg/kg dw 2.6

Marine Water

Pelagic

EUSES 2.1 EUSES 2.1 0.693 mg/L 0.693

FoodChain

Fresh Water Food Chain ...

EUSES 2.1 EUSES 2.1 4.89 mg/kg ww 0.245

Marine Food Chain (pre...

EUSES 2.1 EUSES 2.1 0.489 mg/kg ww 0.024

OCESAR

Releases Exposure Risk Characterisation

Product characteristics

Pattern of release to the environment Continuous

Amounts used

Daily use at a site <= 50 tonnes/day

Annual use at a site <= 1.5E4 tonnes/year

Percentage of tonnage used at regional scale = 100 N

Frequency and duration of use

Environment factors not influenced by risk management

Receiving surface water flow rate >= 1.0E4 m3/d

Other given operational conditions affecting environmental exposure

Technical conditions and measures at process level to prevent release

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Organizational measures to prevent/reduce release from site

Conditions and measures related to municipal sewage treatment plant

Municipal STP Yes (Water: 4.42%)

Discharge rate of STP >= 2E3 m3/d

Incentration of the sludge of the municipal STP No

Conditions and measures related to external treatment of waste for disposal

Conditions and measures related to external recovery of waste

Additional good practice advice beyond the REACH CSA

1

2

3

Verfeinerung der Expositionsbewertung: Emissionen reduzieren

- OC verfeinern
 - **Tägliche Verwendungsmenge reduzieren**
 - pattern of release to the environment ändern
- **Verfeinerte Emissionsfaktoren verwenden** (SPERCs, gemessene Daten)
- **RMM einfügen / verfeinern**
- Umgebungsbedingungen überprüfen / anpassen:
 - Receiving surface water flow rate vergrößern
 - discharge rate of STP ändern

$$E_{\text{local IU, env. comp. } j} = Q_{\text{daily, IU}} \times RF_{\text{IU, env. comp. } j} \times (1 - F_{\text{RMM}})$$

E_{local} : lokale Emissionen, env. comp. j: Umweltkompartiment j, F_{RMM} : Effizienz einer RMM, IU: identified use, RF: release factor, Q_{daily} : tägliche Verwendungsmenge

The screenshot displays the EUSES 2.1 software interface. The main window shows a table of processes with columns for Life Cycle, PC, PROC, Environment Label, ERC, SU, A/C, and Tonnes/day. The table includes processes like 'Manuf. Imp.' (10000 tonnes/day), 'Manuf. Continuous' (15000 tonnes/day), 'Market Sec. Paints' (2000 tonnes/day), and 'Form. Formulation' (2000 tonnes/day). Several dialog boxes are open:

- EUSES 2.1 - Daily use at a site**: Shows 'Value' as ≤ 20 tonnes/day.
- EUSES 2.1 - Receiving surface water flow rate**: Shows 'Value' as ≥ 62208000 m³/d.
- Measurement Asses.**: A table with columns for BCR and values.
- Product characteristics**: A list of parameters such as 'Pattern of release to the environment' (Continuous), 'Daily use at a site' (≤ 50 tonnes/day), and 'Receiving surface water flow rate' ($\geq 1.0E4$ m³/d).

Red arrows from the text above point to the 'Daily use at a site' dialog, the 'Receiving surface water flow rate' dialog, and the 'Receiving surface water flow rate' parameter in the 'Product characteristics' list.

Chesar 20100322_1619 - example 1

Search SpERC

ID	Name	Sector	Descriptor	Subst. funct.
SpERC 41	Industrial water-based washing and cleaning products	ECHA based on AICE	[U 7, SU 15, SU 16, SU 17]	[Surface active agents]

Name	Description	Solubility(mg/l)	Default daily use (tonnes)	Default annual use(tonnes)	Release factor water
Sub SpERC 41-01	Large company High containment	> 1000.0	1.5	450.0	0.03
Sub SpERC 41-02	Large company Low containment	> 1000.0	1.5	450.0	0.3
Sub SpERC 41-03	Large company High containment	< 1000.0	1.5	450.0	0.3
Sub SpERC 41-04	Large company Low containment	< 1000.0	1.5	450.0	3.0
Sub SpERC 41-05	Small company High containment	> 1000.0	0.01	1.0	0.1
Sub SpERC 41-06	Small company Low containment	> 1000.0	0.01	1.0	10.0
Sub SpERC 41-07	Small company High containment	< 1000.0	0.01	1.0	0.01
Sub SpERC 41-08	Small company Low containment	< 1000.0	0.01	1.0	1.0

Releases

Local release to water

Release factor estimation method: ERC

ERC 1

Initial release factor (%): 6

Release factor after on site risk management (%): 50

Local daily use (tonnes/day): 50

Local release rate (kg/day): 3E3

Summed releases to water

Total release (kg/year): 0.494E6

Update

Releases

Local release to water

Release factor estimation method: ERC

ERC 1

Initial release factor (%): 6

Release factor after on site risk management (%): 50

Local daily use (tonnes/day): 50

Local release rate (kg/day): 3E3

Summed releases to water

Total release (kg/year): 0.494E6

Update

Chesar 20100322_1619 - example 1

EUSES 2.1 - Abwasserbehandlungsmaßnahmen

Explanation on determinant

Value: 90% (Water: 90.0%)

Additional explanation on value: 0% (Water: 0.0%), 50% (Water: 50.0%), 90% (Water: 90.0%)

Explanation for the CSR

Standard phrases

Internal note

OK Cancel

Receiving surface water flow rate: >= 1.0E4 m3/d

Other given operational conditions affecting environmental exposure

Technical conditions and measures at process level (source) to prevent release

Technical onsite conditions and measures to reduce or limit discharges, air emissions or

Organizational measures to prevent/limit release from site

Conditions and measures related to surface water

Municipal STP: Yes (Water: 4.62%)

Discharge rate of STP: >= 2E3 m3/d

Incineration of the sludge of the municipal STP: No

Conditions and measures related to external treatment of waste for disposal

Conditions and measures related to external recovery of waste

Additional good practice advice beyond the REACH CSA

Add Determinant

Determinant Type: release after RMM

Create New

release after RMM

Abwasserbehandlungsmaßnahm

Fällung

OK Cancel

Chesar 20100322_1619 - example 1

File Edit Window Import-Export Help

Chesar

Life Cycle Tree: Worker View | Consumer View | Environment View

Life Cycle	PC	PROC	Environment Label	ERC	SU	Tonnage	Remark
Manuf. Continuous, closed		PROC 2	Continuous, closed systems	ERC 1		15000	
Market Sec. Paints and Form. Formulation of	PC 9a	PROC 9a	Formulation of liquid pre...	ERC 2		2000	
Ind. Industrial		PROC 1	processing into article, lo...	ERC 5		1000	worstcase...

OC-Final Releases Exposure Risk Characterisation

Local PEC: 0.004
 Local Concentration: 2.23E-4 mg/L
 Regional PEC: 0.004 mg/L

Representativity and reliability of the exposure value

Remark on exposure value

Update

Environment Assessment: Consumer Assessment Environment Assess. Via Environment Assess.

Environment	Method	Exposure	RCR
Fresh Water			
Pelagic			
EUSES 2.1	EUSES 2.1	0.004 mg/L	3.09E-4
Sediment			
EUSES 2.1	EUSES 2.1	0.029 mg/kg dw	0.001
Marine Water			
Pelagic			
EUSES 2.1	EUSES 2.1	0.07 mg/L	0.07
Sediment			
EUSES 2.1	EUSES 2.1	0.523 mg/kg dw	0.262
FoodChain			
Fresh Water Food Cha...	EUSES 2.1	0.006 mg/kg ww	3.225E-4
Marine Food Chain (pr...	EUSES 2.1	0.006 mg/kg ww	0.002

OC-Final Releases Exposure Risk Characterisation

Product characteristics

Pattern of release to the environment: Continuous

Amounts used

Daily use at a site: <= 50 tonnes/day

Annual use at a site: <= 1.5E4 tonnes/year

Percentage of storage used at regional scale: = 100%

Frequency and duration of use

Environment factors not influenced by risk management

Receiving surface water flow rate: <= 6.221E7 m³/d

Other given operational conditions affecting environmental exposure

Technical conditions and measures at process level (source) to prevent release

Technical on-site conditions and measures to reduce or limit emissions, releases and releases to soil

Abwasserbehandlungsmaßnahmen: 90% (Water: 90.0%)

Organizational measures to prevent/limit release from site

Conditions and measures related to municipal sewage treatment plant

Municipal STP: Yes (Water: 4.62%)

Discharge rate of STP: >= 2E3 m³/d

Incorporation of the sludge of the municipal STP: No

Conditions and measures related to external treatment of waste for disposal

Conditions and measures related to external recovery of waste

Additional good practice advice beyond the REACH CSA

Chesar 20100322_1619 - example 1

File Edit Window Import-Export Help

Chesar

Life Cycle Tree: Exposure Scenario

Life Cycle	PC	PROC	Environment Label	ERC	SU	AC	Tonna	Remark
Manuf. Continuous, closed		PROC 2	Continuous, closed	ERC 1			15000	
Market Sec. Paints and Form. Formulation of	PC 9a	PROC 9a	Formulation of liq...	ERC 2			2000	
Ind. Industrial		PROC 5	processing into a...	ERC 5			1000	worstcase toona...
Prof. Professional us...		PROC 8f		ERC 8f			1000	break down betw...
Cons. Consumer		PROC 8f		ERC 8f			1000	split between pro...
Market Sec. Printing	PC 10	PROC 10	Formulation of liq...	ERC 2			1000	particularly outd...

Environment Assessment: Consumer Assessment Environment Assess. Via Environment Assess. Consumer Assessment

Environment	Method	Exposure	RCR
Fresh Water			
Pelagic			
EUSES 2.1	EUSES 2.1	2.94E-4 mg/L	2.94E-5
Literature Screening	Supportive exposure	10 µg/L	0.001
Sediment			
EUSES 2.1	EUSES 2.1	0.002 mg/kg dw	1.11E-4
Marine Water			
Pelagic			
EUSES 2.1	EUSES 2.1	0.069 mg/L	0.069
Sediment			
EUSES 2.1	EUSES 2.1	0.52 mg/kg dw	0.26
FoodChain			
Fresh Water Food Chain...	EUSES 2.1	2.82E-4 mg/kg ww	1.41E-5
Marine Food Chain (ore...	EUSES 2.1		

OC-Final Releases Exposure Risk Characterisation Exposure Scenario

Manuf. Continuous, closed

Transfer of raw material

Set Exposure Scenario Name

Reference Number: Manufacturing #01

Name: Continuous, closed system 1

OK Cancel

Chesar 20100322_1619 - example 1

File Edit Window Import-Export Help

Life Cycle Tree Exposure Scenario

9.1.1.1 Continuous, closed system 1
 ES reference number Manufacturing #01
 ESC 1, PROC 2, PROC 8b
 Environment Continuous, closed systems
 Worker Closed continuous manufacture
 Transfer of raw material
 9.1.1.2 Operational conditions and risk management measures

9.1.1.2.1 Control of environmental exposure: Continuous, closed systems

Product characteristics
 Pattern of release to the environment Continuous
 Amounts used
 Annual use at a site = 15000.0 tonnes/year
 Daily use at a site = 50.0 tonnes/day
 Percentage of tonnage used at regional scale = 100.0 %
 Frequency and duration of use
 Environment factors not influenced by risk management
 Receiving surface water flowrate >= 6.2208E7 m³/d
 Other given operational conditions affecting environmental exposure
 Technical on-site conditions and measures at process level (source) to prevent release
 Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil
 Abwasserbehandlungsmaßnahmen 90% (Water: 90.0%)
 Umkehrosmose
 Organizational measures to prevent/limit release from site
 Conditions and measures related to municipal sewage treatment plant
 Municipal STP Yes (Water: 4.62%)
 Incineration of the sludge of the municipal STP No
 Discharge rate of STP >= 2000.0 m³/d
 Conditions and measures related to external treatment of waste for disposal
 Conditions and measures related to external recovery of waste
 Additional good practice advice beyond the REACH CSA
 The measures reported in this section have not been taken into account in the exposure estimates related to the exposure subject to obligation laid down in Article 37 (4) of REACH.

9.1.1.2.2 Control of workers exposure for "Closed continuous manufacture" [PROC 2]

Environment	Method	Exposure	RCR
Water			
Fresh Water			
Pelagic			
EUSES 2.1	EUSES 2.1	0.004 mg/L	3.09E-4
Sediment			
EUSES 2.1	EUSES 2.1	0.029 mg/kg dw	0.001
Marine Water			
Pelagic			
EUSES 2.1	EUSES 2.1	0.07 mg/L	0.07
Sediment			
EUSES 2.1	EUSES 2.1	0.523 mg/kg dw	0.262
FoodChain			
Fresh Water Food Cha...			
EUSES 2.1	EUSES 2.1	0.006 mg/kg ww	3.225E-4
Marine Food Chain (pr...			
EUSES 2.1	EUSES 2.1	0.049 mg/kg ww	0.002

OC-Plant Releases Exposure Risk Characterisation Exposure Scen.

Manuf. Continuous, closed system
 Continuous, closed system 1
 Water-FreshWater-Pelagic: EUSES 2.1
 Water-FreshWater-Sediment: EUSES 2.1
 Water-MarineWater-Pelagic: EUSES 2.1
 Water-MarineWater-Sediment: EUSES 2.1
 Water-FoodChain-FreshWaterFoodChain: EUSES 2.1
 Water-FoodChain-MarineFoodChain: EUSES 2.1
 Water-FoodChain-MarineFoodChainTop: EUSES 2.1
 Water-SewageTreatmentPlant-Effluent: EUSES 2.1
 Air: EUSES 2.1
 Soil-AgricultureSoil: EUSES 2.1
 Soil-TerrestrialFoodChain: EUSES 2.1
 Closed continuous manufacture
 Transfer of raw material
 Closed continuous manufacture
 Transfer of raw material
 Transfer of raw material

Vielen Dank für Ihre Aufmerksamkeit



Chesar 20100322_1619 - example 1

File Edit Window Import-Export Help

Life Cycle Tree Worker View Customer View Environment View

	Environment Label	Market Sector	SU	Tonnage	Further specification (em)
ERK					
ERK 1					
Continuous, closed system	Continuous, closed systems			15000	no wastewater, air and waste internally dispose...
ERK 2					
Formulation of paints and coatings	Formulation of liquid preparations	Paints and Coatings		2000	Dedicated equipment
Formulation of printing inks	Formulation of liquid product	Printing Inks		1000	
ERK 3					
Formulation of plastic compounds and masterbatches	Formulation of preparation in solid matrix	Plastic compounds and masterbatches		7000	Substance processed into plastic granules; non ...
ERK 5					
Industrial application of coatings	processing into article, lowrelease	Paints and Coatings		1000	non spray and no water involved
Production of polymer articles		Plastic compounds and masterbatches		7000	
ERK 8f					
Professional end-uses of coatings		Paints and Coatings		1000	worstcase, includes also indoor coatings
Consumer end-use stage (edit as appropriate)		Paints and Coatings		1000	worst case, also covering indoor uses
ERK 10b					
Outdoor Plastic Construction products	Articles: exposed the weathering	Plastic compounds and masterbatches		3500	
ERK 11a					
Indoor plastic articles	Indoor lowrelease articles	Plastic compounds and masterbatches		1000	

Chesar 20100322_1619 - example 1

File Edit Window Import-Export Help

Life Cycle Tree Worker View Customer View Environment View

	Life Cycle stage label	Market Sector	SU	Further specification
Preparation of material for application, fully enclosed	Industrial application of coatings	Paints and Coatings		
PROC 2				
Closed continuous manufacture	Continuous, closed system			Manual interventions from sampling
PROC 3				
Waste handling and storage	Formulation of paints and coatings	Paints and Coatings		Residues from cleaning of equipment directly washed do...
Mixing in closed batch process	Formulation of paints and coatings	Paints and Coatings		no manual intervention for charging, discharging, sampl...
Mixing in closed batch process	Formulation of printing inks	Printing Inks		no manual intervention for charging, discharging, sampl...
Waste handling and storage	Formulation of printing inks	Printing Inks		Residues from cleaning of equipment directly washed do...
Production of plastic compounds and masterbatches in batch	Formulation of plastic compounds and ...	Plastic compounds and masterbatches		
Equipment cleaning in situ, enclosed	Industrial application of coatings	Paints and Coatings		
Storage of waste prior to removal for off site treat	Industrial application of coatings	Paints and Coatings		
PROC 5				
Multistage batch process	Formulation of paints and coatings	Paints and Coatings		manual interventions for charging, sampling
Multistage batch process	Formulation of printing inks	Printing Inks		manual interventions for charging, sampling
Production of plastic compounds and masterbatches, multist...	Formulation of plastic compounds and ...	Plastic compounds and masterbatches		
Equipment cleaning onsite and offline, open	Industrial application of coatings	Paints and Coatings		
Preparation of material for application, batch, open	Industrial application of coatings	Paints and Coatings		
PROC 6				
Calandring of plastic sheets and coated textiles	Production of polymer articles	Plastic compounds and masterbatches		
PROC 8a				
Cleaning and maintenance of equipment	Industrial application of coatings	Paints and Coatings		The conditions over maintenance and cleaning of equipm...
PROC 8b				
Transfer of raw material	Continuous, closed system			
Cleaning and maintenance of machinery	Formulation of paints and coatings	Paints and Coatings		
Receipt, storage and manual transfer of bulk raw material to a...	Formulation of paints and coatings	Paints and Coatings		Includes all bulk raw material transfer by mixing
Cleaning and maintenance of machinery	Formulation of printing inks	Printing Inks		
Receipt, storage and manual transfer of bulk raw material to a...	Formulation of printing inks	Printing Inks		Includes all bulk raw material transfer by mixing
preparation of material for application; loading of application	Industrial application of coatings	Paints and Coatings		
Transfer of process waste to storage containers	Industrial application of coatings	Paints and Coatings		
PROC 9				
Filling product into containers for retail	Formulation of paints and coatings	Paints and Coatings		
Filling product into containers for retail	Formulation of printing inks	Printing Inks		
PROC 10				
Online applications by roller, spreader, flow coating, printing	Industrial application of coatings	Paints and Coatings		
PROC 13				