



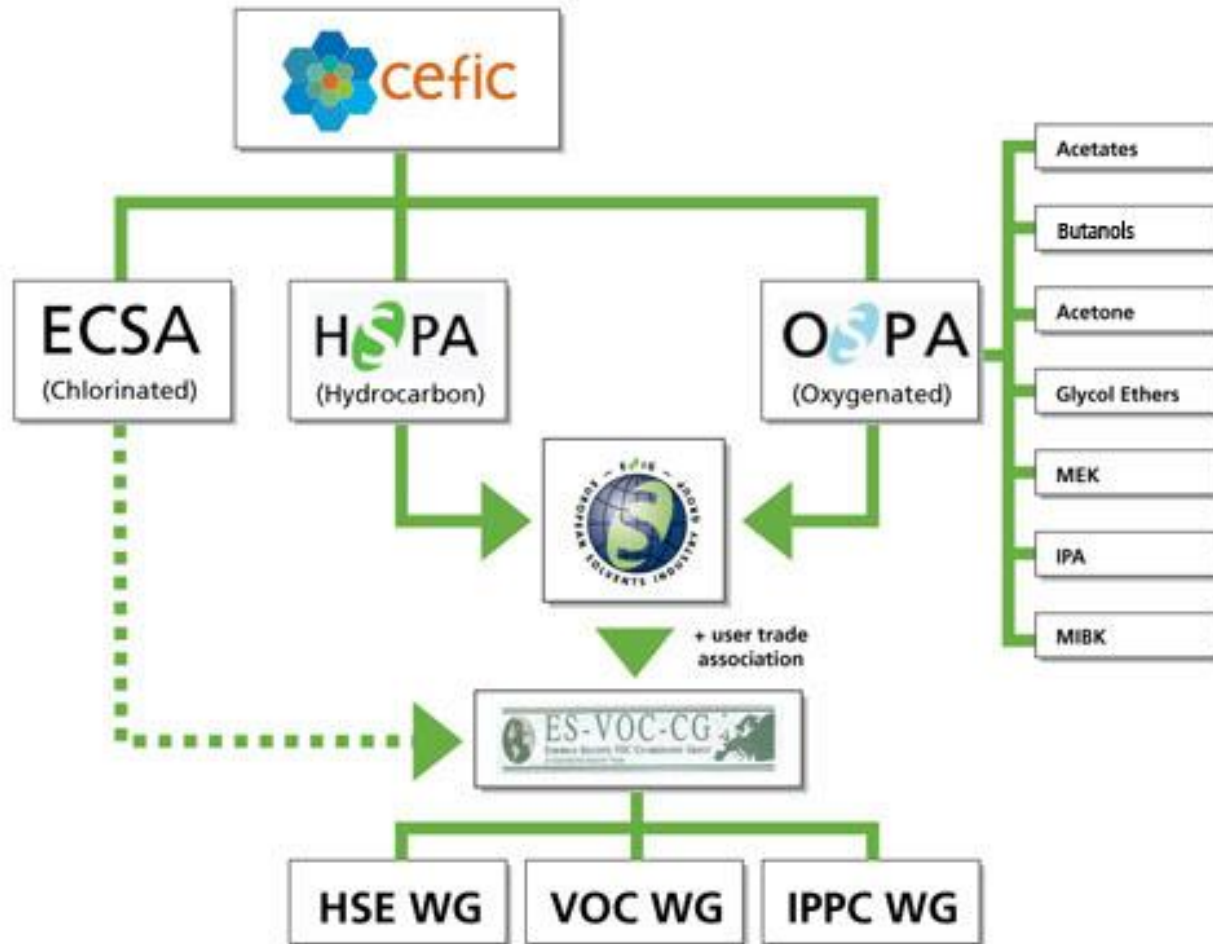
EGRET v2

Enhanced Control Banding for Automated Consumer RMM Selection

Tatsiana (Tanya) Dudzina

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About ESVOC & ESIG



ESVOC is a joint platform that brings together solvents producers and downstream users



ESIG Members

HSPA: 11 members

- Cepsa Química
- DHC Solvent Chemie
- Dow Haltermann
- ExxonMobil
- Galp
- Hellenic Petroleum
- Neste Oil
- Petrochem Carless
- Sasol Italy
- Shell Chemicals
- Total Fluides

OSPA: 21 members

- Arkema
- BASF
- Borealis
- Celanese
- Cepsa Química
- Clariant
- Domo
- Dow
- Eastman
- ExxonMobil
- Ineos Oxide
- Ineos Phenolchemie
- LyondellBasell
- Oxea Chemicals
- Oxochimie
- Perstorp
- Polimeri Europa
- Novacap
- Sasol
- Sekab
- Shell Chemicals



Most of ESIG members are global chemicals players



Outline

- What is EGRET?
- What's new in Version 2?
- What's next?

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Solvents & Air Quality | Ozone Modelling | **REACH** | Solvents and Health & Safety | CLP | Bio-based solvents

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GES Consumers

DEVELOPMENT OF CONSUMERS GESs

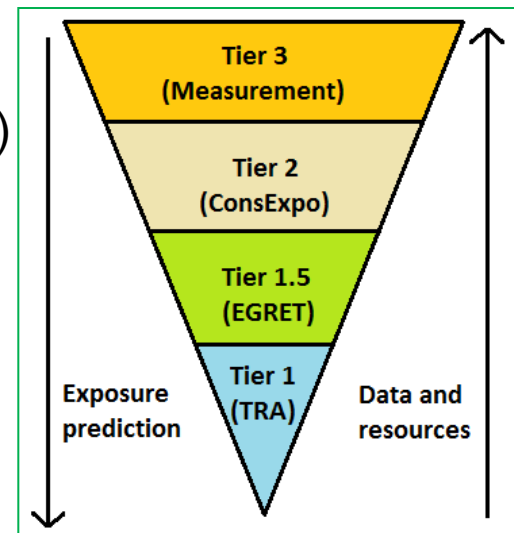
Related Documents

GES Risk and Exposure Tool, Journal of Exposure Science and Environmental Epidemiology

Read more

What is EGRET?

- The European Solvents Industry Group (**ESIG**) Generic Exposure Scenario (**GES**) **R**isk and **E**xposure **T**ool (**EGRET**)
 - Called “ESIG GES consumer tool” when it was released in July 10, 2010
 - Available for free at: <http://www.esig.org/en/regulatory-information/reach/ges-library/consumer-gess>
- A tier 1.5 risk assessment tool for consumers
 - Based on ECETOC Targeted Risk Assessment (TRA)
 - For product categories only (not articles yet)
 - Refinements based on latest TRA developments
 - Additional exposure scenarios and subscenarios to cover CEFIC GES library
 - Enhanced functionalities (e.g. risk control banding)



Key features

- Deliver exposure assessments (EAs) beyond Tier 1
- Conduct a chemical safety assessment (CSA)
- Author ESs from the CSA using standard EuPhrac phrases

Tools	Tier 1 Exposure Estimation	Tier 2 Exposure Estimation	Conducting a CSA	Efficient iteration capability*	Risk Communication
EPA E-Fast	✓	✓	X	X	X
ConsExpo	✓	✓	X	X	X
TRA	✓	X	✓	X	X
Chesar	✓	X	✓	X	✓
AISE REACT	✓	X	✓	X	X
EGRET	✓	(✓)	✓	✓	✓

* Efficiency in specifying RMMs and scaling with minimal manual intervention

✓ – with this capability
x– without this capability

Model recognition

- A peer-reviewed publication
- Was widely used in the 2010 REACH registrations
- EGRET-based CSAs have undergone evaluations

Journal of Exposure Science & Environmental Epidemiology

Journal home > Archive > Articles > Full text

Journal home
Advance online publication
 About AOP
Current issue
Archive
 Exposure Science Digests
 Press releases
 Online submission
 For authors

Original Article

Journal of Exposure Science and Environmental Epidemiology (2014) **24**, 27–35; doi:10.1038/jes.2012.128; published online 30 January 2013

European solvent industry group generic exposure scenario risk and exposure tool
OPEN

Rosemary T Zaleski¹, Hua Qian¹, Michael P Zelenka¹, Anita George-Ares¹ and Chris Money²

¹ExxonMobil Biomedical Sciences, Inc., Annandale, New Jersey 08801, USA
²ExxonMobil Petroleum and Chemical, Ezzo UK, Hythe, UK

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What's new?

Tool's functionalities are improved based on both the users' and stakeholders' (e.g. MSCAs) feedback.

New features include:

1. Enhanced control banding with **automated selection** of Risk Management Measures (**RMMs**) to provide an extra margin of safety
2. **TRA use frequency bands** to assess risks for infrequent exposure
3. Use with Specific Consumer Exposure Determinants (**SCEDs**)
4. Two additional parameters for **scaling** (skin contact area and amount swallowed)
5. Assessment of additional types of risk (other than long-term systemic)
6. Updated air exchange rate for outdoor scenarios to match TRA
7. Simplified user interface for output in a CSA format



What's new?

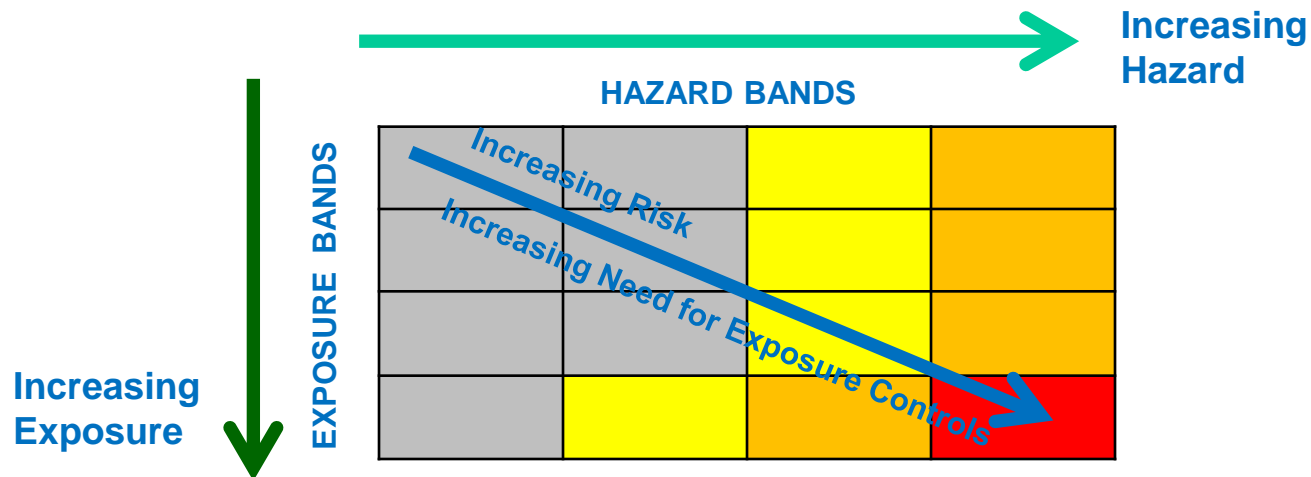
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1. Enhanced control banding

- What is a control banding?
 - A generic technique that determines control measures (e.g. ventilation) based on a range (“band”) of hazards and exposures
 - Used widely in various worker risk assessment tools (e.g. COSHH Essentials, EMKG, ECETOC TRA, EASE, and StoffenManager)
 - Additional information can be found at <http://www.cdc.gov/niosh/topics/ctrlbanding/>



1. Enhanced control banding cont'd

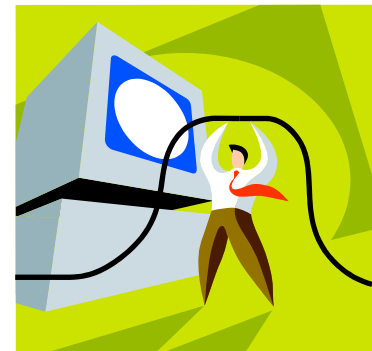
- What is the control banding in EGRET?
 - Control bands were developed to cover the wide range of Derived No Effect Levels (DNELs) for general population for typically encountered solvents.

Control bands	DNEL: inhalation (mg/m ³)	DNEL: dermal/oral (mg/kg/day)
Band1: very low	≥0.5, <5	≥0.1, <1
Band2: low	≥5, <25	≥1, <5
Band3: medium	≥25, <100	≥5, <20
Band4: high	≥100	≥20

- How to use it?
 - When an exposure prediction based on operational conditions (OCs) for a substance exceeds its DNEL value (i.e. RCR>1), RMMs will be automatically specified to reduce the exposure below the most stringent (lowest) DNEL value of the band.

1. Enhanced control banding cont'd

- What's the enhanced control banding?
 - The enhanced banding allows users to select a **target RCR** from three options: **0.9** (by default), **0.5**, or **0.2**
 - Based on the selected **target RCR**, appropriate control measures will be specified automatically by the control banding to provide the associated safety margin.
- What are the benefits?
 - A systematic approach
 - Flexible in providing different safety margins
 - Efficient identification of control measures
 - Consistency in RMMs selected
 - Added assurance for CSA outcomes



2. TRA Frequency Bands

- **Concept**

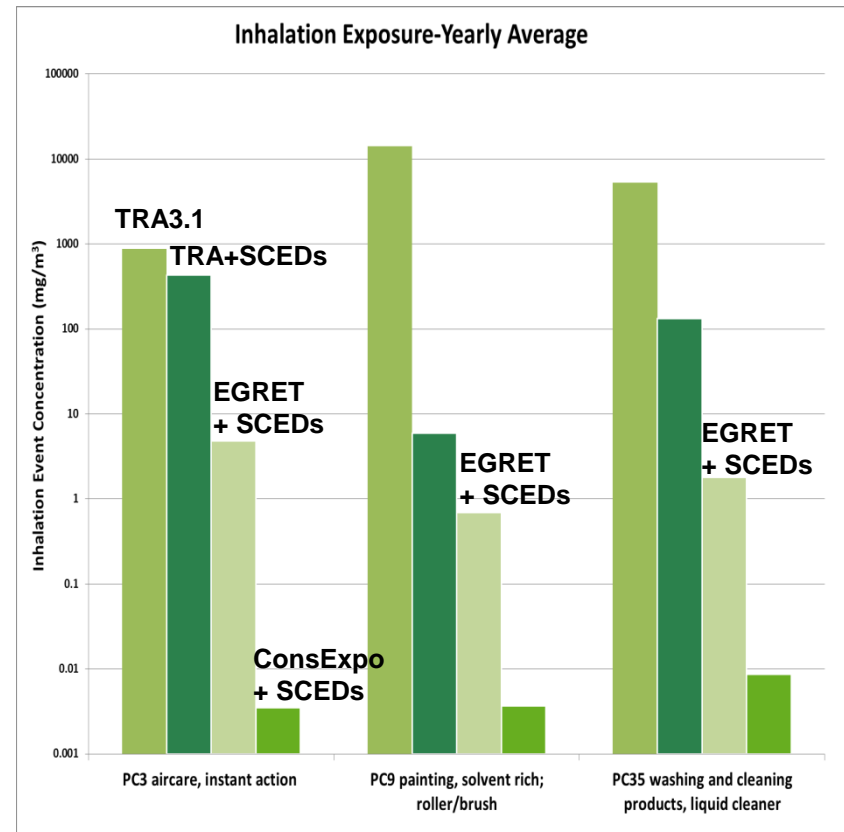
- Developed by ECETOC TRA Task Force to better match exposure and hazard durations when an infrequent exposure must be compared to a daily exposure hazard benchmark.

Frequency bands	Description	Multiplier
Band 1: frequent	≥ 1/week	1
Band 2: occasional	1/month ~ 1/week	0.2
Band 3: infrequent	1/ 6 months ~ 1/month	0.04
Band 4: very infrequent	<1/6 months	0.01

- The banding approach is more conservative than averaging approach.
 - It is implemented in the TRA v3.1.
- EGRET v.2 replaced the actual use frequency values (i.e. averaging approach) with frequency bands to be consistent with TRA.

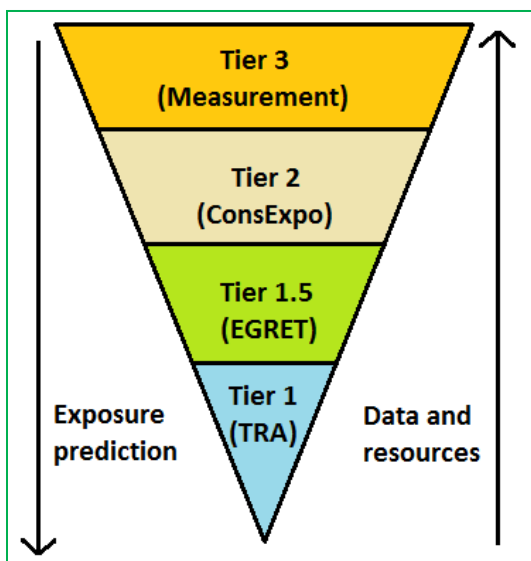
3. Use with SCEDs

- Specific Consumer Exposure Determinants (SCEDs)
 - sets of **refined** exposure determinants (or factors) for more realistic exposure prediction (DUCC SCEDs guidance).
- **Seven** input parameters (including justifications) can be modified **directly** within existing exposure scenarios in EGRET v.2 based on SCEDs data
- The adjustment of other (protected) parameters involves manual follow-up recalculation of the predicted exposure



What's next?

- A webinar on how to use EGRET



Highlights:

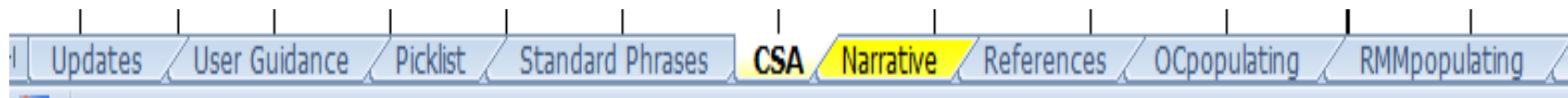
- Risk assessment tool
- Minimal user inputs
- Various types of risk
- Efficient
- Conservative
- Safe use conditions
- Scaling
- REACH output
- Easy communication

- Potential activities:

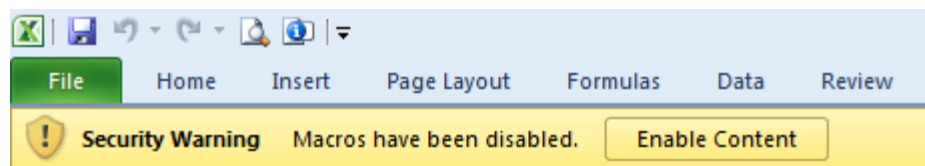
- Generate individual GES workbooks for each consumer GES use to facilitate its application
- Develop output of EGRET assessment in XML format for Chesar and/or International Uniform Chemical Information Database (IUCLID).

Back up - EGRET demo

- Select “CSA” worksheet to start an assessment



- Enable macro



- User Inputs

	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
1													
2	User Input Table												
3	Substance Properties:	Substance Name		Molecular Weight (g/mole)	5000	Physical property	liquid	Substance volatility (Pa):	300000	TRA volatility range	high	Saturated Vapour Concentration (mg/m ³)	605474396.8
4	Common Parameter Defaults:	Thickness Layer (cm)	0.01	Density (g/cm ³)	1.0	Body Weight (kg)	60.0	Inhalation Rate (m ³ /hr)	1.4	fraction released to air	1	Life Cycle Stage / Sector of Use	Consumer (SU21)
5	References Values (DNELs):	dermal long-term systemic (mg/kg/day)	20.0	dermal local (mg/cm ²)		oral long-term systemic (mg/kg/day)	20.0	inhalation systemic (mg/kg/24 hr day)		inhalation long-term systemic (mg/m ³) for 24 hr day	100.0	inhalation local (mg/m ³)	

Back up - EGRET demo cont'd

- Results EGRET

	D	E	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU
10	Relevant Use Sentinel Product	Product sub Category Sentinels	TRA Tier 1- Predicted Exposure - ECETOC TRA - refined estimates											TRA Tier1- Risk Characterization - refined estimates									
11			Predicted Dermal Exposure, Daily (mg/kg/d)	Predicted Dermal Exposure, Chronic (mg/kg/d)	Predicted Dermal Exposure, Local (mg/cm ²)	Predicted Oral Exposure, daily (mg/kg/d)	Predicted Oral Exposure, Chronic (mg/kg/d)	Predicted Inhalation Exposure, daily (mg/kg/d)	Mean Inhalation Event Concentration (mg/m ³)	Indicator for Basis of the Inhalation Event Concentration (SVC if Saturated Vapor Concentration is used)	Mean Inhalation Concentration (24hr TWA) on Day of Exposure (mg/m ³)	Mean Inhalation Concentration Yearly (mg/m ³)	Total Predicted Exposure (mg/kg/d) - day of use for TRA comparison only	RCR dermal local (based on mg/cm ²)	RCR inhalation local (based on Activity TWA mg/m ³)	RCR systemic (dermal, daily, based on mg/kg/d)	RCR systemic (oral, daily, based on mg/kg/d)	RCR systemic (24hr TWA inhalation mg/m ³)	RCR systemic (all routes, daily)	RCR systemic (dermal, chronic, based on mg/kg/d)	RCR systemic (oral, chronic, based on mg/kg/d)	RCR systemic (inhalation, yearly, based on mg/m ³)	RCR systemic (all routes, chronic)
12			dag of use	chronic	event	dag of use	chronic	dag of use	event		dag of use	chronic				20	20	70		20.0	20.0	70.0	
13	PCLAdhesives, sealants	Glues, hobby use	1.79	1.79	3.00	n/a	n/a	4.67	51.15		8.52	8.525	6.46	n/a	n/a	0.09	n/a	0.12	0.21	0.09	n/a	0.12	0.21
13	PCLAdhesives, sealants	Glues DIY-use (carpet glue, tile glue, wood parquet glue)	5.50	0.06	3.00	n/a	n/a	3547.96	25897.51		6474.38	64.744	3553.46	n/a	n/a	0.28	n/a	92.49	92.77	0.00	n/a	0.92	0.93

- OCs and RMMs

- Select a target RCR (optional)

	BX	BY	BZ
3			
4		Target RCR	0.9
5			0.9 0.5 0.2

Operation Conditions (OCs)	Risk Management Measures (RMMs)	Indicator for Basis of Exposure Estimate	RCR systemic (dermal, based on mg/kg/d)	RCR systemic (oral, based on mg/kg/d)
RMMs for communication - Consolidate into GES or e-SDS REACH ADVISED: phrase [RMM code] Recommended: {phrase [RMM code]}				
Unless otherwise stated, covers concentrations up to 30%; [ConsOC1]; covers use up to 364 days/year [ConsOC3]; covers use up to 1 time/on day of use [ConsOC4]; covers skin contact area up to 35.73 cm ² [ConsOC5]; for each use event, covers use amounts up to 9g [ConsOC2]; covers use under typical household ventilation [ConsOC8]; covers use in room size of 20m ³ [ConsOC11]; for each use event, covers exposure up to 4.00hr/event [ConsOC14];	No specific RMMs identified beyond those OCs stated	Based upon daily use	0.09	n/a
Unless otherwise stated, covers concentrations up to 30%; [ConsOC1]; covers use up to 1 day/year [ConsOC3]; covers use up to 1 time/on day of use [ConsOC4]; covers skin contact area up to 110.00 cm ² [ConsOC5]; for each use event, covers use amounts up to 6390g [ConsOC2]; covers use under typical household ventilation [ConsOC8]; covers use in room size of 20m ³ [ConsOC11]; for each use event, covers exposure up to 6.00hr/event [ConsOC14];	Avoid using at a product concentration greater than 10%; [ConsRMM1];	Based upon infrequent use + RMM	0.00	n/a

Backup - EGRET demo cont'd

- Narrative

	A	B	C
1	Section 1		Exposure Scenario Title
2	Title		GES USES
3	Sector of Use (SU code)		21
4	Use Descriptor (PC codes)		PC LISTS
5	Processes, tasks, activities covered		DESCRIPTIONS
6	Environmental Release Category		0
7	Specific Environmental Release Category		0
8	Section 2		Operational conditions and risk management measures
9	<i>Field for additional statements to explain scenario if required - pending better understanding from ECHA</i>		
10	Section 2.1		Control of consumer exposure
11	Product characteristics		
12	Physical form of product		liquid
13	Vapour pressure (Pa)		300000
14	Concentration of substance in product		Unless otherwise stated, cover concentrations up to 100% [ConsOC1]
15	Amounts used		Unless otherwise stated, covers use amounts up to 37500g [ConsOC2]; covers skin contact area up to 6600cm ² [ConsOC5]
16	Frequency and duration of use/exposure		Unless otherwise stated, covers use frequency up to 365 days per year [ConsOC3]; Unless otherwise stated, covers use frequency up to 4 times per day [ConsOC4]; covers exposure up to 8 hours per event [ConsOC14]
17	Other Operational Conditions affecting exposure		Unless otherwise stated assumes use at ambient temperatures [ConsOC15]; assumes use in a 20 m ³ room [ConsOC11]; assumes use with typical ventilation [ConsOC8].
18	Section 2.1.1		Product categories
19	PC1:Adhesives, sealants--Glues, hobby use	OC	Unless otherwise stated, covers concentrations up to 30% [ConsOC1]; covers use up to 364 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35.73 cm ² [ConsOC5]; for each use event, covers use amounts up to 9g [ConsOC2]; covers use under typical household ventilation [ConsOC8]; covers use in room size of 20m ³ [ConsOC11]; for each use event, covers exposure up to 4.00hr/event[ConsOC14];
20		RMM	No specific RMMs identified beyond those OCs stated
21	PC1:Adhesives, sealants--Glues DIY-use (carpet glue, tile glue, wood parquet glue)	OC	Unless otherwise stated, covers concentrations up to 30% [ConsOC1]; covers use up to 1 day/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 110.00 cm ² [ConsOC5]; for each use event, covers use amounts up to 6390g [ConsOC2]; covers use under typical household ventilation [ConsOC8]; covers use in room size of 20m ³ [ConsOC11]; for each use event, covers exposure up to 6.00hr/event[ConsOC14];
22		RMM	Avoid using at a product concentration greater than 10% [ConsRMM1];
	PC1:Adhesives, sealants--Glue from spray	OC	Unless otherwise stated, covers concentrations up to 30% [ConsOC1]; covers use up to 11 days/year[ConsOC3]; covers use