



European Solvents Industry Group (ESIG)

Development of Generic Exposure Scenarios (GES)

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Outline

- **Introduction to ESIG**
- **Development of Generic Exposure Scenarios**
 - ❖ **Background**
 - ❖ **Features**
 - ❖ **Example output**
 - ❖ **Experiences in application**
 - ❖ **Cefic guidance**



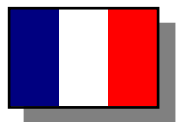
ESIG Members

- **HSPA: 11 members**

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

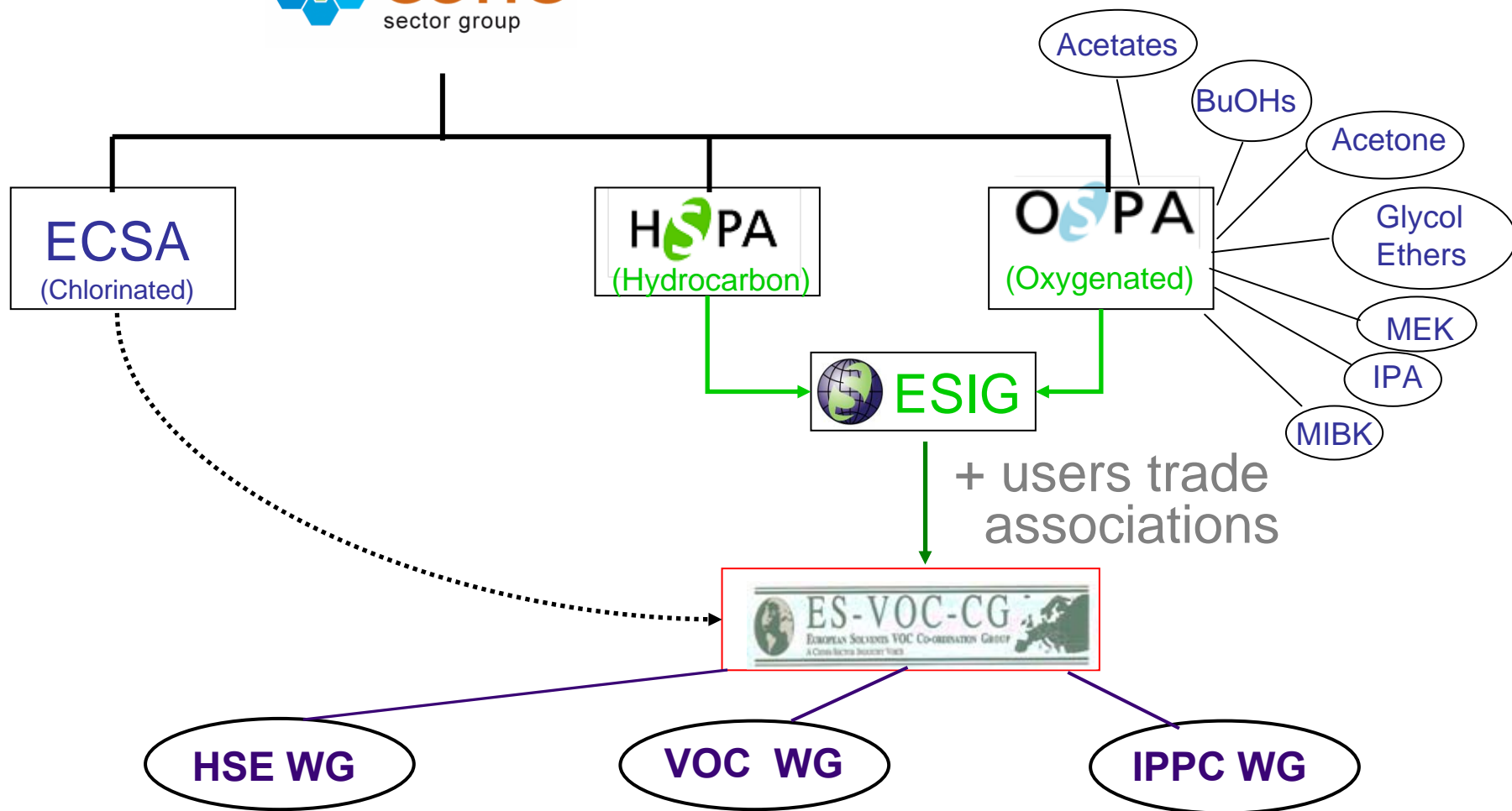
- **OSPA: 20 members**

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





The Solvents' Cluster Organogram





ES VOC CG Membership

- *AISE (Cleaning and maintenance)*
- *ACEA (Automobile)*
- *AFERA (Self-Adhesive tapes)*
- *BLIC (Rubber goods)*
- *CEIBOIS (Wood working)*
- *CEPE (Paint & printing inks)*
- *CINET (Dry cleaning)*
- *COLIPA (Cosmetics)*
- *COTANCE (Leather processing)*
- *EURATEX (Textile manufacture)*
- *ECSA (Chlorinated solvents)*
- *EFPIA (Pharmaceuticals)*
- *EMPAC (Metal packaging)*
- *EPC (Plastics converting)*
- *ERA (Publication printing)*
- *EUROPACABLE (Winding wires)*
- *EUROPANEL (Wood preservation)*
- *EWPM (Wool preservation)*
- *FEA (Aerosols)*
- *FECC (Distributors)*
- *FEDERAUTO (Vehicle refinishing)*
- *FEDES (Flexible packaging printing)*
- *FEDIOL (Seed oil processing)*
- *FEICA (Adhesives)*
- *FINAT (Labels)*
- *INTERGRAF (General printing)*
- *SRM (Solvent resins)*
- *UEA (Furniture)*
- *CIA (Chemical Association UK)*
- *ESSENSCIA (Chemical Association BE)*
- *FEDERCHEMICA (Chemical Association IT)*
- *UIC (Chemical Association FR)*
- *VCI (Chemical Association DE)*
- *VNCI (Chemical Association NL)*



Background to GES development

- ESIG members responsible for the supply of >1000 different solvents
- Widespread uses with many different applications
 - And endless different combinations of exposures
- Concern about the level of resource burden for chemical suppliers and downstream customers to manage the effective development of Exposure Scenarios to meet the ambitious REACH deadlines
 - All commodity solvents manufactured and sold at >1000 tonnes
- Reduced complexity by standardized tools and communication with downstream users → cost and time savings for all parties



What is a Generic Exposure Scenario ? (GES)

- GESs describe ESs for (groups of) substances for an area of operation/type of application within industry and are developed by M/Is in partnership with DU Associations (surrogate for individual DU)
 - Substances clustered by hazard and volatility and grouped by type of application (i.e. have a similar risk profile)
 - Each GES consolidates related tasks/activities involving potential for exposure (Contributing Scenarios) which are mapped to relevant use descriptor codes (Worker – PROC codes; Consumer – PC codes)
- M/I (Consortia) select relevant GES to support their substance registration
 - GES and supporting documentation is refined as necessary to form the substance-specific ES for demonstration of safe use and inclusion within their CSR
 - ES is transferred to the e-SDS for communication to customers



Key Characteristics of GESS

1. Focus on common areas of use of a (group of) substance (that can be characterised by groups of PROCs, PCs and/or ERCs)
2. Comprise 'simple' titles (and descriptions) that describe the areas of use and that are understandable across DUs within and across supply chains
3. Involve the collaboration of M/I (and/or formulator) associations and DU associations
4. Represent a mapping of all (or key parts of) the supply chain for a substance (or groups of substances)
5. Follow a process that aligns with the requirements of the TGD and delivers documentation sufficient to meet these for a CSR and/or eSDS (subject to confirmation on the part of the registrant)
6. Communicate all relevant OCs and RMMs for the identified scenarios
7. Describe the ES according to a library of standard phrases
8. Uses the ECETOC TRA Tier 1 exposure modelling tool



Thorough DU Dialogue is key to the success of GES Development

• Manufacturing Association (ESIG)

1. Based on initial list of identified solvent applications, ESIG characterised exposures and emissions in supply chain

3. ESIG developed initial GES(s) using mapping/CSA template tool.

5. ESIG considered / adopted changes:-
a) Incorporated into final matrix for CSA ES submissions
b) Populated / supporting Excel based GES using standard RMM phrases
c) Finalised narrative version of ES for eSDS communication, and
d) Posted information into ESVOC GES library for use by Consortia in substance specific CSA development

• DU Organisation (ESVOC)

2. Relevant ESVOC trade group(s) reviewed mapping for affected uses / applications and identified where revisions required e.g. increased scope; absent PROC codes; etc.

4. Relevant ESVOC trade group(s) reviewed initial GES(s) and identified where RMMs / OCs appeared inappropriate

- Provided input on alternative RMMs
- If RMMs appear too stringent, then provide exposure data to support deviation away from Tier 1 approaches



Current GES Titles for Solvents

- Manufacture incl. use as process solvent and extraction agent (I)
- Use as an Intermediate (I)
- Distribution (I)
- Formulation & (re)packing of substances and mixtures (I)
- Use in Coatings (I, P & C)
- Use in Cleaning agents (I, P & C)
- Lubricants (I, P & C)
- Functional fluids (I, P & C)
- Use in Oil & Gas field drilling and production operations (I, P)
- Metal working fluids / rolling oils (I,P)
- Blowing agents (I)
- Use in fuels (I, P & C)
- Use as Binders & Release agents (I, P)
- Use in Agrochemicals (P, C)
- Road and construction operations (P)
- Other consumer uses (cosmetics and personal care) (C)
- De-icing and anti-icing applications (P, C)
- Polymer processing (I, P)
- Rubber production and processing (I)
- Water treatment chemicals (I, P & C)
- Explosive manufacture and use (P)
- Mining chemicals (I)
- Use in laboratories (I, P)
- **Titles allow integration of Human Health and Environmental assessments within one ES**

❖ **22 potentially relevant GES titles**

❖ **41 potentially relevant ESs for any solvent (consolidating 5 – 10 Contributing Scenarios per ES)**



Example – communicating safe use

Section 1	Exposure Scenario Title
Title	Use in coatings [GEST3_I] – Industrial [G26]
Use Descriptor	Sector of Use: Industrial (SU3)
	Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13, PROC15
Environmental Release Categories	ERC 4, ESVOC SpERC 4.3a.v1
Processes, tasks, activities covered	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities. [GES3_I]
Section 2	Operational conditions and risk management measures
Section 2.1	Control of worker exposure
Product characteristics	
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa [OC4].
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) [G13].
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently) [G2]
Other Operational Conditions affecting worker exposure	Assumes use at not > 20°C above ambient temperature unless stated differently [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].

Section 1 – ES short title, Use Descriptors and Scope

Section 2.1 provides the baseline OCs applied in the Exposure Scenario



Example – communicating safe use

Contributing Scenarios	Risk Management Measures
General measures (skin irritants) [G19]	Avoid direct contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with the substance is likely. Clean up contamination / spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposure and to report any skin problems that may develop. [E3]
General exposures (closed systems) [CS15]. With sample collection [CS56]. ; Use in contained systems [CS38].	No other specific measures identified [E120].
Mixing operations (closed systems) [CS29].	No other specific measures identified [E120].
Preparation of material for application [CS96] Mixing operations (open systems) [CS30].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11].
Film formation - force drying, stoving and other technologies [CS99]	No other specific measures identified [E120].
Spraying (automatic/robotic) [CS97]	Carry out in a vented booth provided with lamina airflow [E59].
Manual [CS34]. Spraying [CS10].	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). [E11]. Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]

General measures applicable to all activities

CS and RMMs relevant for a task (PROC) clearly distinguished and described in manner relevant for DU

Standard phrases to Support Transition into SDS and translation



2010 Experiences in application

- ✓ Efficiencies of scale achieved
- ✓ Delivery against the 1st Registration deadline achieved
- ✓ Facilitated sensible use alignment dialogue with DUs prior to registration; limited feedback post registration on Uses overlooked
- ✓ GES concept applied by a number of Consortia, not just Solvents, aiding consistency and standardisation
 - Supporting ease of transition into Safety Data Sheets
 - Communication of consistent message to Downstream Users (although may be packaged differently due to differences in company SDS systems)

Require understanding in their application; tight timescales impacted effective training of Consultants

Limited opportunity to incorporate identified adjustments / improvements into the GES documentation during the 2010 registration period



GES approach supported by Cefic

Cefic GES guidance & tools:

- Developing GES under REACH, July 2009
 - supporting peer reviewed article in the BOHS Annals Occup Hyg Vol 55, No.5, pp 451-464, 2011
- GES Worker Chemical Safety Assessment Template, Feb 2010 (update in hand)
- Specific Environmental Release Classes (SPERCs), April 2010
- SPERC Guidance, July 2010
- Extended library of SpERCs and supporting justifications, Sept 2011
- Collation of Sector Association information supporting development of Exposure Scenarios

<http://www.cefic.org/Industry-support/Implementing-reach/Documents-and-tools1>



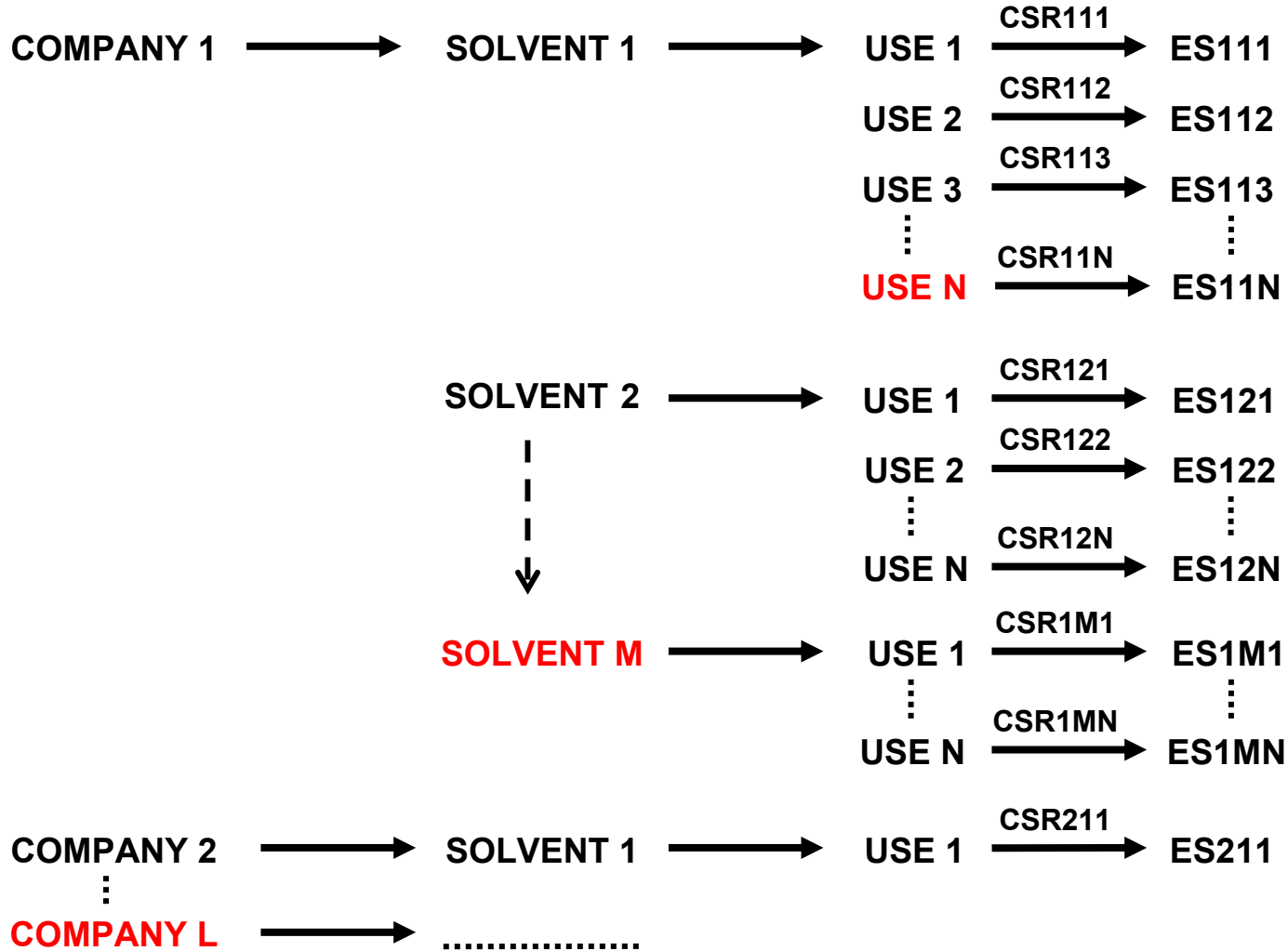
European Solvents Industry Group (ESIG)

www.esig.org

Thank you for your attention!



Background to GES Development



$$\text{TOTAL INDUSTRY NUMBER ES} = L \times N \times M$$



Background to GES development

ESIG

