



Oil Industry Experience from the Petroleum and Coal Stream Substances (PetCo) Working Group

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Agenda

- 1 Concawe
- 2 Petroleum substances
- 3 Petroleum and Coal Stream Substances Working Group, PetCo
- 4 Concawe's actions and experiences on PetCo

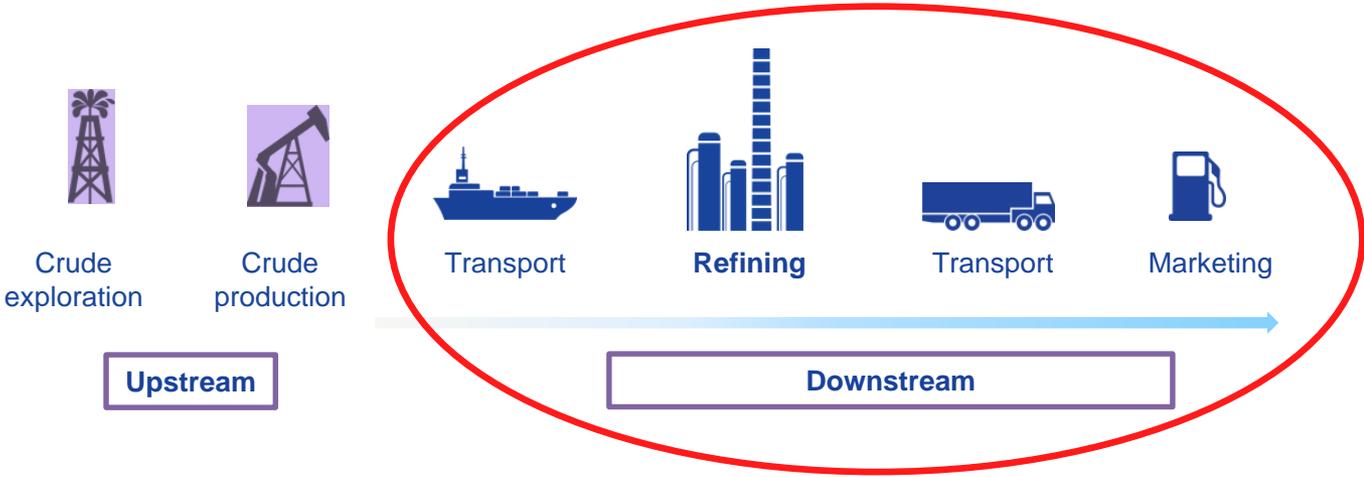


Concawe

CONCAWE

- Concawe was established in 1963 by a small group of leading oil companies to carry out research on environmental issues relevant to the oil industry. Its membership has broadened to include 41 companies operating oil refineries in the EU.
- The scope of Concawe's activities cover areas such as fuels quality and emissions, air quality, water quality, soil contamination, waste, occupational health and safety, petroleum product stewardship and cross-country pipeline performance.
- Our mission is to conduct research programs to provide impartial scientific information in order to:
 - Improve scientific understanding of the human and environmental health, safety and economic performance aspects of both petroleum refining and the distribution and sustainable use of refined products;
 - Assist the development of cost-effective policies and legislation by EU institutions and Member States;
 - Allow informed decision making and cost-effective legislative compliance by Association members.
- Concawe endeavours to conduct its activities with objectivity and scientific integrity. In the complex world of environmental and health science, Concawe seeks to uphold three key principles: sound science, transparency and cost-effectiveness.
- Concawe acts as SIEF Formation Facilitator and prepares the joint part of the REACH registration dossiers for petroleum substances.

Concawe represents the oil downstream industry



Concawe

Concawe represents 41 Member Companies ≈ 100% of EU Refining capacity
Open to companies owning refining capacity in the EU



2

Petroleum substances

Petroleum substances

Petroleum Substances

- Derived from crude oil or natural gas condensates.
- Individual petroleum streams are described by process history and boiling point/carbon number range. These parameters give an indication of the chemical composition.
- Petroleum substances are UVCBs: Unknown or Variable composition, Complex reaction products or Biological materials

Crude oil

- Naturally occurring very complex and variable mix of compounds, primarily hydrocarbons with a wide range of carbon number and molecule type.
- Crude oil itself is exempted from registration under REACH.

Refining

- A generic name for the processes used to obtain many different substances from crude oil.
- Distillation is the first process, used to separate the crude oil into product-related fractions.
- Thereafter, chemical treatments and further cycles of fractionation are applied to some distillate fractions.
- Performance specifications of finished petroleum products (fuels, lubricants, bitumen, etc.) and chemical feedstocks are determined by composition.

REACH registration

- 192 petroleum substances have been registered.
- Concawe acts as SIEF Formation Facilitator and prepares the joint part of the REACH registration dossiers. More than 4,200 registrations have been made by more than 1500 legal entities.



C2-100+



C3-4



C4-11



C8-15



C10-25



C15-65

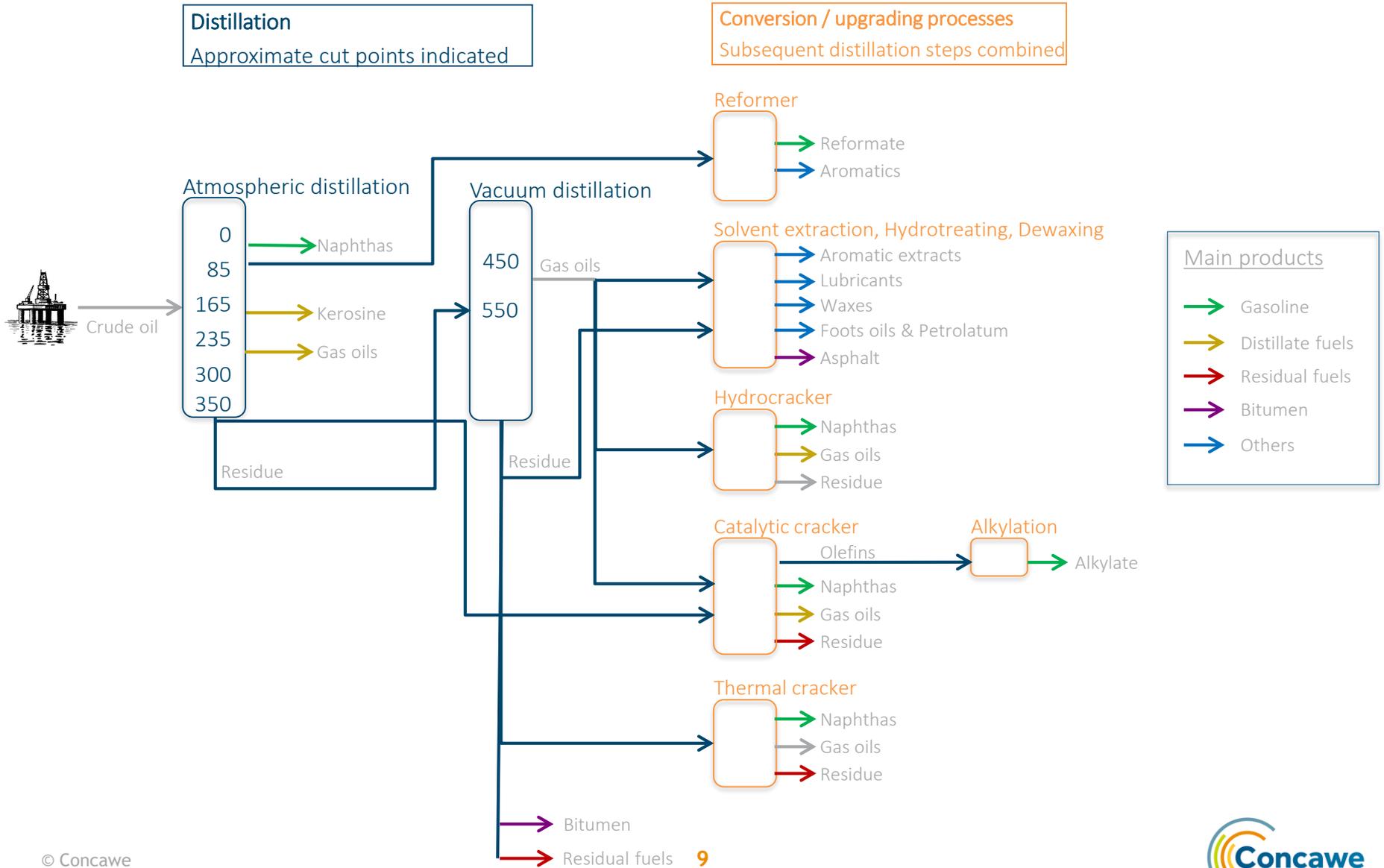


C20-100+



C35-100+

Refining process



Petroleum Substances: Complexity

- The number of individual chemical compounds increases rapidly with carbon number. The predominant compounds are described by carbon number/boiling point ranges and hydrocarbon types.
- Carbon number/boiling point ranges are influenced by fractionation. Hydrocarbon types (n-/i-alkanes, aromatics, olefins etc.) are influenced by chemical processing.
- To identify the hazards in a correct and practical way, testing is conducted on the whole substances, or on hydrocarbon blocks, rather than on individual constituents or groups of constituents.

C number	Boiling point °C (n-alkanes)	Number of isomers (alkanes only!)
3	-42	1
4	-1	2
5	36	3
6	69	5
7	98	9
8	126	18
10	174	75
15	269	4 347
20	343	366 231
25	402	36 777 419
30	450	4 108 221 447
35	490	493 054 243 760
40	525	62 353 826 654 563

3

Petroleum and Coal Stream Substances Working Group, PetCo

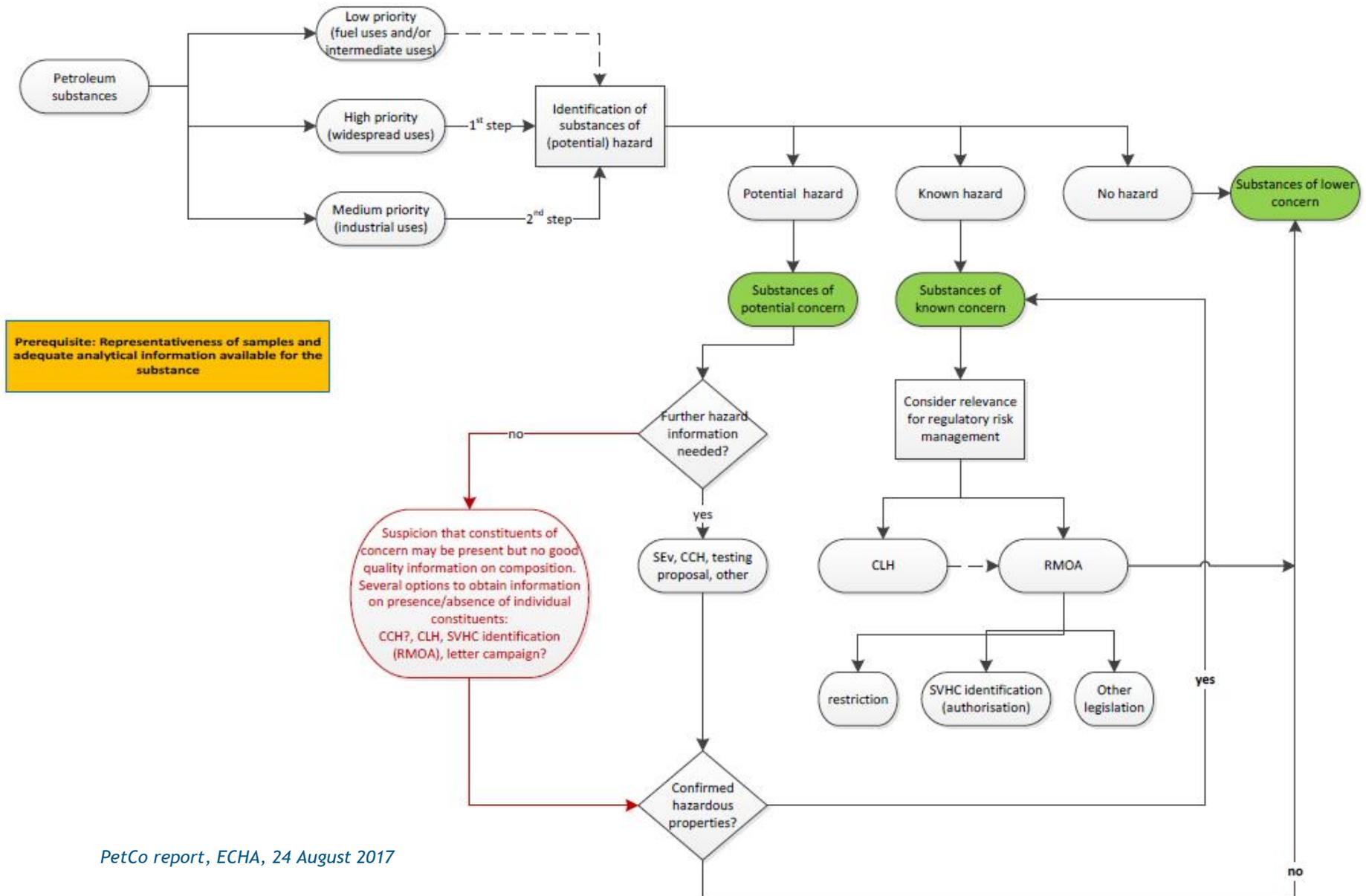
PetCo working group

- Focus is on petroleum and coal stream substances which are UVCB substances originating from both crude oil and coal refining, transformation and extraction processes.
- Established in 2015, since then 10 meetings.
- Participants:
 - 9 Member States (BE, DE, DK, EE, FR, LT, NL, PL and SE)
 - European Commission (DG GROW, DG ENV)
 - Stakeholders:
 - *Concawe*
 - *Hydrocarbon Solvent Consortium (HCSC/Cefic)*
 - *Coal Chemicals Sector Group (CCSG/Cefic)*
 - *Lower Olefins and Aromatics (LOA)*
 - *Higher Olefins and Poly Alpha Olefins (HOPA)*
 - *Association European Candle Makers (AECM)*

PetCo working group

- Initial aim was to develop an approach to identify and address PetCo substances and plan practical implementation of this approach as required by the SVHC Roadmap. (SVHC Roadmap to 2020, Annex 6, December 2013)
 - A platform for MSCAs, Commission, ECHA and stakeholders to discuss and coordinate activities.
 - The approach has been finalized in 2017. (Report, 24 August 2017)
 - Prioritization is based on uses (widespread) and hazard (human health and environment)
- The mandate has been updated:
 - PetCo working group is a platform for exchange to ensure that the work on PetCo substances is moved forward using the developed approach as a basis and ensure that progress is made in improving the registration dossier and, when necessary, in further regulation of PetCo substances.

PetCo approach to identify and assess substances



PetCo actions on petroleum substances

- Risk Management Option Analyses, RMOAs
 - Kerosene by RIVM (NL), 2016
 - Residues (petroleum), catalytic reformer fractionator by RIVM (NL), 2016
- Manual screening of registration dossiers
 - 2 Lubricant Base Oils, by ANSES (FR), 2015
 - White mineral oil, by ANSES (FR), 2017
- Prioritization for identifying substances/categories of concern
 - A preliminary list containing 20 substances (10 proposed by Concawe and 10 by ECHA) for further work
 - A constituent list prepared by ECHA

PetCo actions on petroleum substances

- Human health
 - ECHA is finalizing a data analysis for two categories (OGO and RAE). Analysis includes existing data, data gaps, read-across and testing proposals.
- Environment
 - Methods used in Petrotox and Petrorisk models for environmental hazard and risk calculations are explained and discussed. The models are build for UVCB substances and widely used in industry.
 - Consultation of the PBT Expert Group on the level of information needed to assess PBT properties of the UVCB substances.
 - GCxGC analytical method is discussed in PetCo and in coming ECHA PBT Expert Group meeting, a seminar in September and a workshop on persistence/biodegradation.

4

Concawe's actions and experiences on PetCo

Concawe's actions

- Inventory of uses and volumes of petroleum substances. Only non-CMR petroleum substances have widespread use (professional, consumer and use in articles)
- PetCo implementation plan for petroleum substances 2017 - 2020
- Detailed analytical data from samples and from registration dossiers for all petroleum substances.
- Update of registration dossiers.
- Human health tests
 - The 2010 dossiers had the following testing proposals:
 - Pre-natal Developmental Tests (PNDT) for Bitumen and Oxidized Asphalt categories, done, final report in 2018.
 - Two generation tests for 4 categories. Testing proposals were updated to Extended One-generation Reproductive Toxicity Studies (EOGRTS), which will be included in the new testing strategy.
 - A Human health testing strategy for 2018-2023 to be agreed with ECHA
- Environment risk modelling
 - Explanation of Petrotox and Petrorisk calculation principles for environmental risks, discussion on GCxGC analytical method , an expert seminar in September and working with the ECHA PBT Expert Group

Dossier updates in 2018

Human Health

- Testing strategy all categories - section 13 attachment
- Add short term testing plan (OGO VHGO SRGO & RAE)
- Addition of analytical data to key studies (all categories)
- Justification for modified Ames (all categories except S)
- Justification for dermal exposure route (all except Bitumen & Oxi Asph)
- Address quality warnings

Ecology

- Updated and new Risk Assessment supporting documents
- Address TCC failure IUCLID6 v2.0 for sulfur bioaccumulation
- Address quality warnings

Substance identity

- Revised SIP
- Address quality warnings

Classification

- New CLP17 for Naphtha
- Clarify H350 classification of LBO

Challenges with petroleum substances

- REACH regulation can directly be applied on mono- and multi-constituent substances, but not on UVCBs. Mixture rules cannot be either applied due to large number of hydrocarbon compounds in UVCB substances.
- Testing is conducted on whole substances for human health or on hydrocarbon blocks for environment rather than on individual constituents or groups of constituents. There is adequate compositional data on test substances to show they are representative, given their UVCB nature.
- Concawe prefers a holistic approach to save time, costs and unnecessary animal testing. Holistic approach means using read-across and looking at categories rather than examining every item in individual substances.
- New innovative approach methodologies such-as Cat-App to be used for prove substance similarity and read-across. More information on the Cat-App is in the Concawe web site.
- Registration dossiers have also data from studies done in the past. Historical data is still valid because worst case substances were chosen for tests and testing was done according to high standards.

Experience on working in PetCo

- Concawe as oil industry representative welcomes PetCo. It provides opportunity to discuss with regulators in one forum. The challenge is applying REACH to complex petroleum substances.
- An informal forum is valuable for industry as it allows a holistic view across dossiers to be shared.
- Industry gains a far better understanding on what the regulators are asking for as they examine registration dossiers.
- It facilitates to group similar substances which improves efficiency.



www.concawe.eu

**Thank you for
your attention**

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