Date: 22 May 2009

REACH: descriptors of use: coatings and inks manufacture and application

Background

1. The REACH Regulation introduces a number of new concepts and terms, the interpretations and application of which link to specific obligations and duties that apply to manufacturers, suppliers and users of chemicals.

2. One such concept, which has been the subject of much discussion and debate, is the term "use". This is defined in REACH in terms that are different from typical ways in which "use" is understood by industry. CEPE[1] efforts have been directed to find an approach to describing uses, from an industry perspective, that is compatible with REACH terminology, and supports how the descriptors of use will be applied to other REACH requirements, such as:
   - establishing supported uses (in REACH terminology: "identified uses")
   - conducting chemical safety assessments and preparing chemical safety reports, which may include Exposure Scenarios.

   Reconciling REACH and industry approaches has not proved straightforward; recently published European Chemicals Agency (ECHA) guidance and activities within CEFIC[2] working groups and task forces have provided a much greater clarity of understanding. Common agreement amongst ECHA and industry has been reached that, for practical REACH purposes, "use" will be described in relation to how a substance is handled. In practice, this requires that use is considered in terms of broad process steps.

   It should be noted that this approach does not require consideration of elements, with which industry will be more familiar, such as product technology, application equipment, user sectors. These may however have a secondary role in describing variants that occur in a particular process step.

3. A key point of agreement for all parties is the determination that communications up and down supply chains should use harmonised terminologies and standardised formats for information exchange as far as is practically possible. The CEPE approach to describing uses is in line with the approaches taken by other European industry associations in the Downstream Users Co-ordination Council (DUCC), representing sectors which produce preparations.

[1] CEPE is the sole European trade association for manufacturers of decorative coatings, printing inks, industrial coatings and artists' colours. More information on CEPE and its sector activities can be found on the CEPE website www.cepe.org

[2] European Chemical Industry Council

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REACH "use" descriptor scheme

4. The ECHA scheme for describing use employs a 5-element coding process, which is intended to give a short-hand means of characterising the infinite number of uses of substances throughout Europe. The following table gives an overview of the elements of the scheme. More information on the use descriptor scheme can be found in the ECHA guidance[3] (note: the R.12 guidance is relatively easy to comprehend, whilst R.16 is more complicated).

Element	Code	Purpose	Examples
Sector of use	SU	Indicator of where the substance is used or type of user: industrial, professional, consumer	**SU 3** industrial manufacture (general) **SU 10** chemical formulation/ repacking **SU 21** consumer use **SU22** public domain – e.g. tradesmen
Process category	PROC	Indicator of how substance is handled (human exposure)	**PROC 2** used in closed systems with occasional controlled exposure **PROC 10** roller application or brushing
Product category	PC	Indicator of the type of product in which the substance used	**PC 5** artists' colours **PC 9** coatings **PC18** inks
Article category	AC	Indicator of the type of article in which the substance is used - with no intended release - with intended release	**AC7-2** metal products; toys **AC 35** scented paper articles
Environmental release category	ERC	Indicator of how the substance may be released to environment	**ERC 2** formulation **ERC 3** production of articles

Table 1: EU use descriptor scheme

CEPE and the coatings and printing inks sector

5. CEPE represents around 2,000 companies throughout the EEA. Member companies produce, in total, tens of thousands of individual coatings and inks ("products"), for use in many different occupational (industrial and professional) and consumer applications. The wide range of products produced by CEPE members, and their uses can be described in generic terms, as shown in Tables 2 and 3, respectively.

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[3] More information on this descriptor scheme can found in ECHA Guidance on Information Requirements and Chemical Safety Assessments, Chapters R.12 (SU, PROC, PC, AC) and R.16 (ERC), download from http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_en.htm?time=1231502340

Coatings and inks product categories			
Physical state		Characteristics	Sector applicability
1	Liquid solvent borne	Consistency: flowing liquid (range of viscosities) Volatile phase: organic solvents released during application/film formation	Decorative coatings Industrial coatings Printing inks Artists' colours
2	Liquid water borne	Consistency: flowing liquid (range of viscosities) Volatile phase: water, with up to 10% organic solvent, released during application/film formation	Decorative coatings Industrial coatings Printing inks Artists' colours
3	Liquid/paste solvent-free	Consistency: flowing liquid (range of viscosities) ***or*** paste Volatile phase: none to minimal during film formation	Industrial coatings Printing inks Artists' colours
4	Powder	Consistency: fine free-flowing powder Volatile phase: none to minimal during film formation	Industrial coatings Printing inks Artists' colours

Table 2: product categories

Uses of coatings and inks product categories			
Product physical state		Characteristics	User applicability*
1	Liquid solvent borne	Consistency: flowing liquid (range of viscosities) Volatile phase: organic solvents released during application/film formation	Industrial application of coatings Industrial application of printing inks Professional application of coatings Professional application of printing inks Consumer application of coatings
2	Liquid water borne	Consistency: flowing liquid (range of viscosities) Volatile phase: water, with up to 10% organic solvent, released during application/film formation	Industrial application of coatings Industrial application of printing inks Professional application of coatings Professional application of printing inks Consumer application of coatings
3	Liquid/paste solvent-free	Consistency: flowing liquid (range of viscosities) ***or*** paste Volatile phase: none to minimal during film formation	Industrial application of coatings Industrial application of printing inks Professional application of coatings Professional application of printing inks Consumer application of coatings
4	Powder	Consistency: fine free-flowing powder Volatile phase: none to minimal during film formation	Industrial application of coatings Industrial application of printing inks Professional application of coatings Consumer application of coatings
			* interpretations of these three terms can be found in Annex 3
			*Note: consumer and **some** professional uses of printing inks in liquid and powder form are typically in closed containers (e.g. cartridges for ink jet and laser printers and photocopiers). Such applications currently are not covered in this Information Note*

Table 3: product uses

6. All coatings and inks are manufactured in **industrial manufacturing facilities** (see Annex 3 for interpretation of the term “industrial”), employing **batch manufacturing processes**. Although many different products are manufactured, in different batch sizes, in a wide range of production equipment and processes, all can be described by the overall set of process steps shown Figure 1.

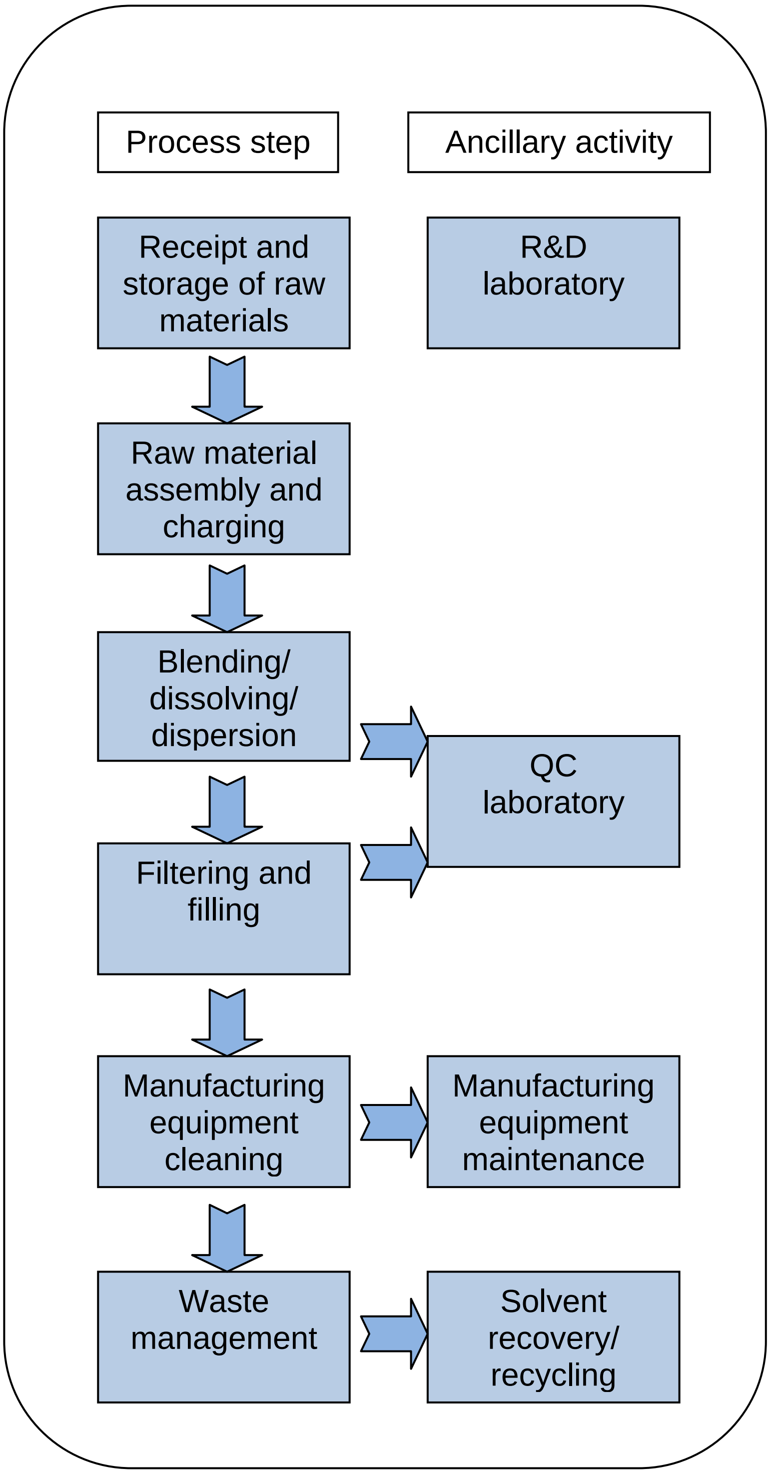

Figure 1: coatings and inks manufacturing process steps

7. Similarly, coatings and inks are applied and used in many different ways, all such uses can be described by the overall set of process steps shown Figure 2.

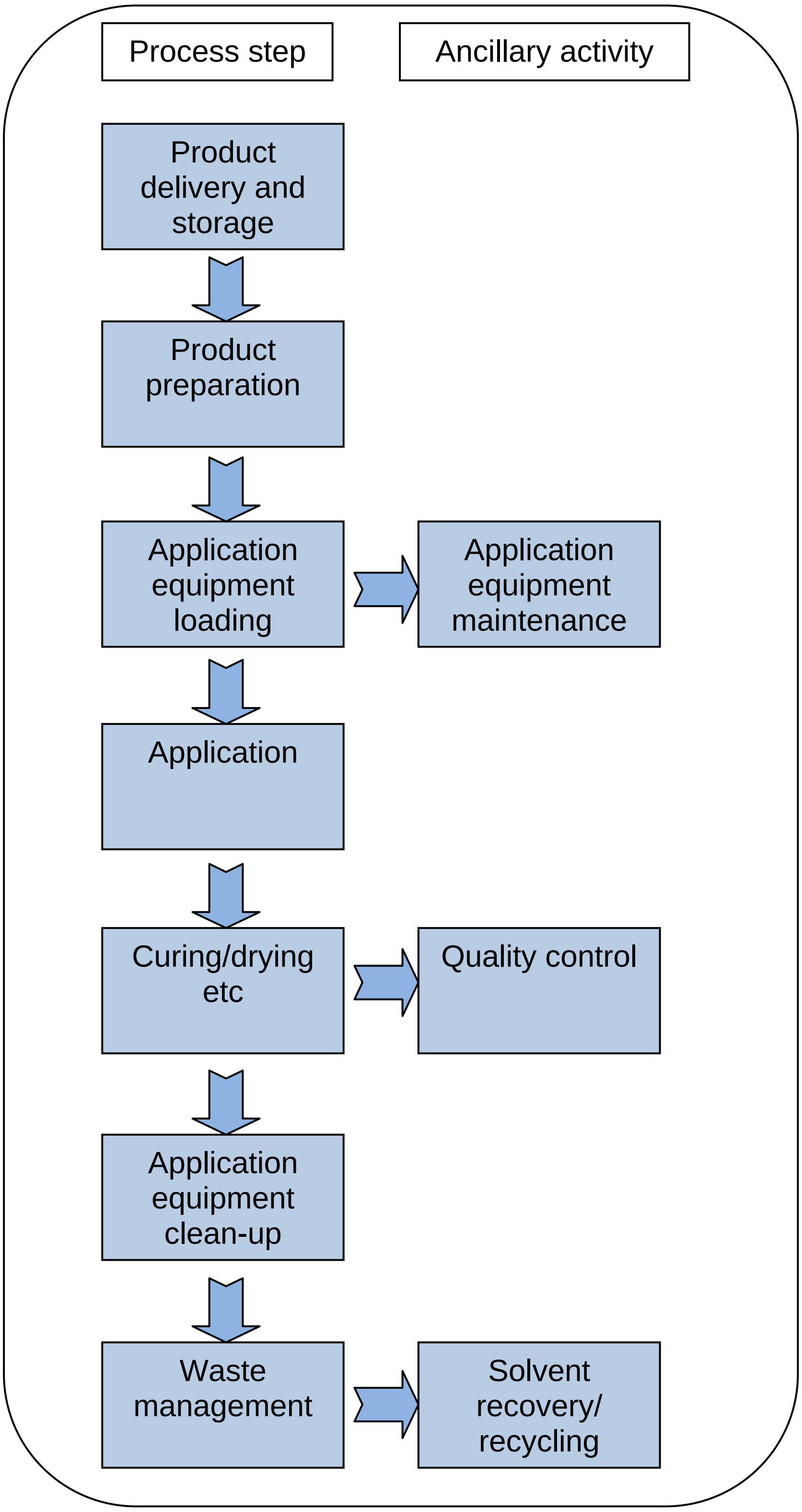

Figure 2: coatings and inks application process steps

8. For each process step, whether in manufacture or application, a number of variants can be identified. Examples are shown in Tables 4 and 5.

Process step	Example variants
raw material assembly	weighing of powders and liquids by hand
	automatic dispensing through pumps
blending/dissolving/dispersion	open mixing vessels
	closed mixing vessels
filtering and filling	closed filtering units into closed containers
	manual filtering and filling into containers

Table 3: examples of coatings and inks manufacturing process step variants

Process step	Example variants
Product preparation	Mixing by hand
	Mixing in closed equipment
Application	Manual spray guns
	Enclosed printing presses
Curing/drying	Evaporation of solvents into the application area
	Closed stoving ovens, venting to atmosphere
Equipment cleaning	Hand cleaning
	Enclosed mechanical processes

Table 4: examples of coatings and inks application process step variants

9. In practice, the appropriate combination of process step variants that are best suited to each situation will be used.

CEPE descriptors of use

10. CEPE has completed mapping exercises for product manufacture and for application of products by consumers and in professional and industrial application processes, identifying typical process steps and variants.

11. For each such process step, a two-part descriptor of use scheme is used:

11.1 **short title**: in line with the principle presented by the CEFIC Communications Task Force at the CEFIC Exposure Scenario Workshop held on 27/28 October 2008, a short title has been assigned to all coatings and inks manufacture and application processes.

11.2 "**5-element descriptors**": the most appropriate categories from the ECHA descriptor scheme have been assigned.

*Note: As this Information Note describes **only** the process steps involved in the **manufacture** or **application** of a coating or a printing ink. It does not extend to describing what is produced as result of the application step. As a consequence the AC is not used. Information on relevant ACs will be identified separately by organisations representing producers of articles.*

12. The tables in the separate spreadsheets "descriptor of use – coatings and inks manufacture" (powder or organic solvent borne, water borne and solvent-free) set out the short title and 5-element descriptors applicable to the coatings and inks manufacturing sector. They apply to all product categories shown in Table 2.

13. The tables in the separate spreadsheets "descriptor of use – coatings and inks application" (industrial, professional or consumer) and "descriptors of use – ancillary activities" set out the short title and 5-element descriptors applicable to coatings and inks application. They apply to all use categories shown in Table 3.

Note: the principle adopted by CEPE's Exposure Scenario Co-ordination Group, when preparing these tables, was to seek to cover the substantial proportion of sector process steps and variations known to CEPE members. The Group has recognised the need to achieve a balance between describing every single process variant, which would result lists of an unmanageable length, and a practical set of generic descriptors.

Use of the CEPE descriptors of use

14. **by CEPE:** The manufacture and application descriptors of use spreadsheets are being provided to upstream organisations, which represent manufacturers and importers of substances used directly in, or are contained in raw materials used, in manufacture of coatings and inks. CEPE is encouraging upstream organisations to endorse and to promote these descriptors of use to their members.

15. **by substance manufacturers and importers:** the manufacture and application descriptor of use spreadsheets provide individual manufacturers and importers with information on uses relevant to the manufacture and application of coatings and inks. The descriptors are intended to be used by manufacturers and importers, when compiling identified uses to include in substance Registration dossiers, as well as providing a basis for preparation of substance exposure scenarios.

16. **by coatings and inks manufacturers:** a coatings or inks manufacturer can confirm the process steps in his facility and those of his customers or users of his products are covered by the descriptors set out in the relevant manufacture and application spreadsheets. The spreadsheets can also be used to communicate to the upstream supply chain those uses specific to the coatings or inks manufacturing plant and/or to the application process.

Maintenance and updating of the Information Note

17. This Information Note can be expected to be updated and amended at regular intervals, in the event of regulatory or legislative developments or further industry activities. CEPE's Exposure Scenario Co-ordination Group is responsible for the maintenance of the document. Any communications on the Information Note should be sent to Mrs M Nymeba at CEPE offices (m.nyemba@cepe.org).

Related and further CEPE activities

18. Information on typical operational conditions (e.g. qualities used, duration and frequency of use, exposures and emissions, risk management measures in use etc) is being prepared and will be published in due course.

ANNEX 1

DESCRIPTORS OF USE FOR COATINGS AND INKS MANUFACTURE

****REMINDER: a description of use comprises two parts: short title and a set of ECHA use descriptors****

A1.1 Refer to the relevant spreadsheet:

- descriptors of use – coatings and inks manufacture (organic solvent, water borne, solvent-free)
- descriptors of use – coatings and inks manufacture (powder)

A1.2 Short title: Industrial manufacture of coatings and inks (applicable to all products, product categories and process steps)

A1.3 ECHA use descriptors: select from Columns *C – I*, the appropriate combination of process steps, which describe the specific process.

Notes:

1. In selecting descriptors, the "best-fit" approach has been used in a number of cases. This is because descriptors:
   - are not coatings and inks specific
   - may not exactly describe a process step
   - more than one descriptor may apply
   - may be imprecise or open to interpretation

2. To avoid overcomplicating the tables, SU 10 has been selected to describe all coatings and inks manufacturing process, as the highest level descriptor. It encompasses more specific SUs, such as SU 13 "other non-metallic mineral products, e.g. plasters, cement".

3. The tables do not include process environmental protection controls (e.g. thermal oxidisers, waste water treatment), which are process operating conditions.

4. The AC is not relevant to the specific process of **manufacture** of coatings and inks.

DESCRIPTORS OF USE FOR COATINGS AND INKS APPLICATION

****REMINDER: a description of use comprises two parts: short title and a set of ECHA use descriptors****

A2.1 Refer to the relevant spreadsheet:

- descriptors of use – coatings and inks application (industrial)
- descriptors of use – coatings and inks application (professional)
- descriptors of use – coatings application (consumer)
- descriptors of use – coatings and inks application (ancillary activities)

A2.2 Short title: Select the short title from *Column A* in the appropriate table:
- consumer
- professional
- industrial

Note: interpretations of these three terms can be found in Annex 3

A2.3 ECHA use descriptors: in the same table, select, from *Columns C – I,* the appropriate combinations which describe the specific process.

Notes: 1. In selecting descriptors, the "best-fit" approach has been used in a number of cases. This is because descriptors:
- are not coatings and inks specific
- may not exactly describe a process step
- more than one descriptor may apply
- may be imprecise or open to interpretation

2. To avoid overcomplicating the tables, the SUs selected for professional and industrial uses are highest level descriptors. Thus SU 3 "Industrial manufacture (all)" covers more specific application descriptors, such as SU 7 "Printing", SU 15 "Manufacture of fabricated metal products" etc; SU22 "Public domain" covers more specific applications, such as SU 19 "Building and construction work" etc

3. The tables do not include process environmental protection controls (e.g. thermal oxidisers, waste water treatment), which are process operating conditions.

4. PROCs apply only to occupational uses (professional and industrial). They are therefore not allocated for consumer uses.

5. PCs are the key parameter for identifying consumer health exposures

6. The ERC for any process step is selected on the basis of the component most likely to represent the most significant environmental risk. Usually this will be the organic solvent, which is identified as a processing aid.

7. The AC is not relevant to the specific process of application of coatings and inks. It is recognised that many industrial and some professional applications of coatings and inks are an integral step in the manufacture of an article. Identification of relevant ACs for such applications is more appropriately undertaken by organisations representing downstream users of CEPE member products, taking into account ECHA guidance that "*for substances used as processing aid or chemically reacted upon use, and not becoming*

part of an article (e.g. solvents, cleaners and laundry detergents) the fourth descriptor [AC] *is not relevant*."[4] Relevant ACs will be added to the tables, as appropriate categories are identified.

8. No ACs are assigned to consumer uses. Dangerous substances present in consumer products are usually limited to organic solvents, which as processing aids do not need to be considered (see 7. above).

[4] Section R.12.6, Guidance on information requirements and chemical safety assessment: Chapter R.12: Use descriptor system, May 2008, download from http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf?vers=20_08_08

ANNEX 3

USER CATEGORIES

A3.1 The need to distinguish the extent to which exposures and emissions from the use of substances by different categories of user is widely recognised, in relation to risk assessments and subsequent identification of risk management measures and operating conditions.

A3.2 In recent years, various proposals have been suggested, from which a consensus view has developed that three broad categories – industrial, professional and consumer - are the most appropriate way of distinguishing uses.

A3.3 These three terms are not legally defined. Although they are generally understood, it is recognised that an interpretation of these would help allocate border-line activities.

A3.4 The following interpretations are taken from a CEPE Position Paper of 2002[5], supplemented with information on frequency of exposure to substances by the three categories of user.

Use category	Characterisation	Typical substance use patterns
Industrial	Engineering controls and/or PPE, training possible, in scope of occupational health, employment etc. regulations.	Typically daily use of substances, up to 8 hours per day per individual. Operational conditions in any one use sector generally show little variation.
Professional	PPE yes, but generally no or only limited recourse to engineering controls, training possible, in scope of occupational health, employment etc. regulations.	Typically daily use of substances, but lower duration than in industrial applications. Operational conditions in any one sector can show a wide variation.
Consumer	No engineering controls, limited recourse to PPE, no training, outside scope of occupational health regulations etc.	Large number of users on any one day, but frequency of individual usage low (few days per annum) and not more than a few hours in any one day

Table A3.1: substance user categories

[5] CEPE Position Paper: Chemicals Policy: Definition of Use Categories, 19 March 2002