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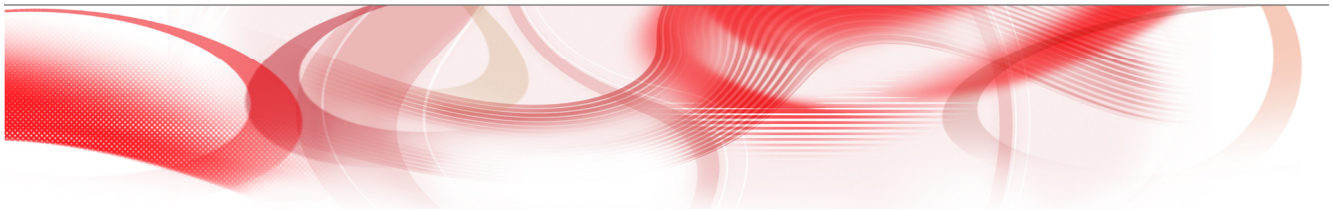

Application of GHS Substances Classification Criteria for the Identification of Seveso Establishments

Report on the Work of the Technical Working Group on Seveso and GHS

Zsuzsanna Gyenes

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Applied abbreviations

DG ENV	Directorate-General Environment
GHS	Globally Harmonised System of classification and labelling of substances and mixtures
SEVESO	Council Directive 105/2003/EC Seveso II Directive
MAHB	Major Accidents Hazards Bureau
CCA	Committee of Competent Authorities for Seveso II Directive
DSD	Dangerous Substances Directive 67/548/EEC
DPD	Dangerous Preparations Directive 1999/45/EC
CLP	Regulation on classification, labelling and packaging of substances and mixtures - Regulation (EC) No 1272/2008
SDS	Safety Data Sheets
TWG	Technical Working Group "Seveso and GHS"
STOT	Specific Target Organ Toxicity
FEA	European Aerosol Federation
UN ADR	Transportation of Dangerous Goods Over Roads

1. Introduction

"The new system, which was called "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)", addresses classification of chemicals by types of hazard and proposes harmonized hazard communication elements, including labels and safety data sheets. It aims at ensuring that information on physical hazards and toxicity from chemicals be available in order to enhance the protection of human health and the environment during the handling, transport and use of these chemicals. The GHS also provides a basis for harmonization of rules and regulations on chemicals at national, regional and worldwide level, an important factor also for trade facilitation."[1]

The European Commission and the EU Member States have endorsed the UN recommendation to implement the GHS in domestic law. The recommendation was also supported by stakeholders from industry and non-governmental organizations.

On 16th of December 2008 the European Parliament and the Council adopted a new Regulation on the classification, labeling and packaging of substances and mixtures (CLP - Regulation (EC) No 1272/2008) which brings existing EU legislation into alignment with the GHS. It was published in the Official Journal on 31st December 2008. This Regulation entered into force on 20th January 2009. The deadline for substance classification according to the new criteria will be 1st December 2010, and for mixtures 1st June 2015. The current legislations on classification, labeling and packaging of substances (Directive 67/548/EEC) (DSD) and preparations (Directive 1999/45/EC) (DPD) after a transitional period will be repealed with effect from 1st June 2015.

At the 15th plenary meeting of the Committee of Competent Authorities (CCA) for Seveso II Directive on 18-20th January in 2006, members of the committee decided to establish a new expert group; a clear remit should be identified since other CLP classification initiatives are ongoing. The main objectives of the new group are to review the potential impact of CLP classification criteria in a Seveso context; it has also been decided to adopt a Technical Working Group "Seveso and GHS".
At the 18th CCA meeting in Lisbon 2007 the terms of reference of the group were agreed.
The first official meeting of the TWG was settled in 2008. The composition of the group was experts of physical and health hazards, Seveso experts, representatives from the industry and the competent authorities from the different Member States.

[1] From the website of UNECE: http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html

2. Methodology

The TWG investigated physical, health and environmental hazards in CLP categories in order to find the best way to align with the Seveso II Directive.

The remit of the group was to:

- Collect information and to provide specific and detailed guidance on the impact of the new CLP classification system on the Seveso II Directive.
- Identify appropriate CLP categories considering the hazard of dangerous substances and mixtures corresponding to the 10 categories in Annex I Part 2.
- If necessary, the Technical Working Group should establish temporary sub-groups to technically assess specific CLP categories, for example for health hazards or for physical chemical hazards.
- For those categories not fully matching the categories in Annex I Part 2:
  - Develop options considering the hazard of substances and bearing in mind the aim of a clear, simple system, keeping the CLP categories as far as possible intact.
  - Estimate the likely impact of these options (substances concerned, number of establishments possibly covered) [2].

To implement this aim a TWG was established with many experts on this issue.

The working group's main objectives are given below:

Objective 1:

- No reduction in the level of protection achieved by existing Seveso II Directive scope (e.g. no significant changes for the thresholds of relevant substances already in the scope).

Objective 2:

- No unnecessary and significant extension of the scope of Seveso II Directive as a consequence of the CLP alignment, in order to avoid increasing the burden on industry and administration, i.e. no increase unless the risk of major hazard is significant.

At the first official meeting of the TWG in Ispra (20-22 of February, 2008) two subgroups were formed. One subgroup discussed work to be carried out regarding physical hazards, while the other subgroup focused on health hazards.

Following these preliminary actions, at successive meetings the whole group considered all types of hazards together.

3. Physical hazards

In the CLP the following 16 GHS hazard classes were implemented. The CLP contributes to the GHS aim that the same hazards will be described and labelled in the same way all around the world. It means that CLP contains the same 16 classes for physical hazards with test methods also under the new regulation:

1. Explosives
2. Flammable gases
3. Flammable aerosols
4. Oxidising gases
5. Gases under pressure
6. Flammable liquids
7. Flammable solids
8. Self-reactive substances and mixtures
9. Pyrophoric liquids
10. Pyrophoric solids
11. Self-heating substances and mixtures
12. Substances and mixtures which, in contact with water emit flammable gases
13. Oxidising liquids
14. Oxidising solids
15. Organic peroxides
16. Corrosive to metals

Although in the Annex I Part 2 of the current Seveso II Directive the substance categories exist, in the CLP Regulation these categories of substances have new definitions, new test methods.

- Oxidising
- Explosive
- Flammable liquids
- Highly flammable liquids
- Extremely flammable gases and liquids
- Substances which react violently with water or when in contact with water emit flammable gases with risk phrases R14, R14/15 and R29.

The group launched the work with investigation on the matches and differences between these groups and made final proposals for most of these classes.
The methodology which the group applied was to compare the so-called "old" EU substance group categories to the new CLP ones, examining the similarities and the differences in the test methods and to figure out if they were the same. If these test methods were not used similarly, were there any substances that would be included in the new Seveso II Directive or not.

3.1 HAZARD CLASSES WHICH ARE PROPOSED NOT TO BE INCLUDED IN THE NEW SEVESO II DIRECTIVE

During the discussions the TWG decided not to include all CLP hazard classes in the CLP-adjusted Seveso II Directive. Therefore these are the classes below which are proposed not to be included in the new Seveso II Directive. These considerations are the following:

3.1.1 Gases under pressure

CLP Definition: Gases contained in a receptacle at a pressure of 200 kPa or more, or which are liquefied or liquefied and refrigerated.

Seveso status: It was not included before in the Seveso II Directive.

Consideration: Based upon the characteristic of this group of substances it is not relevant for Seveso.

Recommendation: The TWG suggested that gases under pressure should not to be included in Seveso.

3.1.2 Flammable solids

CLP Definition: Solids which are readily combustible, or may cause or contribute to fire through friction.

Seveso status: The current Seveso II Directive gives no definition for "solids", "liquids" and "gases".

Consideration: It is recommended that for "solid" the definition of CLP is used in the future:
The effective Seveso II Directive, Annex I, Part 2 comprises the categories

1. Flammable
2. Highly flammable
3. Extremely flammable.

From note 3 it is clear that only liquids and gases fall under the scope of Seveso. Furthermore, the Q&A published by the EU in October 2000 excludes flammable solids. Thus, addition of flammable solids would be an extension in the scope of the Directive.

Recommendation: Based on the considerations above extension the scope of the Seveso II Directive with a new category 'flammable solids' is not recommended by the TWG.

3.1.3 Self-heating substances

CLP Definition: A self-heating substance or mixture is a liquid or solid substance or mixture, other than a pyrophoric liquid or solid, which, by reaction with air and without energy supply, is liable to self-heat; this substance or mixture differs from a pyrophoric liquid or solid in that it will ignite only when in large amounts (kilograms) and after long periods of time (hours or days).

Seveso status: The CLP hazard class of self-heating substances and mixtures is a hazard class which does not exist in the current EU-system (DSD, DPD).

Consideration: Given that this category does not exist in the current classification system, it was necessary to be investigated further whether it should be involved in the Seveso II Directive or not. Self- heating substances have a hazard which - in comparison with those relevant for the new Seveso II Directive -, less or not so relevant with regard to major accidents.

For example waste often has self-heating properties but in the CLP Regulation in Art. 1. No. 3. it is stated: "Waste as defined in Directive 2006/12/EC of the European Parliament and of the Council is not a substance, mixture or article within the meaning of paragraph 1."

The list of self-heating substances is included in Appendix II of this report.

Recommendation: The final proposal was given by the TWG. They agreed that self-heating substances are not relevant for the scope of the new Seveso II Directive therefore they should not to be covered by it.

3.1.4 Corrosive to metals

CLP Definition: A substance or mixture which by chemical action will materially damage, or even destroy, metals.

Seveso status: This is a new hazard class which means it was not included in any EU classification system before not either the current Seveso II Directive.

Consideration: Given that this category of substances does not possibly present a major accident hazard, it is not relevant for the scope of the new Seveso II Directive.

Recommendation: The TWG made a proposal against this consideration, that this category should not be included in the reviewed Seveso II Directive.

Table III in Appendix IV shows a summary of the above mentioned groups of substances which were considered by the TWG not relevant for the scope of the forthcoming Seveso II Directive.

3.2 HAZARD CLASSES WHICH ARE PROPOSED TO BE INCLUDED IN THE NEW SEVESO II DIRECTIVE

Hazard classes with one-to-one translation from CLP

These groups of substances have the characteristic that allows them to be considered as substances and should be included in the new Seveso II Directive without any necessary modifications.

3.2.1 Flammable gases

CLP Definition: A gas or a gas mixture having a flammable range with air at 20 °C and a standard pressure of 101.3 kPa.

Seveso status: The Categories 1 and 2 of this group of substances are covered by the current Seveso II Directive Annex I. Part 2 as "Extremely Flammable (where the substance or preparation falls within the definition given in Note 3 (c)).

Note 3 (c) (2) F^+: gases which are flammable in contact with air at ambient temperature and pressure (risk phrase R12, second indent), which are in a gaseous or supercritical state. The thresholds for these substances are determined with 10 & 50 tonnes in the prevailing Seveso II Directive.

Consideration: Straight translation for Note 3(c)(2). F+; R12 gases in the DSD correspond to Flammable Gases Category 1 and 2 in the CLP Regulation.

Recommendation: The Category 1 and 2 of flammable gases should be included in the revised Seveso II Directive with the same thresholds as those before.

Categories of dangerous substances and mixtures	Lower tier	Upper tier
P2 FLAMMABLE GASES Flammable gases, Category 1 or 2	10	50

3.2.2 Oxidising gases

CLP Definition: An oxidising gas means any gas or gas mixture which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does.

Seveso status: This hazard class already exists in the current Seveso II Directive as OXIDISING (R8).

Consideration: Based on its characteristics the Category 1 of oxidising gases in CLP is equal to the Seveso category of "Oxidising" R8 substances.

Recommendation: Due to the fact that one-to-one translation is possible, the TWG suggested including the oxidising gases Category 1 of the CLP Regulation in the amended Seveso II Directive.

Categories of dangerous substances and mixtures	Lower tier	Upper tier
P4 OXIDISING GASES Oxidising gases, Category 1	50	200

3.2.3 Oxidising liquids and solids

CLP Definition: a) Oxidising liquid means a liquid substance or mixture which, while in itself not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material.

b) Oxidising solid means a solid substance or mixture which, while in itself is not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material.

Seveso status: The hazard class already exists in the current Seveso II Directive as OXIDISING.

Consideration: Straight translation is possible. Liquids with R9 and R8 in DSD correspond to oxidising liquids Category 1, 2 and 3 in the CLP Regulation.

During discussions about oxidising solids the physico-chemical experts of the TWG suggested the inclusion of this category in the amended Seveso II Directive. However others expressed concern that this action could have a major impact on a great number of industries without truly presenting a major hazard.

Recommendation: Based upon the uniformity given in the DSD for oxidising with that in the CLP as oxidising liquids Category 1, 2 and 3, as well as oxidising solids Category 1, 2 and 3 it was proposed by the TWG to include these groups of substances in the revised Seveso II Directive.

Categories of dangerous substances and mixtures	Lower tier	Upper tier
P8 OXIDISING LIQUIDS AND SOLIDS Oxidising Liquids, Category 1, 2 or 3, or Oxidising Solids, Category 1, 2 or 3	50	200

Hazard classes should be covered by the scope of the new Seveso II Directive with modifications

These groups of substances should be kept included in the new Seveso II Directive but for those which already existed in the operative Seveso II Directive the one-to-one translation was not possible.

3.2.4 Explosives

CLP Definition: - An explosive substance or mixture is a solid or liquid substance or mixture of substances, which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic substances are included even when they do not evolve gases.

- A pyrotechnic substance or mixture is a substance or mixture of substances designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative self-sustaining exothermic chemical reactions.
- An unstable explosive is an explosive substance or mixture which is thermally unstable and/or too sensitive for normal handling, transport and use.
- An explosive article is an article containing one or more explosive substances or mixtures.
- A pyrotechnic article is an article containing one or more pyrotechnic substances or mixtures.
- An intentional explosive is a substance, mixture or article which is manufactured with a view to producing a practical, explosive or pyrotechnic effect.

Seveso status: With the amendment of the Seveso II Directive in 2003 the category of explosives were changed, based on the UN/ADR criteria. It meant that those categories are used for the transportation of dangerous goods were implemented into the effective Seveso II Directive. Substances and mixtures having explosive properties (E; R2 or E; R3) are currently covered with a limiting quantity of 10 & 50 tonnes by Annex I, Part 2 of the existing Seveso II Directive.

Additionally, explosives which are packed as for transport UN/ADR Division 1.4 are covered with thresholds 50 & 200 tonnes.

(1) EXPLOSIVE (see Note 2) where the substance, preparation or article falls under UN/ADR Division 1.4.

(2) EXPLOSIVE (see Note 2) where the substance, preparation or article falls under any of: UN/ADR Divisions 1.1, 1.2, 1.3, 1.5 or 1.6 or risk phrase R2 or R3.

Consideration: According to the DSD and the DPD a substance or mixture is classified as explosive if either of the tests according to test method A.14 (Explosive properties)[2] gives a positive result. Test method A.14 consists of the following tests:

- Thermal sensitivity (Koenen test)
- Mechanical sensitivity to impact (Fallhammer)
- Mechanical sensitivity to friction (Friction apparatus)

As a consequence of the new classification system according to the GHS or CLP-Regulation, for details of the testing regime see Annex I, chapter 2.1) a part of the substances or mixtures which are currently classified as explosive are not classified according to the hazard they actually pose.

(1) Where the substance, mixture or article falls under GHS hazard class Explosives, unstable explosives or divisions 1.1, 1.2, 1.3, 1.5 or 1.6 with thresholds of 10 & 50 tonnes. The current entry is already harmonized with the CLP Regulation through use of the ADR-classification. Unstable Explosives have been added, which is a category which does not occur in ADR (since they may not be transported). It has been agreed to take out the definition of Explosives since it exists in the CLP Regulation.

[2] Regulation (EC) No 440/2008 of 30 May 2008 laying down test methods pursuant to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

(2) Where the substance, mixture or article falls under GHS hazard class Explosives, Division 1.4 and is packaged as for transport, with thresholds of 50 & 200 tonnes (see note 1). The current entry is already harmonized with CLP through use of the ADR-classification. In the proposal a clarification is added that unpacked or repacked Explosives of Division 1.4 may no longer be Division 1.4, (see 2.1.3 in Annex I. Part 2 of the CLP). It has been agreed to remove the definition of Explosives since it exists in the CLP Regulation.

Recommendation: Given that the definitions used in UN/ADR correspond to those are in the UN/GHS, the category of explosives are already translated. In order to maintain the current level of protection it is essential that substances and mixtures having explosive properties continue to be covered by the scope of the revised Seveso II Directive (and not only those substances and mixtures that are covered by equivalent entries for explosives, self-reactive substances and mixtures and organic peroxides).

During the 6th meeting of the TWG a new proposal was achieved with adding the reference to the testing method A.14 by the Regulation (EC) No 440/2008 and separate explosive substances from those which are already classified as self-reactive or organic peroxide in order to avoid duplication in the classification. An additional change was the cancellation of the former note 2, which contained the definition of explosives. The definition was included in the current Seveso II Directive because the classification of the explosives was based on the UN ADR regulation. Therefore it was a subsidiary part about how to classify explosives under the current Seveso II Directive. Since the CLP Regulation has its own test methods and definitions for substances and substance groups it would have been unnecessary to leave the long explanation in the Annex I. of the old Seveso II Directive, so the group unanimously proposed to take the note away.

Categories of dangerous substances and mixtures	Lower tier	Upper tier
P1a EXPLOSIVES (see note 2) - Unstable explosives or - Explosives, Division 1.1, 1.2, 1.3, 1.5 or 1.6, or - Substances or mixtures having explosive properties according to method A.14 of Regulation (EC) No 440/2008 (see note 3) and do not belong to the hazard classes Organic peroxides or Self-reactive substances and mixtures	10	50
P1b EXPLOSIVES (see note 2) Explosives, Division 1.4 (see note 4)	50	200

Notes to the table:

2. The hazard class Explosives includes explosive articles (see Section 2.1 of Annex I of the CLP-Regulation). If the quantity of the explosive substance or mixture contained in the article is known, that quantity shall be considered for the purposes of this Directive. If the quantity of the explosive substance or mixture contained in the article is not known, then, for the purposes of this Directive, the whole article shall be treated as explosive.

3. Testing for explosive properties of substances and mixtures is only necessary if the screening procedure according to Appendix 6 (Part 3) of the UN Manual of Tests and Criteria[3] identifies the substance/mixture as potentially having explosive properties.

4. If Explosives of Division 1.4 are unpacked or repacked, they shall be assigned to the entry P1a, unless the hazard is shown to still correspond to Division 1.4, in accordance with Regulation (EC) No 1272/2008.

[3] More guidance on waiving of the test can be found in the A.14 method description, see Regulation (EC) No 440/2008 of 30 May 2008 laying down test methods pursuant to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

3.2.5 Flammable aerosols

CLP Definition: Aerosol dispensers, are any non-refillable receptacles made of metal, glass or plastics and containing a gas compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state.

Seveso status: Aerosols have been considered under "flammables" in the Seveso II Directive, but as the CLP Regulation now has a specific entry for Aerosols, it might be necessary and appropriate to include such an entry in the revised Seveso II.

Consideration: The current situation was highlighted by the HSE. According to their consideration the classification and designation of flammable aerosols is complex and has evolved over many years, starting in 1961 with the adoption of RID/ADR and moving to the present day with discussions on the method of the CLP Regulation. A full summary of this historical information is appended.

These ongoing changes in classification and treatment bring the Member States to the current discussions on the implementation of the CLP Regulation and the possible inclusion of flammable aerosols as a specific entry in the new Seveso II. It is evident that the consideration of the possibility of aerosols being flammable, and their contents being classified as such, is not new.

Implementation of CLP brings the opportunity for a new consideration, the adoption of the category of ‘flammable aerosol’ in CLP will be a continuation of the present situation, all be it regarding the aerosol as an item, rather than classifying on the basis of flammable components, thus ensuring continued public safety. As the method of assignment under CLP will use identical criteria to those already in global acceptance. This possible inclusion in the amended Seveso II Directive brings the need to establish the inventory of flammable materials held.

The TWG investigated the issue and outlined some possible entries and thresholds for flammable aerosols:

Option 1 has been figured out depending on the flammability of the propellant - thresholds are 150 & 500 tonnes if the propellant is flammable and with thresholds of 5.000 & 50.000 tonnes in case the propellant is non-flammable for Category 1 and Category 2 substances.

This option makes allowance for aerosols using both flammable (LPG) and non-flammable (CO_2) propellants. Separate threshold quantities are proposed for each propellant group, with those using non-flammable propellants having considerably higher thresholds.

Option 2 based on the category of the flammable aerosol, which means if the flammable aerosol is included in Category 1, then thresholds are 75 &300 tonnes; if the flammable aerosol is in Category 2, then thresholds are 250 & 1.000 tonnes.

Following this proposal some Member States investigated the possible impacts of the proposed options and came back to the group with several suggestions.

The information available suggests that the major components of flammable aerosols pressurised using non-flammable propellants are petroleum distillates. At present petroleum distillates have a Lower Tier threshold quantity of 2500 tonnes. A 10-fold reduction in the threshold quantity to 250 tonnes would have a considerable impact on companies holding this material in aerosol form.

Either in Option 1 or Option 2 it is important to clear that Category 1 refers only to flammable liquids and not to flammable gases.

Option 1 a) – flammable aerosols using flammable propellants

The analysis performed using an assumed average LPG content of 30% found that sites operating just below the lower and upper tier thresholds are likely to be affected by a change in their regulatory status. The number of sites affected by this cannot be determined at the present time with the information available to the author. A limited number of discussions with the industry would suggest, however, that sites may choose to decrease stock levels slightly to retain their present position.

Option 1 b) – flammable aerosols using non-flammable propellants

The method of treatment of flammable aerosols using non-flammable propellants appears satisfactory as it is likely to use the same thresholds for those which are already be applied to flammable liquids of the type commonly used in these products. Exceptions would be to those fluids with flashpoints above 55^{o}C, which are not currently regarded as flammable. The number of sites holding these products is not known.

Option 2

At present Option 2 might not be workable without considerable effort from manufacturers, or the operators of major hazard sites, for the following reasons:

- Manufacturers appear not to be applying correct classifications to their products; and,

- Operators are only required to record the quantity of flammable aerosols held. There is no requirement to record separate tonnages for extremely flammable (Category 1) and flammable (Category 2) aerosols.

- It is not possible to use the transport document with option 2; for Class 2 (gases), the division 2.1 (flammable gases) does not differentiate between flammable aerosols Category1 and 2.

- Warehouses do not have the information on classification Category1 and 2 in their databases. Regulations do not require the transmission of safety data sheets for cosmetics, food, aerosols which represent the majority of aerosol products.

- Aerosols which do not follow the testing scheme are automatically classified Category 1.

Recommendation: In order to keep the impact as low as possible and not to increase the burden to the industry, the TWG finally proposed to keep the Option 1 as two possible entries in the new Seveso II Directive.

Categories of dangerous substances and mixtures	Lower tier	Upper tier
P3a FLAMMABLE AEROSOLS (see note 5.1) "Extremely flammable" or "Flammable" aerosols, containing flammable gases Category 1 or 2 or flammable liquids Category 1	150	500
P3b FLAMMABLE AEROSOLS (see note 5.1) "Extremely flammable" or "Flammable" aerosols, not containing flammable gases Category 1 or 2 nor flammable liquids category 1 (see note 5.2)	5.000	50.000

Notes to the table

5.1. Flammable aerosols are classified in accordance to the Aerosol Dispensers Directive 75/324/EEC. 'Extremely flammable' and 'Flammable' aerosols of Directive 75/324/EEC correspond to Flammable Aerosols Category 1 or 2 respectively of Regulation (EC) No 1272/2008.

5.2. In order to use this entry, it must be documented that the aerosol dispenser does not contain Flammable Gas Category 1 or 2 nor Flammable Liquid Category 1.

3.2.6 Flammable liquids

CLP Definition: Flammable liquid means a liquid having a flash point of not more than 60 °C.

Seveso status: The category of flammable liquids is currently covered by the old Seveso II Directive, but those three entries have different flash point limits.

Consideration: Even if the flash-point limits of 21°C and 55°C currently used in the DSD are replaced by 23°C and 60°C following the implementation of the CLP, the TWG has identified an easy alignment option for flammable liquids using the new categories 1, 2 and 3:

- Thresholds of 5 000 / 50 000 tonnes for flammable liquids, Categories 2 or 3
- Thresholds of 50 / 200 tonnes for flammable liquids, Categories 2 or 3, where particular processing conditions, such as high pressure or high temperature, may create major accident hazards
- Thresholds of 10 / 50 tonnes for flammable liquids, Category 1 or flammable liquids, Category 2 or 3 maintained at a temperature above their boiling point.

However, according to the Chapter 2.6.4.5 of Annex I of the CLP Regulation "*Liquids with a flash point of more than 35°C need not be classified in Category 3 if negative results have been obtained in the sustained combustibility test L.2, Part III, section 32 of the UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria.*"

This means that liquids with a flash point of more than 35°C may not be classified as Category 3 liquids and not be included in the scope of the modified Seveso directive if the wording agreed on as a working basis during last TWG meeting is finally implemented.

Recommendation: In order to avoid the gap in the scope of application it is necessary to use the same kind of wording as in the current Seveso II Directive, which would mean:

Categories of dangerous substances and mixtures	Lower tier	Upper tier
P5a FLAMMABLE LIQUIDS - Flammable liquids, Category 1, or - Flammable liquids Category 2 or 3 maintained at a temperature above their boiling point, or -Other liquids with a flash point • 60°C, maintained at a temperature above their boiling point (see note 6)	10	50
P5b FLAMMABLE LIQUIDS - Flammable liquids Category 2 or 3 where particular processing conditions, such as high pressure or high temperature, may create major-accident hazards, or - Other liquids with a flash point • 60°C where particular processing conditions, such as high pressure or high temperature, may create major-accident hazards (see note 6)	50	200
P5c FLAMMABLE LIQUIDS - Flammable liquids, Categories 2 or 3 not covered by P5a and P5b	5.000	50.000

Note 6 :

According to 2.6.4.5 in Annex I of Regulation (EC) No 1272/2008, liquids with a flash point of more than 35 °C need not be classified in Category 3 if they do not sustain combustion. This is however not valid under elevated conditions such as high temperature or pressure, and therefore such liquids are included in this entry.

3.2.7 Self reactive substances and mixtures / organic peroxides

CLP Definition: Self-reactive substances and mixtures are thermally unstable liquid or solid substances or mixtures liable to undergo a strongly exothermic decomposition even without participation of oxygen (air). This definition excludes substances and mixtures classified according to this Part as explosives, organic peroxides or as oxidising.

Organic peroxides are liquid or solid organic substances which contain the bivalent -O-O- structure and may be considered derivates of hydrogen peroxide, where one or both of the hydrogen atoms have been replaced by organic radicals.

These hazard categories are discussed under the same group because their classification tests and criteria are the same.

Seveso status: Although the hazard class of self-reactive substances and mixtures has not existed as such in the DSD, substances and mixtures in this class mainly have properties which also lead to classification under the DSD (e.g. as substances having explosive properties or as flammables).

Organic peroxides are classified as Oxidising - R7 (assignment based on chemical structure and composition, no test required) under the DSD and in addition are classified as Explosive - R2 or Explosive - R3 if explosive properties according to the test method A.14 are observed.

Consideration: Organic peroxides are classified as Oxidising - R7 under the current Seveso II Directive as entry 3 of Annex I, Part 2 with a threshold of 50 t and 200 t. Organic peroxides which have explosive properties are classified as Explosive - R2 and are then assigned to current entry 5 of Annex I, Part 2 with a threshold of 10t and 50t. Self-reactive substances are currently not covered by Seveso as such but they are covered if they have other hazardous properties such as explosive properties, flammability (or health or environmental hazards).

The classification procedure for self-reactive substances and mixtures, and organic peroxides in the CLP Regulation is exactly the same, which clearly shows that they pose the same hazard and should be covered under the new Seveso in the same way.

Organic peroxides and self reactive substances and mixtures Types A and B are classified in DSD as Explosives (R2 or R3), this is a straight translation. Organic peroxides are classified Oxidising - R7 in DSD, unless they are R2 or R3.
Straight translation is from Oxidising - R7 in DSD to Organic Peroxides Type C, D, E or F in CLP.
Organic peroxides and self-reactive substances and mixtures Type G are exempt from ADR and have no hazard communication elements in CLP. They should therefore also be exempt here.

Recommendation: Since self-reactive substances and mixtures as well as organic peroxides of Types A and B have explosive properties, they are most similar to the current entry 5 of Annex I, Part 2 of the operative Seveso II Directive (substances having explosive properties: Explosive - R2 and Explosive - R3 and UN divisions 1.1 to 1.3 and 1.5 and 1.6). Therefore they should be covered with the same threshold - 10 t and 50 t. Organic peroxides and self reactive substances and mixtures Types C to F are currently covered by entry 3 of Annex I, Part 2 of the Seveso II Directive (oxidising, this entry includes Oxidising - R7 which comprises organic peroxides). Therefore, organic peroxides of Types C to F should be covered with the same threshold - 50 t and 200 t.

Categories of dangerous substances and mixtures	Lower tier	Upper tier
P6a SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES Self-reactive substances and mixtures, Type A or B or organic peroxides, Type A or B	10	50
P6b SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES Self-reactive substances and mixtures, Type C, D, E or F or organic peroxides, Type C, D, E, or F	50	200

3.2.8 Pyrophoric liquids

CLP Definition: Liquids which, even in small quantities, are liable to ignite within five minutes after coming into contact with air.

Seveso status: The category of pyrophoric liquids is included in the current Seveso II Directive as highly flammable liquids with risk phrase R17.

Consideration: There is a straight translation for the first indent of current Note 3(b) (1), since category of highly flammable liquids with R-phrase R17 corresponds directly to Pyrophoric liquids Category 1.

Recommendation: The TWG would suggest that Pyrophoric liquids CLP Category 1 should be included in the modified Seveso II Directive.

Categories of dangerous substances and mixtures	Lower tier	Upper tier
P7 PYROPHORIC LIQUIDS Pyrophoric liquids, Category 1	50	200

3.2.9 Pyrophoric solids

CLP Definition: Solids which, even in small quantities, are liable to ignite within five minutes after coming into contact with air.

Seveso status: The category of pyrophoric solids is not included in the existing Seveso II Directive.

Consideration: During the discussions the physico-chemical experts of the group suggested the inclusion of this category in the new Seveso II Directive. However some members from the group expressed their concern that this action could have impact on a number of industries.

Recommendation: The TWG suggested not to include this category of substances in the new Seveso II Directive. However there were discussions about to include this category, since they practically exactly the same definition/hazard as pyrophoric liquids. Against to include them is that these solids were not covered before.

3.3 ANY CLASSIFICATION IS NOT COVERED – "OTHER" HAZARDS

3.3.1 Substances or mixtures with hazard statement EUH014

CLP Definition: Substances and mixtures that react violently with water.

Seveso status: The current Annex I Part 2 of the Seveso II Directive, entry number 10, reads ”ANY CLASSIFICATION not covered by those given above in combination with risk phrases:

(i) R14: ‘Reacts violently with water’ (including R14/15)

(ii) R29: ‘in contact with water, liberates toxic gas’

Considerations: In the new Annex I Part 2, this entry is changed to ”Substances and mixtures with hazard statement EUH014” and ”Substances and mixtures with hazard statement EUH029” respectively, for the following reasons:

a) Since both R14 and R29 are risk phrases that can only occur in combination with another classification, i.e. they are not ”stand alone” classifications (CLP-Regulation, Annex II, 1.), the wording ”in combination with” is superfluous. It is already inherent in the conditions for assigning these two risk phrases that they occur in combination with other risk phrases.

   Therefore: the words “in combination with” can be deleted.

b) Note 1 of both the current and proposed Annex I part 2 includes the text: *“In the case of substances and mixtures with properties giving rise to more than one classification, for the purposes of this Directive the lowest qualifying quantities shall apply.”*

   Note 1 thus prescribes that the lowest thresholds shall be considered for a substance/mixture that falls under more than one entry. This makes it clear that the wording "ANY CLASSIFICATION not covered by those given above" is superfluous, as well as being in contradiction with the requirement that the lowest qualifying quantities shall apply. If a substance falls under this particular entry (current entry number 10) as well as under an entry "above", the lowest thresholds shall apply as this is in accordance with the guiding principle given in Note 1.

Therefore: the words ”ANY CLASSIFICATION not covered by those given above” can be deleted.

c) R14 and R29 have been retained in the CLP as ”EU left-over” hazard statements, and have the new designations of EUH014 and EUH029. Therefore: ”R14” should be replaced with ”EUH014”, and ”R29” should be replaced with ”EUH029”.

d) It is superfluous to spell out the text of the hazard statements – this is not done for any other hazard statements.

Therefore: the text of the hazard statements EUH014 and EUH029 can be omitted.

e) It is proposed that the CLP-equivalent of R14/R15 becomes a separate entry in the new Annex I Part 2 (see at Chapter 3.3.2). This would make it redundant to mention (the CLP-equivalent of) R14/R15 in the EUH014-entry.

Therefore: the words ”(including R14/15)” can be deleted, provided that the CLP-equivalent of R14/R15 becomes a separate entry in the new Annex I Part 2.

f) With the above deletions and substitutions, all that remains is

EUH014

EUH029

However, some explanatory text needs to be added in order to make the entries understandable.

Recommendation: Based upon the above mentioned considerations the TWG agreed on the suggested entries in the new Annex I Part 2 which are:

”Substances and mixtures with hazard statement EUH014”, and
”Substances and mixtures with hazard statement EUH029”

3.3.2 Substances and mixtures which in contact with water emit flammable gases

CLP Definition: Substances and mixtures which, in contact with water, emit flammable gases means solid or liquid substances or mixtures which, by interaction with water, are liable to become spontaneously flammable or give off flammable gases in dangerous quantities.

Seveso status: The current Annex I. Part 2 of the Seveso II Directive includes the entry "Any classification [...] in combination with R14 (including R14/R15)".

Considerations: In the new Annex I, the classification R14/15 from this entry has been translated into the CLP-classification ‘Substance and mixtures which is contact with water emit flammable gases’ Category 1.

In the classification system of DSD/DPD, the risk phrase R15 (contact with water liberates extremely flammable gas) is assigned to substances/mixtures that react with water to produce flammable gases. For substances/mixtures that not only react with water to produce flammable gases but where this reaction is also violent, R14 (reacts violently with water) is also assigned to form the combination R14/15 (reacts violently with water, liberating extremely flammable gases).

The DSD/DPD risk phrase R14 has been retained as an “EU left-over” hazard statement in the CLP, with the designation EUH014. EUH014 is thus the exact correspondence to R14. However, there is no criteria at all for when R14 or EUH014 should be assigned.

The classification R15 corresponds to the entire CLP hazard class 'Substances and mixtures which in contact with water emit flammable gases', and has three categories. Equivalent test methods are used in both systems to determine the classification, and R15 can be translated to either Category 1, 2 or 3 of this hazard class.

Without resorting to test data, there is, however, no way of knowing to which of these three categories a substance/mixture classified with R15 belongs.

In the CLP-system, the substances/mixtures reacting most violently with water are assigned to Category 1 of the hazard class 'Substances and mixtures which in contact with water emit flammable gases'.

The criteria for inclusion in Category 1 are (quote from Table 2.12.1 in Annex I of the CLP):

"Any substance or mixture which reacts vigorously with water at ambient temperatures and demonstrates generally a tendency for the gas produced to ignite spontaneously, or which reacts readily with water at ambient temperatures such that the rate of evolution of flammable gas is equal to or greater than 10 litres per kilogram of substance over any one minute."

Comparison of the above-cited criteria for Category 1 of ‘Substances and mixtures which in contact with water emit flammable gases’ and the text of the combined risk phrase R14/15, i.e. “Reacts violently with water, liberating extremely flammable gases”, shows that the reasons for assignment are similar – i.e. that a substance/mixture reacts violently/vigorously/readily with water and emits flammable gases.

Recommendation:

a) Since there are no criteria for R14 (or EUH014), the grounds for assigning R14/R15 are also unclear. This ambiguity is overcome by relying on the clear criteria of Category 1 of the hazard class "Substances and mixtures which in contact with water emit flammable gases", and

b) Category 1 of the hazard class "Substances and mixtures which in contact with water emit flammable gases" comprises substances/mixtures that do react violently with water, and

c) Category 1 of "Substances and mixtures which in contact with water emit flammable gases" inherently covers the old R14 for substances/mixtures that emit flammable gases upon contact with water. This category therefore corresponds to R14/R15, as closely as can be argued in the absence of criteria for R14, and

d) Substances/mixtures that produce great amounts of flammable gas upon contact with water, where, in addition, the gases may self-ignite, present a major accident hazard.

For these reasons, Category 1 of the hazard class "Substances and mixtures which in contact with water emit flammable gases" should be included explicitly in the CLP-adapted proposal for Annex I Part 2 of the revised Seveso II Directive.

3.3.3 Substances or mixtures with hazard statement EUH029

CLP Definition: Substances or mixtures which contact with water liberates toxic gas.

Seveso status: The current Annex I Part 2 of the Seveso II Directive, entry number 10, reads ”ANY CLASSIFICATION not covered by those given above in combination with risk phrases:

(i) R14: ‘Reacts violently with water’ (including R14/15)

(ii) R29: ‘in contact with water, liberates toxic gas’

Considerations: In the new Annex I Part 2, this entry is changed into ”Substances and mixtures with hazard statement EUH014” and ”Substances and mixtures with hazard statement EUH029”, respectively, for the following reasons – see above at chapter 3.3.1.

g) R14 and R29 have been retained in the CLP as ”EU left-over” hazard statements, and have the new designation EUH014 and EUH029.
Therefore: ”R14” should be replaced with ”EUH014”, and ”R29” should be replaced with ”EUH029”.

h) It is superfluous to spell out the text of the hazard statements – this is not done for any other hazard statements.
Therefore: the text of the hazard statements EUH014 and EUH029 can be omitted.

i) It is proposed that the CLP-equivalent of R14/R15 becomes a separate entry in the new Annex I Part 2 (see separate document for the justification of this). This would make it redundant to mention (the CLP-equivalent of) R14/R15 in the EUH014-entry.
Therefore: the words ”(including R14/15)” can be deleted, provided that the CLP-equivalent of R14/R15 become a separate entry in the new Annex I Part 2.

j) With the above deletions and substitutions, all that remains is
EUH014; EUH029
However, some explanatory text needs to be added in order to make the entries understandable.

Recommendation: Based upon the above mentioned considerations the TWG agreed on the suggested entries in the new Annex I Part 2 which are:

”Substances and mixtures with hazard statement EUH014”, and
”Substances and mixtures with hazard statement EUH029”

Categories of dangerous substances and mixtures	Lower tier	Upper tier
O1 Substances or mixtures with hazard statement EUH014	100	500
O2 Substances and mixtures which in contact with water emit flammable gases, Category 1	100	500
O3 Substances or mixtures with hazard statement EUH029	50	200

During the meetings an open discussion started whether this other hazards should be included within the physical or health hazards? In the 6th meeting the group suggested to put them into there but later it was proposed to take them out and deal with these categories of substances as separate entries as “other” hazards.

4. Environmental hazards

CLP Definitions: **Acute aquatic toxicity** means the intrinsic property of a substance to be injurious to an organism in a short term exposure to that substance.

Chronic aquatic toxicity means the intrinsic property of a substance to cause adverse effects to aquatic organisms during exposures which are determined in relation to the life-cycle of the organism.

Seveso status: Two categories exist in Annex I. Part 2 of the Seveso II Directive for environmental hazards.

Consideration: There is a near direct match between the current classification system and the CLP for environmental hazards, so a direct alignment has been suggested by the TWG.

Recommendation: Given that a direct match is possible between the current classification and that which is given in the CLP Regulation, the TWG recommends retaining two categories for environmental hazards. According to the classification categories provided in the CLP the two entries should be:

a) Hazardous to the Aquatic Environment Category Acute I, Chronic I: where the substance or mixture falls under the CLP hazard class Acute Category 1 and Chronic Category 1. It means straight translation form R50 and R50/53 in DSD to CLP Acute Category 1 and to Chronic Category 1, respectively.

b) Hazardous to the Aquatic Environment Category Chronic II: where the substance or mixture falls under the CLP Chronic Category 2. Straight translation from R51/53 in DSD to Aquatic Chronic Category 2.[4]

Categories of dangerous substances and mixtures	Lower tier	Upper tier
E1 Hazardous to the Aquatic Environment in Category Acute I or Chronic I	100	200
E2 Hazardous to the Aquatic Environment in Category Chronic II	200	500

[4] Unless the chronic toxicity NOECs of relevant organisms are >1 mg/l

5. Health hazards

5.1 OPTIONS FOR HEALTH HAZARDS

Members of the TWG have developed alternative options for alignment of health hazards from CLP. The working group followed the two main objectives which were stated in the chapter 2 relating to health hazards.

5.1.1 The 1st TWG meeting

During the 1st meeting of the TWG the so-called "Health hazard subgroup" investigated the options of how to match the DSD/DPD and Seveso II Directive to the CLP health categories. The graph below shows the alignment between acute toxicity categories in the DSD and CLP. It is very clear that straight translation is nearly impossible without extension/reduction in the scope of the Seveso II Directive since the line between the certain intake routes is not straightforward. Therefore the TWG had to come up with a solution for how to deal with these discrepancies.

Proposed option: By the end of the 1st meeting some proposals were made up based on the considerations. Proposal by MAHB for provisional structure is to take out existing T+ - values with existing thresholds as named substances, CLP Category1, CLP Category 2 with existing T – thresholds with Category 2 and parts of Category 3 with further scrutiny on additional conditions for Category 3; for gases, vapours and aerosols adaptation to given borders between Categories 2 and 3 with additional scrutiny for gases.

Remarks: REACH will provide information on the toxicity data.
Further research on future classification is needed.
Self-classification is a big burden on the industry.
Concern that the proposal might lead to overlooking of other possibly important single substances.

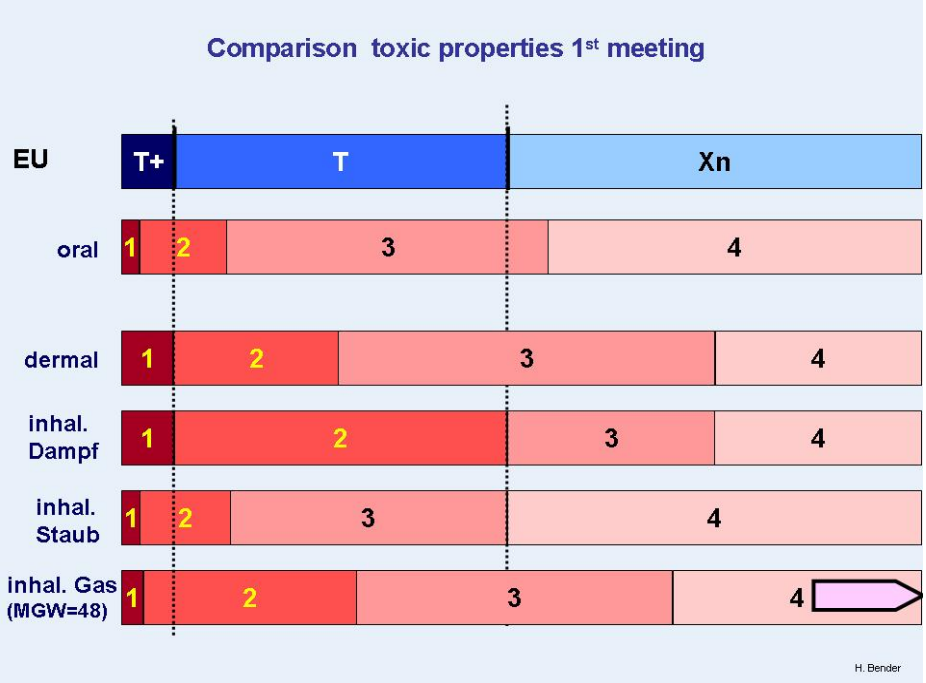


Figure 1: Comparison of EU and CLP toxicity categories depending on intake route

5.1.2 The 2nd TWG meeting

After the 2nd meeting of the TWG on Seveso and GHS the group carried out a more precise approach with 3 possible alternatives. These are referred to as Option 1, Option 2 and Option 3. The TWG reached general agreement that T+ should be equal to CLP Category 1 and T to Category 2, but as illustrated by the graph above by Professor Herbert Bender, this would imply a decrease in the scope of the Directive that will need more T-named substances (Category 3 substances).

Each option has its differences and the following points will highlight some of these.

Proposed option:

Option 1:

- Suggests a simple alignment with an addition of named substances. Furthermore the option is characterised by suggesting a screening tool that would consider whether a given substance should be included, based on whether it is in Category 3, on its exposure route, and on its LD/LC50 values, etc. Briefly it means that T category substances under the existing Seveso II Directive aligned with Category 2 substances + named substances and/or use of a screening tool to screen in (see Figure 3).

Option 2:

- Aims to maintain the scope of the current Seveso II Directive, however, supports a slight increase in scope for substances in oral test areas and a slight increase for gases. According to this proposal new T category includes Category 3 substances for oral, inhalative dust and inhalative gas intake routes; it also includes Category 3 substances for dermal intake, but only for those cases that are not classified as Category 3 for inhalative vapour.

Option 3:

- Suggests a slight decrease in the scope of the new Seveso II Directive with removing from the scope the Category 3 substances in oral, dermal and inhalation vapours and gases (except those which should be included based on screening tools). It means that the new T category for the current Seveso II Directive includes Category 3 substances only for inhalative dust + use screening tool for inhalative gas Category 3.

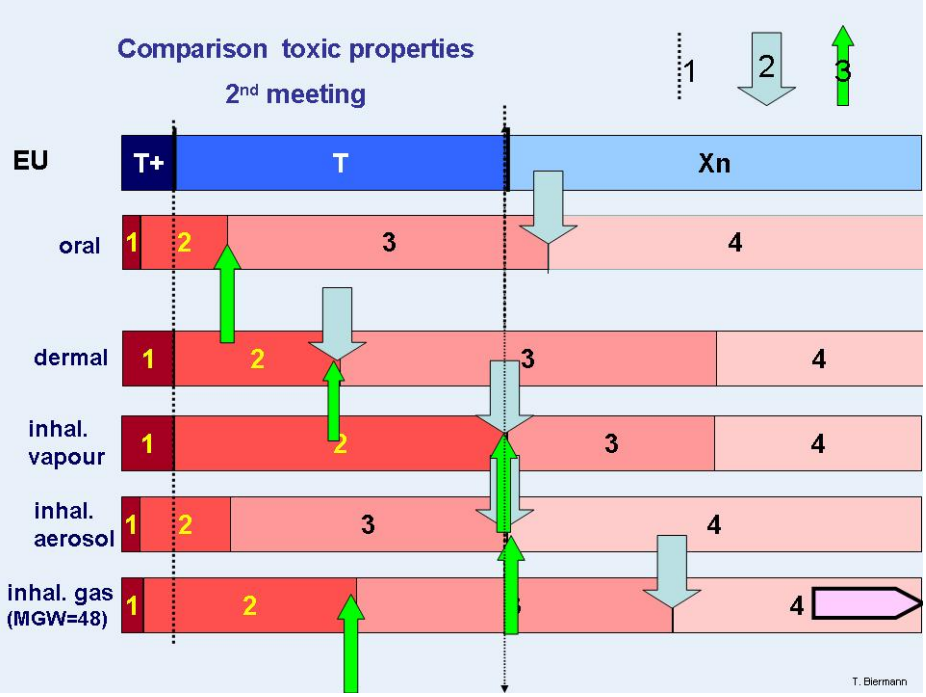


Figure 2: Comparison of EU and CLP toxicity categories depending on intake route based on the 2nd meeting discussions

5.1.3 The 3rd TWG meeting

During the 3rd meeting the TWG discussed the options which had been provided during the 2nd meeting by certain MS, giving detailed descriptions of the method. The aim of these methods was to ascertain the simplest way to implement the CLP Regulation in the amended Seveso II Directive.

Screening tool for Option 1:

Inhalation The CLP classification for substances tested as a gas is based on the 4h LC_{50} value expressed as ppm. For the purposes of this screening tool the LC_{50} value for gases must be converted to mg/l units.

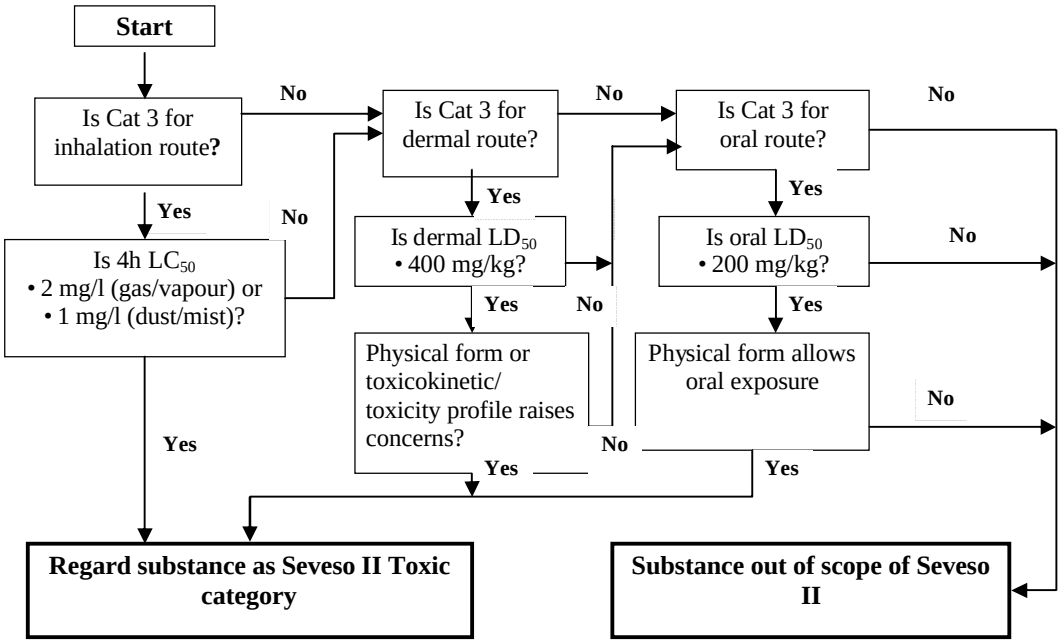
Dermal For the dermal route, the physical form or toxicokinetic/toxicity profile is considered to cause concerns that acute toxicity could be expressed following an accidental release from a major hazards site if:

- Substance can be deposited on skin as liquid/dust; note that liquids of moderate (0.5 - 25 kPa) or high (>25 kPa) vapour pressure at process temperature would be considered to have minimal contact with the skin as a liquid, **and**
- It can be rapidly absorbed through the skin, such that serious health effects could occur following exposure to the dermal LD_{50} for a brief (<1h) exposure period; **or**
- Brief exposure causes serious site of contact effects (i.e. skin corrosion)

If information on the physical form or toxicokinetic/toxicity profile is limited or ambiguous then worst case assumptions will be made.

Oral With respect to the oral route, in general significant exposure via oral ingestion is not expected following an accidental release from a major hazards site and therefore most substances will be considered to have a physical form that does not allow oral exposure.

Figure 3: Screening tool for substances with overall GHS acute toxicity classification of Category 3 according to Option 1



Tool for Option 2:

Column 1	Column 2	Column 3
Categories of dangerous substances	Qualifying quantity (tonnes) of dangerous substances as delivered in Article 3 (4) for the application of	
	Article 6 and 7	Article 9
ACUTE TOXIC where the substance or mixture falls under CLP hazard class: Acute toxic, category 1	5	20
ACUTE TOXIC where the substance or mixture falls under CLP hazard class: Acute toxic, categories 2 and 3, except: – category 3 for intake route "inhalation/vapours", – category 3 for intake route "dermal", if the substance or mixture is classified as category 3 for intake route "inhalation/vapours" also.	50	200

Figure 4: Tool for Option 2

Inhalation Vapours CLP Category 2 is completely identical to the EU classification “toxic” (T). Therefore it is not necessary to include Category 3.

Inhalation Aerosols Due to different concentration limits Category 2 may also contain substances at present classified as “very toxic” with a LD_{50} value in the range of 0.05 to 0.25 mg/l . Category 3 is completely covered by the current EU category “toxic” (T).

Inhalation Gases Both Categories 2 and 3 are to be assigned to EU category “toxic”. For substances at present classified as “very toxic” the same applies as for the intake route “inhalation/vapours”.

Dermal EU classification "toxic" (T) covers CLP Category 2 completely as well as a major part of Category 3. Including Category 3 completely would lead to a significant expansion of the scope of the new Seveso II Directive, as EU classification "toxic" (T) (dermal) applies to LD_{50} values of 50 to 400 mg/kg body weight, whereas CLP Category 3 applies to LD_{50} of 200 to 1000 mg/kg body weight. In order to modify the scope of the revised Seveso II Directive as little as possible it should be assigned to the intake route “dermal” of the EU classification “toxic” the substances of CLP Category 2 and those of Category 3 which are not classified at the same time as Category 3 for the intake route “inhalation/vapours”. This means that substances which are classified as Category 3 for both intake routes “dermal” and “inhalation/vapours” are not to be taken into account. The proposal is based on the toxicological insight that for human beings the exposure to a substance via the dermal intake route in general is not higher that the exposure due to inhalation of the vapours.

Oral The EU classification “toxic” (oral) is covered by CLP Categories 2 and 3. Due to concentration limits which are not identical some substances will have to be added. These are Xn (EU) substances with LD_{50} values of 200 to 300 mg/kg body weight and possibly T+ (EU) substances with LD_{50} values of 5 to 25 mg/kg body weight.

5.1.4 The 4th TWG meeting

At the 4th meeting of the TWG a new option, the so-called "Decision tree" which was referred to as Option 4.

Option 4: "Decision tree" approach

According to this suggestion T+ also means CLP Category 1 substances. As for T substances there is a priority concerning the intake route. According to this approximation the first intake route is acute toxic inhalative, since it can contribute to the occurrence of major accidents. Dermal and oral intake routes have a lower rating, since they are not involved in triggering major accidents as frequently as the inhalation route.

This means that if no data is available for inhalation intake route for vapours and gases Category 2, neither for aerosols Category 2 nor Category 3, then it needs to go to the next level. The next step signifies the dermal intake route Category 2. In that case if there is no available data, then we should go forward to oral intake route Category 2 and Category 3.

Column 1	Column 2	Column 3
Categories of dangerous substances and mixtures	Qualifying quantity (tonnes) of dangerous substances as delivered in Article 3 (4) for the application of	
	Lower tier	Upper tier
ACUTE TOXIC where the substance or mixture falls under GHS hazard class: Acute toxic, category 1	5	20
ACUTE TOXIC where the substance or mixture falls under GHS hazard class: 1. Acute toxic, inhalative route: vapour and gases category 2 aerosols categories 2 and 3 2. If no inhalative data are available: Acute toxic, category 2 via dermal route 3. If neither inhalative and dermal data are available: Acute toxic categories 2 and 3 via oral route	50	200

Decision tree approach

At the 4th meeting all possible options had been changed and finally converged with each other. The latest version of the 4 options can be seen below in Figure 5.

Option 1 — Means T category substances under the current Seveso II Directive aligned with CLP Category 2 substances + named substances and/or use of screening tool to screen in according to the figure of screening tool (see Figure 3).

Options 2-3-4 — Means the new T category includes Category 3 substances for oral and inhalative aerosols intake routes; it includes Category 2 only for dermal route, inhalative vapour and gases intake routes. Inhalative gases Category 3 is not included.

Remarks: A substance list is needed for dermal exposure route values in Category 3 LD50 values between 200 and 400 mg/kg.

Oral exposure route Category 3 should be in - especially for LD50 values between 200 and 300 mg/kg. Investigation is needed.

Take into consideration gases Category 1 and Category 2 - 5 substances should join the group of named substances (NH_3, SO_2, sulphuryl-difluoride with thresholds 50/200 and CO, H_2S with appropriate thresholds for toxic and flammable properties. 2 substances, the boron-trifluoride and the methyl-mercaptan are to be checked.

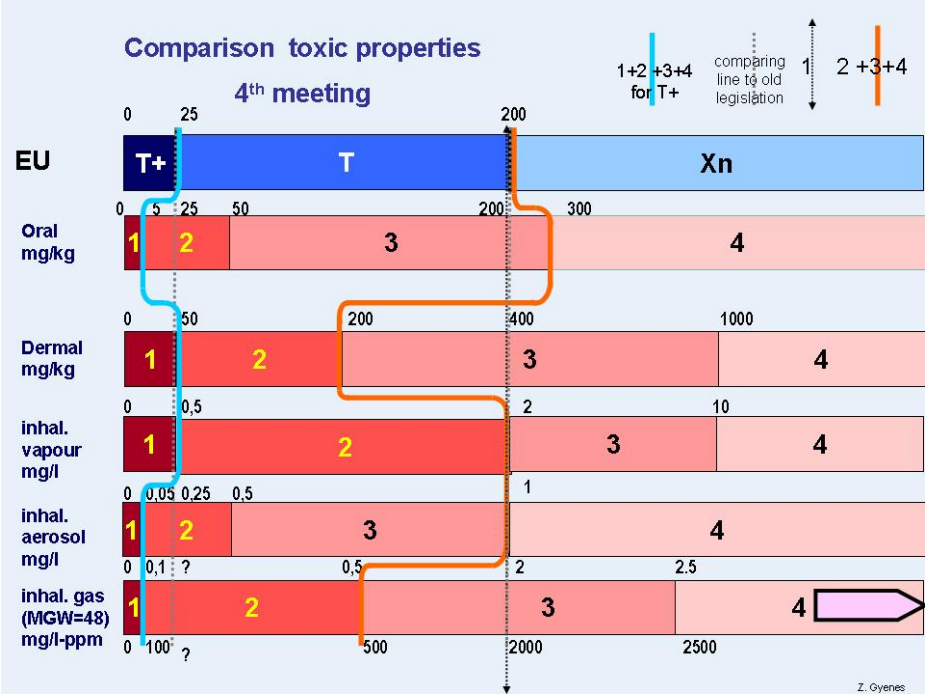


Figure 5: Comparison of EU and CLP categories depending on intake route based on the 4 options after the 4th meeting

5.1.5 The 5th TWG meeting

At the 5th meeting the TWG discussed the areas which do not match the current EU system and identified substances in these fields. The areas A1 - Oral Category 2 - and A5 – Inhalative aerosols Category 2 (see Figure 6 below) are T+ substances which are classified under the CLP as Category 2. If the translation was straightforward it would reduce the scope of the new Seveso II Directive due to the reduction in the classification of these chemicals. The list of substances for areas A1 and A5 are described in Appendix III. Also the option of a precautionary alignment has arisen as a possible option for the implementation of health hazards. These considerations are illustrated in Figure 6 below.

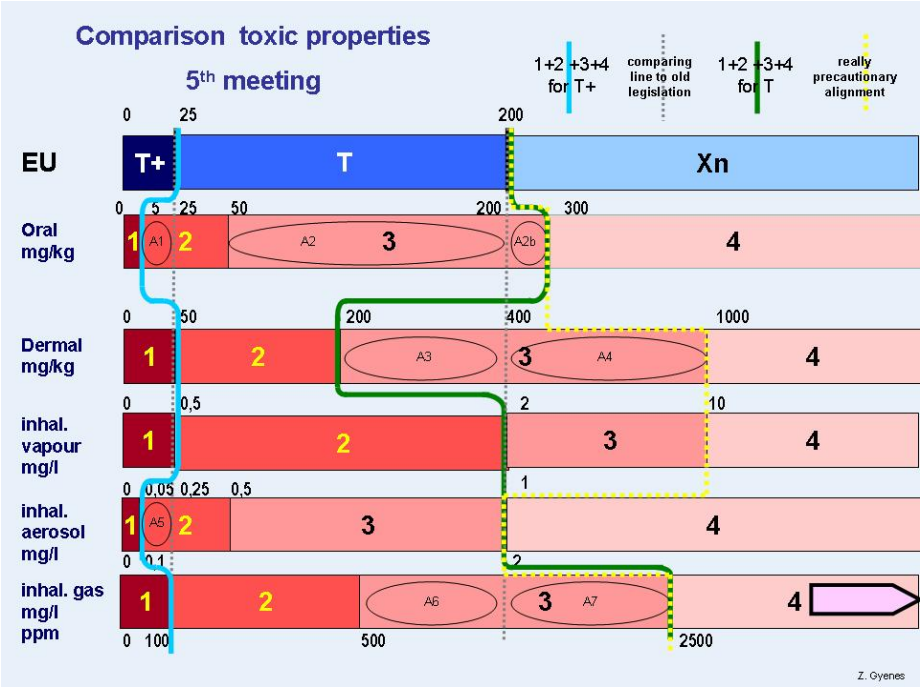


Figure 6: Additional possible option: a precautionary alignment at the 5th meeting

5.1.6 The 6th TWG meeting

At the 5th meeting further work was carried out by the TWG whereupon at the 6th meeting the group checked through the list of named substances in order to decide which of them should be kept as named ones and which of them should be eliminated. They considered the areas A2 and A2b; A3, A4, A6 and finally A7. The group defined a new area, identified as A5b, being the second part of the inhalation aerosols classified under Category 2 and for which its relevant substances should be established. Figure 7 demonstrates these fields and the list of identified substances are included in Appendix III. The group reviewed many named substances and removed some of them.

The rest of these substances have been added to draft Annex I. Part 1 of the Seveso II Directive which can be found in the Appendix I. of this report. Another discussion was started about the Area 1, Area 3 and Area 5 in order to identify other classifications for these substances. The group agreed that it might be better to see R-phrases and the toxicity data for the substances concerned to decide whether some of the mentioned ones should be classified in accordance with the Area 1 instead of Area 3 and Area 5. Since the resources for toxicity data are not identical it made the research very difficult.

One aim of the group was to identify as much substances as possible as candidates for named substance for a possible compensation if such area is not taken by a different option, problematic of "unequal treatment if you only identify a few, concept of generic categories much better than "individual named substances. The list of substances from A3 and A5 are included in Appendix III. By the end of the 6th meeting the green line in Figure 7 emerged as a possible way forward.

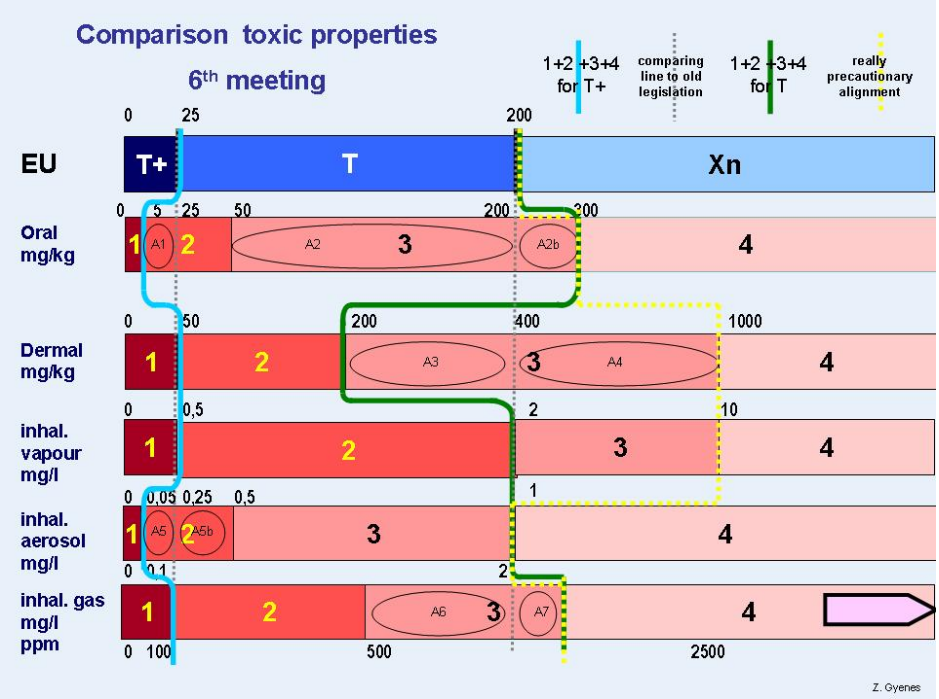


Figure 7: Substances in Area A5b at the 6th meeting

Conclusions for health hazards: For the health hazards, the emerging result from the TWG was to keep Category 1 substances as the old T+ with some named substances which under CLP are classified as Acute Category 2 but still T+, meanwhile for toxic substances there became some extensions and reductions in the modified Seveso II Directive.

For oral route the group suggested a minor extension in the scope of the directive with including category 3 substances as toxic ones. For dermal route and inhalation vapour route the group suggested to keep only the category 2 substances and not include category 3. For inhalation route aerosols and gases it was proposed to take into account the category 3 too. In order to see clearly the impact of all these options, a separate impact assessment study was carried out [14].

The proposal for health hazards can be seen in the table below.

Categories of dangerous substances and mixtures			Lower tier	Upper tier
Section 'H' - HEALTH HAZARDS				
H1 ACUTE TOXIC 1 ('To be decided in light of IA')				
CLP Category 1 for - oral route - dermal route - inhalative route: vapours - inhalative route: aerosols (discussion about incl. category 2)? - inhalative route: gases			5	20
H2 ACUTE TOXIC 2 ('To be decided in light of IA')				
CLP Category	**2**	**3**	50	200
- oral route	X	X?		
- dermal route	X	X?		
- inhalative route: vapours	X	X?		
- inhalative route: aerosols	X?	X		
- inhalative route: gases	X	X		
X,X?,? open issues				

5.2 SPECIFIC TARGET ORGAN TOXICITY

5.2.1 R39 substances – STOT single exposure

CLP Definition: Specific target organ toxicity (single exposure) STOT-SE is defined as specific, non lethal target organ toxicity arising from a single exposure to a substance or mixture.

Seveso status: Very toxic R39 and toxic R39 substances are currently covered by the existing Seveso II Directive as toxic or very toxic as a combination of R-phrases.

Consideration: The classification R39 (Danger of very serious irreversible effects) is given if a single exposure can cause irreversible damage to health by a mechanism other than carcinogenicity, mutagenicity or reproductive toxicity. Substances classified with T+;R39 and T;R39 are within the scope of the current Seveso II Directive. Currently, 11 substances are classified with T+/T; R39 on Annex I of 67/548/EEC. For a list of these substances, see Appendix II. Chapter 2.4.

The hazards covered by T+; R39 and T; R39 are comparable with those covered by CLP Category 1 STOT-SE. To maintain the scope of the Seveso II Directive, it is proposed to include Category 1 of STOT-SE. It is not considered necessary to include categories STOT-SE cat. 2 and 3 as they represent a lower level of harm and are not considered to be within the scope of the current Seveso II Directive.

The concentration/dose cut-off limits of STOT-Single Exposure Cat. 1 are 300 mg/kg for the oral route, 1000 mg/kg for the dermal route, 2500 ppm for inhalation of gases, 10 mg/kg for inhalation of vapours and 1 mg/l for inhalation of dusts/mists/fumes. In many cases, these cut-offs are higher than those of T; R39. Furthermore, substances can be classified as STOT-SE based on good quality epidemiology studies or human cases. The proposed qualifying quantities of 50/200 tonnes are the same as for the current category toxic substances. These qualifying quantities are proposed since 8 of the 11 R39 substances are currently classified as toxic whereas only one is classified as very toxic. These qualifying quantities are, however, only a proposal. It may also be considered if the substance now classified as T+/R39 should be placed on the named substances list with lower qualifying quantities. Implementing the STOT-single exposure is considered a better option than placing all R39 substances on the named substances list. This latter option will increase the number of named substances, is less transparent for the user, and does not include the whole category which makes future identification of substances fulfilling the criteria for R39/STOT-SE difficult.

Categories of dangerous substances and mixtures	Lower tier	Upper tier
Section 'H' - HEALTH HAZARDS		
H3 STOT SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE STOT Category 1	50	200

5.2.2 Very toxic R48 substances – STOT repeated exposure

CLP Definition: Target organ toxicity (repeated exposure) means specific, target organ toxicity arising from a repeated exposure to a substance or mixture. All significant health effects that can impair function, both reversible and irreversible, immediate and/or delayed are included.

Seveso status: Very toxic R48 substances are aligned with STOT - Repeated Exposure Category 1 and it is currently not covered by the Seveso II Directive as a separate category.

Consideration: R48 substances are not relevant for major accident because of prolonged or repeated exposure, the majority of the group expressed the opinion that they should not stay in the Directive. There was a Q&A concerning this issue so the group finally agreed to indicate a justification in the Technical Report based upon the decision of CCA.

As a final consequence the R39 substances – indicated with H370 in the Annex VII of the CLP regulation – will be included in the new Seveso II Directive because they are T+ substances. A discussion was started whether R48 substances – indicated with H372 in the referred part of the CLP – should be included in the Seveso or not. R48 substances seem not to present a major accident hazard due to the need the repetition of exposure, as well as many identified R48 substances are already covered by other hazards, like hazardous to the aquatic environment – see in Appendix II. Chapter 2.5.

6. Other issues

6.1 NAMED SUBSTANCES

The problem

The TWG discussed the possibility to put some of the substances into the Annex I. Part 1 of the Seveso II Directive as named substance. The reason was that these substances – classified based on the CLP Regulation – might fall out of the scope of the Directive or due to change the threshold they could change the scope of the current Seveso II Directive.

Ammonia

According to the Substances Directive, Annex I (now Annex VI, Table 3.2 of the CLP Regulation) ammonia is classified as

R10

T; R23

C; R34

N; R50

As a consequence, ammonia is covered by the entry "Toxic" in Annex I, Part 2 in the existing Seveso II Directive and the qualifying quantities 50 t and 200 t apply.

According to the CLP Regulation (Annex VI, Table 3.1) ammonia is classified as

- Flam. Gas 2
- Press. Gas
- Acute Tox. 3 *
- Skin Corr. 1B
- Aquatic Acute 1

As a consequence, ammonia would be covered by the entry ""Flammable gases" in the revised Seveso II Directive and the qualifying quantities 10 t and 50 t would apply.

Explanation for the differing classifications with regard to flammability:

The reason for the differing classification with regard to the flammable properties of ammonia is that - in both cases - the classification is not based on the criteria but is a compromise that is supposed to reflect the difficulty with which ammonia is ignited.

R10 normally may not be assigned to gases but only to liquids. All gases that have a flammable range in air normally should have F+; R12.

Under the CLP - based on the criteria - ammonia normally should be classified as a flammable gas of category 1. Its classification as a flammable gas of category 2 is also a compromise (for the same reasons). However, this compromise is better than the one made under Substances Directive because ammonia at least is correctly classified as a gas.

Final consequence

In order to maintain the threshold of 50 t and 200 t for ammonia, it has to be listed as a named entry.

Boron trifluoride

Hydrogen sulfide

These substances are currently classified as R26, very toxic, however according to the CLP regulation they would fall into the Category 2. It would mean that these dangerous substances would fall out of the scope of the directive or they would get higher threshold therefore could reduce the current scope of the Seveso II Directive. To avoid this, the group was led to the suggestion to put the affected substances into the named list of substances.

Named substances

Column 1	CAS number [5]	Column 2	Column 3
		Qualifying quantity (tonnes)for the application of	
Dangerous substances			
		Lower tier	Upper tier
Anhydrous Ammonia	7664-41-7	50	200
Boron trifluoride	7637-07-2	5	20
Hydrogen sulphide	7783-06-4	5	20

Candidates for named substances for possible compensation, depending on options

The following substances have been identified by the TWG as candidates for possible consideration as named substances if the respective area would be covered by a lower toxicity grade. The list is not exhaustive.

[5] The CAS number is only visualised for indication.

Column 1	CAS number [6]	Column 2	Column 3
		Qualifying quantity (tonnes)for the application of	
Dangerous substances			
		Lower tier	Upper tier
Piperidine (areaA3)	*110-89-4*	*50*	*200*
Bis(2-dimethylaminoethyl)(methyl)amine (areaA3)	*3030-47-5*	*50*	*200*
3-(2-Ethylhexyloxy)propylamine (areaA3)	*5397-31-9*	*50*	*200*
Vitamin D2 powder or Ergocalciferol (Cyclohexanol,4-methylene-3-[(2E)-2-[(1R,3aS,7aR)-octahydro-7a-methyl-1-[(1R,2E,4R)-1,4,5-trimethyl-2-hexen-1-yl]-4H-inden-4-ylidene]ethylidene]-,(1S,3Z)) (area A1)	*50-14-6*	*5*	*20*

6.2 AMMONIUM-NITRATE AND POTASSIUM-NITRATE FERTILISERS

1. *Ammonium nitrate (5000 / 10000): fertilisers capable of self-sustaining decomposition*

This applies to ammonium nitrate-based compound/composite fertilisers (compound/composite fertilisers contain ammonium nitrate with phosphate and/or potash) in which the nitrogen content as a result of ammonium nitrate is

— between 15,75 %[7] and 24,5 %[8] by weight, and either with not more than 0,4 % total combustible / organic materials or which fulfil the requirements of Annex III-2 of Regulation (EC) N° 2003/2003,

Comment : Directive 80/876 has been repealed.

— 15,75 %[9] by weight or less and unrestricted combustible materials,

and which are capable of self-sustaining decomposition according to the UN Trough Test (see United Nations Recommendations on the Transport of Goods: Manual of Tests and Criteria, Part III, subsection 38.2).

[6] The CAS number is only visualised for indication.

[7] 15,75 % nitrogen content by weight as a result of ammonium nitrate corresponds to 45 % ammonium nitrate.

[8] 24,5 % nitrogen content by weight as a result of ammonium nitrate corresponds to 70 % ammonium nitrate.

[9] 15,75 % nitrogen content by weight as a result of ammonium nitrate corresponds to 45 % ammonium nitrate.

2. *Ammonium nitrate (1250 / 5000): fertiliser grade*

This applies to straight ammonium nitrate-based fertilisers and to ammonium nitrate-based compound / composite fertilisers in which the nitrogen content as a result of ammonium nitrate is

— more than 24,5 % by weight, except for mixtures of straight ammonium nitrate-based fertilisers with dolomite, limestone and/or calcium carbonate with a purity of at least 90 %,

*Comment : As the 3 indents applies both to straight ammonium nitrate **and** to ammonium nitrate compound, we should precise that the exception in the first indent concerns only straight ammonium nitrate. If we don't precise it, ammonium nitrate compound containing between 24.5 et 28 % by weight as a result of ammonium nitrate will fall out of the scope of the Directive.*

— more than 15,75 % by weight for mixtures of ammonium nitrate and ammonium sulphate if ammonium sulphate is added as a fertilising component,

Comment : Products that shall be targeted here comprise AN straight and compound fertilizers in which ammonium sulfate is voluntary added. Simple traces of AS should not trigger the entry of related fertilizers.

— more than 28 %[10] by weight for mixtures of straight ammonium nitrate-based fertilisers with dolomite, limestone and/or calcium carbonate with a purity of at least 90 %,

Comment : Rewriting this indent this way leads to the exclusion of compound fertilizers in this indent. However, they would be covered by indent 1 if the N content is more than 28%. Alternatively, if such products do not pass the detonation test, they would be covered by sub-category 4 of SEVESO ammonium nitrate entries.

and which fulfil the requirements of Annex III-2 of Regulation (EC) N° 2003/2003.

3. *Ammonium nitrate (350 / 2500): technical grade*

This applies to

— ammonium nitrate and mixtures of ammonium nitrate in which the nitrogen content as a result of the ammonium nitrate is

— between 24,5 % and 28 % by weight, and which contain not more than 0,4 % combustible substances,

— more than 28 % by weight, and which contain not more than 0,2 % combustible substances,

— aqueous ammonium nitrate solutions in which the concentration of ammonium nitrate is more than 80 % by weight.

[10] 28 % nitrogen content by weight as a result of ammonium nitrate corresponds to 80 % ammonium nitrate.

4. *Ammonium nitrate (10 / 50): "off-specs" material and fertilisers not fulfilling the detonation test*

This applies to

— material rejected during the manufacturing process and to ammonium nitrate and mixtures of ammonium nitrate, straight ammonium nitrate-based fertilisers and ammonium nitrate-based compound/composite fertilisers referred to in Notes 2 and 3, that are being or have been returned from the final user to a manufacturer, temporary storage or reprocessing plant for reworking, recycling or treatment for safe use, because they no longer comply with the specifications of Notes 2 and 3;

— fertilisers referred to in Note 1, first indent, and Note 2 which do not fulfil the requirements of Annex III-2 of Regulation (EC) N° 2003/2003.

Dangerous substances	Lower tier	Upper tier
Ammonium nitrate (note 1)	5000	10000
Ammonium nitrate (note 2)	1250	5000
Ammonium nitrate (note 3)	350	2500
Ammonium nitrate (note 4)	10	50
Potassium nitrate (note 5)	5000	10000
Potassium nitrate (note 6)	1250	5000

6.3 CARCINOGENS

The group also discussed the possible change for carcinogens and came up with the following change:

Dangerous substances	CAS number	Lower tier	Upper tier
The following CARCINOGENS or the mixtures containing the following carcinogens at concentrations above 5% by weight: 4-Aminobiphenyl and/or its salts, Benzotrichloride, Benzidine and/or salts, Bis (chloromethyl) ether, Chloromethyl methyl ether, 1,2-Dibromoethane, Diethyl sulphate, Dimethyl sulphate, Dimethylcarbamoyl chloride, 1,2-Dibromo-3-chloropropane, 1,2-Dimethylhydrazine, Dimethylnitrosamine, Hexamethylphosphoric triamide, Hydrazine, 2-Naphthylamine and/or salts, 4-Nitrodiphenyl, and 1,3 Propanesultone		0,5	2

Comment: As the whole amount of the mixture (not just the "dangerous" portion) should be taken into account in determining Seveso coverage, it might be clearer to precise it.

6.4 DIOXINES

In the Annex I. Part 1 of the current Seveso II Directive Notes point 7 the quantities of polychlorodibenzofurans and polychlorodibenzodioxins are calculated using the WHO toxic equivalency factors. These factors were changed by the WHO in 2005, therefore the Seveso II also should be modified based upon the given data. The reference table can be found below:

The International Programme on Chemical Safety (IPCS) — WHO — UNEP

Compound	WHO 1998 TEF	WHO 2005 TEF*
chlorinated dibenzo-p-dioxins		
2,3,7,8-TCDD	1	1
1,2,3,7,8-PeCDD	1	1
1,2,3,4,7,8-HxCDD	0.1	0.1
1,2,3,6,7,8-HxCDD	0.1	0.1
1,2,3,7,8,9-HxCDD	0.1	0.1
1,2,3,4,6,7,8-HpCDD	0.01	0.01
OCDD	0.0001	**0.0003**
chlorinated dibenzofurans		
2,3,7,8-TCDF	0.1	0.1
1,2,3,7,8-PeCDF	0.05	**0.03**
2,3,4,7,8-PeCDF	0.5	**0.3**
1,2,3,4,7,8-HxCDF	0.1	0.1
1,2,3,6,7,8-HxCDF	0.1	0.1
1,2,3,7,8,9-HxCDF	0.1	0.1
2,3,4,6,7,8-HxCDF	0.1	0.1
1,2,3,4,6,7,8-HpCDF	0.01	0.01
1,2,3,4,7,8,9-HpCDF	0.01	0.01
OCDF	0.0001	**0.0003**
non-ortho substituted PCBs		
PCB 77	0.0001	0.0001
PCB 81	0.0001	**0.0003**
PCB 126	0.1	0.1
PCB 169	0.01	**0.03**
mono-ortho substituted PCBs		
105	0.0001	**0.00003**
114	0.0005	**0.00003**
118	0.0001	**0.00003**
123	0.0001	**0.00003**
156	0.0005	**0.00003**
157	0.0005	**0.00003**
167	0.00001	**0.00003**
189	0.0001	**0.00003**

* Numbers in bold indicate a change in TEF value

Reference - *Van den Berg et al* :
The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

The final proposal for the related data in the Seveso II Directive is highlighted with yellow.

WHO 2005 TEF			
2,3,7,8-TCDD	1	2,3,7,8-TCDF	0,1
1,2,3,7,8-PeCDD	1	2,3,4,7,8-PeCDF	0,3
		1,2,3,7,8-PeCDF	0,03
1,2,3,4,7,8-HxCDD	0,1		
1,2,3,6,7,8-HxCDD	0,1	1,2,3,4,7,8-HxCDF	0,1
1,2,3,7,8,9-HxCDD	0,1	1,2,3,7,8,9-HxCDF	0,1
		1,2,3,6,7,8-HxCDF	0,1
1,2,3,4,6,7,8-HpCDD	0,01	2,3,4,6,7,8-HxCDF	0,1
OCDD	0,0003	1,2,3,4,6,7,8-HpCDF	0,01
		1,2,3,4,7,8,9-HpCDF	0,01
		OCDF	0,0003
(T = tetra, P = penta, Hx = hexa, Hp = hepta, O = octa)			
Reference - *Van den Berg et al*: The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds			

Appendix I - Amended parts of the existing Seveso II Directive – Annex I.

Article 2

Scope

1. The Directive shall apply to establishments where dangerous substances are present in quantities equal to or in excess of the quantities listed in Annex I, Parts 1 and 2, column 2 (lower tier) or 3 (upper tier). Articles 9, 11 and 13 shall apply to upper tier establishments only.

   For the purposes of this Directive, the 'presence of dangerous substances' shall mean the actual or anticipated presence of such substances in the establishment, or the presence of those which it is believed may be generated during loss of control of an industrial chemical process, in quantities equal to or in excess of the thresholds in Parts 1 and 2 of Annex I.

2. The provisions of this Directive shall apply without prejudice to Community provisions concerning the working environment, and, in particular, without prejudice to Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work[11].

Article 3

Definitions

For the purposes of this Directive:

1. 'establishment' shall mean the whole location under the control of an operator where dangerous substances are present in one or more installations, including common or related infrastructures or activities;

   "lower tier establishment' shall mean an establishment where dangerous substances are present in quantities equal to or in excess of the quantities listed in Annex I, Parts 1 and 2, column 2;

   'upper tier establishment' shall mean an establishment where dangerous substances are present in quantities equal to or in excess of the quantities listed in Annex I, Parts 1 and 2, column 3;

2. 'installation' shall mean a technical unit within an establishment in which dangerous substances are produced, used, handled or stored. It shall include all the equipment, structures, pipework, machinery, tools, private railway sidings, docks, unloading quays serving the installation, jetties, warehouses or similar structures, floating or otherwise, necessary for the operation of the installation;

3. 'operator' shall mean any individual or corporate body who operates or holds an establishment or installation or, if provided for by national legislation, has been given decisive economic power in the technical operation thereof;

4. 'dangerous substance' for the purposes of this directive shall mean a substance or mixture listed in Annex 1, Part 1, or fulfilling the criteria laid down in Annex 1, Part 2, and present as a raw material, product, by-product, residue or intermediate, including those substances which it is reasonable to suppose may be generated in the event of accident;

[11] OJ No L 183, 29.6.1989, p. 1.

5. ‘major accident’ shall mean an occurrence such as a major emission, fire, or explosion resulting from uncontrolled developments in the course of the operation of any establishment covered by this Directive, and leading to serious danger to human health and/or the environment, immediate or delayed, inside or outside the establishment, and involving one or more dangerous substances;
6. ‘hazard’ shall mean the intrinsic property of a dangerous substance or physical situation, with a potential for creating damage to human health and/or the environment;
7. ‘risk’ shall mean the likelihood of a specific effect occurring within a specified period or in specified circumstances;
8. ‘storage’ shall mean the presence of a quantity of dangerous substances for the purposes of warehousing, depositing in safe custody or keeping in stock.

ANNEX I

APPLICATION OF THE DIRECTIVE

INTRODUCTION

1. This Annex applies to the presence of dangerous substances at any establishment within the meaning of Article 3 of this Directive and determines the application of the relevant Articles thereof.
2. Mixtures shall be treated in the same way as pure substances provided they remain within concentration limits set according to their properties under the relevant Directive given in Part 2, Note 1, or their latest adaptation to technical progress, unless a percentage composition or other description is specifically given.
3. The qualifying quantities set out below relate to each establishment.
4. The quantities to be considered for the application of the relevant Articles are the maximum quantities which are present or are likely to be present at any one time. Dangerous substances present at an establishment only in quantities equal to or less than 2 % of the relevant qualifying quantity shall be ignored for the purposes of calculating the total quantity present if their location within an establishment is such that it cannot act as an initiator of a major accident elsewhere on the site.
5. The rules given in Part 2, Note 7 governing the addition of dangerous substances, or categories of dangerous substances, shall apply where appropriate.

..

Column 1	CAS number [12]	Column 2	Column 3
Dangerous substances		Qualifying quantity (tonnes)for the application of	
		Lower tier	Upper tier
Ammonium nitrate (note 1)	-	5000	10000
Ammonium nitrate (note 2)	-	1250	5000
Ammonium nitrate (note 3)	-	350	2500
Ammonium nitrate (note 4)	-	10	50

[12] The CAS number is only visualised for indication.

Potassium nitrate (note 5)	-	5000	10000
Potassium nitrate (note 6)	-	1250	5000
Arsenic pentoxide, arsenic (V) acid and/or salts	1303-28-2	1	2
Arsenic trioxide, arsenious (III) acid and/or salts	1327-53-3		0,1
Bromine	7726-95-6	20	100
Chlorine	7782-50-5	10	25
Nickel compounds in inhalable powder form (nickel monoxide, nickel dioxide, nickel sulphide, trinickel disulphide, dinickel trioxide)	-		1
Ethyleneimine	151-56-4	10	20
Fluorine	7782-41-4	10	20
Formaldehyde (concentration ≥ 90 %)	50-00-0	5	50
Hydrogen	1333-74-0	5	50
Hydrogen chloride (liquefied gas)	7647-01-0	25	250
Lead alkyls	-	5	50
Liquefied flammable gases, CLP-Category 1 or 2 (including LPG) and natural gas	-	50	200
Acetylene	74-86-2	5	50
Ethylene oxide	75-21-8	5	50
Propylene oxide	75-56-9	5	50
Methanol	67-56-1	500	5000
4, 4-Methylenebis (2-chloraniline) and/or salts, in powder form	101-14-4		0,01
Methylisocyanate	624-83-9		0,15
Oxygen	7782-44-7	200	2000
2,4 -Toluene diisocyanate 2,6 -Toluene diisocyanate	584-84-9 91-08-7	10	100
Carbonyl dichloride (phosgene)	75-44-5	0,3	0,75
Arsine (arsenic trihydride)	7784-42-1	0,2	1
Phosphine (phosphorus trihydride)	7803-51-2	0,2	1
Sulphur dichloride	10545-99-0	1	1
Sulphur trioxide	7446-11-9	15	75
Polychlorodibenzofurans and polychlorodibenzodioxins (including TCDD), calculated in TCDD equivalent	-		0,001
The following CARCINOGENS or the mixtures containing the following carcinogens at concentrations above 5% by weight: 4-Aminobiphenyl and/or its salts, Benzotrichloride, Benzidine and/or salts, Bis (chloromethyl) ether, Chloromethyl methyl ether, 1,2-Dibromoethane, Diethyl sulphate, Dimethyl sulphate, Dimethylcarbamoyl chloride, 1,2-Dibromo-3-chloropropane, 1,2-Dimethylhydrazine, Dimethylnitrosamine, Hexamethylphosphoric triamide, Hydrazine, 2- Naphthylamine and/or salts,	-	0,5	2

4-Nitrodiphenyl, and 1,3 Propanesultone			
Petroleum products (a) gasolines and naphthas, (b) kerosenes (including jet fuels), (c) gas oils (including diesel fuels, home heating oils and gas oil blending streams)	-	2500	25000
Anhydrous Ammonia	7664-41-7	50	200
Boron trifluoride	7637-07-2	5	20
Hydrogen sulphide	7783-06-4	5	20
Candidates for Named Substances for possible compensation, depending on options:			
Piperidine (areaA3)	*110-89-4*	*50*	*200*
Bis(2-dimethylaminoethyl)(methyl)amine (areaA3)	*3030-47-5*	*50*	*200*
3-(2-Ethylhexyloxy)propylamine (areaA3)	*5397-31-9*	*50*	*200*
Vitamin D2 powder or Ergocalciferol (Cyclohexanol,4-methylene-3-[(2E)-2-[(1R,3aS,7aR)-octahydro-7a-methyl-1-[(1R,2E,4R)-1,4,5-trimethyl-2-hexen-1-yl]-4H-inden-4-ylidene]ethylidene]-,(1S,3Z)) (area A1)	*50-14-6*	*5*	*20*

NOTES

1. *Ammonium nitrate (5000 / 10000): fertilisers capable of self-sustaining decomposition*

This applies to ammonium nitrate-based compound/composite fertilisers (compound/composite fertilisers contain ammonium nitrate with phosphate and/or potash) in which the nitrogen content as a result of ammonium nitrate is

— between 15,75 %[13] and 24,5 %[14] by weight, and either with not more than 0,4 % total combustible / organic materials or which fulfil the requirements of Annex III-2 of Regulation (EC) No 2003/2003,

— 15,75 % by weight or less and unrestricted combustible materials,

and which are capable of self-sustaining decomposition according to the UN Trough Test (see United Nations Recommendations on the Transport of Goods: Manual of Tests and Criteria, Part III, subsection 38.2).

2. *Ammonium nitrate (1250 / 5000): fertiliser grade*

This applies to straight ammonium nitrate-based fertilisers and to ammonium nitrate-based compound . fertilisers in which the nitrogen content as a result of ammonium nitrate is

[13] 15,75 % nitrogen content by weight as a result of ammonium nitrate corresponds to 45 % ammonium nitrate.

[14] 24,5 % nitrogen content by weight as a result of ammonium nitrate corresponds to 70 % ammonium nitrate.

— more than 24,5 % by weight, except for mixtures of straight ammonium nitrate-based fertilisers with dolomite, limestone and/or calcium carbonate with a purity of at least 90 %,

— more than 15,75 % by weight for mixtures of ammonium nitrate and ammonium sulphate, if ammonium sulphate is added as a fertilising component,

— more than 28 %[15] by weight for mixtures of straight ammonium nitrate-based fertilisers with dolomite, limestone and/or calcium carbonate with a purity of at least 90 %,

and which fulfil the requirements of Annex III-2 of Regulation (EC) No 2003/2003.

3. *Ammonium nitrate (350 / 2500): technical grade*

This applies to

— ammonium nitrate and mixtures of ammonium nitrate in which the nitrogen content as a result of the ammonium nitrate is

— between 24,5 % and 28 % by weight, and which contain not more than 0,4 % combustible substances,

— more than 28 % by weight, and which contain not more than 0,2 % combustible substances,

— aqueous ammonium nitrate solutions in which the concentration of ammonium nitrate is more than 80 % by weight.

4. *Ammonium nitrate (10 / 50): "off-specs" material and fertilisers not fulfilling the detonation test*

This applies to

— material rejected during the manufacturing process and to ammonium nitrate and mixtures of ammonium nitrate, straight ammonium nitrate-based fertilisers and ammonium nitrate-based compound/composite fertilisers referred to in Notes 2 and 3, that are being or have been returned from the final user to a manufacturer, temporary storage or reprocessing plant for reworking, recycling or treatment for safe use, because they no longer comply with the specifications of Notes 2 and 3;

— fertilisers referred to in Note 1, first indent, and Note 2 which do not fulfil the requirements of Annex III-2 of Regulation (EC) No 2003/2003.

5. *Potassium nitrate (5000 / 10000)*

This applies to those composite potassium-nitrate based fertilisers (in prilled/granular) form which have the same hazardous properties as pure potassium nitrate.

6. *Potassium nitrate (1250 / 5000)*

This applies to those composite potassium-nitrate based fertilisers (in crystalline) form which have the same hazardous properties as pure potassium nitrate.

[15] 28 % nitrogen content by weight as a result of ammonium nitrate corresponds to 80 % ammonium nitrate.

7. *Polychlorodibenzofurans and polychlorodibenzodioxins*

The quantities of polychlorodibenzofurans and polychlorodibenzodioxins are calculated using the following factors:

WHO 2005 TEF			
2,3,7,8-TCDD	1	2,3,7,8-TCDF	0,1
1,2,3,7,8-PeCDD	1	2,3,4,7,8-PeCDF	0,3
		1,2,3,7,8-PeCDF	0,03
1,2,3,4,7,8-HxCDD	0,1		
1,2,3,6,7,8-HxCDD	0,1	1,2,3,4,7,8-HxCDF	0,1
1,2,3,7,8,9-HxCDD	0,1	1,2,3,7,8,9-HxCDF	0,1
		1,2,3,6,7,8-HxCDF	0,1
1,2,3,4,6,7,8-HpCDD	0,01	2,3,4,6,7,8-HxCDF	0,1
OCDD	0,0003	1,2,3,4,6,7,8-HpCDF	0,01
		1,2,3,4,7,8,9-HpCDF	0,01
		OCDF	0,0003
(T = tetra, P = penta, Hx = hexa, Hp = hepta, O = octa)			
Reference - *Van den Berg et al*: The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds			

PART 2

Categories of substances and mixtures not specifically named in Part 1

Column 1			Column 2	Column 3
Categories of dangerous substances and mixtures			Qualifying quantity (tonnes) of substances as delivered in Article 3 (4) for the application of	
			Lower tier	Upper tier
Section 'H' - HEALTH HAZARDS				
H1 ACUTE TOXIC 1 ('To be decided in light of IA')				
CLP Category 1 for - oral route - dermal route - inhalative route: vapours - inhalative route: aerosols (discussion about incl. category 2)? - inhalative route: gases			5	20
H2 ACUTE TOXIC 2 ('To be decided in light of IA')				
CLP Category	**2**	**3**	50	200
- oral route	X	X?		
- dermal route	X	X?		
- inhalative route: vapours	X	X?		
- inhalative route: aerosols	X?	X		
- inhalative route: gases	X	X		
X,X?,? open issues				
H3 STOT SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE STOT Category 1			50	200

Column 1	Column 2	Column 3
Categories of dangerous substances and mixtures	Qualifying quantity (tonnes) of substances as delivered in Article 3 (4) for the application of	
	Lower tier	Upper tier
Section 'P' - PHYSICAL HAZARDS		
P1a EXPLOSIVES (see note 2) - Unstable explosives or - Explosives, Division 1.1, 1.2, 1.3, 1.5 or 1.6, or - Substances or mixtures having explosive properties according to method A.14 of Regulation (EC) No 440/2008 (see note 3) and do not belong to the hazard classes Organic peroxides or Self-reactive substances and mixtures	10	50
P1b EXPLOSIVES (see note 2) Explosives, Division 1.4 (see note 4)	50	200
P2 FLAMMABLE GASES Flammable gases, Category 1 or 2	10	50
P3a FLAMMABLE AEROSOLS (see note 5.1) "Extremely flammable" or "Flammable" aerosols, containing flammable gases Category 1 or 2 or flammable liquids Category 1	150	500
P3b FLAMMABLE AEROSOLS (see note 5.1) "Extremely flammable" or "Flammable" aerosols, not containing flammable gases Category 1 or 2 nor flammable liquids category 1 (see note 5.2)	5.000	50.000
P4 OXIDISING GASES Oxidising gases, Category 1	50	200

Column 1	Column 2	Column 3
Categories of dangerous substances and mixtures	Qualifying quantity (tonnes) of substances as delivered in Article 3 (4) for the application of	
	Lower tier	Upper tier
P5a FLAMMABLE LIQUIDS - Flammable liquids, Category 1, or - Flammable liquids Category 2 or 3 maintained at a temperature above their boiling point, or - Other liquids with a flash point • 60°C, maintained at a temperature above their boiling point (see note 6)	10	50
P5b FLAMMABLE LIQUIDS - Flammable liquids Category 2 or 3 where particular processing conditions, such as high pressure or high temperature, may create major-accident hazards, or - Other liquids with a flash point • 60°C where particular processing conditions, such as high pressure or high temperature, may create major-accident hazards (see note 6)	50	200
P5c FLAMMABLE LIQUIDS Flammable liquids, Categories 2 or 3 not covered by P5a and P5b	5.000	50.000
P6a SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES Self-reactive substances and mixtures, Type A or B or organic peroxides, Type A or B	10	50
P6b SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES Self-reactive substances and mixtures, Type C, D, E or F or organic peroxides, Type C, D, E, or F	50	200
P7 PYROPHORIC LIQUIDS Pyrophoric liquids, Category 1	50	200

Column 1	Column 2	Column 3
Categories of dangerous substances and mixtures	Qualifying quantity (tonnes) of substances as delivered in Article 3 (4) for the application of	
	Lower tier	Upper tier
P8 OXIDISING LIQUIDS AND SOLIDS Oxidising Liquids, Category 1, 2 or 3, or Oxidising Solids, Category 1, 2 or 3	50	200
Section 'E' - ENVIRONMENTAL HAZARDS		
E1 Hazardous to the Aquatic Environment in Category Acute I or Chronic I	100	200
E2 Hazardous to the Aquatic Environment in Category Chronic II	200	500
Section 'O' – OTHER HAZARDS		
O1 Substances or mixtures with hazard statement EUH014	100	500
O2 Substances and mixtures which in contact with water emit flammable gases, Category 1	100	500
O3 Substances or mixtures with hazard statement EUH029	50	200

NOTES

1. Substances and mixtures are classified according to Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labeling and packaging of substances and mixtures and its current adaptation to technical progress.

   In the case of substances and mixtures which are not covered by Annex I of this directive, for example waste, but which nevertheless are present, or are likely to be present, in an establishment and which possess or are likely to possess, under the conditions found at the establishment, equivalent properties in terms of major-accident potential, Member States shall provisionally assign these to the most analogous Seveso category/named substance (pending a decision pursuant to Article XXX of this Directive (i.e. general safeguard clause)).

In the case of substances and mixtures with properties giving rise to more than one classification, for the purposes of this Directive the lowest qualifying quantities shall apply. However, for the application of the rule in Note 7, the qualifying quantity used shall always be the one corresponding to the classification concerned.

For the purposes of this Directive, the Commission shall establish and keep up to date a list of substances which have been classified into the above categories. .

2. The hazard class Explosives includes explosive articles (see Section 2.1 of Annex I of the CLP-Regulation). If the quantity of the explosive substance or mixture contained in the article is known, that quantity shall be considered for the purposes of this Directive. If the quantity of the explosive substance or mixture contained in the article is not known, then, for the purposes of this Directive, the whole article shall be treated as explosive.

3. Testing for explosive properties of substances and mixtures is only necessary if the screening procedure according to Appendix 6 (Part 3) of the UN Manual of Tests and Criteria [16] identifies the substance/mixture as potentially having explosive properties.

4. If Explosives of Division 1.4 are unpacked or repacked, they shall be assigned to the entry P1a, unless the hazard is shown to still correspond to Division 1.4, in accordance with Regulation (EC) No 1272/2008.

5.1. Flammable aerosols are classified in accordance to the Aerosol Dispensers Directive 75/324/EEC. 'Extremely flammable' and 'Flammable' aerosols of Directive 75/324/EEC correspond to Flammable Aerosols Category 1 or 2 respectively of Regulation (EC) No 1272/2008.

5.2. In order to use this entry, it must be documented that the aerosol dispenser does not contain Flammable Gas Category 1 or 2 nor Flammable Liquid Category 1.

6. According to 2.6.4.5 in Annex I of Regulation (EC) No 1272/2008, liquids with a flash point of more than 35 °C need not be classified in Category 3 if they do not sustain combustion. This is however not valid under elevated conditions such as high temperature or pressure, and therefore such liquids are included in this entry.

7. In the case of an establishment where no individual substance or mixture is present in a quantity above or equal to the relevant qualifying quantities, the following rule shall be applied to determine whether the establishment is covered by the relevant requirements of this Directive.

This Directive shall apply if the sum:

$q_1/Q_{U1} + q_2/Q_{U2} + q_3/Q_{U3} + q_4/Q_{U4} + q_5/Q_{U5} + \ldots$ is greater than or equal to 1,

where q_x = the quantity of dangerous substance x (or category of dangerous substances) falling within Parts 1 or 2 of this Annex,

and Q_{UX} = the relevant qualifying quantity for substance or category x from column 3 of Parts 1 or 2.

[16] More guidance on waiving of the test can be found in the A.14 method description, see Regulation (EC) No 440/2008 of 30 May 2008 laying down test methods pursuant to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

This Directive shall apply, with the exception of Articles 9, 11 and 13, if the sum:

$q_1/Q_{L1} + q_2/Q_{L2} + q_3/Q_{L3} + q_4/Q_{L4} + q_5/Q_{L5} + \ldots$ is greater than or equal to 1,

where q_x = the quantity of dangerous substance x (or category of dangerous substances) falling within Parts 1 or 2 of this Annex,

and Q_{LX} = the relevant qualifying quantity for substance or category x from column 2 of Parts 1 or 2.

This rule shall be used to assess the overall major accident hazards described in the three above sections: health hazards, physical hazards and environmental hazards. It must therefore be applied three times:

(a) for the addition of substances and mixtures named in Part1 that are classified as acute toxicity category 1,2 or 3, together with substances and mixtures falling into section H: H1 to H3.

(b) for the addition of substances and mixtures named in Part 1 that are classified as explosives, flammable gases, flammable aerosols, oxidising gases, flammable liquids, self-reactive substances and mixtures, organic peroxides, pyrophoric liquids, oxidising liquids and solids, together with substances and mixtures falling into section P: P1 to P8.

(c) for the addition of substances and mixtures named in Part 1 that are classified as hazardous to the aquatic environment, acute category 1, chronic category 1 or chronic category 2, together with substances and mixtures falling into section E: E1 and E2.

The relevant provisions of this Directive apply if any of the sums obtained by (a), (b) or c) is greater than or equal to 1.

Appendix II - Lists of substances based upon their classification in accordance with the CLP Regulation

2.1 FLAMMABLE SOLIDS

Below is a list of solids that is categorized as "flammable solids", taken from Annex I of Directive 67/548/EEC. Often the substances have an additional classification (e.g. pyrophoric; emitting flammable gas when in contact with water).

Aluminium-tri-isopropoxide (CASnr.555-31-7). Easily ignitable. May emit hydrogen with moisture. Reactant in metalorganic vapour deposition.
Bis(• -cyclopentadienyl)-bis(2,6-difluoro-3-[pyrrol-1-yl]-phenyl)titanium (CASnr. 125051-32-3). Easily ignitable. Used for photopolymerization.
Cellulose nitrate, max. 12.6% nitrogen (no CASnr.) Very easily ignitable. Application in explosives.
2,2'-dimethyl-2,2'-azodipropiononitrile (CASnr. 78-67-1). Easily ignitable. May ignite spontaneously under influence of shock / friction. Applied as reaction initiator
Hexamethylenetetramine (CASnr. 100-97-0). Easily ignitable and very prone to dust explosion. Antibioticum or solid fuel for camping.
Lithium methanolate (CASnr. 212-737-7) Easily ignitable. Used in research environments and as a catalyst.
Magnesium(-alloy) (granules, shavings, ribbon) (CASnr. 7439-95-4)**.** Readily flammable. May emit hydrogen with moisture.
Magnesium(-alloy) powder or granules are applied as a reducing agent in organic (reductive) synthesis (e.g. Grignard reaction), for the desulphurization of steel and in pyrotechnics/flares.
2-(methoxycarbonylhydrazonomethyl)quinoxaline-1,4-doxide (CASnr. 6804-07-5) Easily ignitable and very prone to dust explosion. Animal medicine and additive in animal feed.
Pentachlorobenzene (CASnr. 608-93-5) Toxic. Mainly by-product of production of chemicals.
(Red) phosphorus (CASnr. 7723-14-0)**.** May ignite spontaneously under influence of shock / friction. Emits toxic vapours when burning (phosphorus oxides). May emit toxic vapour (phosphine) when heated in contact with water. The same is true in general for amorphous or molten white or yellow phosphorus (both CASnr. 12185-10-3 for P_4) (melting point 44 ^{o}C).
Red phosphorus is applied for the production of matches and flame retardants. White/yellow phosphorus is produced in the Netherlands (Thermphos, Vlissingen). It is used for the production of organic phosphorus derivatives.

Phosphorus sesquisulphide (CASnr. 1314-51-8)**.** May ignite spontaneously under influence of shock / friction. Emits toxic vapours when burning (phosphorus oxides, sulphur oxides). May emit toxic vapour (hydrogen sulphide) when heated in contact with water.
Idem **diphosphorus pentasulphide** (CASnr. 1314-80-3).
Phosphorus trisulphide is used for organic synthesis.
Diphosphorus pentasulphide is used for the production of additives for lubricants, insecticides and flotation aids.
Potassium ethanolate (CASnr. 213-029-0) Easily ignitable. Reacts violently with water. Used in organic synthesis.
Potassium methanolate (CASnr. 212-736-1) Easily ignitable. Used in research environments and as a catalyst.
Potassium mu-fluoro-bis(triethylaluminium) (CASnr. 12091-08-6). The substance is somewhat toxic. May emit hydrogen with moisture. Application unknown.
Sodium((n-butyl)$_x$(ethyl)$_y$-1,5-dihydro)aluminate) (x=0.5 y=1.5) (No CASnr.) The substance is pyrophoric and may emit hydrogen with moisture. Application unknown.
Sodium ethanolate (CASnr.205-487-5). Easily ignitable. Reacts violently with water. Used in organic synthesis.
Sodium methanolate (CASnr.204-699-5). Easily ignitable. Used in research environments and as a catalyst.
***tert*-butyl alcohol** (CASnr. 75-65-0). Easily ignitable. Low melting point (25.5 ^{0}C). Application. as solvent and denaturant for ethanol.
3a,4,7,7a-tetrahydro-4,7-methanoindene (dicyclopentadiene) (CASnr. 77-73-6). Can easily ignite. Chemical used in rubber chemistry.
1,3,5,-trioxan (CASnr. 110-88-3) Easily ignitable. Application in polyacetale production.

2.2 SELF-HEATING SUBSTANCES

		UN-No	Index-No	Name	Self-heating category	Classification GHS-Annex VI	Transport class
contained in Dangerous Goods List		1362		Carbon, activated	Cat. 2	-	-
		1369		p-Nitrosodimethylanilin	Cat. 1	-	-
		1376		Iron oxide, spent, or iron sponge, spent	Cat. 2	-	-
		1382		Potassium sulphide	Cat. 1	-	-
		1384	016-028	Sodium dithionite	Cat. 1	Cat. 1	-
		1418	012-002	Magnesium (depending on form)	Cat. 2	Cat. 2, note #	4.3
		1431	603-040	Sodium methoxide (Sodiummethylate)	Cat. 1	Flam. sol. 1	8
		1436	030-001	Zinc (depending on form)	Cat. 1, 2	Pyr. Sol. 1	4.3
		1923		Calcium dithionite	Cat. 1	-	-
		1929		Potassium dithionite	Cat. 1	-	-
		2008	040-002	Zirconium (depending on form)	Cat. 1, 2	Water reactive	-
		2004		Magnesium diamide	Cat. 1	-	-
		2210		Maneb (Manganethylen-1,2-bis-dithiocarba		-	4.3
		2318		Sodium hydrosulphide ???	Cat. 1		-
		2545		Hafnium (depending on form)	Cat. 1, 2	-	-
		2546		Titanium (depending on form)	Cat. 1, 2	-	-
		2940		9-Phosphabicyclononanes (Cyclooctadienp	Cat. 1	-	-
		3174		Titanium disulphide	Cat. 2	-	-
		3341		Thiourea dioxide	Cat. 1, 2	-	-
		3342		Xanthates	Cat. 1, 2	-	-
not contained in Dangerous Goods List				Different types of coal	*		
				Zinc, 98 %	*		
				Hard metal powder (89 5 % Tungsten carbi	Cat. 2		
				Various alloys (Nd-Fe-B) (33 % Seltenerde	*		
				Iron/iron oxide catalyst, granulated	*		
				Bleaching earths (aluminum and/or magnes	*		
				Ferro titanite	*		
				Polybutadiene dispersed in silicic acids	*		
	Alcoholates		603-040	Methoxides (potassium, magnesium)	*	Flam. sol. 1	
			603-040	Methoxide (lithium)	*	Flam. sol. 1	
			603-041	Ethoxides (sodium)	*	Flam. sol. 1	
			603-041	Ethoxides (potassium, magnesium)	*	Flam. sol. 1	
				n-Propoxides (magnesium)	*		
				i-Propoxides (sodium)	*		
				i-Propoxides (magnesium)	*		
				n-Butoxides (magnesium)	*		
				t-Butoxides (lithium)	*		
				t-Butoxides (sodium, potassium)	*		
				n-Amylates (magnesium)	*		
				t-Amylates (sodium)	*		
				n-Hexylates (magnesium)	*		
				Glycolat (lithium)	*		

* Self-heating substance or mixture, but category was not looked into

2.3 EXPLOSIVES

Examples for substances and mixtures with E; R2 or E; R3 which are neither classified as explosives nor as self-reactive substances or mixtures nor as organic peroxides of type A or B are given in the following table:

Substance or mixture	Classification acc. to 67/548/EEC or 1999/45/EC[17]	Classification acc. to Regulation (EC) No 1272/2008	Remark, Classification acc. to transport
ammonium perchlorate Index No. 017-009-00-0 (split entry)	Harmonised classification (31st ATP): [content of particles with a diameter of 0-30 µm ≥ 80 %]: E; R3, O; R9 [content of particles with a diameter of 0-30 µm < 80 %]: E; R2, O; R9	Expl. 1.1, H201 Ox. Sol. 1, H271 EUH044 Note T but most likely no review of classification if delivered as UN 1442	1.1, UN 0402 Explosive, division 1.1 5.1, UN 1442 Oxidising solid
ammonium dichromate Index Nr. 024-003-00-1	Harmonised classification (29th ATP): E; R2, O; R8	Ox. Sol. 2****, H272 Note G	5.1, UN 1439 Oxidising solid
musk xylene Index Nr. 609-068-00-1	Harmonised classification: (29th ATP): E; R2	Expl. 1.1, H201 Note T but "exempted" from class of explosives if tested in transport packaging	4.1, UN 2956 related to self-reactive
C,C'-azodi(formamide); AZODICARBONAMIDE (and formulations, which are not classified as self-reactive) Index No. 611-028-00-3	Harmonised classification (31st ATP): E; R2	No physical hazard assigned Note G	4.1, UN 3242 related to self-reactive
bis(hydroxylammonium) sulphate Index Nr. 612-123-00-2	Harmonised classification (30th ATP): E; R2	Met. Corr. 1, H290 Note G and Note T	8, UN 2865 Corrosive
hydroxylammonium chloride Index Nr. 612-123-00-2	Harmonised classification (30th ATP): E; R2	Met. Corr. 1, H290 Note G and Note T	9, UN 3077 environmentally hazardous substance

[17] Classification according to test method A.14 and with regard to physical hazards, respectively.

Substance or mixture	Classification acc. to 67/548/EEC or 1999/45/EC[17]	Classification acc. to Regulation (EC) No 1272/2008	Remark, Classification acc. to transport
troclosene potassium troclosene sodium Index No. 613-030-00-X (Dichloroisocyanuric acid salts)	Harmonised classification (30th ATP): E; R2, O; R8, Note T	Ox. Sol. 2, H272	5.1, UN 2465 Oxidising solid
TRINITROPHENOLE (PICRIC ACID), WETTED with not less than 30% water by mass	E	?	4.1, UN 1344 solid desensitized explosive
TRINITROPHENOLE (PICRIC ACID), WETTED with not less than 10% water by mass	E	?	4.1, UN 3364 solid desensitized explosive
ISOSORBIDE-5-MONONITRATE	E	?	4.1, UN 3251 related to self-reactive
DINITROPHENYLHYDRAZIN, pure, and wetted with water	E	?	1 or 4.1 depending on amount of water
PERCHLORIC ACID 18%, MIXTURE WITH ACETIC ACID 82%	E	?	(?)
Explosive nitrocellulose preparations, E; R2 or E; R3, depending on nitrocellulose content, type and nitrogen content			
NITROCELLULOSE WITH WATER (not less than 25% water, by mass)	E	?	4.1, UN 2555 solid desensitized explosive
NITROCELLULOSE WITH ALCOHOL (not less than 25 % alcohol, by mass, and not more than 12.6% nitrogen, by dry mass)	E	?	4.1, UN 2556 solid desensitized explosive
NITROCELLULOSE, with not more than 12.6% nitrogen, by dry mass, MIXTURE WITH PLASTICICER, WITH PIGMENT	E	?	4.1, UN 2557 solid desensitized explosive
NITROCELLULOSE, with not more than 12.6% nitrogen, by dry mass, MIXTURE WITH PLASTICICER, WITHOUT PIGMENT	E	?	4.1, UN 2557 solid desensitized explosive
NITROCELLULOSE, with not more than 12.6% nitrogen, by dry mass, MIXTURE WITHOUT PLASTICICER, WITH PIGMENT	E	?	4.1, UN 2557 solid desensitized explosive

Substance or mixture	Classification acc. to 67/548/EEC or 1999/45/EC[17]	Classification acc. to Regulation (EC) No 1272/2008	Remark, Classification acc. to transport
NITROCELLULOSE, with not more than 12.6% nitrogen, by dry mass, MIXTURE WITHOUT PLASTICICER, WITHOUT PIGMENT	E	?	4.1, UN 2557 solid desensitized explosive

2.4 STOT SINGLE EXPOSURE

Substances that are classified with R39 in Annex I of 67/548/EEC (including the 30th and the 31st ATP)

CAS number	Annex I. number	Name	Symbol	Classification
	014-022-00-3	Reaction product of: (2-hydroxy-4-(3-propenoxy)benzophenone and triethoxysilane with (hydrolysis product of silica and methyltrimethoxysilane)	T	R: 11-20/21/22-39/23/24/25
78-30-8	015-015-00-8	tricresyl phosphate, tritolyl phosphate, o-o-o, o-o-m, o-o-p, o-m-m, o-m-p, o-p-p	T	R: 39/23/24/25-51/53
371-86-8	015-062-00-4	mipafox, N,N'- di-isopropylphosphorodiamidic fluoride	T+	R: 39/26/27/28
21609-90-5	015-093-00-3	leptophos (ISO), O-4-bromo-2,5-dichlorophenyl O-methyl phenylphosphorothioate	T	R: 21-25-39/25-50/53
13067-93-1	015-110-00-4	cyanofenphos (ISO), O-4-cyanophenyl O-ethyl phenylphosphonothioate	T	R: 21-25-36-39/25-51/53
3811-49-2	015-152-00-3	2-methoxy-4H-1,3,2-benzodioxaphosphorin 2-sulphide, dioxabenzofos	T	R: 24/25-39/25-51/53
98886-44-3	015-168-00-0	fosthiazate (ISO), (RS)-S-sec-butyl-O-ethyl-2-oxo-1,3-thiazolidin-3-ylphosphonothioate	T	R: 21-23/25-39-41-43-50/53
67-56-1	603-001-00-X	methanol	T	R: 11-23/24/25-39/23/24/25
5428-02-4	609-058-00-7	2-nitro-2-phenyl-1,3-propanediol		R: 21/22-39-41-43-48/25-51/53
101-77-9	612-051-00-1	4,4'-diaminodiphenylmethane, 4,4'-methylenedianiline	T	R: 45-39/23/24/25-43-48/20/21/22-68-51/53
143322-57-0	613-201-00-9	(R)-5-bromo-3-(1-methyl-2-pyrrolidinyl methyl)-1H-indole		R: 20/22-39-41-43-48/25-62-50/53

2.5 STOT Repeated Exposure

Substance Name	CAS number	Risk Phrases
carbon disulphide	75-15-0	R: 11-36/38-48/23-62-63
divanadium pentaoxide, vanadium pentoxide	1314-62-1	R: 20/22-37-48/23-51/53-63-68
nickel	7440-02-0	R: 40-43-48/23
nickel powder, particle diameter < 1 mm	7440-02-0	R: 40-43-48/23-52/53
nickel dioxide	12035-36-8	R: 49-43-48/23-53
dinickel trioxide	1314-06-3	R: 49-43-48/23-53
nickel (II) sulfide [1] nickel sulfide [2] millerite [3]	16812-54-7 [1] 11113-75-0 [2] 1314-04-1 [3]	R: 49-43-48/23-68-50/53
trinickel disulfide, nickel subsulfide [1] heazlewoodite [2]	12035-72-2 [1] 12035-71-1 [2]	R: 49-43-48/23-68-50/53
nickel dihydroxide [1] nickel hydroxide [2]	12054-48-7 [1] 11113-74-9 [2]	R: 49-61-20/22-38-42/43-48/23-68-50/53
nickel sulfate	7786-81-4	R: 49-61-20/22-38-42/43-48/23-68-50/53
nickel carbonate, basic nickel carbonate, carbonic acid, nickel (2+) salt [1] carbonic acid, nickel salt [2] [µ-[carbonato(2-)-*O*:*O'*]] dihydroxy trinickel [3] [carbonato(2-)] tetrahydroxytrinickel [4]	3333-67-3 [1] 16337-84-1 [2] 65405-96-1 [3] 12607-70-4 [4]	R: 49-61-20/22-38-42/43-48/23-68-50/53
nickel dinitrate [1] nitric acid, nickel salt [2]	13138-45-9 [1] 14216-75-2 [2]	R: 49-61-8-20/22-38-41-42/43-48/23-68-50/53
nickel matte	69012-50-6	R: 49-43-48/23-50/53
slimes and sludges, copper electrolytic refining, decopperised, nickel sulfate	92129-57-2	R: 49-61-20/22-38-42/43-48/23-68-50/53
slimes and sludges, copper electrolyte refining, decopperised	94551-87-8	R: 49-61-42/43-48/23-62-68-50/53
nickel diperchlorate, perchloric acid, nickel(II) salt	13637-71-3	R: 49-61-34-42/43-48/23-68-50/53
nickel dipotassium bis(sulfate) [1] diammonium nickel bis(sulfate) [2]	13842-46-1 [1] 15699-18-0 [2]	R: 49-61-20/22-42/43-48/23-68-50/53
nickel bis(sulfamidate), nickel sulfamate	13770-89-3	R: 49-61-42/43-48/23-68-50/53
nickel bis(tetrafluoroborate)	14708-14-6	R: 49-61-42/43-48/23-68-50/53

Substance Name	CAS number	Risk Phrases
nickel diformate [1] formic acid, nickel salt [2] formic acid, copper nickel salt [3]	3349-06-2 [1] 15843-02-4 [2] 68134-59-8 [3]	R: 49-61-42/43-48/23-68-50/53
nickel di(acetate) [1] nickel acetate [2]	373-02-4 [1] 14998-37-9 [2]	R: 49-61-20/22-42/43-48/23-68-50/53
nickel dibenzoate	553-71-9	R: 49-61-42/43-48/23-68-50/53
nickel bis(4-cyclohexylbutyrate)	3906-55-6	R: 49-61-42/43-48/23-68-50/53
nickel(II) stearate, nickel(II) octadecanoate	2223-95-2	R: 49-61-42/43-48/23-68-50/53
nickel dilactate	16039-61-5	R: 49-61-42/43-48/23-68-50/53
nickel(II) octanoate	4995-91-9	R: 49-61-35-42/43-48/23-68-50/53
nickel difluoride [1] nickel dibromide [2] nickel diiodide [3] nickel potassium fluoride [4]	10028-18-9 [1] 13462-88-9 [2] 13462-90-3 [3] 11132-10-8 [4]	R: 49-61-42/43-48/23-68-50/53
nickel hexafluorosilicate	26043-11-8	R: 49-61-42/43-48/23-68-50/53
nickel selenate	15060-62-5	R: 49-61-42/43-48/23-68-50/53

nickel hydrogen phosphate [1] nickel bis(dihydrogen phosphate) [2] trinickel bis(orthophosphate) [3] dinickel diphosphate [4] nickel bis(phosphinate) [5] nickel phosphinate [6] phosphoric acid, calcium nickel salt [7] diphosphoric acid, nickel(II) salt [8]	14332-34-4 [1] 18718-11-1 [2] 10381-36-9 [3] 14448-18-1 [4] 14507-36-9 [5] 36026-88-7 [6] 17169-61-8 [7] 19372-20-4 [8]	R: 49-42/43-48/23-50/53
diammonium nickel hexacyanoferrate	74195-78-1	R: 49-42/43-48/23-50/53
nickel dicyanide	557-19-7	R: 49-32-42/43-48/23-50/53
nickel chromate	14721-18-7	R: 49-42/43-48/23-50/53
nickel(II) silicate [1] dinickel orthosilicate [2] nickel silicate (3:4) [3] silicic acid, nickel salt [4] trihydrogen hydroxybis[orthosilicato(4-)]trinickelate(3-) [5]	21784-78-1 [1] 13775-54-7 [2] 31748-25-1 [3] 37321-15-6 [4] 12519-85-6 [5]	R: 49-43-48/23-50/53

Substance Name	CAS number	Risk Phrases
dinickel hexacyanoferrate	14874-78-3	R: 49-43-48/23-50/53
trinickel bis(arsenate), nickel(II) arsenate	13477-70-8	R: 45-43-48/23-50/53
nickel oxalate [1] oxalic acid, nickel salt [2]	547-67-1 [1] 20543-06-0 [2]	R: 49-43-48/23-50/53
nickel telluride	12142-88-0	R: 49-43-48/23-50/53
trinickel tetrasulfide	12137-12-1	R: 49-43-48/23-50/53
trinickel bis(arsenite)	74646-29-0	R: 49-43-48/23-50/53
cobalt nickel gray periclase, C.I. Pigment Black 25, C.I. 77332 [1] cobalt nickel dioxide [2] cobalt nickel oxide [3]	68186-89-0 [1] 58591-45-0 [2] 12737-30-3 [3]	R: 49-43-48/23
nickel tin trioxide, nickel stannate	12035-38-0	R: 49-43-48/23
nickel triuranium decaoxide	15780-33-3	R: 49-43-48/23
nickel dithiocyanate	13689-92-4	R: 49-61-32-42/43-48/23-68-50/53
nickel dichromate	15586-38-6	R: 49-61-42/43-48/23-68-50/53
nickel(II) selenite	10101-96-9	R: 49-42/43-48/23-50/53
nickel selenide	1314-05-2	R: 49-43-48/23-50/53
silicic acid, lead nickel salt	68130-19-8	R: 49-61-43-48/23-62-50/53
nickel diarsenide [1] nickel arsenide [2]	12068-61-0 [1] 27016-75-7 [2]	R: 49-43-48/23-50/53
nickel barium titanium primrose priderite, C.I. Pigment Yellow 157, C.I. 77900	68610-24-2	R: 49-43-48/23
nickel dichlorate [1] nickel dibromate [2] ethyl hydrogen sulfate, nickel(II) salt [3]	67952-43-6 [1] 14550-87-9 [2] 71720-48-4 [3]	R: 49-61-42/43-48/23-68-50/53
nickel(II) sulfite [1] nickel tellurium trioxide [2] nickel tellurium tetraoxide [3] molybdenum nickel hydroxide oxide phosphate [4]	7757-95-1 [1] 15851-52-2 [2] 15852-21-8 [3] 68130-36-9 [4]	R: 49-42/43-48/23-50/53
nickel boride (NiB) [1] dinickel boride [2] trinickel boride [3] nickel boride [4] dinickel silicide [5] nickel disilicide [6] dinickel phosphide [7] nickel boron phosphide [8]	12007-00-0 [1] 12007-01-1 [2] 12007-02-2 [3] 12619-90-8 [4] 12059-14-2 [5] 12201-89-7 [6] 12035-64-2 [7] 65229-23-4 [8]	R: 49-43-48/23-50/53
dialuminium nickel tetraoxide [1] nickel titanium trioxide [2] nickel titanium oxide [3] nickel divanadium hexaoxide [4] cobalt dimolybdenum nickel octaoxide [5] nickel zirkonium trioxide [6] molybdenum nickel tetraoxide [7] nickel tungsten tetraoxide [8] olivine, nickel green [9] lithium nickel dioxide [10] molybdenum nickel oxide [11]	12004-35-2 [1] 12035-39-1 [2] 12653-76-8 [3] 52502-12-2 [4] 68016-03-5 [5] 70692-93-2 [6] 14177-55-0 [7] 14177-51-6 [8] 68515-84-4 [9] 12031-65-1 [10] 12673-58-4 [11]	R: 49-43-48/23
trioctylstannane	869-59-0	R: 38-48/25-53
benzene	71-43-2	R: 45-46-11-36/38-48/23/24/25-65

pentachloroethane	76-01-7	R: 40-48/23-51/53
hexachlorobenzene	118-74-1	R: 45-48/25-50/53
•,•,•,4-tetrachlorotoluene, *p*-chlorobenzotrichloride	5216-25-1	R: 45-21/22-37/38-48/23-62
pindone (ISO), 2-pivaloylindan-1,3-dione	83-26-1	R: 25-48/25-50/53
hexan-2-one, methyl butyl ketone, butyl methyl ketone, methyl-n-butyl ketone	591-78-6	R: 10-48/23-62-67
warfarin [1] (*S*)-4-hydroxy-3-(3-oxo-1-phenylbutyl)-2-benzopyrone [2] (*R*)-4-hydroxy-3-(3-oxo-1-phenylbutyl)-2-benzopyrone [3]	81-81-2 [1] 5543-57-7 [2] 5543-58-8 [3]	R: 61-48/25-52/53
dicoumarol, 4,4'-dihydroxy-3,3'-methylenebis(2*H*-chromen-2-one)	66-76-2	R: 22-48/25-51/53
perfluorooctane sulfonic acid, heptadecafluorooctane-1-sulfonic acid [1] potassium perfluorooctanesulfonate, potassium heptadecafluorooctane-1-sulfonate [2] diethanolamine perfluorooctane sulfonate [3] ammonium perfluorooctane sulfonate, ammonium heptadecafluorooctanesulfonate [4] lithium perfluorooctane sulfonate, lithium heptadecafluorooctanesulfonate [5]	1763-23-1 [1] 2795-39-3 [2] 70225-14-8 [3] 29081-56-9 [4] 29457-72-5 [5]	R: 61-20/22-40-48/25-64-51/53
2-nitro-2-phenyl-1,3-propanediol	5428-02-4	R: 21/22-39-41-43-48/25-51/53
A mixture (1:1) of: 2-[*N*-ethyl-4-[(5,6-dichlorobenzothiazol-2-yl)azo]-*m*-toludino]ethyl acetate, 2-[*N*-ethyl-4-[(6,7-dichlorobenzothiazol-2-yl)azo]-*m*-toludino]ethyl acetate		R: 43-48/25-51/53
4-(2-chloro-4-trifluoromethyl)phenoxy-2-fluoroaniline hydrochloride	113674-95-6	R: 22-41-43-48/20-48/25-50/53
N-[3-(1,1-dimethylethyl)-1*H*-pyrazol-5-yl]-*N*'-hydroxy-4-nitrobenzenecarboximidamide	152828-23-4	R: 22-48/25-52/53
asbestos	12001-28-4 [1] 132207-32-0 [2] 12172-73-5 [3] 77536-66-4 [4] 77536-68-6 [5] 77536-67-5 [6] 12001-29-5 [7]	R: 45-48/23

Appendix III - List of substances – Health hazard

3.1 LIST OF SUBSTANCES – AREA 1

Area 1 (T+ - oral Cat 2)	**CAS number**
Sodium cyanide	143-33-9
Vitamin D2 Pulver	50-14-6

3.2 LIST OF SUBSTANCES FROM AREA 2 TO AREA 7

Area 2 (oral cat 3, LD50 50-200 mg/kg)	**CAS number**
N,n'-di-sec-butyl-1,4-fenyleendiamine	101-96-2
Tributylamine	102-82-9
3-mercaptopropionic acid	107-96-0
1,4-Naphthoquinone - Several suppliers	130-15-4
Ethyltriphenylphosphonium acetate	35835-94-0
1,1'-(p-Tolylimino)dipropan-2-ol	38668-48-3
Thimerosal	54-64-8
Methyloranje	547-58-0
Methyl-p-benzoquinone	553-97-9
Triphenylstibine	603-36-1
o-Phthalaldehyde	643-79-8
Vanadiumoxytrichloride	7727-18-6
Dibutyl tin dilaurate - several suppliers	77-58-7
Dibutyltin oxide	818-08-6
N,N-Dimethylbutylamine (N,N-dimethtyl-n-butylamine ex. OXEA)	927-62-8
B 109, 5% in styrene	
C5-Wittigester halogenide (C5WE)	
UNIREZ 550 (Inactive)	
N-(2-(4-amino-N-ethyl-m-toluidino)ethyl)methaansulfonamidesesquisulfaat	?
Natriumchloriet (bedoelen ze 'sodium chloride, CAS 7647-14-5)	?
Rhodate(3-), tri-.mu.-bromohexabromodi-, tripotassium	?

Area 2b (Oral Cat 3 LD50 200-300 mg/kg)	CAS number
Methanesulfonamide, N-[2-[(4-amino-3-methylphenyl) ethylamino]ethyl]-,sulfate (2:3), dihydrate	?
Nickel sulfate hexahydrate	10101-97-0
Nickel(II)sulfate hexahydrate (1:1:6)	10101-97-0?
4-Dimethylaminopyridine	1122-58-3
1,2-dihydroxybenzene; pyrocatechol **	120-80-9
Potassium hydroxide	1310-58-3
Lithium hydroxide (anhydrous)	1310-65-2
Lithium hydroxide monohydrate	1310-66-3
Sodium sulphide	1313-82-2
Imidazole	288-32-4
Benzaldehyde, 2,4-dihydroxy-, oxime	349660-72-6
1,3-Propanediol, 2-bromo-2-nitro-	52-51-7
Ethyl-2-bromopropionate (BPE)	535-11-5
Sodium thiocyanate (Component)	540-72-7
Trimethyl benzyl ammonium chloride	56-93-9
2-mercaptoethanol	60-24-2
Aniline	62-53-3
Cyclohexanol, 2-amino- **	6850-38-0
Cyclohexanol, 2-amino-, (1R,2R)-rel- **	6982-39-4
didecyldimethylammonium chloride	7173-51-5
2,2,2-trifluorethanol	75-89-8
1,3-Dibromo-5,5-dimethylhydantoin	77-48-5
Sodium metaperiodate	7790-28-5
Jeffamine D-2000	9046-10-0
Methyl acrylate	96-33-3
Triethylborium	97-94-9
Mangannitrat	10377-66-9
benzyldimethylamine	103-83-3
4-(Diethylamino)-2-butyn-1-ol	10575-25-4
m-cresol	108-39-4
Cyclohexylamin	108-91-8
N,N'-Methylenediacrylamide	110-26-9
Hexylamine	111-26-2
1-Methylpyrrolidine	120-94-5
(potassium hydroxide)	1310-58-3
Ethylacrylat	140-88-5
3-Methoxybenzenethiol	15570-12-4
9-[2-(Ethoxycarbonyl)phenyl]-3,6-bis(ethylamino)-2,7-dimethylxanthylium ethyl sulphate	26694-69-9
3,7-Dihydro-1,3-dimethyl-1H-purine-2,6-dione, sodium	3485-82-3
Fenthion	55-38-9
Phenethylamine	64-04-0

.alpha.,.alpha.-Bis[4-(dimethylamino)phenyl]-4-(phenylamino)naphthalene-1-methanol	6786-83-0
1-Ethylpiperidine	766-09-6
Dibutyltin dilaurate	77-58-7
Sodium bromate	7789-38-0
Quinoline	91-22-5
3,4-Dimethoxyphenylacetonitrile	93-17-4
Glycerol-alpha-Chlorhydrin	96-24-2
Area 3 dermal with LD50 200-400 mg/kg	**CAS number**
2-methylpyridine; 2-picoline	109-06-8
Piperidine	110-89-4
Bis(2-dimethylaminoethyl)(methyl)amine	3030-47-5
3-(2-Ethylhexyloxy)propylamine	5397-31-9
Area 4 (dermal with LD50 400-1000 mg/kg)	**CAS number**
Cyclohexanemethylamine	3218-02-8
2-Aminoethyldiethylamine	100-36-7
2-diethylaminoethanol; N,N-diethylethanolamine	100-37-8
Cyclohexyl(methyl)amine	100-60-7
4-Ethylmorpholine	100-74-3
Tripropylamine	102-69-2
Benzyldimethylamine	103-83-3
1-Naphthalenemethanamine, .alpha.-methyl-, (S)-	10420-89-0
2-Ethylhexylamine	104-75-6
3-aminopropyldiethylamine; N,N-diethyl-1,3-diaminopropane	104-78-9
Bis(2-ethylhexyl)amine	106-20-7
P-toluidine; 4-aminotoluene	106-49-0
Isobutyl acrylate	106-63-8
1-chloro-2,3-epoxypropane	106-89-8
2,3-epoxypropyl methacrylate; glycidyl methacrylate	106-91-2
Propylamine	107-10-8
Cyclohexylamine	108-91-8
Cyclohexanone	108-94-1
Phenol; carbolic acid; monohydroxybenzene; phenyl alcohol	108-95-2
3-Methylpyridine	108-99-6
butylamine	109-73-9
Malononitrile	109-77-3
Diethylamine	109-89-7
Pentylamine	110-58-7
But-2-yne-1,4-diol; 2-butyne-1,4-diol	110-65-6
Morpholine	110-91-8

Hexylamine	111-26-2
Butyl isocyanate	111-36-4
2,2'-iminodiethylamine; diethylenetriamine	111-40-0
2-butoxyethanol; ethylene glycol monobutyl ether butyl cellosolve	111-76-2
Di-n-butylamine	111-92-2
3,6-diazaoctanethylenediamin; triethylenetetramine	112-24-3
2-hexyloxyethanol; ethylene glycol monohexyl ether; n-hexylglycol	112-25-4
Ethyl(1-naphthyl)amine	118-44-5
4-Diethylaminobenzaldehyde	120-21-8
1,2-dihydroxybenzene; pyrocatechol	120-80-9
Triethylamine	121-44-8
Cresol	1319-77-3
Butyl(ethyl)amine	13360-63-9
1-naphthylamine	134-32-7
2-piperazin-1-ylethylamine	140-31-8
Dipropylamine	142-84-7
Sodium dodecyl sulphate	151-21-3
3,3'-(Methylimino)bispropiononitrile	1555-58-4
2-Methyl-3-butenenitrile	16529-56-9
Cyclohexanemethanamine, .alpha.-methyl-, (.alpha.S)-	17430-98-7
Aluminium tri-sec-butanolate	2269-22-9
2-(Dimethylamino)ethyl acrylate	2439-35-2
Diaminotoluene, technical product - mixture of 4-methyl-m-phenylene diamine and 2-methyl-m-phenylene	25376-45-8
L-.alpha.-Methylbenzylamine	2627-86-3
1-Butanol, 3-amino-	2867-59-6
N,N,N',N'-Tetramethyl-2,2'-oxybis(ethylamine)	3033-62-3
Isododecane	31807-55-3
2-Octanamine, (2R)-	34566-05-7
Crotonic acid	3724-65-0
N-[3-(Dimethylamino)propyl]-N,N',N'-trimethylpropane-1,3-diamine	3855-32-1
D-.alpha.-Methylbenzylamine	3886-69-9
R-(+)-1-(1-Naphthyl)ethylamine	3886-70-2
N,N-Diethyl-2-propynylamine	4079-68-9
N-Methylisopropylamine	4747-21-1
(R)-.alpha.-Cyclohexanemethylamine	5913-13-3
1-Butanol, 3-amino-, (3R)-	61477-40-5
DL-.alpha.-methylbenzylamine	618-36-0
Diethyl sulphate	64-67-5
Thioglycolic acid	68-11-1
Cyclohexanol, 2-amino-	6850-38-0

Benzenesulfonic acid, C10-16-alkyl derivs.	68584-22-5
Tetrahydro-2,5-dimethoxyfuran	696-59-3
Cyclohexanol, 2-amino-, (1R,2R)-rel-	6982-39-4
2-Pyrrolidinone, 5-ethenyl-	7529-16-0
2-aminopropane; isopropylamine	75-31-0
Tert-Butyl hydroperoxide	75-91-2
Propylidynetrimethanol	77-99-6
Isoprene (stabilized); 2-methyl-1,3-butadiene	78-79-5
Acrylic acid	79-10-7
Methyl chloroformate	79-22-1
Isobutyric acid	79-31-2
.alpha.,.alpha.-dimethylbenzyl hydroperoxide; cumene hydroperoxide	80-15-9
1,1,3,3-Tetramethylguanidine	80-70-6
hexamethylene diisocyanate	822-06-0
4-Methylimidazole	822-36-6
1-vinyl-2-pyrrolidone	88-12-0
2-tert-Butylphenol	88-18-6
Salicylaldehyde	90-02-8
N,N-Dimethylbutylamine	927-62-8
2-Ethyl-4-methylimidazole	931-36-2
o-cresol	95-48-7
2-Chloroaniline	95-51-2
Allyl methacrylate	96-05-9
Acetic acid, chloro-, methyl ester	96-34-4
1-Methylpyrrole	96-54-8
2-Diisopropylaminoethanol	96-80-0
2-furaldehyde	98-01-1
Nicotinamide	98-92-0
1,1,1,3,3,3-Hexamethyldisilazane	999-97-3
Area 5 (T+ - inhal aerosol Cat 2)	**CAS number**
1,1,2,2-tetrabromoethane	79-27-6
3,5,5-Trimethylhexanoyl chloride	36727-29-4
1,4-dichlorobut-2-ene	764-41-0
Chloroacetaldehyde	107-20-0
Trichloronitromethane; chloropicrin	76-06-2
Hydrogen fluoride	7664-39-3
Phosphorus trichloride	7719-12-2
2-methylaziridine; propyleneimine	75-55-8
Isononanoyl chloride	57077-36-8
2-(Dimethylamino)ethyl acrylate	2439-35-2

Methanesulphonyl chloride	124-63-0
Sodium dichromate anhydrate	10588-01-9
Vitamin D2 Pulver	50-14-6
Vitamin D3 Pulver	67-97-0
Dihexylamine	143-16-8
Ammonium dichromate	7789.09.05
Potassium dichromate	7778-50-9
Sodium chromate	7775.11.03
Chlorothalonil	1897-45-6
Chloromethyl ethyl ether	3188-13-4
Ethyl chloroformate	541-41-3
Methyl chloroformate	79-22-1
O,O – diethylphosphorochloridothioate	2524.04.01
O,O – dimethylphosphorochloridothioate	2524-03-0
Peracetic acid	79-21-0
Tetraethyl lead	78-00-2
Thioglycolic acid	68-11-1
Dimethylaminosulphonyl chloride	13360-57-1
Phosphorus oxychloride	10025-87-3
Iodine	7553-56-2
Phosphorus pentoxide	1314-56-3
Sulphuric acid mist	7664-93-9
Area 6 (inhal gas T Cat3)	**CAS number**
Bromotrifluoroethylene	00598-73-2
Carbonyl sulphide	00463-58-1
Chlorotrifluoroethylene	00079-38-9
Ethylene oxide	00075-21-8

Area 7 (inhal gas Xn Cat 3)	**CAS number**
Hexafluoroisobutene	00382-10-5
Hydrogen iodide	10034-85-2
Hexafluoro-1,3-Butadiene	00685-63-2
Hydrogen bromide	10035-10-6

3.3 LIST OF SUBSTANCES – AREA 3 AND AREA 5

							Blue: Toxic Properties (incl. In Seveso)		
							Red: Phys-Chem Properties (incl. In Seveso)		
							Green: Dangerous for Environment (incl in Seveso)		
name	CAS number	Area	total amount in kg	LD 50 (mg/kg) oral	LD 50 (mg/kg) dermal				
							Result of Classlab Search	**Toxic properties**	**Can be deleted from named substances ?**
3-(2-Ethylhexyloxy)propylamine	5397-31-9	A3	0	320 (inchem) 845 (BASF)	305		not found in ECB database		no
Acrolein (should be out?)	107-02-8	A3	12	46 (BASF)	na	**(T+ by inhal)**			no
Bis(2-dimethylaminoethyl)(methyl)amine	3030-47-5	A3	130	1630	280		22 - 24 - 34		no
Piperidine	110-89-4	A3	42 303	400	320		11 - 23/24 - 34	inh. toxic for C • 5 %	no
2-methylpyridine; 2-picoline (to be checked)	109-06-8	A3	100 110	790	410 (A4)		10 - 20/21/22 - 36/37		no
Fomaldehyde (to named)	50-00-0	A3	2 146 646	800? / 100?	270		23/24/25 - 34 - 40 - 43	inh. toxic for C •25 %	no
Sum = 6			2 289 200						
							Result of Classlab Search	**Toxic properties**	
1,4-dichlorobut-2-ene	764-41-0	A5	0	89	620		45 - 24/25 - 26 - 34 - 50/53		
3,5,5-Trimethylhexanoyl chloride	36727-29-4	A5	0	1700 (BASF test)	na		not found in ECB data base		
Chloromethyl ethyl ether	3188-13-4	A5	0	na	na		not found in ECB data base/ R11 R20/21/22 R40		
Dihexylamine	143-16-8	A5	0	380	170		not found in ECB data base/R23-25		
O,O – diethylphosphorochloridothioate	2524.04.01	A5	0	800	na		not found in ECB data base		
O,O – dimethylphosphorochloridothioate	2524-03-0	A5	0				not found in ECB data base		
Sodium dichromate anhydrate	10588-01-9	A5	0	50	na		45 - 46 - 60 - 61 - 8 - 21 - 25 - 26 - 34 - 42/43 - 48/23 - 50/53	oral very toxic for C •7%, otherwise toxic	? -> A1
Trichloronitromethane; chloropicrin	76-06-2	A5	0	250	820		22 - 26 - 36/37/38		
Dimethylaminosulphonyl chloride	13360-57-1	A5	0	na	na		45 - 21/22 - 26 - 34		
Isononanoyl chloride	57077-36-8	A5	2	same substance as 3,5,5-trimethylhexanoyl chloride			not found in ECB data base		
Vitamin D2	50-14-6	A5/A1	2	56	na		24/25 - 26 - 48/25	toxic for oral and dermal routes	
1,1,2,2-tetrabromoethane	79-27-6	A5	5	1100	na		26 - 36 - 52/53		
Potassium dichromate	7778-50-9	A5	23	25	14	**A1**	45 - 46 - 60 - 61 - **8** - 21 - 25 - 26 - 34 - 42/43 - 48/23 - **50/53**	toxic for oral route	

Tetraethyl lead	78-00-2	A5	41	1,2 (inchem) 12,3 (SAX)	na	**A1?**	not found in ECB data base		
Thioglycolic acid	68-11-1	A5	1 012	114	LDL0: 300		23/24/25 - 34	toxic for all routes	
Methyl chloroformate	79-22-1	A4/A5	2 000	60	7120		11 - 21/22 - 26 - 34		
Phosphorus pentoxide	1314-56-3	A5	3 401	na	na		35		
Peracetic acid	79-21-0	A5	4 328	1540	na		7 - **10** - 20/21/22 - 35 - **50**	classification according to conc	
Iodine	7553-56-2	A5	4 379	14 g/kg	na		20/21 - **50**		
2-methylaziridine; propyleneimine	75-55-8	A5	4 999	19	na	**A1**	45 - **11** - **26/27/28** - 41 - **51/53**	classification according to conc, very toxic for all routes >7%	yes
Chloroacetaldehyde	107-20-0	A5	5 000	75	224		24/25 - 26 - 34 - 40 - 50	classification according to conc ; very toxic for oral and dermal routes >7%, toxic>1%	yes
Methanesulphonyl chloride	124-63-0	A5	22 078	50	500		not found in ECB data base		
2-(Dimethylamino)ethyl acrylate	2439-35-2	A5	35 000	455	na		not found in ECB data base		
Ethyl chloroformate	541-41-3	A5	39 538	270	7120		11 - 22 - 26 - 34		
Chlorothalonil	1897-45-6	A5	50 000	10	na	**A1**	26 - 37 - 40 - 41 - 43 - **50/53**		
Vitamin D3	67-97-0	A5	54 950	42	na		24/25 - 26 - 48/25	toxic for oral and dermal routes	
Phosphorus oxychloride	10025-87-3	A5	150 639	380	na		14 - 22 - 26 - 35 - 48/23		
Hydrogen fluoride	7664-39-3	A5	300 166	1276 ppm/1h	na	**?**	26/27/28-35	very toxic for all exposure routes	yes
Phosphorus trichloride	7719-12-2	A5	304 906	550?	na		14 - 26/**28** - 35 - 48/20	very toxic for oral route	? -> A1
Sulphuric acid	7664-93-9	A5	19 177 118	2144	na		35		
ammonium dichromate	7789-09-5			54?	na	**A1?**	45 - 46 - 60 - 61 - **2 - 8** - 21 - **25** - 26 - 34 - 42/43 - 48/23 - **50/53**	oral very toxic for C • 7%	? -> A1
sodium chromate	7775-11-3			51?	na	**A1?**	45 - 46 - 60 - 61 - 21 - **25** - 26 - 34 - 42/43 - 48/23 - **50/53**	oral very toxic for C • 7%	? -> A1

Appendix IV

TABLE I: SEVESO II DIRECTIVE PROPOSAL FOR ANNEX I. PART 2 AFTER TWG MEETING 4 FOR PHYSICAL HAZARDS WITH MOTIVATIONS

Draft proposal after TWG4			**Corresponding current text**		**Motivation/Comment**
Column 1	Column 2	Column 3			
Categories of dangerous substances and mixtures	Qualifying quantity (tonnes) of dangerous substances as delivered in Article 3 (4) for the application of		Entry #	Denotation	
	Article 6 and 7	Article 9			
EXPLOSIVES (see note 1) where the substance, mixture or article falls under GHS hazard class: Explosives, Unstable explosives or divisions 1.1, 1.2, 1.3, 1.5 or 1.6	10	50	5	EXPLOSIVE (see note 2) where the substance, preparation or article falls under any of: UN/ADR Divisions 1.1, 1.2, 1.3, 1.5 or 1.6 or risk phrase R2 or R3	The current entry is already harmonized with CLP through use of the ADR-classification. Unstable Explosives has been added, which is a Category that does not occur in ADR (since they may not be transported).
EXPLOSIVES (see note 1) where the substance, mixture or article falls under GHS hazard class: Explosives, Division 1.4 and is packaged as for transport	50	200	4	EXPLOSIVE (see note 2) where the substance, preparation or article falls under UN/ADR Division 1.4	The current entry is already harmonized with CLP through use of the ADR-classification. In the proposal a clarification is added that unpacked or repacked Explosives of Division 1.4 may no longer be Division 1.4, see 2.1.3 in Annex I Part 2 of the CLP.
OXIDISING GASES Oxidising gases, Category 1	50	200	3	OXIDISING	Straight translation from O;R8 in DSD (Dangerous Substances Directive) to Oxidising Gases Category 1.
OXIDISING LIQUIDS AND SOLIDS Oxidising solids and liquids, Category 1, 2 and 3	50	200	3	OXIDISING	For liquids: Straight translation. O;R9 and O;R8 in DSD correspond exactly to Oxidising Liquids Category 1, 2 and 3 in CLP. For solids: O;R9 and O;R8 in DSD correspond almost directly to Oxidising Solids Category 1, 2 and 3 in CLP. No significant impact is expected

Draft proposal after TWG4			Corresponding current text		Motivation/Comment
Column 1	Column 2	Column 3			
Categories of dangerous substances and mixtures	Qualifying quantity (tonnes) of dangerous substances as delivered in Article 3 (4) for the application of		Entry #	Denotation	
	Article 6 and 7	Article 9			
					due to the slight discrepancy, which is due to somewhat different test methods (A.17 in DSD and O.1 in CLP).
FLAMMABLE GASES ~~(see note 2)~~ Flammable gases, Category 1 or 2 ~~(and falls within the definition in note 2~~?)	10	50	8	EXTREMELY FLAMMABLE (where the substance or preparation falls within the definition given in Note 3 (c)) Note 3(c)(2): "(c) extremely flammable gases and liquids: 2. gases which are flammable in contact with air at ambient temperature and pressure (risk phrase R12, second indent), which are in a gaseous or supercritical state, and"	Straight translation for Note 3(c)(2). F+;R12 gases in DSD correspond to Flammable Gases Category 1 and 2 in CLP.
Option 1 for FLAMMABLE AEROSOLS Flammable aerosols, Category 1 and Category 2 with flammable propellant Flammable aerosols, Category 1 and Category 2	150? 5.000?	500? 50.000?	8 or 6, 7a, 7b	Flammable aerosols are considered based on their individual contents using the summation rule. In the vast majority of aerosols, the driving	If the two entries are specified depending on whether the propellant is flammable or not, the advantage is that it probably divides flammable aerosols better according to the hazard they actually pose. However, the practical

Draft proposal after TWG4			Corresponding current text		Motivation/Comment
Column 1	Column 2	Column 3			
Categories of dangerous substances and mixtures	Qualifying quantity (tonnes) of dangerous substances as delivered in Article 3 (4) for the application of		Entry #	Denotation	
	Article 6 and 7	Article 9			
with non-flammable propellant				gas is LPG, which is a flammable gas with F+;R12 classification in DSD. Aerosols frequently also contain flammable liquids. The direct assignment of an individual entry in the current Annex I of the Seveso-Directive is not possible; entries 6, 7a, 7b and especially 8 are all involved, as is the named entry of LPG in Part 1 of the Annex.	implementation will be more problematic due to the required information in the supply chain which cannot always be ensured.
Option 2 for FLAMMABLE AEROSOLS Flammable aerosols, Category 1	75?	300?	8 or 6, 7a, 7b	Flammable aerosols are considered based on their individual contents using the summation rule. In the vast majority of aerosols, the driving gas is LPG, which is a flammable gas with F+;R12 classification in DSD. Aerosols frequently also contain flammable liquids. The direct assignment of an individual entry in the current Annex I of the Seveso-Directive is not possible; entries 6, 7a, 7b and especially 8 are all involved, as is the named entry of LPG in Part 1 of the Annex.	The advantage of this solution is that problems due to insufficient communication of the components of flammable aerosols in the supply chain are avoided because the qualifying quantity is directly linked to the classification. The disadvantage is that the distinction between category 1 and category 2 is based on tests that are aimed at the end-user (and that are not really Seveso-relevant). However, the average content of flammable contents of category 1 aerosols will be lower than that of category 2, so it is still better than having only one entry for flammable aerosols.
Flammable aerosols, Category 2	250?	1.000?			

Draft proposal after TWG4			Corresponding current text		Motivation/Comment
Column 1	Column 2	Column 3			
Categories of dangerous substances and mixtures	Qualifying quantity (tonnes) of dangerous substances as delivered in Article 3 (4) for the application of		Entry #	Denotation	
	Article 6 and 7	Article 9			
FLAMMABLE LIQUIDS - Flammable liquids, Category 1 or - Flammable liquids, Categories 2 or ~~(32)~~/ flammable liquids with a flash point up to and including 60 °C, maintained at a temperature above their boiling point	10	50	8	EXTREMELY FLAMMABLE (where the substance or preparation falls within the definition given in Note 3 (c)) Note 3(c)(1) and (3): "(c) extremely flammable gases and liquids: 1. liquid substances and preparations which have a flash point lower than 0 ºC and the boiling point (or, in the case of a boiling range, the initial boiling point) of which at normal pressure is less than or equal to 35 ºC (risk phrase R 12, first indent), and" […] "3. flammable and highly flammable liquid substances and preparations maintained at a temperature above their boiling point."	Translation from F+;R12 in DSD to Flammable Liquids Category 1 in CLP, which is not completely straight (increase of the upper limit of the flash point from 0°C to 23°C) but this is not of practical relevance (because liquids with a boiling point below 35°C do not have such a high flash point). It is the best possible translation and in practice has few consequences Translation for liquids is F;R11 à Category 2 and R10 à Category 3, which is not straight (slight increase of the upper limit of the flash point for both categories) but the best possible and with few consequences. Category 3 Flammable Liquids are liquids with flash points • 23 and • 60°C. However, the wording "or flammable liquids with a flash point up to and including 60°C" is used in the proposal. This has the effect of including the liquids that have been excluded from Category 3 (for the purposes of CLP) due to not supporting combustion according to 2.6.4.5 in Annex I Part 2 of the CLP. This is necessary because under these conditions (above the boiling point) the results of the sustained combustibility test L.2 are not relevant.

Draft proposal after TWG4			Corresponding current text		Motivation/Comment
Column 1	Column 2	Column 3			
Categories of dangerous substances and mixtures	Qualifying quantity (tonnes) of dangerous substances as delivered in Article 3 (4) for the application of		Entry #	Denotation	
	Article 6 and 7	Article 9			
FLAMMABLE LIQUIDS Flammable liquids, Categories 2 or ~~(3)~~ flammable liquids with a flash point up to and including 60 °C where particular processing conditions, such as high pressure or high temperature, may create major-accident hazards (?)	50	200	7a	HIGHLY FLAMMABLE (where the substance or preparation falls within the definition given in Note 3 (b) (1)) Note 3(b) (1), second indent: " (b) highly flammable liquids: — substances and preparations which have a flash point lower than 55 º C and which remain liquid under pressure, where particular processing conditions, such as high pressure or high temperature, may create major-accident hazards;"	The proposal corresponds to Note 3(b)(1) second indent: Translation for liquids is F;R11 à Category 2 and R10 à Category 3, which is not straight (slight increase of the upper limit of the flash point for both categories) but the best possible and with few consequences. Category 3 Flammable Liquids are liquids with flash points • 23 and • 60°C. However, the wording "or flammable liquids with a flash point up to and including 60°C" is used in the proposal. This has the effect of including the liquids that have been excluded from Category 3 (for the purposes of CLP) due to not supporting combustion according to 2.6.4.5 in Annex I Part 2 of the CLP. This is necessary because under these conditions (elevated pressure/temperature etc.) the results of the sustained combustibility test L.2 are not relevant.
FLAMMABLE LIQUIDS Flammable liquids, Categories 2 or 3 ~~(see note 3)~~	5.000	50.000	6 and 7b	FLAMMABLE (where the substance or preparation falls within the definition given in Note 3 (a)) Note 3(a): "(a) flammable liquids: substances and preparations having a flash point equal to or greater than 21 ºC and less than or	Translation for liquids is F;R11 à Category 2 and R10 à Category 3, which is not straight but the best possible and with few consequences. Category 3 thus corresponds to current entry 6 FLAMMABLE, and Category 2 to current entry 7b HIGHLY FLAMMABLE Note 3(b)(2). According to 2.6.4.5 in Annex I of the CLP, liquids with flash points above 35°C need not be classified

Draft proposal after TWG4			Corresponding current text		Motivation/Comment
Column 1	Column 2	Column 3			
Categories of dangerous substances and mixtures	Qualifying quantity (tonnes) of dangerous substances as delivered in Article 3 (4) for the application of		Entry #	Denotation	
	Article 6 and 7	Article 9			
				equal to 55 ºC (risk phrase R 10), supporting combustion;" HIGHLY FLAMMABLE liquids (where the substance or preparation falls within the definition given in Note 3 (b) (2)) Note 3(b)(2): "substances and preparations having a flash point lower than 21 ºC and which are not extremely flammable (risk phrase R 11, second indent);"	in Category 3 if they do not support combustion. Such liquids are thus not Flammable Liquids Category 3 and therefore do not fall under this entry. Hence the last condition in the current Note 3(a), "supporting combustion", is already included in the condition on Category 3 in CLP, and therefore can be omitted.
SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES Self-reactive substances and mixtures, Type A or B or organic peroxides, Type A or B	10	50	5	EXPLOSIVE (see note 2) where the substance, preparation or article falls under any of: UN/ADR Divisions 1.1, 1.2, 1.3, 1.5 or 1.6 or risk phrase R2 or R3	Organic Peroxides and Self-Reactives Types A and B in CLP are always classified as E; R2 or E;R3 according to DSD. Hence this is a straight translation from E;R2 or E;R3 in DSD to Self-Reactives or Organic Peroxides Types A or B in CLP.
SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES Self-reactive substances and mixtures, Type C, D, E or F or organic peroxides, Type C, D, E, or F	50	200	3	OXIDISING	Organic peroxides are classified O;R7 in DSD, unless they are R2 or R3. Straight translation is from O;R7 in DSD to Organic Peroxides Type C, D, E or F in CLP. Self-Reactives are a new Hazard Class in CLP that has no direct correspondence in DSD. DSD-assignment for Types C, D. E and F can be

Draft proposal after TWG4			Corresponding current text		Motivation/Comment
Column 1	Column 2	Column 3			
Categories of dangerous substances and mixtures	Qualifying quantity (tonnes) of dangerous substances as delivered in Article 3 (4) for the application of		Entry #	Denotation	
	Article 6 and 7	Article 9			
					F+;R12, F;R11, R10, possibly none or in a few cases E;R2. They therefore may fall under diverse entries (mainly 6, 7a, 7b, 8) in the current Annex I Part 2, or fall out completely. The classification scheme for Self-Reactives in CLP and ADR is exactly the same as for Organic Peroxides, and thus also the hazards are the same. For this reason Self-Reactives have been treated in the same way as Organic Peroxides in this new entry. Organic Peroxides and Self-Reactives Type G are exempted from ADR and have no hazard communication elements in CLP. They have therefore been exempted also here.
PYROPHORIC SOLIDS AND LIQUIDS Pyrophoric solids, Category 1, or Pyrophoric liquids, Category 1	50	200	7a	HIGHLY FLAMMABLE (where the substance or preparation falls within the definition given in Note 3 (b) (1)) Note 3(b) (1), first indent: " (b) highly flammable liquids: 1. substances and preparations which may become hot and finally catch fire in contact with air at ambient temperature without any input of energy (risk phrase R 17),"	For liquids: Straight translation for the first indent of current Note 3(b)(1), since F;R17 corresponds directly to Pyrophoric Liquids Category 1. For solids: Pyrophoric Solids are currently not included in Annex I Part 2.
ANY CLASSIFICATION not covered by those given above in combination with hazard statement EUH014 (including EUH014 / GHS hazard class	100	500	10	ANY CLASSIFICATION not covered by those given above in combination with risk phrases:	EUH014 is a remaining EU-hazard statement in CLP, and is a straight translation from R14 in DSD. Substances and Mixtures which in Contact

Draft proposal after TWG4			Corresponding current text		Motivation/Comment
Column 1	Column 2	Column 3	Entry #	Denotation	
Categories of dangerous substances and mixtures	Qualifying quantity (tonnes) of dangerous substances as delivered in Article 3 (4) for the application of				
	Article 6 and 7	Article 9			
"Substances which in contact with water emit flammable gases")				(i) R14: 'Reacts violently with water' (including R14/15)	with Water Emit Flammable Gases, Category 1, 2 or 3 in CLP correspond to R15 in DSD. Normally those in Category 1 should also be assigned R14.

Notes

1. An "explosive" means:

   ~~(a substance, mixture or article covered by the hazard class "explosives" of the CLP Regulation, Unstable explosives or Divisions 1.1, 1.2, 1.3, 1.4, 1.5 or 1.6.~~) ?

   If explosives of division 1.4 are unpacked or repacked, they must be assigned to entry x[18] unless the hazard is shown to still correspond to this hazard division.

   (~~Included in this definition are pyrotechnics, which for the purposes of this Directive are defined as substances (or mixtures of substances), designated to produce heat, light, sound, gas or smoke or a combination of such effects through self sustained exothermic chemical reactions.~~

   ~~Included in this definition are also explosive or pyrotechnic substances or mixtures contained in articles. In the case of articles containing explosive or pyrotechnic substances or mixtures, if the quantity of the substance or mixture contained is known, that quantity shall be considered for the purposes of this Directive. If the quantity is not known, then, for the purposes of this Directive, the whole article shall be treated as explosive.~~) ?

This Note on Explosives still has to be carefully checked and reworded.

2. ~~(A flammable gas means: a gas or gas mixture having a flammable range with air at 20°C and a standard pressure of 101.3 kPa and which is in a gaseous or supercritical state.) ?~~

The supercritical condition has to be taken care of in this Note,

(~~3. According to 2.6.4.5 of Annex I of the CLP Regulation liquids with a flash point of more than 35°C need not be classified in Category 3 if negative results have been obtained in the sustained combustibility test L.2, Part III, section 32 of the UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria.~~)

[18] This reference shall be added to the other entry for explosives (comprising unstable explosives and explosives of the divisions 1.1, old entry no. 5.

TABLE II: SEVESO II DIRECTIVE, PROPOSAL FOR ANNEX I, PART 2 AFTER TWG MEETING 4 FOR ENVIRONMENTAL HAZARDS

Draft proposal after TWG4			**Corresponding current text**		**Motivation/Comment**
Column 1	**Column 2**	**Column 3**	**Entry #**	**Denotation**	
Categories of dangerous substances and mixtures	**Qualifying quantity (tonnes) of dangerous substances as delivered in Article 3 (4) for the application of**				
	Article 6 and 7	**Article 9**			
Substances Hazardous to the Aquatic Environment			9	Dangerous for the Aquatic Environment risk phrases:	
i) Hazardous to the Aquatic Environment, Category Acute I, Chronic I	100	200		i) R50: "Very toxic to aquatic organisms (including R50/53)	Straight translation from R50 and R50/53 in DSD (Dangerous Substances Directive - 67/548/EC) to Aquatic Acute Category 1 and to Aquatic Chronic Category 1, respectively.
ii) Hazardous to the Aquatic Environment, Category Chronic II	200	500		ii) R51/53: "Toxic to aquatic organisms. May cause long term adverse effects in aquatic environment"	Straight translation from R51/53 in DSD to Aquatic Chronic Category 2.[19]

[19] Unless the chronic toxicity NOECs of relevant organisms are >1 mg/l

TABLE III - SUMMARY FOR PHYSICAL HAZARDS SUGGESTED NOT TO BE INCLUDED IN SEVESO II. DIRECTIVE AFTER THE 6TH MEETING

Name of the substance group	Definition according to CLP Regulation	Status regarding the Seveso II Directive	Justification for non inclusion in the Seveso II Directive
Gases under pressure	Gases contained in a receptacle at a pressure of 200 kPa or more, or which are liquefied or liquefied and refrigerated	New hazard class	It was proposed not to be included in Seveso II. because it is not within the scope of the Directive.
Flammable solids	Solids which are extremely combustible, or may cause or contribute to fire through friction.	In Seveso there are 3 types of flammability; flammable, highly flammable and extremely flammable. Following on from their definition it is clear that these substances are gases and liquids but not solids. Although flammable solids in powder form may be relevant to (external) safety, this group of substances is not covered by Seveso at the moment.	The generic group of powdered flammable solids may be of concern because of their sensibility to dust explosions. Most of the flammable solids are already covered by other categories of Seveso or are not dangerous substances.
Self-heating substances	A self-heating substance or mixture is a liquid or solid substance or mixture, other than a pyrophoric liquid or solid, which, by reaction with air and without energy supply, is liable to self-heat; this substance or mixture differs from a pyrophoric liquid or solid in that it will ignite only when in large quantities (kilograms) and after long periods of time (hours or days).	This category of substances is not yet covered by Seveso.	Suggestion against being included in the Seveso II Directive because it does not seem to present a major accident hazard.
Corrosive to metals	A substance or mixture which by chemical action will materially damage, or even destroy metals.	This is a new hazard class and previously was not included in Seveso.	Not relevant for the scope of the Seveso II. It does not seem to present a major accident hazard.

8. References

[1] Report on the 15th CCA meeting held in Austria

[2] 18th plenary meeting of the Committee of Competent Authorities (CCA) for Seveso II Directive

[3] European Commission, JRC-IPSC MAHB TWG on Seveso and GHS working documents on website: http://mahbsrv.jrc.it/sevesoandghs

[4] Draft minutes and lists of actions from the 1st meeting of TWG on Seveso and GHS - Ispra, 20-22nd of February 2008.

[5] Draft minutes and lists of actions from the 2nd meeting of TWG on Seveso and GHS - Ispra, 12-13th of June 2008.

[6] Draft minutes and lists of actions from the 3rd meeting of TWG on Seveso and GHS - Ispra, 6-7th of November 2008.

[7] Draft minutes and lists of actions from the 4th meeting of TWG on Seveso and GHS Ispra, 5-6th of March 2009.

[8] Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

[9] European Commission, [COM(2007) 355 final] for a Regulation of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures, and amending Directive 67/548/EEC and Regulation (EC) No 1907/2006.

[10] EC Council Directive 105/2003/EC Seveso II Directive

[11] EC Council Directive, 67/548/EC Dangerous Substances Directive

[12] CLP Regulation on classification, labelling and packaging of substances and mixtures

[13] European Commission JRC- IHCP EX-ECB website: http://ecb.jrc.ec.europa.eu

[14] Impact assessment study, COWI

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Abstract
The Globally Harmonized System of Classification and Labelling of Chemicals (GHS) provides a framework for classifying hazardous substances and mixtures based upon their physical characteristics, environmental and health effects. In December 2008 the European Parliament and the Council adopted a new Regulation on classification, labelling and packaging of substances and mixtures (CLP - Regulation (EC) No 1272/2008) to align existing EU legislation with the GHS.
At the 15th plenary meeting of the members of the Committee of Competent Authorities for Seveso II Directive it was decided to establish an expert group since other GHS classification initiatives were ongoing. The main objectives of the group were to review the potential impact of GHS classification criteria in a Seveso context. This report contains the results of the work which has been carried out by the Technical Working Group on Seveso and GHS in order to embed the new system into the current legislation. It examines how the GHS classification criteria apply in the identification of the various categories of Seveso establishments and – in this context – it constitutes an input in the decision making process for the development of Annex I of the Seveso legislation.

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