

HEALTH AND SAFETY EXECUTIVE		HID SEMI PERMANENT CIRCULAR	
Hazardous Installations Directorate		SPC/ENFORCEMENT/77	
Review Date:	July 2006	Subject File:	289
Author Section:	CI 4A	OG Status:	Fully Open
Issue Date:	August 2005	Version No:	2
<p>STATUS: For information – This SPC replaces the CCL document ‘Aerosols containing LPG’ in the COMAH Manual CHIP/COMAH Linkage section</p>			

**TO: Staff in HID - CD,
CI1 – CI4 (Bands 0 – 4)**

CLASSIFICATION OF AEROSOLS FOR COMAH APPLICATION

PURPOSE

This SPC provides guidance on how CHIP3 classification of aerosols should be used for determining COMAH application. It also explains how aerosols are labelled for normal use (and how this differs from classification).

BACKGROUND

1. The majority of aerosols on the market today use liquefied petroleum gas (LPG) as their propellant, although a small number use dimethyl ether (also a liquefied extremely flammable gas - LEFG) or compressed gases (e.g. nitrogen, carbon dioxide). Aerosol products are usually in solution or suspension, and may be dissolved in the liquefied propellant, or other solvent carriers (e.g. acetone, ethanol).
2. Under the Chemical (Hazard Information and Packaging for Supply) Regulations 1994 (CHIP2) a derogation was introduced by the Aerosols Directive as the CHIP classification test methods for determining flammability (during normal use) presented difficulties for aerosols (in that the tests refer to either flammable liquids or gases flammable in air, whereas an aerosol spray during normal use is often a mix of both). As a result most aerosols with flammable contents were classified and labelled as ‘flammable’. The Chemical (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP3) removed this derogation when they came into force 24 July 2002.
3. A clear distinction should be made between **labelling information for normal use** and **CHIP classification for application of COMAH**:
 - i. **LABELLING**: aerosols are **labelled for normal use**, to provide information for users relating to potential risks they may be exposed to

during an intentional, controlled spray release (i.e. normal release) of the aerosol's contents, in contrast to-

- ii. **CHIP CLASSIFICATION & COMAH APPLICATION:** aerosols classified under CHIP should also be considered for COMAH application for their major accident hazard potential arising from any unintended break in the integrity of the aerosol dispenser, causing sudden release of contents (i.e abnormal release). COMAH application should NOT be determined using the labelling information, which serves a different purpose.
4. [Appendix 2](#) explains how the labelling of aerosols for use differs from their classification. It should be noted that the test methods used for labelling are **not** suitable for determining their classification.

CLASSIFICATION OF AEROSOLS FOR DETERMINING COMAH APPLICATION

5. For the purposes of determining COMAH application, CHIP3 classification rules should be applied, regardless of whether or not the aerosols come within scope of CHIP3 (COMAH Schedule 1, Part 3, Note 1 refers). So, for example, aerosols containing cosmetic or medicinal products should be classified as if CHIP3 applies in order to determine COMAH application, even though CHIP3 does not apply.
6. COMAH Schedule 1 Part 1, para.2 states that mixtures and preparations shall be treated, for COMAH purposes, in the same way as pure substances provided they remain within the concentration limits set according to their properties in accordance with CHIP (unless other percentage compositions are specified in the COMAH Schedule – for example, formaldehyde). CHIP3 does not prescribe concentration limits for physico-chemical properties (which are classified through testing), making this rule difficult to apply to preparations, including aerosols. Therefore, there are two options available for determining whether COMAH applies to flammable aerosols-
7. **OPTION 1:** Bearing in mind the mechanism of release in the event of a major accident, an aerosol container should be considered as having two substances – propellant and contents – the quantities of which are then summed according to the Aggregation Rule in Note 4 of COMAH Schedule 1 Part 3. The percentage by weight of liquefied extremely flammable gases (LEFG) propellants in the aerosols should be aggregated and compared to the thresholds for 'liquefied extremely flammable gases' (including LPG) in COMAH Schedule 1 Part 2, Named Substances. The relevant qualifying thresholds are 50te for Lower Tier and 200te for Top Tier. Some examples for determining COMAH application are given in [Appendix 1](#).
8. This approach has been agreed by Member States through the Committee of Competent Authorities for the Implementation of the Seveso II Directive as the suggested interpretation.

9. LEFG propellants should NOT be compared to the generic category of 'extremely flammable gases' in COMAH Schedule 1 Part 3, which has lower qualifying thresholds (COMAH Schedule 1 Part 3 Note 3(c) refers, and **specifically excludes** LEFGs).
10. Any other relevant dangerous substances in the aerosol (as products or solvent carriers) should be aggregated using the appropriate generic category from Part 3. Where they are a Named Substance, they should be calculated using COMAH Schedule 1 Part 2, or otherwise the generic categories in COMAH Schedule Part 3. [See Example 2 in Appendix 1](#) to this SPC for a worked example.
11. Flammable aerosols should also be aggregated with any other relevant dangerous substances on site, e.g. storage of LPG in bulk or containers, oxidisers etc.
12. **OPTION 2:** Where an aerosol supplier does not wish to adopt the above approach, they will need to use an appropriate test method to determine the flammability of the aerosol contents and thereby provide suitable evidence to justify an alternative under CHIP before applying the COMAH application rules. Copies of supporting documentation, including flammability test reports should be readily accessible and made available to the competent authority on request. The test methods for labelling for consumer use are **not** suitable for this purpose.

COMAH STATUS AND CHARGING

13. Where the COMAH qualifying quantities discussed above are met or exceeded, COMAH work will be chargeable. Care should be taken where the dutyholder may have based the labelling of their aerosols on the full weight of the aerosol contents, not just that percentage which is an extremely flammable liquefied gas. In such a case, the percentages by weight of liquefied extremely flammable gases and any highly flammables or flammables should each be established, the summation rule applied where necessary, and COMAH application then determined, as discussed above.

SAFETY REPORTS

14. The CHIP3 Regulations came into force on 24 July 2002 and therefore, allowing for the 12 month transition period under COMAH Regulation 3(4) (subsequently revoked by the COMAH Amendment Regulations 2005), safety reports for new top tier entrants establishments were due 24 July 2003. Where safety reports are required but have not been submitted because of the confusion surrounding aerosols, a reasonable and realistic date should promptly be set for their submission.

OTHER CONSIDERATIONS

15. In the Planning (Hazardous Substances) Regulations 1992, certain types of aerosols were exempt from the need to obtain Consent. This exemption was

removed by the Planning (COMAH) Regulations 1999, so consent is now required for 25 tonnes or more of LPG in bulk, aerosols or any mixture of the two. This reflects the qualifying threshold in the Notification of Installations Handling Hazardous Regulations 1982 (NIHHS), which is lower than the COMAH threshold. Aerosols which do not qualify for COMAH may do so for NIHHS, and the Dangerous Substances (Notification and Marking of Sites) Regulations (again, with a threshold of 25 tonnes or more of dangerous substances).

16. Determining COMAH application depends upon a detailed knowledge of the aerosol contents and their CHIP classifications. There have been instances where some companies, such as haulage operators 'temporarily' storing large quantities of aerosols in lorry parks, have not been able to establish these details from the health and safety information provided under carriage legislation alone, and have not realised that NIHHS or COMAH may apply. Where necessary, they must obtain this information from the consignor to determine the CHIP classification of the aerosols and whether COMAH or NIHHS applies. Further guidance is given in SPC/Enforcement/02 [COMAH Guidance on Intermediate Temporary Storage \(ITS\)](#).

FURTHER INFORMATION

Further information on CHIP-COMAH issues can be found in the [COMAH Manual](#) on the Intranet, or by contacting CI4 on VPN 510 6226 or 523 5772.

APPENDIX 1

WORKING EXAMPLES FOR DETERMINING COMAH APPLICATION TO AEROSOLS

Example 1

- a. A site has 115te (gross weight) of aerosols containing hairspray and an LPG propellant. The weight of their contents (net weight) is 90te. Each aerosol contains by weight 65% flammable liquefied gas propellant:

(flammable %) (total weight)

$$0.65 \quad \times \quad 90 \quad = \quad 58.5\text{te, so the site is COMAH LT (>50te)}$$

- b. If there was also 180te LPG in bulk storage on site: $180 + 58.5 = 238.5\text{te}$, the site would become COMAH TT (>200te).

Example 2

A site has 115te (gross weight) of aerosols containing an LPG propellant and a flammable spray glue product. Their net weight is 90te. Each aerosol contains by weight 55% LPG and 40% glue product.

Therefore the aerosols hold $(90 \times 0.55 =)$ 49.5te LPG propellant and $(90 \times 0.40 =)$ 36te glue. Apply the aggregation rule (COMAH Schedule 1 Part 3, Note 4):

LPG Flammable Glue

(Named Substance) (generic category)

$$(49.5 / 50) \quad + \quad (36 / 5,000) \quad = \quad (0.99 + 0.0072) = 0.9972$$

The site is sub-COMAH as the sum of dangerous substances is not >1 for LT.

Example 3

- a. A site has 120te of aerosols containing deodorant spray and an LPG propellant. Their net weight is 100te.

Each aerosol dispenser contains 55% by weight liquefied extremely flammable gas propellant:

$$0.55 \times 100 = 55\text{te, so the site is COMAH LT (>50te).$$

- b. If there was also 180te hydrogen peroxide (oxidiser) stored on site, the aggregation rule would be applied to determine whether the site qualifies as COMAH TT, aggregating the LPG as a Named Substance (COMAH Schedule 1 Part 2) and the hydrogen peroxide (oxidiser) as a generic category (COMAH Schedule 1 Part 3):

LPG Oxidiser

(55 / 200) + (180 / 200) = (0.28)+(0.9) = 1.18 so the site is TT as the sum is >1

APPENDIX 2

CHIP3 LABELLING OF AEROSOLS FOR THE PURPOSE OF USE

1. CHIP3 requires aerosols to be classified in the same way as any other dangerous substance or preparation. However, due to the difficulties in testing the contents of an aerosol for flammability (during actual use), a pragmatic approach to labelling has been adopted throughout Europe, including the UK, whereby all aerosols containing 'flammable' propellants are labelled 'extremely flammable', in keeping with the spirit of CHIP3 legislation, unless the supplier chooses to derogate.
2. The derogation for labelling of aerosols with flammable contents (introduced into CHIP3 by an amendment to the Aerosols Directive) is set out in CHIP3 Regulation 9(3)-(4) and Schedule 3, Part 1, paragraph 3. This **labelling** derogation relates specifically to safety during the normal or reasonably foreseeable conditions of **use** (i.e. the intentional, metered spray release of contents and propellant to atmosphere) and **should not be confused with classification for intrinsic hazards**. (The fact the products of an aerosol container may have special properties when released normally is not relevant to a major accident. For COMAH purposes the classification is the critical point).
3. The derogation allows aerosol suppliers to omit some of the flammability **labelling** provisions (i.e. indication of danger, hazard symbol, risk and safety phrases) where they can provide evidence through testing that the aerosol contents do not present a risk in '**normal or reasonably foreseeable conditions of use**'. No specific test methods are referred to in the Aerosol Directive, its amendments, or CHIP3 . However, the European Aerosol Federation (FEA) has developed 3 test methods for classifying and labelling aerosols for **consumer use**. Although non-obligatory these are widely accepted as suitable for providing the evidence required:
 - The Ignition Distance Test - to provide an indication of the likelihood of a spray product igniting when discharged near a flame or ignition source;
 - The Enclosed Space Test – gives an indication of the time required to produce an explosive mixture in an enclosed space containing an ignition source, and
 - The Foam Test – designed to assess the flammability of a foam in-use.
4. These tests are detailed in the DTI guidance document, 'Methods of test for use with the derogation in the Aerosol Dispensers (EEC Requirements) [Amendment] Regulations 1996, and are available from the DTI Consumer Safety Unit. These tests are not suitable for determining CHIP classification for COMAH purposes.