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**COMMITTEE OF EXPERTS ON THE TRANSPORT OF  
DANGEROUS GOODS AND ON THE GLOBALLY  
HARMONIZED SYSTEM OF CLASSIFICATION  
AND LABELLING OF CHEMICALS**

Sub-Committee of Experts on the  
Transport of Dangerous Goods

Sub-Committee of Experts on the Globally  
Harmonized System of Classification  
and Labelling of Chemicals

Thirty-fourth session  
Geneva, 1-9 December 2008  
Item 12 of the provisional agenda

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Geneva, 10-12 (a.m) December 2008  
Item 7 of the provisional agenda

PROGRAMME OF WORK FOR THE BIENNIUM 2009-2010

Test method N.5

Ability for testing low gas evolution rates of toxic gases released when a substance  
is in contact with water

Transmitted by the experts from France and Germany<sup>1</sup>

**Note:** This document is submitted to the Sub-Committee of Experts on the Transport of Dangerous Goods (TDG Sub-Committee) for adoption and to the Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals (GHS Sub-Committee) for information; the GHS Sub-Committee will be informed during its sixteenth session of the decision taken by the TDG Sub-Committee the week before. Experts from all sectors are requested to send comments to the TDG Sub-Committee, either directly or via the secretariat, and are invited to participate in the work.

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<sup>1</sup> In accordance with the programme of work of the Sub-Committee for 2007-2008 approved by the Committee at its third session (refer to ST/SG/AC.10/C.3/60, para. 100 and ST/SG/AC.10/34, para. 14).

## Introduction

1. In 2003, after studying a proposal from OECD, the GHS Sub-Committee set up a correspondence working group in order to address classification criteria concerning substances which, in contact with water, release toxic gases, based, both on the toxicity on the released gases (LC50) and the evolution rate (quantity of gas emitted in a given time). France accepted to lead this group that met several times and also exchanged e-mails. Experts interested in the history of that work may consult the documents listed in the annex to this document. At the fifteenth session of the GHS Sub-Committee, the expert from France presented a summary of what had been achieved so far (see ST/SG/AC.10/C.4/2008/10).

2. While there was a basic consensus that the toxicity of the released gas itself should be determined according to the GHS toxicity criteria, a consensus on the evolution rate could not be achieved. This was mainly because the current limiting rate of evolution (lower cut-off value) of test method N.5 for the release of flammable gases in contact with water (1 l gas per kg substance per hour) was deemed much too high for the evolution of toxic gases, but test method N.5 does not provide for a specific evolution rate below this value.

3. In view of the above, and considering that the expertise for this test method was found within the TDG Sub-Committee as a focal point for physical hazards, the GHS Sub-Committee decided to defer the work on the improvement of test method N.5 to the TDG Sub-Committee to make it suitable for measurement of very low emission rates of toxic gases. Only when this work on test N.5 is finalized would the GHS Sub-Committee be able to reconsider these issues (see ST/SG/AC.10/C.4/30, paragraphs 25 and 26).

4. Furthermore, during a recent inter-laboratory comparison on the evaluation of UN Test N.5 "Test method for substances which in contact with water emit flammable gases" carried out under the lead of the Federal Institute for Materials Research and Testing (BAM) of Germany, the same substance (homogenized) was tested in different testing institutes worldwide. It was observed that the scattering between the test results (flammable gas evolution rate) of the test method was relatively large (range of all single values: 0.4 to 5.7 l/kg per hour, range of the laboratory maximum values: 1.63 to 5.7 l/kg per hour, range of the laboratory mean: 1.0 to 5.2 l/kg per hour, robust mean value overall laboratories (Reference value): 3.18 l/kg per hour).

## Proposal

5. Therefore the experts from France and Germany believe that work should be carried out on test method N.5 to achieve better performance of this test method, both to take care of the request of the GHS Sub-Committee and to improve the reliability of test method N.5.

6. Given the very specialized technical nature of the work, it is proposed that the TDG Sub-Committee sets up an *ad hoc* intersessional correspondence group or informal working group with the following terms of reference:

The group would work preferably by correspondence (e.g. via e-mail), but face-to-face meetings may be organized as appropriate, either intersessionally or parallel to the sessions of both Sub-Committees (TDG and GHS).

The tasks to be worked out are:

- (a) Enable test method N.5 to measure the evolution of acute toxic gases released by substances in contact with water and to measure also very low evolution rates (e.g. in the range of 1 ml gas per kg substance per hour) taking into account kinetic aspects of the gas evolution rate during the testing period;
- (b) Establish and define boundary conditions for the order of magnitude in which test method N.5 shall be able to detect evolution rates of flammable and/or acute toxic gases based on a accidental exposure scenario;
- (c) Enable test method N.5 to measure the evolution rates of flammable and/or acute toxic gases with high accuracy and precision, taking into account the hazard categories and to produce reproducible test results;
- (d) Consider whether the amended test method N.5 could also be applicable to measure corrosive gases released in contact with water;
- (e) Draft a proposal for the TDG Sub-Committee during the biennium 2009/2010 to modify the Manual of Tests and Criteria, which can then be given to the GHS Sub-Committee to continue the work on classification criteria for water-activated toxicity;
- (f) Provide recommendations for the use of the new method in the development of classification criteria, as appropriate;
- (g) Report on interim progress to the TDG Sub-Committee, which will keep the GHS Sub-Committee informed.

**Note:** The work on test method N.5 concerning the ability to measure toxic gases in very low concentrations was deferred to the TDG Sub-Committee by the GHS Sub-Committee (ST/SG/AC.10/C.4/70, para. 25). But as the results of the inter-laboratory comparison on the evaluation of test method N.5 for flammable gases also show need for action with respect to the application of this method to substances which, in contact with water, emit flammable gases, it would be useful and economically sound to combine both issues.

7. If the TDG Sub-Committee agrees to carry out this work as a focal point of the GHS Sub-Committee in the frame of such a correspondence/informal working group, bearing in mind the involvement of the Federal Institute of Materials Testing and Research of Germany (BAM) in the work already done for the inter laboratory test, the Sub-Committee may consider inviting Germany to organize and chair the group. In this case, delegations interested in that work are invited to confirm their interest to the expert from Germany.

8. The GHS Sub-Committee should be informed of this procedure in order to allow participation of interested experts from all sectors.

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Annex

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### Annex

#### DOCUMENTS CONCERNING THE WORK ON WATER ACTIVATED TOXICITY

ST/SG/AC.10/C.4//2003/9, Initial proposal from OECD

Informal document UN/SCEGHS/6/INF.6, Comments from France

ST/SG/AC.10/C.4/12, paras. 12 to 21 (Report of the GHS Sub-Committee on its 6<sup>th</sup> session)

Informal document UN/SCEGHS/7/INF.22, Working group documents

Informal document UN/SCEGHS/7/INF.27, Proposal by France

ST/SG/AC.10/C.4/14, paras. 27 to 31 (Report of the GHS Sub-Committee on its 7<sup>th</sup> session)

Informal document UN/SCEGHS/8/INF.34, Proposal by France and the United States

ST/SG/AC.10/C.4/16, paras. 23 to 24 (Report of the GHS Sub-Committee on its 8<sup>th</sup> session)

ST/SG/AC.10/C.4/2008/10, Proposal by France

ST/SG/AC.10/C.4/30, paras. 25 to 26 (Report of the GHS Sub-Committee on its 15<sup>th</sup> session)

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