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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

Twenty-fifth session, 5-14 July 2004  
Item 3 (b) of the provisional agenda

EXPLOSIVES, SELF-REACTIVE SUBSTANCES AND ORGANIC PEROXIDES

Further comments on ST/SG/AC.10/C.3/2003/31

Transmitted by the expert from Spain

**SCOPE**

Further comments to the Spanish proposal to amend Special Provision 309 to include the common range of chemicals generally used in Ammonium Nitrate Suspensions and Gels.

**RELATED DOCUMENTS**

UN/SCETDG/21/INF.69 – ANE Working Group Geneva July 2002  
UN/SCETDG/22/INF.4 – (Spain) Test results of ANE  
ST/SG/AC.10/C.3/2003/31– (Spain) Definition of ammonium nitrate emulsions, suspensions and gels  
UN/SCETDG/23/INF.12 – (Spain) Definition of ammonium nitrate emulsions, suspensions and gels  
UN/SCETDG/23/INF.32 – (Spain) Preliminary results of modified vented pipe test on ANE  
ST/SG/AC.10/C.3/46 – Report of the Sub-Committee of Experts on its 23<sup>rd</sup> session  
ST/SG/AC.10/C.3/46/Add.1 – (Report of the Working Group on Explosives, 1-3 July 2003)  
ST/SG/AC.10/C.3/48 – Report of the Sub-Committee of Experts on its 24<sup>th</sup> session  
ST/SG/AC.10/C.3/48Add.1 – Report of the Working Group on Explosives, 3-5 December 2003  
UN/SCETDG/24/INF.37 – (Canada) Comments on document ST/SG/AC.10/C.3/2003/31  
UN/SCETDG/25/INF.25 – (Sweden) Proposal for a new UN No for Sensitized ANE

## **Background**

The recommendation in ST/SG/AC.10/C.3/2003/31, to amend Special Provision 309 to include the common range of chemicals generally used in Ammonium Nitrate Suspensions and Gels, was drafted at the 23rd session of the Sub-Committee, during the Working Group on explosives.

Prior to the 24th session held in December 2003, the expert from Spain was prepared to address specific questions on the issues of concern that had been expressed during the Working Group meeting. However, no such questions were brought to the attention of the expert from Spain by any other expert during that period. During the 24th session of the Sub-Committee, additional documents were also presented in relation to the ANE Emulsions, Suspensions and Gels. As a result, the expert from Spain considered it appropriate to defer the matter to the July 2004 session to provide the opportunity of addressing all concerns before a vote is cast on the subject.

Following the volume of information and public discussion in relation to the UN 3375 issue, the understanding of the expert from Spain at this stage is:

1. No scientific or technical basis exists to invalidate the Spanish proposal as presented in ST/SG/AC.10/C.3/2003/31. All questions and concerns raised so far have been adequately addressed by the expert from Spain with facts and testing results. Furthermore, the Spanish proposal conforms basically to the wording already agreed at the July 2003 Working Group.
2. Opponents of the Spanish proposal argue the following two lines of thought:
  - 2.1. The inclusion of certain substances within the definition leaves some experts with a “bad feeling” that the sensitivity of the candidate is increased. However, testing results tabled by the Spanish competent authority clearly indicate that this hypothesis is unequivocally incorrect.
  - 2.2. A somehow obscure and ill-defined “reaction time” has recently been introduced to the debate whereby it has been argued that as suspensions and gels manifest a markedly shorter reaction time, the substances should be treated differently in case of emergency. In addition, the release of toxic fumes has also been argued as being completely different. These arguments, however interesting and insightful into the physical processes at play in hypothetical situations, bear no relevance to the problem at hand. The expert from Spain stresses the fact that the objective of the entire testing regime is to assess the ability of a candidate to mass explode in order to classify it as Class 1 or Class 5 Introducing distinctions in reaction time could lead to a false sense of safety when there is a consensus that UN3375 substances should be dealt with in a similar manner, which basically includes early attempts at fighting and evacuation. The introduction of speculative scenarios as to the duration of fires in emergency situations and arbitrary reaction times is a very unfortunate development.
3. The expert from Sweden has suggested the need for two UN numbers. There is no value in having two UN Numbers that are transported and dealt with effectively in an emergency situation in the same manner. Simple, uniform and unambiguous emergency procedures should be the objective of the UN Committee of Experts.
4. The volume of debate generated around changing this definition is remarkable given that all these arguments are based on findings and learnings from tests in Series 8. The expert from Spain is convinced that what determines the alleged behaviour of a substance should be a series of tests rather than blind conformance to a definition that is expressed in purely chemical terms when the

characteristics that are intended for assessment such as sensitivity and mass explosion depend just as much upon physical properties of the components such as particle size and nature of the blend. Some experts have already explicitly expressed (UN/SCETDG/24/INF.37) that, in assessing classification, the relevance of the testing results should be the driving factor. This is consistent with the fact that a definition cannot possibly account for all future developments in the field and would be subject to re-definition as new evidence emerges that support the changes. All documentation in relation to series 8 test results already in the public domain show that suspensions pass this test with similar if not more stringent criteria than the emulsions that already conform with SP309 definition in its current form. There are references in the documentation (see UN/SCETDG/21/INF.69, page 2) of some experts explicitly admitting that the 8(b) Gap test is possibly the best test to discriminate between substances that are candidates for UN3375. Based on published results, this test supports the inclusion of suspensions in the definition.

5. The expert from Spain would also like to point out that the issue related to classification is commonly mixed with the more complex, and still under review, issue of transport. It seems more appropriate to modify a definition that is inconsistent with a testing regime in the absence of clear evidence to the contrary. In fact, Ammonium Nitrate Suspensions and Gels have been transported for more than 15 years without an accident. In respect of the matter of transporting UN 3375, it should be remembered that the current Test 8(d), which is the VPT in its original form, is discretionary and there is substantial work-in-progress both in Spain and Australia to refine this test to make it workable, useful and practical. Recently, there have been some interpretations of this test that are trying to limit the timeframe for running the test. The need to improve this test was due to the lack of a uniform heat flux rate but it was always assumed that the test should run until exhaustion. An emergency with a massive fire could run until all the substance has reacted and the issue at hand is whether this reaction could end as a mass explosion. The fact that there are toxic fumes and other types of reaction could have been easily anticipated with a literature review. This adds very little to the issue at hand which is classification. Spain is currently working on some test results that are expected to show that the important aspect of the test is to show whether detonation is possible in the presence of a fire irrespective of the path that the substance follows in the course of the fire. These results are expected to be ready for discussion at the July 2004 Working Group meeting and will be presented as a separate INF document.

The expert from Spain finds no reason to modify the draft amendment to SP309 that was agreed at the July 2003 Working Group meeting.

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