

UN/SCETDG/16/INF9

**COMMITTEE OF EXPERTS ON THE
TRANSPORT OF DANGEROUS GOODS**
Sub-Committee of Experts on the
Transport of Dangerous Goods
(Sixteenth session, Geneva, July 5-16, 1999,
agenda item 5 (a)ii)

MISCELLANEOUS DRAFT AMENDMENTS TO THE MODEL REGULATIONS ON THE TRANSPORT OF DANGEROUS GOODS

Explosives

Creation of a New Entry **Ammonium Nitrate Emulsion Matrix**

Transmitted by OECD-IGUS

Introduction

1. At the twentieth session of the Committee of Experts, France transmitted a paper (ST/SG/AC.10/1998/45) proposing a new entry for “ammonium nitrate emulsion matrix”. The Netherlands transmitted an information paper (ST/SG/AC.10/1998/INF.21) proposing to include the subject on the programme of work for the 1999/2000 biennium of the Committee, since no criteria are given on which to base to exclusion from Class 1, while the properties of the emulsion can vary considerably. Because of lack of time, agenda item 2(d) of the 20th session was not discussed. It was decided that all scheduled subjects are included in the Committee’s work programme, provided relevant proposals are subsequently transmitted.
2. From 17 to 21 May 1999, two working groups of the OECD International Group of experts on the explosion risks of Unstable Substances (OECD-IGUS) met in Stockholm, Sweden. Those were the Working Group on Energetic and Oxidising Substances (EOS) and the Working Group on Explosives, Propellants and Pyrotechnics (EPP). A joint session to discuss ammonium nitrate issues (fertilisers, emulsion matrices) was held as well. About 30 experts from industry, authorities and laboratories from Canada, Finland, France, Germany, Ireland, Japan, Netherlands, Norway, Poland, Portugal, Sweden, UK and USA participated *a titre personnel* (thus not necessarily representing their countries national view and position) in this meeting.
3. The following documents were discussed:
 - ST/SG/AC.10/1998/45, from France
 - ST/SG/AC.10/C.3/1999/34, from Canada
 - ST/SG/AC.10/C.3/1999/47, from Norway with additional experimental data
 - a Swedish paper “Classification of ammonium nitrate based emulsion”
 - a German paper, providing experimental test data
5. After an extensive discussion, a number of points became clear.
 - Since there are a large number of different compositions and formulations are available in the different countries, some showing significant different hazard properties than others, a clear

- unambiguous definition to which kind of formulations this new entry in Division 5.1 might apply was felt necessary.
- Although other modes should be kept in mind as well (in the view of the global harmonisation), it was felt that the classification in Division 5.1 should be limited to transport only, as proposed by France. For manufacturing and use, Class 1 might be the most appropriate one.
 - This family of substances have a physical state, bordering between liquid and solid. If oxidising properties are considered for the substance, the decision on whether it is a liquid or a solid has consequences on the applicable test method as well: O.1 or O.2. These formulations typically have a large portion of water included. The water content affects the results of the solid oxidiser test more than that of the liquid oxidiser test, leading to a less strict classification when the solid oxidiser test is used. The mentioned reasons have resulted in various ways to classify the substance in the different countries, varying from flammable solid, via oxidising solid and oxidising liquid to non-regulated. From a viewpoint of a proper identification of hazard and of (global) harmonisation, this situation is not favourable.
 - Norway and Sweden have experimental experience on the behaviour of the substances in a fire. It was found that encasing material that softens in a fire (like aluminium or fibre reinforced plastic) leads to less violent reactions than stronger material like steel. Some guidance on the construction material of tanks as well as venting requirements might be necessary.
 - No uniform view on which hazard properties should be considered to evaluate whether a candidate can be assigned to the proposed entry was obtained in the limited time available. Explosive properties are often mentioned, as are behaviour in a large fire and oxidising properties. Adiabatic calorimetry might be considered to obtain background information supporting a future decision.
6. Since their experts have experience on all relevant properties of the ammonium nitrate emulsion matrix, the OECD-IGUS working groups offer their assistance to the Committee in finding answers to the above mentioned unsolved items.
If felt necessary, FEEM has offered to host an informal working group in Norway to draft proposals to fill in the details which are to be submitted to the (Sub-)Committee in the current biennium.

Proposal

7. The experts present at the OECD-IGUS working group recommend to create an entry in Division 5.1 (in principle) for the emulsion matrix. If the Sub-Committee agrees with this principle, they also might wish to consider to approve the formation of an informal working group. OECD-IGUS offers its assistance in this working group. The main task of such an informal working group could be:
- to draft proposals on a definition of the formulation to which the entry in Division 5.1 as proposed by France would apply,
 - to recommend the properties to be assessed,
 - to recommend the applicable test methods and
 - to propose possible conditions for transport.

The work of this informal working group should be completed in the current biennium.
