



Secretariat

**Distr.
GENERAL**

**ST/SG/AC.10/1998/26
23 September 1998**

Original: ENGLISH

**COMMITTEE OF EXPERTS ON THE
TRANSPORT OF DANGEROUS GOODS**

**(Twentieth session,
Geneva, 7-16 December 1998,
agenda item 2 (c)(ii))**

**WORK OF THE SUB-COMMITTEE OF EXPERTS
ON THE TRANSPORT OF DANGEROUS GOODS**

**Draft amendments to the Recommendations on the Transport of Dangerous Goods
Model Regulations on the Transport of Dangerous Goods**

Special Provision for Oxygen Concentration in Gas Mixtures

Transmitted by the Expert from the United States of America

Background

1. In document ST/SG/AC.10/C.3/1998/30, the expert from the United States of America proposed limiting the application of the oxidizer subsidiary risk label for two gas mixtures on the dangerous goods list to oxygen concentrations greater than 23.5% oxygen. It was explained that this was being proposed for pragmatic reasons. In particular it was noted that in the United States of America the oxygen concentration of artificial air typically ranges from 19.5% to 23.5%. In this respect the representative of EIGA noted that in Europe artificial air generally has a tolerance of 2%. With these limited variations of oxygen concentration, strict application of the oxidizing gas criteria given in 2.2.2.(b)(ii) could result in some artificial air mixtures requiring an oxidizer subsidiary risk label while other mixtures made under the same specifications would not.

2. While there was reluctance on the part of the Sub-Committee of providing an upper limit of 23.5% for all gas mixtures containing oxygen, some experts spoke in favour of providing a special provision for artificial air. Consequently, the expert from the United States of America agreed to prepare a new document in consultation with EIGA.

3. Technical data (ref. EIGA/IGC Document 4/93 “Fire hazards of oxygen and oxygen enriched atmospheres”) shows that the burning rate of combustible material does not increase significantly with increasing oxygen concentrations in air until higher oxygen levels are reached. For example, the burning rate curve for cotton shows that the burning rate increases only gradually with increasing oxygen concentrations until an oxygen concentration of 35% is reached. Beyond this point the burning rate increases dramatically with increasing oxygen levels. Curves for other substances are similar.

4. It is proposed that a special provision be applied to UN 1002, AIR, COMPRESSED that would permit air with an oxygen concentration of up to 25% to be classified under these entries without the need for a subsidiary risk label.

5. As noted in ST/SG/AC.10/C.3/1998/30, there is also a need to clarify whether a subsidiary risk label should be applied to UN 1980, RARE GASES AND OXYGEN MIXTURE, COMPRESSED when high concentrations of oxygen are present. The expert from the United States of America believes that the approach should be similar to that proposed above for AIR. Namely, when oxygen concentrations in mixtures with rare gases exceed 25% a different description which better conveys the hazards of the gas mixture should be used (i.e., UN 3156, COMPRESSED GAS, OXIDIZING, N.O.S) and that for concentrations less than 25% no subsidiary risk label is required. Therefore, the proposed special provision should also be applied against UN 1980.

Proposal

6. Create a new special provision XXX (below) and apply it to UN 1002 and UN 1980.

New Special Provision XXX:

Only mixtures with not more than 25% oxygen may be transported under this entry. A Division 5.1 subsidiary risk label is not required for any concentrations within this limit.
