

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

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LISTING, CLASSIFICATION AND PACKING

Comments on ST/SG/AC.10/C.3/2008/96 Classification of Sour Crude

Transmitted by the expert from Canada

1. The expert from Canada appreciates DGAC's effort to review and comment on the proposals from Canada that were adopted by the Sub-Committee during the thirty-third session regarding two new shipping names and UN numbers for sour crude oil but disagrees with DGAC's proposal to delete these shipping names.
2. Crude oil is a mixture of many substances and the substances in crude oil vary widely depending on the source of the oil. Some crude oil compositions contain a sufficient concentration of dissolved hydrogen sulphide so that the evolved vapour from the oil can meet the criteria for inclusion in Class 6.1 by virtue of inhalation toxicity. This is well known in the oil industry.
3. The existing criteria in the Model Regulations for classifying a substance as Class 6.1 are applicable to crude oil. It is the same situation for any other mixture that may evolve vapour with inhalation toxicity. The composition of the vapour will determine inclusion in Class 6.1 and will determine the packing group.
4. The UN number and shipping name, UN1267, PETROLEUM CRUDE OIL, are not allowed to be used to identify crude oil that has a Class 6.1 inhalation hazard. Instead, an n.o.s. entry such as UN1992, FLAMMABLE LIQUID, TOXIC, N.O.S. or UN2929, TOXIC LIQUID, FLAMMABLE, ORGANIC, N.O.S. must be used. Many consignors of crude oil mistakenly believe that UN1267 is a "catch all" entry for all crude oil. This belief has resulted in instances of mis-classification and the selection of inappropriate means of containment.
5. Hydrogen sulphide is a toxic gas that may be dissolved in crude oil. When crude oil is extracted from the ground and is being transported, the amount of hydrogen sulphide that is liberated is not significantly related to the rate of bacterial action, which takes place over a prolonged period of time when the oil is in the ground, but rather to the concentration of hydrogen sulphide that is already dissolved in the crude oil.

6. The rate at which hydrogen sulphide evolves from liquid crude oil is dependent the H₂S concentration and on transport conditions.

7. The rate of evolution of toxic vapours from crude oil of any given concentration of H₂S will be influenced by the temperature and the degree of agitation. Increasing the temperature and degree of agitation will increase the rate of release but will not affect the composition of the evolved vapour. Evolution of toxic vapour can continue well after a transport emergency has begun and this is no different from other similar mixtures and does not affect the intrinsic properties relative to classification. In addition, factors like wind speed and degree of confinement affect the degree of hazard faced by emergency responders but, once again, this is no different from other substances and does not negate the need to properly identify the very real hazards. Both the flammability and the hydrogen sulphide toxicity issues must be addressed by responders and appropriate response must include consideration of all the circumstances to protect against the dual threats of flammability and toxic hydrogen sulphide exposure. The current entry under UN 1267 does not take inhalation toxicity into account and does not provide consignors with an option to correctly identify the hazards.

8. Hydrogen sulphide exposure does not occur only when a tank is initially opened. Certainly, an initial surge of hydrocarbon and hydrogen sulphide vapours would be released if containment is breached. However, evolution of toxic vapour could continue to occur and, consequently, cause continued danger from exposure.

9. While the expert from Canada recognizes DGAC's proposal to replace shipping names and UN numbers with a notation on a document, it must be remembered that during a transport emergency documentation is not always readily available thus any warnings that may be in that document are not available to emergency responders. Consequently, some other mechanism must be used to provide the necessary warnings.

10. The concern that the expert from Canada raised regarding crude oil is significant for any country in the world where crude oil is transported for whatever reason. Consequently, the expert from Canada disagrees that this issue is not an international issue.

11. Other substances may, indeed, pose similar risks to hydrogen sulphide exposure from crude oil, and if they satisfy the criteria for inclusion in Class 6.1 would need to be appropriately classified using an existing shipping name or N.O.S. entry. This is not a reason to avoid addressing the risk in crude oil. The current single shipping name under UN 1267 precludes an alternate for crude oil and this invites mis-classification.

12. Under the proposal adopted by the Sub-Committee in July, the UN number and shipping name, UN1267, PETROLEUM CRUDE OIL, will continue to exist and can be used appropriately for petroleum crude oil that does not have a toxic inhalation hazard meeting the criteria for inclusion in Class 6.1. In Canada's view, the Sub-Committee has provided the means to properly classify crude oil that does have a toxic inhalation hazard into new UN numbers and shipping names rather than continuing to use N.O.S. entries. However, it is still the consignor's responsibility to select the shipping name that most precisely describes the dangerous goods.
