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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

Thirty-third session
Geneva, 30 June 2008 - 9 (a.m.) July 2008
Item 4 of the provisional agenda

LISTING, CLASSIFICATION AND PACKING

Petroleum sour crude oil

Transmitted by the expert from Canada*

Background

1. This paper includes a proposal for two new UN numbers and shipping names regarding petroleum sour crude oil.

2. The essential difference between regular or "sweet" crude oil and "sour" crude is the presence of the gas hydrogen sulphide (H_2S). Sour crude oil evolves vapour that has inhalation toxicity due to the presence of H_2S in the vapour. The vapour evolved from sour crude is a mixture and is not pure H_2S so the toxicity of the vapour will depend on the composition of the vapour mixture and the toxicity can be determined using the classification criteria for Class 6.1. There is no difference in principle from classifying other liquid substances that have an inhalation hazard.

* 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/C.3/34, para. 14)

3. The lack of a specific UN number and shipping name for sour crude oil leads to consignors using UN 1267, PETROLEUM CRUDE OIL, even when the crude oil poses an inhalation hazard. Consignors are selecting the shipping name that supposedly most precisely describes the substance but, as a result, a crude oil that has an inhalation hazard is not identified and the appropriate means of containment is not selected.

4. In Canada, most crude oil is transported from well sites to collection points by road or rail transport and this is where problems are occurring. Sour crude oil with a significant inhalation hazard is a large portion of the oil being produced, at least in Canada. The situation for crude oil is that it is, essentially, a mixture the composition of which varies depending on which well it comes from so the more volatile the components are, such as propane, butane, natural gas, etc., the higher the flammability which is taken into account in UN1267. However, UN1267 does not take into account the presence of H_2S when it is in a concentration sufficient to pose an inhalation hazard.

5. The expert from Canada recognizes that there may be situations when small amounts of crude oil must be transported for testing other than by road or rail and this proposal provides a limited quantity value for all but Packing Group I entries.

6. There have been a number of incidents with UN1267, PETROLEUM CRUDE OIL, in Canada including explosions. However, few where the presence of hydrogen sulphide can be determined as the cause of the incidents except where one driver of a tank truck transporting UN1267 was overcome by vapours containing hydrogen sulphide. The problem is that UN1267 does not distinguish between "sweet" crude and "sour" crude. It is well known in the oil industry that "sour" crude oil poses an inhalation hazard and that precautions need to be taken to prevent breathing the vapour it evolves.

Proposal

7. Consequently, the Expert from Canada proposes adding two new UN numbers and shipping names to the Model Regulations as indicated in the annex.

8. These two new UN numbers and shipping names take into account the different concentrations of hydrogen sulphide that may be in "sour" crude oil so that in one instance the primary class is Class 3 and the subsidiary class is Class 6.1 and in the other case the classes are reversed to indicate the possibility of increased toxicity.

9. The packing instructions and T codes proposed are in line with the Guiding Principles.

10. Il is also proposed to add a special provision XYZ to read as follows:

> “This entry applies to crude oil containing hydrogen sulphide, carbon dioxide or mercaptans, in sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard”.

Annex

UN No.	Name and Description	Class or Division	Subsidiary risk	UN Packing Group	Special provisions	Limited and excepted quantities		Packing Instructions	Special packing provisions	Instructions	Special provisions
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7a)**	**(7b)**	**(8)**	**(9)**	**(10)**	**(11)**
	3.1.2	**2.0**	**2.0**	**2.0.1.3**	**3.3**	**3.4**	**3.5**	**4.1.4**	**4.1.4**	**4.2.5/4.3.2**	**4.2.5**
XXXX	PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC	3	6.1	I	XYZ	0	E0	P001		T14	TP2 TP13
		3	6.1	II	XYZ	1L	E2	P001 IBC02		T7	TP2
		3	6.1	III	XYZ	5L	E1	P001 IBC03		T4	TP1
					XYZ						
XXXY	PETROLEUM SOUR CRUDE OIL, TOXIC FLAMMABLE	6.1	3	I		0	E5	P001		T14	TP2 TP13
		6.1	3	II	XYZ	100 ml	E4	P001 IBC02		T7	TP2