

Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals

14 June 2016

Sub-Committee of Experts on the Transport of Dangerous Goods

Forty-ninth session

Geneva, 27 June-6 July 2016

Item 3 of the provisional agenda

Listing, classification and packing

Report on the informal conference call regarding crude oil classification

Transmitted by the expert from Canada

Introduction

1. An informal meeting of interested parties was held on 29 March 2016 via teleconference as a follow-up to discussions held at the Forty-eighth Session of the Sub-Committee regarding informal documents INF.62 (48th session) and INF.23 (30th session). It was organised by Canada and a total of 13 participants from the Sub-Committee, industry, and Canada participated on the call. The expert from Canada, Mr. Patrick J. Juneau, chaired the meeting.

2. Participants from Canada presented the results of the crude oil sampling and testing campaign that can be found in informal documents INF.62-Add.1 (48th session) – and INF.23-Add.1 (30th session). Canadian experts were available to answer questions from attendees and discuss other work being undertaken by Canada or jointly with the United States of America and / or industry.

Discussions

3. It was noted by the group that some of the methods used in the campaign are not currently mentioned in the UN Model Regulations (e.g., use of ASTM D7169 for the determination of initial boiling point).

4. It was also noted that, in regards to hydrogen sulphide (H₂S) in crude oil, the toxic inhalation hazard is generally present when liquid crude oil containing H₂S is allowed to equilibrate in a means of containment with an outage. When this occurs, H₂S evolves into the vapour phase present in the means of containment. At this time, there do not exist any methods that can reasonably determine H₂S concentrations in the vapour phase. Standard operating procedure in the crude oil industry is to measure H₂S in the liquid phase – the results of this measurement do not allow for an accurate calculation of the resulting H₂S in the vapour phase due to the highly complex and variable nature of crude oil composition, and the impacts of this variability on H₂S partition into the vapour phase.

5. Given the difficulties in measuring H₂S in the vapour phase, the Sub-Committee is asked whether members have information regarding how H₂S in the vapour phase is measured elsewhere in the world, as well as what methods used in other countries that transport crude oil and therefore need to assess this hazard.

6. The group also discussed the common use of ASTM D86 by North American industry for initial boiling point determination (packing group assignment). It was agreed by the members present that this method does not provide an accurate representation of the initial boiling point since it is open to atmosphere and does not capture the light ends present in a volatile sample – it generally underestimates the initial boiling point and therefore the packing group of crude oils. This finding was confirmed in the crude oil sampling and testing campaign when compared to methods (e.g., ASTM D7169, D8003) that can accurately be used to determine the initial boiling points accounting for the presence of light ends. When used, ASTM D86 will lead to an inappropriate packing group assignment, which can have impacts on means of containment selection, hazard communication, etc.

7. While the UN Manual of Tests and Criteria does provide suggestions of methods that can be used, the list is incomplete and the methods listed do not include some of the methods referenced above. The Sub-Committee is asked whether consideration should be given to revising the list of test methods given as examples in the UN Manual of Tests and Criteria.

8. It should be noted that while there is a list that provides examples, this list is sometimes interpreted as the only permissible methods. Since a complete list is impossible to maintain, the expert from Canada questions whether providing examples is a useful exercise, or if the Sub-Committee should consider removing the list of examples altogether.

Next Steps

9. The expert from Canada has shared the presentation that was given with those present at the informal meeting. Feedback is pending once members have a chance to consult with their respective stakeholders.

10. In the interim, the expert from Canada is seeking feedback from the Sub-Committee on the questions raised above.

11. As some Sub-Committee members continue to grapple with this issue, the expert from Canada will continue to share information as it becomes available. Members of the Sub-Committee may benefit from the information gained should they face similar issues related to the transport of crude oil in their respective states.
