
Economic Commission for Europe**Inland Transport Committee**

21 January 2014

Working Party on the Transport of Dangerous Goods**Joint Meeting of Experts on the Regulations annexed to the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN) (ADN Safety Committee)****Twenty-fourth session**

Geneva, 27-31 January 2014

Item 4 (c) of the provisional agenda**Interpretation of the Regulations annexed to ADN**

**CONCAWE / EUROPIA study on
“HFO Emissions and Exposure Assessment”****Transmitted by EUROPIA****Background**

Reference is made to INF paper 33 of the 22nd session of the Joint Meeting of Experts on ADN (Safety Committee) which provided the outline of the CONCAWE study of emissions of vapours emitted during barge loading with Heavy Fuel Oils classified under UN No. 3082 and associated worker exposure. Reference is further made to the presentation by a CONCAWE representative during the 23rd session of the ADN Safety Committee where a further detailed study outline and some initial findings were discussed (item V-B-10.64 in the report of the Joint Meeting of Experts on its twenty-third session). As indicated, a progress update will be provided to the twenty-fourth Joint Meeting of Experts on ADN (Safety Committee) meeting on 27-31 January 2014. The original timeline of the project foresaw project completion by end of 2013, however due to operational reasons some delay did occur in carrying out the field work during loading of HFO at CONCAWE member company jetties. The current estimated completion date is end of first quarter, 2014.

Objective

To better understand the potential risk of airborne emissions, CONCAWE is implementing a project to assess the nature and likelihood of airborne emissions during tank vessel loading operations with heavy fuel oil in parallel with exposure measurements in the field. The outcome of this evaluation will be used to identify whether or not there are potential health risks for personnel from emissions during loading and, if so, allow the development of appropriate measures to reduce or minimize airborne emissions.

Completed Research**1. Identify and obtain a set of representative samples of HFO's transported via European inland waterways**

A total of 8 samples of HFO meeting the project definitions has been obtained from CONCAWE member companies and has been fully characterised by an independent contract research organisation. Five (5) samples are related to barge loading operations and three (3) others were used to define the methodology.

2. Potential for emissions during barge loading operations

Using measured vapour pressure data and other relevant physical-chemical properties of HFO at normal handling and storage temperature a first estimate of vapour exposure ranges has been made based on a suitable modelling approach.

3. Exposure measurements during HFO loading operations

Comprehensive sets of static and personal air samples were obtained from 5 barge loading operations between August and December 2013. Exposure sampling covered the entire duration of the loading operations and included deck crew and jetty operators. The samples have been analysed or are currently undergoing analysis at the independent contract research organisation. Available results are currently held by participating companies prior to anonymisation and further joint interpretation in CONCAWE.

4. Preparation of vapour samples

Using HFO bulk samples of 20 litres each, obtained during the 5 loading operations described above, the independent contract research organisation generated vapour at temperatures which are representative of the loading operations and subsequently collected these vapour samples via cooling as condensate. The condensate samples are currently undergoing the agreed set of chemical and biological analyses.

Planned final steps

5. Assess the biological relevance of emissions of HFO

The short-term predictive assay for the carcinogenic potential of petroleum streams (the Modified Ames test – with the result expressed as Mutagenicity Index (MI)) will be applied to the condensates.

Timing: February 2014

Task performed by: contract laboratory/facility

6. Prepare Occupational Health Risk Assessment Report on HFO Emissions

Using the field assessment data, compare and confirm potential worker exposures are within appropriate limits for safe operations of barge loading of HFO.

Timing: March 2014

Task performed by: HFO Working Group, and consultant

Revised Timeline:

End Q1, 2014
