
Economic Commission for Europe**Inland Transport Committee**

15 January 2019

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)****Thirty-fourth session**

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Item 4 (c) of the provisional agenda

Implementation of the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways ADN:**Interpretation of the Regulations annexed to ADN**

Proposal of adaption of ADN 8.3.5 “Work on board”**Transmitted by EBU / ESO****I. Introduction**

1. The barge industry wishes to maintain their ships in good shape and to be able to present itself as a safe and responsible mode of transport. Regularly, maintenance of the painting of the barges is performed, therefore.
2. According to ADN 8.3.5 on board of tank vessels and dry cargo vessels it is not allowed to execute repair or maintenance work on board that requires the use of an open flame (“hot work”) or requires the use of electric current, or work that is liable to cause sparks. Other types of work are not specifically prohibited.
3. The barging industry faces a couple of practical problems here, given the fact that ships have to be maintained. This doesn’t mean “hot work” but it means the conservation of the ship and her equipment; activities such as polishing, grinding, chipping of rust and painting, that is being performed by crew.
4. ADN 8.3.5. might not always be relevant, but it restricts the crew in her possibilities to maintain the barge and it could cause a false sense of safety. For example, a barge carrying caustic soda in a time charter is not allowed to work in despite of the fact that caustic soda is a class 8 substance and inflammable.
5. To work safely and respecting legislation, for some years initiatives have been taken by the barge industry such as the use of compressed air driven tools (pneumatic sanding machines and pneumatic hammers), and chipping hammer with Copper beryllium needles, which cannot cause a spark. Unfortunately, it is not totally clear whether these alternative tools are fully safe and the use of them does not conflict the ADN-requirements as 8.3.5. states *No work requiring the use of an open flame or electric current or liable to cause sparks may be carried out on board.* Later in 8.3.5 it is stated that: *“The use of low-sparking hand-tools (chromium vanadium steel screwdrivers and wrenches or screwdrivers and wrenches of equivalent material from the point of view of spark formation) and appropriate equipment at least for the zone concerned is permitted”.*
6. To avoid discussions and misinterpretation of the correct use of tools under which circumstances, EBU/ESO likes to draw attention for this topic and proposes to clarify this topic, considering the ATEX-provisions.

II. Safe work and different situations

7. For the barge industry it is desirable to investigate nuances in this “black-white” legislation. The purpose of this prescription is off course to prevent an explosion on board. All parties are aware of that and will not be careless. An explosion can only occur in the case of the combination of an explosive mixture (>100% LEL; the minimum mixture of flammable vapors and air) and an ignition source, with sufficient ignition energy or surface temperature above the auto-ignition temperature of the substance.

8. Not in all cases for which the ADN applies, an explosion is even possible, given the characteristics of the substances being transported.

III. Substances for which no explosion protection is required, and cannot form an explosive mixture

9. In the ADN-2017 a new paragraph has been added for the transport of reefer containers in combination with dangerous goods; ADN 7.1.4.4.4. The separation of the ignition source and dangerous substance has been studied closely and thoroughly in this case.

10. The electric motor of the reefer container is a potential source of ignition. This ADN-article describes the possibility to use electrical equipment of a “not certified safe type” in the Zone 1 and 2 (Cargo hold below and above the deck), as long as it is sufficiently separated from other containers, containing substances which can cause flammable vapors, based on the Classes:

- Class 2 for which a label No. 2.1 is required in column (5) of Table A of Chapter 3.2;
- Class 3, packing group I or II;
- Class 4.3;
- Class 6.1; packing group I or II, with an additional hazard of Class 4.3;
- Class 8, packing group I, with an additional hazard of Class 3; and
- Class 8, packing group I or II, with an additional hazard of Class 4.3.

11. For other substances, no limitations are applicable.

12. This article was based on the fact that substances, that will not form flammable gases under atmospheric circumstances, do not form any risk. Within Class 3, PG III is excluded (flashpoint 23-60° C); this means that the flashpoint of the substance determines, whereby 23° C is the tipping point.

IV. Work within ATEX-Zoning on shore

13. For shore installations, the European ATEX-Guideline is applicable and embedded in national legislation.

ATEX-153

14. In line with the European Guideline 1999/92/EG (ATEX-153) areas in which explosive atmospheres can occur, are being classified in Zones. Within these zones minimum requirements are applicable to avoid and protect human being against explosions.

ATEX-114

15. In line with the European Guideline 2014/34/EU (ATEX-114) requirements are set concerning apparatus and installations that are used in areas, where the risk of explosion exists.

16. Work can be performed in an ATEX Zoned area according to NEN-EN 1127-1:2007 Appendix A; from which the relevant part about Zone 0, 1 and 2 are copied, below:

Information for the use of tools in potentially explosive atmospheres (From Annex A of NEN-EN1127-1:2007)

Instructions on the use of hand tools should take the following into account:

Two different types of tools can be distinguished:

a) tools which can only cause single sparks when they are used (e.g. screw-drivers, spanners, impact screw-drivers);

b) tools which generate a shower of sparks when used during sawing or grinding.

In zones 0 (and 20), no tools which can cause sparks should be allowed.

In zones 1 and 2, only steel tools according to a) should be allowed. Tools according to b) should only be permissible if no hazardous explosive atmosphere is present at the workplace.

However, the use of any kind of steel tools should be prohibited in zone 1 if the risk of explosion exists because of the presence of substances belonging to explosion group II C (according to IEC/TR3 60079-20, acetylene, carbon disulphide, hydrogen), and hydrogen sulphide, ethylene oxide, carbon monoxide, unless no hazardous explosive atmosphere is present at the workplace during the work with these tools.

V. Conclusion comparison of requirements shore and ship (ADN and ATEX)

17. 1. Under the current legislation, on board of barges, no maintenance work can be performed unless spark-free, non-electrical tools are used. This applies to all substances carried under the ADN. There is no distinction made with regards to flashpoint, inert transport conditions, etc.

18. 2. There is confusion and misinterpretation about tools being suitable for Zone 1 and Zone 2. ADN 8.3.5 is contradictive in her first sentence and the explaining of the use of 'low sparking hand tools'.

19. 3. On shore, it is allowed to work within Zone 1, with steel tools that only can cause particular, single sparks, however this is not allowed in relation to substances with gas group IIC admission, unless it is proven that no explosive atmosphere is present;

20. 4. On shore, it is allowed to work within Zone 2, using steel tools that can only cause particular, single sparks.

21. 5. The tools, which are to be used in Zone 1 and Zone 2 shall be approved by the manufacturer for the use of these tools in the relevant Zone.

VI. Proposal

22. EBU/ESO is stating that this important safety provision could be clarified, in line with the wish to maintain barges in a safe and practical way, based on the idea of ATEX, from which the major Explosion Safety changes to the ADN-2019 have been established.

23. EBU/ESO would like to ask the ADN Safety Committee, if delegates can find themselves in the proposal to clarify the details of 'work on board' and align the provisions for 'work' with ATEX. EBU/ESO is willing to work out a proposal for the following session of the ADN Safety Committee, with help from independent ATEX-experts.

VII. Safety impact

24. It is a fact that barges have to be and are being maintained. A clarification which kind of work is allowed under which circumstances will lead to a positive effect towards safety.

25. Within this proposal, the barging industry asks the Safety Committee to consider an adaption of the ADN.

26. A benefit would be more practical and more clear requirements, which are in line with ATEX (ADN-2019/Zone-concept).

27. A positive approach allows the crew to work safely, maintaining the barges in mentioned circumstances. It even makes them more aware of the safety rules and understanding of ATEX and working with different types of tools.
