

**Economic and Social Council**Distr.: General  
4 November 2015

Original: English

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**Economic Commission for Europe****Inland Transport Committee****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-eighth session**

Geneva, 25–29 January 2016

Item 6 of the provisional agenda

**Reports of informal working groups****Report of the informal working group on  
degassing of cargo tanks****Transmitted by the Government of the Netherlands<sup>1</sup>****Introduction**

1. On 13 October 2015 the informal working group on degassing of cargo tanks held its fourth meeting at the Physikalisch-Technische Bundesanstalt in Braunschweig, Germany. The meeting was attended by delegates from Germany and the Netherlands, the European Barge Union (EBU) and the European Skippers Organization (ESO).
2. The informal working group continued, based on the principle aim adopted at the earlier meetings of the informal working group (ECE/TRANS/WP.15/AC.2/2015/29), its work on proposals for amendments to the ADN in line with the aim of the informal working group (WP.15/AC.2/25/INF.18 and WP.15/AC.2/26/INF.19). Furthermore, the informal working group discussed the comments and suggestions which resulted from the discussion in the ADN Safety Committee in August 2015 on the third report of the informal working group (ECE/TRANS/WP.15/AC.2/56, paras. 70-74).

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<sup>1</sup> Distributed in German by the Central Commission for the Navigation of the Rhine under the symbol CCNR-ZKR/ADN/WP.15/AC.2/2016/25.

## Considerations

3. In some paragraphs of the English version of ADN the word "gas-free" is used where the French version uses the word "dégazage" and the German version uses the word "entgasen". This could lead to misinterpretation and the informal working group decided to replace the word "gas-free" in the English version by "degassing".
4. In ADN there is a definition for a cargo tank which is considered gas-free: the cargo tank does not contain any measurable concentration of dangerous gases. The informal working group decided to add to Chapter 1.1.2.5 that the condition of being gas-free may only be declared and certified by a person approved by the competent authority, a provision which is currently in 7.2.3.7.6.
5. The informal working group discussed the question from the ADN Safety Committee (ECE/TRANS/WP.15/AC.2/56, paragraph 72) of whether it is desirable to limit the duration of validity of the certificate of the condition of being gas-free. The informal working group came to the conclusion that limiting the duration of validity of the certificate to a certain period (e.g. month or a week), does not add any more assurance that the vessel is gas-free than a certificate with unlimited duration of validity. Therefore the informal working group proposed no amendment on this matter.
6. About the entrance to holds etc. on dry cargo vessels and to hold spaces etc. on tank vessels, the informal working group improved its earlier proposals. The current provisions were logically ordered, taking into account the earlier agreed proposals about the introduction of the limit of 10% of the Lowest Explosion Limit, which plays a vital role in the proposals for entrance to holds and hold spaces and for degassing. To clarify these proposals the informal working group introduced definitions of the Lowest Explosion Limit, the Explosion Range and the Upper Explosion Limit.
7. The informal working group discussed the suggestion from the ADN Safety Committee (ECE/TRANS/WP.15/AC.2/56, paragraphs 73-74) to take into account recent technical, procedural and policy developments relating to the prevention of air pollution, for example the introduction of filters for exhaust gases and introduction of the new framework of the CDNI Convention. The informal working group agreed that these developments are relevant for the work of the informal working group. However, these proposals go beyond the initial aim of the working group and the new text of the framework of the CDNI-convention is not yet available. The informal working group however supports the idea of a new informal working group in the spring of 2016 to align the ADN with the new framework of the CDNI Convention and other technical, procedural and policy developments.
8. The remark made by the ADN Safety Committee (ECE/TRANS/WP.15/AC.2/56, paragraph 71) was endorsed by the informal working group. Therefore the informal working group reintroduced the word "dangerous" in Chapter 1.2.1 and deleted the word "toxic" in 7.2.3.7.1. Where appropriate, however, the informal working group proposes to be specific on which gases should be measured.
9. Last but not least, the informal working group on degassing of cargo tanks discussed its proposals with the informal working group on protection against explosion on board tank vessels. The texts were aligned, so the informal working group on degassing was able to delete some of its earlier proposals for Chapters 7, 8 and 9 of ADN.

## **Proposal**

10. The Safety Committee is invited to consider the proposals to amend the Regulations annexed to ADN, which can be found in the annex to this document.

## Annex

## Proposals to amend ADN 2015

<i>Proposal</i>	<i>Explanation</i>
<b>1.2.1 Definitions</b>	
<p>1.1.2.5 The provisions of ADN also apply to empty vessels or vessels which have been unloaded as long as the holds, cargo tanks or receptacles or tanks accepted on board are not free from dangerous substances or gases, except for the exemptions for which section 1.1.3 of these Regulations provides. <u>The condition of being gas-free may only be declared and certified by a person approved by a competent authority.</u></p>	<p><b>Proposal</b></p> <p>To add: "The condition of being gas-free may only be declared and certified by a person approved by a competent authority."</p> <p><b>Justification</b></p> <p>With this addition, there can be no misunderstanding that the status of being gas free has to be proven by a person approved by a competent authority (a.k.a. the gas doctor).</p>
<p>1.2.1 <b>Cargo tank (discharged)</b> means a cargo tank which after unloading may contain some residual cargo.</p> <p><b>Cargo tank (empty)</b> means a cargo tank which after unloading contains no residual cargo but may not be gas free.</p> <p><b>Cargo tank (gas free)</b> means a cargo tank which after unloading does not contain any residual cargo or any measurable concentration of dangerous gases <u>and vapours.</u></p> <p><u>Degassing means an operation with the aim of lowering the concentration of dangerous gases and vapours in an empty cargo tank by emitting them to the atmosphere or to vapour recovery units.</u></p>	<p><b>Proposal</b></p> <p>To add a new definition: "Degassing"</p> <p><b>Justification</b></p> <p>According to the adopted principles, the proposal will be made to change the phrase "gas freeing" into "degassing".</p> <p>Besides this change, the ADN does not provide any definition of "degassing"/"gas freeing". However, in 7.2.3.7 "Gas freeing (Degassing) of empty cargo tanks" this phrase is frequently used.</p>
<p><u>Explosion range means the range of the concentration of a flammable substance or mixture of substances in air, within which an explosion can occur, respectively the range of the concentration of a flammable substance or mixture of substances in mixture with air/inert gas, within which an explosion can occur, determined under specified test conditions</u></p>	<p><b>Proposal</b></p> <p>To add a definition of "explosion range"</p> <p><b>Justification</b></p> <p>If it is desirable to define the lower explosion limit, it is desirable to define the upper explosion limit and the explosion range as well. The definition is taken from EN 13237-2012.</p>

*Proposal**Explanation*

<p><b>Flammable Gas detector</b> means a device allowing measuring of any significant concentration of flammable gases given off by the cargo below the lower explosive limit (LEL) and which clearly indicates the presence of higher concentrations of such gases. <del>Flammable</del> Gas detectors may be designed for measuring flammable gases only but also for measuring both flammable gases and oxygen.</p> <p>This device shall be so designed that measurements are possible without the necessity of entering the spaces to be checked;</p>	<p><b>Proposal</b></p> <p>To delete "Flammable" in the title of the English definition.</p> <p><b>Justification</b></p> <p>Flammable gas detectors can be designed for measuring both flammable gases and oxygen.</p> <p>The deletion of "flammable" in the English language.</p>
<p><b>Lower explosion limit (LEL)</b> means the <u>lowest concentration of the explosion range at which an explosion can occur.</u></p>	<p><b>Proposal</b></p> <p>To add a definition of "Lower explosion limit".</p> <p><b>Justification</b></p> <p>This phrase and the abbreviation "LEL" are frequently used in the ADN but there is no definition in 1.2.1. The definition is taken from EN 13237-2012.</p>
<p><b>Toximeter</b> means a device allowing measuring of any significant concentration of toxic gases given off by the cargo. <u>This device shall be so designed that measurements are possible without the necessity of entering the spaces to be checked;</u></p>	<p><b>Proposal</b></p> <p>To add: "This device shall be so designed that measurements are possible without the necessity of entering the spaces to be checked."</p> <p><b>Justification</b></p> <p>This sentence is already in the French and German translation of the ADN 2015, but is absent in the English translation.</p>
<p><b>Upper explosion limit (UEL)</b> means the <u>highest concentration of the explosion range at which an explosion can occur.</u></p>	<p><b>Proposal</b></p> <p>To add a definition of "Upper explosion limit"</p> <p><b>Justification</b></p> <p>If it is desirable to define the lowest explosion limit, it is desirable to define the upper explosion limit and the explosion range as well. The definition is taken from EN 13237-2012.</p>
<p><b>7.1.3.1 Access to holds, double-hull spaces and double bottoms; inspections</b></p> <p>7.1.3.1.3 If the concentration of gases <u>given off by the cargo</u> or the oxygen content of the air in holds, double-wall spaces or double bottoms has to be measured before entry the results of these measurements shall be recorded in writing. The measurement may only be effected by <u>an expert referred to in 8.2.1,</u> <del>persons</del> equipped with suitable breathing apparatus for the substance carried. Entry into the spaces is not permitted for the purpose of measuring.</p> <p>(stays 7.1.3.1.3)</p>	<p><b>Proposal</b></p> <p>To ensure that the measurement is performed correctly, it is desirable that the measurement if performed by an ADN expert.</p>

<i>Proposal</i>	<i>Explanation</i>
<p>7.1.3.1.4 <b><u>Carriage of cargo in bulk or without packaging</u></b></p> <p>(current 7.1.3.1.5) <del>The gas concentration in holds and in adjacent holds containing dangerous goods carried in bulk or without packaging for which EX and/or TOX appears in column (9) of Table A of Chapter 3.2, shall be measured before any person enters these holds.</del></p> <p><u>If a vessel carries dangerous goods in bulk or without packaging in its holds for which EX and/or TOX appears in column 9 of Table A of Chapter 3.2, the concentration of flammable and/or toxic gases given off by the cargo in these holds and adjacent holds shall be measured before any person enters these holds.</u></p>	<p><b>Proposal</b></p> <p>To clarify that in this case any person entering these holds, should measure first the concentration of flammable or toxic gases in the holds.</p> <p><b>Justification</b></p> <p>The proposed amendment clarifies and makes it more explicit that it may concern either flammable or toxic gases.</p>
<p>7.1.3.1.5 (current 7.1.3.1.7) Entry into holds where dangerous goods are carried in bulk or without packaging as well as entry into double-hull spaces and double bottoms is <u>only permitted when not permitted except where :</u></p> <p>– <u>The concentration of flammable gases given off by the cargo in the hold, double hull space or double bottom is below 10% of the LEL, the concentration of toxic gases given off by the cargo is below a significant concentration, and the percentage of oxygen is between 20 and 23.5 volume %.</u></p> <p><i>or</i></p> <p>– <u>The concentration of flammable gases given off by the cargo is below 10% of the LEL, and the person entering the space wears a self-contained breathing apparatus and other necessary protective and rescue equipment, and is secured by a line. Entry into these spaces is only permitted if this operation is supervised by a second person for whom the same equipment is readily at hand. Another two persons capable of giving assistance in an emergency shall be on the vessel within calling distance.</u></p> <p><u>In deviation from 1.1.4.6, national legislation on the entry into holds shall take precedence over the ADN.</u></p>	<p><b>Proposal</b></p> <ul style="list-style-type: none"> <li>- To alter the current order of the provisions, and also to include headers. With these headers a clearer distinction is made between the "Carriage of cargo in bulk or without packaging" and "Carriage in packaging";</li> <li>- To include the three major relevant factors i.e. the % of EX, TOX and OX;</li> <li>- To include the possibility of national legislation on the entry to enclosed spaces. If this is the case, domestic legislation will prevail;</li> <li>- To delete the double denial phrase "not permitted except";</li> <li>- To add a reference to 1.1.4.6; the aim of this is to arrange for national legislation to take precedence in case it exists.</li> <li>- The volume % of oxygen is based on the standards developed by OSHA, an agency of the US Department of Labor.</li> </ul>
<p>7.1.3.1.6 <b><u>Carriage in packages</u></b></p> <p>(current 7.1.3.1.4) In case of suspected damage to packages, the <u>gas concentration of flammable and/or toxic gases given off by the cargo</u> in holds containing dangerous goods of Classes 2, 3, 5.2, 6.1 and 8 for which EX and/or TOX appears in column (9) of Table A of Chapter 3.2, shall be measured before any person enters these holds.</p>	<p><b>Proposal</b></p> <ul style="list-style-type: none"> <li>- To change "gas concentration" into "concentration of flammable or toxic gases"</li> </ul> <p><b>Justification</b></p> <p>The proposed amendment makes it more explicit that it may concern either flammable or toxic gases.</p>

<i>Proposal</i>		<i>Explanation</i>
7.1.3.1.7 (current 7.1.3.1.6)	<p>Entry into holds where damage is suspected to packages in which dangerous goods of Classes 2, 3, 5.2, 6.1 and 8 are carried as well as entry into double-hull spaces and double bottoms <u>is only permitted when not permitted except where:</u></p> <p><del>There is no lack of oxygen and no measurable amount of dangerous substance in a dangerous concentration</del></p> <p>– <u>The concentration of flammable gases given off by the cargo in the hold is below 10% of the LEL; the concentration of toxic gases given off by the cargo is below a significant concentration; and the percentage of oxygen in the hold, double hull space or double bottom is between 20 and 23.5%;</u></p> <p><i>or</i></p> <p>– <u>The concentration of flammable gases given off by the cargo in the hold is below 10% of the LEL, and the person entering the space wears a self-contained breathing apparatus and other necessary protective and rescue equipment and is secured by a line. Entry into these spaces is only permitted if this operation is supervised by a second person for whom the same equipment is readily at hand. Another two persons capable of giving assistance in an emergency shall be on the vessel within calling distance.</u></p> <p><u>In deviation from 1.1.4.6, national legislation on the entry into holds shall take precedence over the ADN.</u></p>	<p><b>Proposal</b></p> <ul style="list-style-type: none"> <li>- To introduce a threshold for oxygen and flammable gases before entry into an enclosed space.</li> </ul> <p>For toxic gases no threshold is introduced due to differences in thresholds used in the national legislation in different ADN contracting States.</p> <ul style="list-style-type: none"> <li>- To add a reference to 1.1.4.6; the aim of this is for national legislation to take precedence in case it exists</li> <li>- The volume % of oxygen is based on the standards developed by OSHA, an agency of the US Department of Labor.</li> </ul> <p><b>Justification</b></p> <p>This proposal introduces a defined threshold for both flammable gases and oxygen, instead of the current more vague provisions.</p>

### Ventilation requirements

7.1.4.12.2 ... Where damage of the container or release of content inside the container is suspected, the holds shall be ventilated so as to reduce the concentration of flammable gases given off by the cargo to less than 10% ~~of the lower explosive limit of the LEL~~ or in the case of toxic gases and vapours to below any significant concentration.

### 7.1.6.12 *Ventilation*

The following additional requirements shall be met when they are indicated in column (10) of Table A of Chapter 3.2:

*VE01:* Holds containing these substances shall be ventilated with the ventilators operating at full power, where after measurement it has been established that the concentration of flammable gases given off by the cargo exceeds 10% ~~of the lower explosive limit of the LEL~~. The measurement shall be carried out immediately after loading. The measurement shall be repeated after one hour ~~for monitoring purposes~~. The results of the measurement shall be recorded in writing.

<i>Proposal</i>	<i>Explanation</i>
<p>VE02: Holds containing these substances shall be ventilated with the ventilators operating at full power, where after measurement it has been established that the holds are not free from <u>toxic</u> gases given off by the cargo. The measurement shall be carried out immediately after loading. <del>The A control</del> measurement shall be repeated after one hour <del>for monitoring purposes</del>. The results of the measurement shall be recorded in writing. Alternatively, on vessels only containing these substances in containers in open holds, the holds containing such containers may be ventilated with the ventilation operating at full power only when it is suspected that the holds are not free of <u>toxic gases given off by the cargo</u>. Prior to unloading, the unloader shall be informed about this suspicion.</p> <p>VE03: Spaces such as holds, accommodation and engine rooms, adjacent to holds containing these substances shall be ventilated. After unloading, holds having contained these substances shall undergo forced ventilation. After ventilation, the <del>gas</del>concentration <u>of flammable or toxic gases given off by the cargo</u> in these holds shall be measured. The results of the measurement shall be recorded in writing. (...)</p>	<p>VE02 is only relevant when toxic gases are carried. To make this clearer and to make a clear distinction between VE01 and VE02 the word "toxic" is added;</p>
<p>7.1.6.16 <b><i>Measures to be taken during loading, carriage, unloading and handling of cargo</i></b></p> <p>The following additional requirements shall be met when they are indicated in column (11) of Table A of Chapter 3.2:</p> <p><i>IN01:</i> After loading and unloading of these substances in bulk or unpackaged and before leaving the cargo transfer site, the concentration of <u>flammable gases given off by the cargo</u> in the accommodation, engine rooms and adjacent holds shall be measured by the consignor or consignee using a <del>flammable</del> gas detector.</p> <p>Before any person enters a hold and prior to unloading, the concentration of <u>flammable gases given off by the cargo</u> shall be measured by the consignee of the cargo.</p> <p>The hold shall not be entered or unloading started until the concentration of <u>flammable gases given off by the cargo</u> in the airspace above the cargo is below 50% <del>of the lower explosive limit</del> of the <u>LEL</u>.</p> <p>If <del>the significant</del> concentration of flammable gases <u>given off by the cargo is not below 50% of the LEL are found in these spaces, the necessary</u> safety measures shall be taken immediately by the consignor or the consignee.</p> <p><i>IN02:</i> If a hold contains these substances in bulk or unpackaged, the <del>gas</del>concentration <u>of toxic gases given off by the cargo</u> shall be measured in all other spaces of the vessel which are used by the crew at least once every eight hours with a toximeter. The results of the measurements shall be recorded in writing. ...</p>	<p><b>Proposal</b></p> <p>To add: "flammable" and "toxic".</p> <p><b>Justification</b></p> <p>This addition makes it clearer what kind of gases have to be measured. The current reference to either flammable or toxic gases is implicitly made by the reference to either a flammable gas detector or a toximeter.</p>



Proposal

Explanation

### 7.2.3.1 Access to cargo tanks, residual cargo tanks, cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms and hold spaces; inspections

7.2.3.1.4 When the gas-concentration of flammable or toxic gases given off by the cargo or oxygen content has to be measured before entry into cargo tanks, residual cargo tanks, cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms or hold spaces, the results of these measurements shall be recorded in writing.

The measurement may only be effected by an expert referred to in 8.2.1, ~~persons~~ equipped with breathing apparatus suited to the substance carried.

Entry into these spaces is not permitted for the purpose of measuring.

7.2.3.1.5 Before any person enters cargo tanks, the residual cargo tanks, the cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms, ~~or~~ hold spaces or other confined spaces:

(a) When dangerous substances of Classes 2, 3, 4.1, 6.1, 8 or 9 for which a ~~flammable~~ gas detector is required in column (18) of Table C of Chapter 3.2 are carried on board the vessel, it shall be established, by means of this device that the gas concentration of flammable gases given off by the cargo in these cargo tanks, residual cargo tanks, cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms, or hold spaces is not more than 50% of the ~~of the lower explosive limit LEL of the cargo~~. For the cargo pump-rooms below deck this may be determined by means of the permanent gas detection system;

(b) When dangerous substances of Classes 2, 3, 4.1, 6.1, 8 or 9 for which a toximeter is required in column (18) of Table C of Chapter 3.2 are carried on board the vessel, it shall be established, by means of this device that the cargo tanks, residual cargo tanks, cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms or hold spaces do not contain any significant concentration of toxic gases given off by the cargo.

In deviation from 1.1.4.6, national legislation on the entry into holds shall take precedence over the ADN.

7.2.3.1.6 Entry into empty cargo tanks, the residual cargo tank, the cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms, hold spaces, ~~or other confined spaces~~ is only permitted when not permitted except:

~~—there is no lack of oxygen and no measurable amount of dangerous substances in dangerous concentrations;~~

~~or~~

#### Proposal

To add: "Residual cargo tanks" and "other confined spaces"

#### Justification

In the header of 7.2.3.1 a reference is made to the residual cargo tanks, but these are not mentioned in each relevant provision.

#### Proposal

- To introduce a threshold for oxygen and flammable gases before entering an enclosed space.

For toxic gases no threshold is introduced due to differences in thresholds used in the national legislation in different ADN contracting States.

Proposal	Explanation
<p>– <del>the person entering the spaces wears a self contained breathing apparatus and other necessary protective and rescue equipment, and is secured by a line. Entry into these spaces is only permitted if this operation is supervised by a second person for whom the same equipment is readily at hand. Another two persons capable of giving assistance in an emergency shall be on the vessel within calling distance. If a rescue winch has been installed, only one other person is sufficient.</del></p> <p>– <del>the concentration of flammable gases given off by the cargo in the cargo tanks, the residual cargo tank, the cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms, hold spaces or other confined spaces is below 10% of the LEL, the concentration of toxic gases given off by the cargo is below a significant concentration, and the percentage of oxygen is between 20 and 23.5% volume,</del></p> <p><u>or</u></p> <p>– <del>the concentration of flammable gases given off by the cargo in the cargo tanks, the residual cargo tank, the cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms, hold spaces or other confined spaces is below 10% of the LEL, and the person entering the spaces wears a self-contained breathing apparatus and other necessary protective and rescue equipment, and is secured by a line.</del></p> <p><u>Entry into these spaces is only permitted if this operation is supervised by a second person for whom the same equipment is readily at hand. Another two persons capable of giving assistance in an emergency shall be on the vessel within calling distance. If a rescue winch has been installed, only one other person is sufficient.</u></p> <p><u>In case of emergency or mechanical problems, it is allowed to enter the tank when the gas concentration given off by cargo is between 10 and 50% of the LEL. The breathing apparatus in use has to be designed in such a way that the causing of sparks is avoided.</u></p> <p><u>In deviation from 1.1.4.6, national legislation on the entry into cargo tanks shall take precedence over the ADN.</u></p>	<p>- The current possibility for entering the cargo tank in case of emergency or mechanical problems (10-50%) is made more explicit and constrained.</p>
<p>7.2.3.7 <del>Gasfreeing</del> <u>Degassing</u> of empty cargo tanks</p> <p>7.2.3.7.0 <del>Gasfreeing</del> <u>Degassing</u> of empty or unloaded cargo tanks is permitted under the conditions below but only if it is not prohibited on the basis of international or <del>domestic</del> <u>national</u> legal requirements.</p>	<p><b>Justification</b></p> <p>This proposal introduces a defined threshold for both flammable gases and oxygen, instead of the current more vague provisions.</p> <p>The current ADN allows for the entry into the cargo tank when the gas concentration is below 50% LEL, but there is no requirement for the equipment used to avoid any sparks.</p>

<i>Proposal</i>	<i>Explanation</i>
<p>7.2.3.7.1 Empty or unloaded cargo tanks having previously contained dangerous substances of Class 2 or Class 3, with a classification code including the letter "T" in column (3b) of Table C of Chapter 3.2, Class 6.1 or packing group I of Class 8, may only be <del>gas freed</del> degassed by either competent persons according to sub-section 8.2.1.2 or companies approved by the competent authority for that purpose. <del>Gas freeing</del> <u>This</u> may be carried out only at the locations approved by the competent authority.</p>	
<p>7.2.3.7.2 <u><i>Degassing of empty or unloaded cargo tanks when the gas concentration is above 10% of the LEL</i></u></p> <p><del>Gas freeing</del> <u>Degassing</u> of empty or unloaded cargo tanks having contained dangerous goods other than those referred to under 7.2.3.7.1, <u>when the gas concentration given off by the cargo is 10% of the LEL or above</u>, may be carried out while the vessel is underway or at locations approved by the competent authority by means of suitable venting equipment with the tank lids closed and by leading the gas/air mixtures through flame-arresters capable of withstanding steady burning. <del>In normal conditions of operation,</del> <u>The gas concentration in the vented mixture at the outlet shall be less than 50% of the LEL of the lower explosive limit.</u> The suitable venting equipment may be used for <del>gas freeing</del> <u>degassing</u> by extraction only when a flame-arrester is fitted immediately before the ventilation fan on the extraction side. The gas concentration shall be measured once each hour during the two first hours after the beginning of the <del>gas freeing</del> <u>degassing</u> operation by forced ventilation or by extraction, by an expert referred to in 8.2.17.2.3.15. The results of these measurements shall be recorded in writing.</p> <p><del>Gas freeing</del> <u>Degassing</u> is, however, prohibited within the area of locks including their lay-bys.</p> <p><u><i>Degassing of empty or unloaded cargo tanks when the gas concentration is below 10% of the LEL</i></u></p> <p><u>Degassing of empty or unloaded cargo tanks having contained dangerous goods other than those referred to under 7.2.3.7.1, and when the gas concentration given off by the cargo is below 10% of the LEL, is allowed, and also additional openings of the cargo tank are allowed to be opened if there is no risk involved for the crew. Also, there is no obligation to use a flame arrester.</u></p> <p><u>It is prohibited within the area of locks including their lay-bys, under bridges or within densely populated areas.</u></p>	<p><b>Proposal</b></p> <p>To introduce a threshold of 10% before the current provisions for degassing are obligatory. This is no difference to the current practice where a cargo tank is considered "degassed" below 10% LEL. This is however not made very explicit in the current ADN.</p> <p><b>Justification</b></p> <p>In the ADN 10% LEL is considered a safe threshold when dealing with flammable gases. This is now also introduced in relation to the degassing of cargo tanks.</p>
<p>7.2.3.7.3 Where <del>gas freeing</del> <u>degassing</u> of cargo tanks having previously contained the dangerous goods referred to in 7.2.3.7.1 above is not practicable at the locations designated or approved for this purpose by the competent authority, <del>gas freeing</del> <u>degassing</u> may be carried out while the vessel is underway, provided that:</p>	<p><b>Proposal</b></p> <p>To change "dangerous substances" into "flammable gases".</p>

<i>Proposal</i>	<i>Explanation</i>
<p>– the requirements of 7.2.3.7.2 are complied with; the concentration of <del>dangerous substances</del> <u>flammable gases given off by the cargo</u> in the vented mixture at the outlet shall, however, be not more than 10% <del>of the lower explosive limit of the LEL</del>;</p>	<p><b>Justification</b></p> <p>A reference is made to the lower explosion limit, so "dangerous substances" have to be read as "flammable gases".</p>
...	
<p>7.2.3.7.4 <del>Gasfreeing</del> <u>Degassing</u> operations shall be interrupted during a thunderstorm or when, due to unfavorable wind conditions, dangerous concentrations of <u>flammable or toxic</u> gases are to be expected outside the cargo area in front of accommodation, the wheelhouse and service spaces. The critical state is reached as soon as concentrations <u>given off by the cargo of flammable gases</u> of more than 20% of <del>the lower explosive limit LEL</del> or a significant concentration of <u>toxic gases</u> have been detected in those areas by measurements by means of portable equipment.</p>	
<p>7.2.3.7.5 The marking prescribed in column (19) of Table C of Chapter 3.2 may be withdrawn by <u>order of the master</u> when, after <del>gasfreeing degassing</del> of the cargo tanks, it has been ascertained, using the equipment described in column (18) of Table C of Chapter 3.2, that the cargo tanks no longer contain flammable gases in concentrations of more than 20% of <del>the lower explosive limit the LEL</del> or do not contain any significant concentration of toxic gases.</p>	
<p>7.2.3.7.6 Before taking measures which could cause hazards as described in section 8.3.5, cargo tanks and pipes in the cargo area shall be cleaned and <u>made gas-free gasfreed</u>. <del>The result of the gasfreeing</del> This shall be documented in a gas-free certificate. The condition of being gas-free may only be declared and certified by a person approved by <u>a</u> <del>the</del> competent authority.</p>	
<p>7.2.3.12.2 The ventilation of pump rooms shall be in operation:</p> <ul style="list-style-type: none"> <li>– at least 30 minutes before entry and during occupation;</li> <li>– during loading, unloading and <del>gasfreeing degassing</del>;</li> <li>and</li> <li>– after the gas detection system has been activated.</li> </ul>	
<p>7.2.4.2.2 <del>Mooring The landing</del> and reception of oily and greasy wastes may not take place during the loading and unloading of substances for which protection against explosion is required in column (17) of Table C of Chapter 3.2 nor during the <del>gas freeing degassing</del> of tank vessels. This requirement does not apply to oil separator vessels provided that the provisions for protection against explosion applicable to the dangerous substance are complied with.</p>	

<i>Proposal</i>	<i>Explanation</i>
7.2.4.2.3	<p><del>Mooring Berthing</del> and handing over of products for the operation of vessels shall not take place during the loading or unloading of substances for which protection against explosions is required in column (17) of Table C of Chapter 3.2 nor during the <del>gasfreeing degassing</del> of tank vessels. This requirement does not apply to supply vessels provided that the provisions for protection against explosion applicable to the dangerous substance are complied with.</p>
<b>7.2.4.7</b>	<b><i>Places of loading and unloading</i></b>
7.2.4.7.1	<p>Tank vessels shall be loaded or unloaded <del>or gas freed</del> only at the places designated or approved for this purpose by the competent authority.</p> <p><b>Proposal</b></p> <p>To delete "or gas-freed".</p> <p><b>Justification</b></p> <p>With the current amendments in 7.2.3.7 this reference has become superfluous.</p>
7.2.4.12	<p><b><i>Registration during the voyage</i></b></p> <p>The following particulars shall immediately be entered in the register referred to in 8.1.11:</p> <p>....;</p> <p><del>Gasfreeing</del> <u>Degassing</u> of UN No. 1203 petrol:  <del>Gasfreeing</del> <u>Degassing</u> place and facility or sector, date and time.</p> <p>These particulars shall be provided for each cargo tank.</p> <p><b>Proposal</b></p> <p>To delete "gasfreeing" and replace it with "degassing". This is only applicable to the English version of the ADN.</p>
7.2.4.15.3	The <del>gas freeing</del> <u>degassing</u> of cargo tanks and piping for loading and unloading shall be carried out in compliance with the conditions of 7.2.3.7.
7.2.4.16.3	The shut-off devices of the loading and unloading piping as well as of the pipes of the stripping systems shall remain closed except during loading, unloading, stripping, cleaning or <del>gasfreeing degassing</del> operations.
7.2.4.16.7	When a tank vessel conforms to 9.3.2.25.5 (d) or 9.3.3.22.5 (d), the individual cargo tanks shall be closed off during transport and opened during loading, unloading and <del>gasfreeing degassing</del> .
7.2.4.17.1	During loading, unloading and <del>gasfreeing degassing</del> operations, all entrances or openings of spaces which are accessible from the deck and all openings of spaces facing the outside shall remain closed.
7.2.4.17.2	After the loading, unloading and <del>gasfreeing degassing</del> operations, the spaces which are accessible from the deck shall be ventilated.
7.2.4.25.3	The shut-off devices of the loading and unloading cargo piping shall not be open except as necessary during loading, unloading or <del>gasfreeing degassing</del> operations.

<i>Proposal</i>	<i>Explanation</i>
7.2.5.0.1	<p>Vessels carrying dangerous goods listed in Table C of Chapter 3.2 shall display the number of blue cones or blue lights indicated in column (19) and in accordance with CEVNI. When because of the cargo carried no marking with blue cones or blue lights is prescribed but the concentration of flammable gases in the cargo tanks is higher than 20% <del>of the of the lower explosion limit</del> <u>LEL of the last cargo for which this marking was required</u>, the number of blue cones or blue lights to be carried is determined by the last cargo for which this marking was required.</p>

**Training of the crew**

- 8.2.2.3.3.1 The specialization course on gases shall comprise at least the following objectives:
- ...
- Practice:*
- ...
- certificates for ~~degassing~~ the status of being gas free and permitted work;
- ...
- 8.2.2.3.3.2 The specialization course on chemicals shall comprise at least the following objective: (...)
- Practice:*
- cleaning of cargo tanks, e.g. ~~gas freeing~~, degassing, washing, residual cargo and receptacles for residual products
- ...
- certificates for ~~degassing~~ the status of being gas free and permitted work
- ...

**Hold spaces and cargo tanks**

- 9.3.X.11.3 (a)...
- (b)...
- (c) All spaces in the cargo area shall be capable of being ventilated. ~~Means for checking their gas-free condition shall be provided. It has to be possible to check their gas-free condition.~~

**Proposal**

There is a difference between the different language versions. In the French and German text, the obligation for having the means on board is absent.

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*Proposal**Explanation*

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**Tank vessels, Type C/ N**

- 9.3.2.42.4/ Where the cargo heating system is used during loading,  
unloading or ~~gasfreeing~~ degassing with a concentration  
9.3.3.42.4 given off by the cargo of 10% of the LEL or above, the  
service space which contains this system shall fully  
comply with the requirements of 9.3.2.52.3. This  
requirement does not apply to the inlets of the  
ventilation system.

...