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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-seventh session**

Geneva, 24–28 August 2015

Item 5 of the provisional agenda

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

1. On 22 and 23 April 2015 the Informal Working Group on degassing of cargo tanks held its third meeting at the Bundesanstalt für Gewässerkunde in Koblenz, Germany. The meeting was attended by delegates from Germany and the Netherlands, the European Barge Union (EBU), the European Skippers Organization (ESO) and an independent gas expert from Germany.

2. The Informal Working Group has - based on the principle adopted at the two earlier working groups - discussed and decided upon proposals for amendments to the ADN in relation to the aim of the Informal Working Group (25<sup>th</sup> Session/INF.18 and 26<sup>th</sup> session/INF.19). The principles adopted during the two earlier working groups are:

(a) The use of the word “gas-freed” in English could cause misinterpretation because it could imply the cargo tank needs to be “degassed” when it is “gas free”. For the status “gas free” ADN has the definition: “Cargo tank (condition): gas-free: not containing any measurable concentration of dangerous gases”.

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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.2/2015/29.

(b) In the German version the word “entgasen” is used and in the French version the word “dégazage”. So only the English version talks about “gas freeing”.

(c) Most members of the Informal Working Group expressed the wish to include a definition for the operation of “degassing”. A definition will be drawn up at the next meeting of the Group.

(d) It concluded that in provisions where the words “dangerous gases” or “dangerous substances” were mentioned (7.1.3.1.5, 7.1.3.1.6, 7.1.3.1.7) this should be made more explicit by writing “flammable or toxic gases”.

(e) There was also agreement on the basic principle that when entering the cargo hold (or other spaces where flammable or toxic gases could be present) without self-contained breathing protection, a measurement should be undertaken not only for flammable or toxic gases as is required in the current ADN, but also for oxygen. This should be added in 7.1.3.1.5 and 7.1.3.1.7.

(f) The current provisions in 7.1.3 on entering cargo holds are not always logically ordered. The Informal Working Group agreed to reorder the provisions for a more easy understanding. A proposal to change this (including the merger of the current 7.1.3.1.6. and 7.1.3.1.7) will be discussed during the next meeting of the Group. For the provisions on entering cargo tanks (7.2.3) the same conclusion was drawn.

The Informal Working Group concluded that - based upon 7.2.4.22.2 - for the operation of opening the cargo tank covers or the housing of flame arresters a cargo tank is to be considered “degassed” of flammable gases when the percentage of the lower explosive limit (LEL) is below 10%. The Informal Working Group decided not to propose any amendments for the (parts of) provisions involving toxic gases due to already existing national legislation.

(g) The Informal Working Group proposes to amend the current second sentence of 7.2.4.22.2 and section 7.3.7 only in the English language version. In 7.2.4.22.2 the text in the second paragraph is:

“(…)

When in column (17) of Table C of Chapter 3.2 anti-explosion protection is required, the opening of cargo tank covers or of the housing of the flame arrester for the purpose of mounting or removing the flame arrester plate stack in unloaded cargo tanks shall be permitted only if the cargo tanks in question have been gas-freed and the concentration of flammable gases in the tanks is less than 10% of the lower explosive limit.”

The proposal is to change this into:

“(…)

When in column (17) of Table C of Chapter 3.2 anti-explosion protection is required, the opening of cargo tank covers or of the housing of the flame arrester for the purpose of mounting or removing the flame arrester plate stack in unloaded cargo tanks shall be permitted only if the cargo tanks in question have been gas freed are empty and the concentration of flammable gases in the tanks is less than 10% of the lower explosive limit (LEL).”

(h) The Informal Working Group further proposes to change in all the provisions belonging to paragraph 7.2.3.7 of the English version the words “gas-freed” into “degassed” and “gas-freeing” into “degassing”.

(i) The French proposal contained two alternative proposals for the second paragraph of 7.2.4.22.2. In both alternatives the reference to the status of being “degassed”

is deleted. Only a clear cut threshold for the gas concentration within the cargo tanks to be below 10% LEL - as a condition for the cargo tank covers to be opened - remains. With this proposal any possible misunderstanding in 7.2.4.22.2 between the requirements of being “dégazées” in French, “degassed” in English, “entgast” in German, and the gas concentration being below 10% LEL is avoided.

The Informal Working Group had a positive attitude to the French proposal, and considered to incorporate it into their proposals to amend the ADN for the August 2015 session of the ADN Safety Committee.

(j) As a result of the discussion following the French proposal, most of the participants of the Informal Working Group expressed the preference to delete in general the phrase “degassed”. As an alternative, clear thresholds when a cargo tank or other enclosed spaces on board are to be considered “degassed” and ready to be opened and/or entered should be included. This creates clarity under what conditions certain operations are allowed. For example, in the case of degassing of cargo tanks, to add to 7.2.3.7 that this only applies when the gas concentration is above 10% LEL.

(k) Contradictory provisions were found in subsections 7.2.4.41 “Fire or naked light”, 7.2.4.74 “Prohibition of smoking, fire and naked light” and 8.3.4 “Prohibition on smoking, fire and naked light”, when and where the use of light, open fire and smoking is allowed or not. The German delegate was asked to send a request to the Informal Working Group on protection against explosion on board tank vessels to examine whether these three paragraphs could be merged.

## **II. Proposals**

3. The proposals to amend the Regulations annexed to the ADN according to the adopted principles can be found in the Annex.

## 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 <u>gas-free</u> 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 the 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 the 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 the competent authority (a.s.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 <del>dangerous</del> <u>flammable or toxic</u> gases.</p> <p><b><u>Degassing to the atmosphere:</u></b></p> <p><u>An operation with the aim of lowering the concentration of dangerous gases in an empty cargo tank by emitting vapours to the atmosphere.</u></p>	<p><b>Proposal</b></p> <p>To change “dangerous” into “flammable or toxic gases”</p> <p><b>Justification</b></p> <p>Dangerous gases refer to flammable or toxic gases. With this amendment this is made clearer.</p> <p><b>Proposal</b></p> <p>To add a new definition: “Degassing to the atmosphere”</p> <p><b>Justification</b></p> <p>According to the adopted principles, the proposal will be made to change the 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><b>Flammable Gas detector</b> means a device allowing measuring of any significant concentration of flammable gases given off by the cargo below the</p>	<p><b>Proposal</b></p> <p>To delete “Flammable” in the title of the definition.</p>

<i>Proposal</i>	<i>Explanation</i>
<p>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>Gas detection system</b> means a fixed system capable of detecting in time significant concentrations of flammable gases given off by the cargoes at concentrations below the lower explosion limit and capable of activating the alarms;</p> <p><b>Lower explosion limit (LEL)</b> means the lowest concentration (percentage) of a gas in the air capable of producing a flash of fire in the presence of a source of ignition.</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>Justification</b></p> <p>Flammable gas detectors can be designed for measuring both flammable gases and oxygen.</p> <p>The deletion of “flammable”</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.</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>7.1.3.1 Access to holds, double-hull spaces and double bottoms; inspections</b></p> <p>7.1.3.1.4 <b><u>Carriage of cargo in bulk or without packaging</u></b></p> <p>(current 7.1.3.1.7) 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 <del>not permitted except where</del> :</u></p> <p>– The <u>concentration of flammable gases in the hold, double hull space or double bottom is below 10% LEL, the concentration of toxic gases is below a significant concentration, and the percentage of oxygen is 20 volume % or above.</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</li> </ul>

Proposal		Explanation
	<p><i>or</i></p> <ul style="list-style-type: none"> <li>- <u>the concentration flammable gases is below 10% LEL</u>, 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.</li> </ul> <p><u>In contrast to 1.1.4.6, national legislation on the entry into holds shall take precedence over the ADN.</u></p>	<p>on the entry to enclosed spaces. If this is the case, domestic legislation will prevail;</p> <ul style="list-style-type: none"> <li>- To delete the double denial phrase “not permitted except”;</li> <li>- To add a reference to 1.1.4.6.1; the aim of this is to arrange for national legislation to take precedence in case it exists.</li> </ul>
7.1.3.1.5 (stays 7.1.4.1.5)	<p><b><u>Carriage of cargo in bulk or without packaging</u></b></p> <p>The <u>gasconcentration of flammable or toxic</u> gases 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.</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>
7.1.3.1.6 (current 7.1.3.1.4)	<p><b><u>Carriage in packages</u></b></p> <p>In case of suspected damage to packages, the <u>gasconcentration of flammable or toxic gases</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>
7.1.3.1.7 (current 7.1.3.1.6)	<p><b><u>Carriage in packages</u></b></p> <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> <ul style="list-style-type: none"> <li>- <u>the concentration of flammable gases in the hold is below 10% LEL; the concentration of toxic gases is below a significant concentration; and the percentage of oxygen in the hold, double hull space or double bottom is 20%</u></li> </ul>	<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 1.1.4.6.1; the aim of this is for national legislation to take precedence in case it exists</li> </ul>

<i>Proposal</i>	<i>Explanation</i>
<p>or above;</p> <p>or</p> <p>– <u>the concentration of flammable gases in the hold is below 10%, and</u> 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.</p> <p><u>In contrast to 1.1.4.6, national legislation on the entry into holds shall take precedence over the ADN.</u></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><b>Ventilation requirements</b></p>	
<p>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 <u>flammable</u> gases given off by the cargo to less than 10% <del>of the lower explosive limit LEL</del> or in the case of toxic gases to below any significant concentration.</p>	
<p>7.1.6.12 <b>Ventilation</b></p> <p>The following additional requirements shall be met when they are indicated in column (10) of Table A of Chapter 3.2:</p> <p><i>VE01:</i> 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 <u>flammable</u> gases given off by the cargo exceeds 10% <del>of the lower explosive limit LEL</del>. 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.</p> <p><i>VE02:</i> 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</del> <u>A control</u> measurement shall be repeated after one hour for monitoring purposes. 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</p>	<p><i>VE02</i> is only relevant when toxic gases are carried. To make this clearer and to make a clear distinction between <i>VE01</i> and <i>VE02</i> the word “toxic” is added;</p>

Proposal	Explanation
	<p>ventilation operating at full power only when it is suspected that the holds are not free of <u>toxic gases</u>. Prior to unloading, the unloader shall be informed about this suspicion.</p> <p><i>VE03:</i> 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 of <u>flammable or toxic gases</u> in these holds shall be measured. The results of the measurement shall be recorded in writing.</p> <p>(...)</p>
<p>7.1.6.16</p> <p><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</u> gases 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</u> gases 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</u> gases in the airspace above the cargo is below 50% <del>of the lower explosive limit</del> <u>LEL</u>.</p> <p>If significant concentrations of flammable gases are found in these spaces, the necessary 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 of <u>toxic gases</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>...</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
<p><b>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</b></p>	
<p>7.2.3.1.4 When the <del>gas</del> concentration of flammable or toxic gases 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.</p> <p>...</p>	
<p>7.2.3.1.5 Before any person enters cargo tanks, <u>the residual cargo tanks</u>, the cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms or hold spaces:</p> <p>(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 <u>flammable gases</u> in these cargo tanks, <u>residual cargo tanks</u>, cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms, or hold spaces is not more than 50% <del>of the lower explosive limit</del> <u>LEL</u> of the cargo. For the cargo pump-rooms below deck this may be determined by means of the permanent gas detection system;</p> <p>(b) When dangerous substances of Classes 2, 3, 4.1, 6.1, 8 or 9 for which a taximeter 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, <u>residual cargo tanks</u>, cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms or hold spaces do not contain any significant concentration of toxic gases.</p>	<p><b>Proposal</b></p> <p>To add: “Residual cargo tanks”</p> <p><b>Justification</b></p> <p>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.</p>
<p><u>In contrast to 1.1.4.6, national legislation on the entry into holds shall take precedence over the ADN.</u></p>	
<p>7.2.3.1.6 Entry into empty cargo tanks, the cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms and hold spaces is <u>only permitted when not permitted except:</u></p> <p><del>—there is no lack of oxygen and no measurable amount of dangerous substances in dangerous concentrations;</del></p> <p><del>or</del></p> <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</del></p>	<p><b>Proposal</b></p> <p>- To introduce a threshold for oxygen and flammable gases before entering an enclosed space.</p> <p>For toxic gases no threshold is introduced due to differences in thresholds used in the national legislation in different ADN contracting States.</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>

<i>Proposal</i>		<i>Explanation</i>
	<p><del>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 in the hold, double hull spaces or double bottoms is below 10% LEL, the concentration of toxic gases is below a dangerous percentage, and the percentage of oxygen is 20% volume or above,</del></p> <p><del>or</del></p> <p><del>– the concentration of flammable gases in the hold, double hull spaces or double bottoms is below 10% 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><del>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>In case of emergency or mechanical problems, it is allowed to enter the tank when the gas concentration is between 10%-50% LEL. The breathing apparatus in use has to be designed in such a way that the causing of sparks is avoided.</del></p> <p><del>In contrast to 1.1.4.6, national legislation on the entry into cargo tanks shall take precedence over the ADN.</del></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>
7.2.3.7	<p><del>Gasfreeing</del> <b>Degassing of empty cargo tanks into the atmosphere</b></p>	<p><b>Proposal</b></p> <p>To add: “Into the atmosphere” to the header</p> <p><b>Justification</b></p> <p>To make a clear distinction between degassing into the atmosphere and the future possibility of degassing into a degassing unit.</p>
7.2.3.7.0	<p><del>Gasfreeing</del> <b>Degassing into the atmosphere</b> 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> <b>national</b> legal requirements.</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>gasfreed</del> <u>degassed from toxic gases</u> 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>Degassing when the gas concentration is 10% LEL or above</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 is 10% 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. In normal conditions of operation, the gas concentration in the vented mixture at the outlet shall be less than 50% <u>LEL</u> <del>of the lower explosive limit</del>. 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 7.2.3.15. 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>Degassing when the gas concentration is below 10% LEL</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 is 10% LEL or below 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>gasfreeing</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>gasfreeing</del> <u>degassing</u> may be carried out while the vessel is underway,</p>	<p><b>Proposal</b></p> <p>To change “dangerous substances” into “flammable gases”.</p>

<i>Proposal</i>	<i>Explanation</i>
	<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>provided that:</p> <ul style="list-style-type: none"> <li>– the requirements of 7.2.3.7.2 are complied with; the concentration of <del>dangerous substances</del> <u>flammable gases</u> in the vented mixture at the outlet shall, however, be not more than 10% <del>of the lower explosive limit LEL</del>;</li> <li>....</li> </ul> <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>of flammable gases</u> of more than 20% <del>of 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 the master when, after <del>gasfreeing</del> <u>degassing</u> 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% <del>of the lower explosive limit 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</u> <del>gasfreed</del>. The result of the <del>gasfreeing</del> <u>degassing</u> 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 the 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</del> <u>degassing</u>; and</li> <li>– after the gas detection system has been activated.</li> </ul>	
<p>7.2.4.2.2 The landing 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</del> <u>degassing</u> 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>
<p>7.2.4.2.3 Berthing 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</del> <u>degassing</u> 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>	
<p><b>7.2.4.7 <i>Places of loading and unloading</i></b></p>	
<p>7.2.4.7.1 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> To delete “or gas-freeed”.</p> <p><b>Justification</b> With the current amendments in 7.2.3.7 this reference has become superfluous.</p>
<p>7.2.4.12 <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>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.</p>	
<p>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</del> <u>degassing</u> operations.</p>	
<p>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</del> <u>degassing</u>.</p>	
<p>7.2.4.17.1 During loading, unloading and <del>gasfreeing</del> <u>degassing</u> operations, all entrances or openings of spaces which are accessible from the deck and all openings of spaces facing the outside shall remain closed.</p> <p>...</p>	

<i>Proposal</i>	<i>Explanation</i>	
7.2.4.17.2	After the loading, unloading and <del>gasfreeing</del> <u>degassing</u> operations, the spaces which are accessible from the deck shall be ventilated.	
7.2.4.22.2	... When in column (17) of Table C of Chapter 3.2 anti-explosion protection is required, the opening of cargo tank covers or of the housing of the flame arrester for the purpose of mounting or removing the flame arrester plate stack in unloaded cargo tanks shall be permitted only if <del>the cargo tanks in question have been gas freed and</del> the concentration of flammable gases in the cargo tanks is less than 10% <del>of the lower explosive limit</del> <u>LEL</u> .	
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</del> <u>degassing</u> operations.	
7.2.4.41	<b><i>Fire or naked light</i></b> During loading, unloading or <del>gas freeing</del> <u>degassing</u> operations fires and naked lights are prohibited on board the vessel. However, the provisions of 7.2.3.42.3 and 7.2.3.42.4 are applicable.	This provision is also being considered by the Informal Working Group on protection against explosion on board tank vessels. Proposals by the Informal Working Group on degassing of cargo tanks will be included.
7.2.4.51.1	During loading, unloading or <del>gasfreeing</del> <u>degassing</u> operations, <u>when the concentration of flammable gases inside the cargo tanks is 10% LEL or above</u> , only electrical equipment conforming to the rules for construction in Part 9 or which are installed in spaces complying with the conditions of 9.3.1.52.3, 9.3.2.52.3 or 9.3.3.52.3, may be used. All other electrical equipment marked in red shall be switched off.	
7.2.4.51.2	Electrical equipment which has been switched off by the device referred to in 9.3.1.52.3, 9.3.2.52.3 or 9.3.3.52.3 shall only be switched on <u>when the concentration of flammable gases inside these spaces is below 10% LEL</u> <del>after the gas free condition has been established in these spaces.</del>	
7.2.5.0.1	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 lower explosion limit</del> <u>LEL</u> , the number of blue cones or blue lights to be carried is determined by the last cargo for which this marking was required.	

<i>Proposal</i>	<i>Explanation</i>
<b>Training of the crew</b>	
8.2.2.3.3.1	<p>The specialization course on gases shall comprise at least the following objectives:</p> <p>...</p> <p><i>Practice:</i></p> <p>...</p> <p>- certificates for <del>degassing</del> <u>the status of being gas free</u> and permitted work;</p> <p>...</p>
8.2.2.3.3.2	<p>The specialization course on chemicals shall comprise at least the following objective: (...)</p> <p><i>Practice:</i></p> <p>- cleaning of cargo tanks, e.g. <del>gas freeing</del>, <u>degassing</u>, washing, residual cargo and receptacles for residual products</p> <p>...</p> <p>- certificates for <del>degassing</del> <u>the status of being gas free</u> and permitted work</p> <p>....</p>
<b>Hot work on board</b>	
8.3.5	<p><b>Danger caused by work on board</b></p> <p>...</p> <p>- when tank vessels are furnished with an authorization from the competent authority or a certificate attesting to the <del>totally gas free</del> condition of the vessel <u>of being gas free from flammable or toxic gases</u>;</p> <p>- to berthing operations.</p> <p>Such work on board tank vessels may be undertaken without permission in the service spaces outside the cargo area, provided the doors and openings are closed and the vessel is not being loaded, unloaded or <del>gas freed</del> <u>degassed</u> <u>when the concentration of flammable gases is 10% LEL or above.</u></p> <p>...</p>

<i>Proposal</i>	<i>Explanation</i>
<b>Hold spaces and cargo tanks</b>	
9.3.X.11.3 (a)... (b)... (c) All spaces in the cargo area shall be capable of being ventilated. <del>Means for checking their gas-free condition shall be provided. It has to be possible to check their gas-free condition.</del>	<b>Proposal</b> 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.
9.3.X.17.6 ... – the cargo pump-room is provided with a permanent gas detection system which automatically indicates the presence of <del>explosive gases or lack of oxygen</del> <u>flammable gases or the concentration of oxygen below 19.5%</u> by means of direct-measuring sensors and which actuates a visual and audible alarm when the <u>gas concentration of flammable gases</u> has reached 20% of the lower explosive limit (LEL). The sensors of this system shall be placed at suitable positions at the bottom and directly below the deck. Measurement shall be continuous. The audible and visual alarms are installed in the wheelhouse and in the cargo pump-room and, when the alarm is actuated, the loading and unloading system is shut down. Failure of the <u>flammable</u> gas detection system shall be immediately signaled in the wheelhouse and on deck by means of audible and visual alarms;	The Informal Working Group on protection against explosion on board tank vessels will also come with a proposal to amend this provision, and the comments from this Working Group will be incorporated.
9.3.X.50.1 In addition to the documents required by the Regulations referred to in 1.1.4.6, the following documents shall be on board: ... (c) a list of or general plan indicating the electrical equipment outside the cargo area which may be operated during loading, unloading or <u>degassing</u> <del>gas freeing</del> . All other electrical equipment shall be marked in red. See 9.3.1.52.3 and 9.3.1.52.4.	
9.3.X.52.3 (a) Electrical equipment used during loading, unloading and <u>gas freeing</u> <del>degassing</del> <u>when the concentration of flammable gases is 10% LEL or above</u> , during berthing and which are located outside the cargo area (comparable to zone 2) shall be at least of the “limited explosion risk” type. (b)...	



<i>Proposal</i>	<i>Explanation</i>
	<p>2. The spaces are fitted with a <u>flammable</u> gas detection system with sensors:</p> <p>...</p> <p>3. The <del>gas concentration</del> measurement is continuous;</p> <p>4. When the <del>gas concentration of flammable gases</del> reaches 20% of the <del>lower explosive limit LEL</del>, the ventilators shall be switched off. In such a case and when the overpressure is not maintained or in the event of failure of the <u>flammable</u> gas detection system, the electrical installations which do not comply with (a) above, shall be switched off. These operations shall be performed immediately and automatically and activate the emergency lighting in the accommodation, the wheelhouse and the service spaces, which shall comply at least with the “limited explosion risk” type. The switching-off shall be indicated in the accommodation and wheelhouse by visual and audible signals;</p> <p>5. The ventilation system, the <u>flammable</u> gas detection system and the alarm of the switch-off device fully comply with the requirements of (a) above;</p> <p>...</p>
<p><b>Tank vessels, Type C/ N</b></p> <p>9.3.2.42.4/</p> <p>9.3.3.42.4</p>	<p>Where the cargo heating system is used during loading, unloading or <del>gasfreeing</del> <u>degassing with a concentration 10% LEL or above</u>, 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.</p> <p>...</p>