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Working Party on the Transport of Dangerous Goods

Joint Meeting of the RID Safety Committee and the  
Working Party on the Transport of Dangerous Goods  
(Geneva, 13-23 September 2005)

**NEW PROPOSALS FOR AMENDMENTS TO RID/ADR/ADN**

**Section 5.5.2: Carriage of transport units ventilated after fumigation**

**Transmitted by the Government of Germany\***

The secretariat has received from the Central Office for International Carriage by Rail (OCTI) the proposal reproduced below.

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\* Circulated by the Central Office for International Carriage by Rail (OCTI) under the symbol OCTI/RID/GT-III/2005/41.

### Summary

**Executive summary:** Transport units ventilated after fumigation are accepted for carriage without markings, although during lengthy transport operations gases may escape from fumigated goods or packaging materials and may accumulate in concentrations exceeding the accepted values. If the administrative personnel involved in inspections (customs, phytosanitary protection, police) enter such units without protection during carriage or unloading when they reach the consignee, they may encounter health hazards.

For this reason it is proposed that ventilated transport units, in which gas generation cannot be totally excluded when they are immobile, should also be equipped with a warning sign.

Account should be taken of standard regulations in all modal requirements and in the United Nations Model Regulations.

**Action to be taken:** An addition to section 5.5.2 of the ADR/RID regulations and to comparable regulations in all modal requirements and in the United Nations Model Regulations.

**Related documents:** DSC 7/3/17 (Document of the International Maritime Organization).

## 1. Introduction/Justification

In document DSC 7/3/17, the competent British authorities reported that for Great Britain 2% of the containers inspected (out of 650 per month in a British port) contained (residues of) fumigants, although they were neither marked nor mentioned in the transport documents.

This information from Great Britain is confirmed by experiences in Germany. Investigations carried out in Rotterdam in 2002 on 303 randomly selected containers gave similar observations (measuring the amount of gas in import containers, T. Knol-de Vos, 15 October 2002, -729/02 IEM). It may be deduced from the values observed that approximately two thirds of the containers were ventilated after fumigation (two to three times the accepted values). High values for the remaining third suggested that fumigated containers, unventilated and unmarked, were being carried contrary to transport requirements.

In accordance with the requirements of 7.4.3.5 of the IMDG Code, the Code does not apply:

*“to closed cargo transport units which have been completely ventilated after fumigation either by opening the doors of the unit or by mechanical ventilation to ensure that no harmful concentration of gas remains. When completely ventilated, the unit should have the fumigation warning sign(s) removed.”*

For the carriage by sea of containers under fumigation, more stringent requirements need to be met and lead to higher transport costs. For this reason containers are as often as possible fumigated on land and ventilated. Generally speaking, the only result of the ventilation effected after completion of fumigation, measurement of the gas and authorization in accordance with the currently applicable regulations of legislation on fumigation and transport safety - and before possibly lengthy follow-on carriage - is the provisional state of the gas at the time of measuring. This result nevertheless provides an occasion, both in international and national fumigation practice, for considering that the transport unit is not in the process of fumigation, and therefore for not marking it or for removing existing marking.

During lengthy follow-on carriage, for example, preceding or following a sea journey, gas residues still remaining may accumulate in the load or in the packaging and again form concentrations constituting a health hazard.

The hazard of accumulated gases may become a reality when a transport unit is opened by the inspection services (customs, phytosanitary authorities, water conservation police) during carriage or after carriage during unloading when the unit reaches the consignee.

Clarity of independent measurement:

Even the regulations worded somewhat more broadly in paragraph 7.4.3.5 of the IMDG Code than in paragraph 5.5.2.2, second sentence, of the United Nations Model Regulations do not specify with technical clarity when the absence of gas can be taken as a starting point (absence of gas after independent measurement following ventilation by the consignor, absence of gas guaranteed for a longer journey to reach the consignee based on the example of transport by sea?).

The IMO "Recommendation on the Safe Use of Pesticides on Ships" does not contain more specific rules (see 3.5.2). The significance of the Threshold Limit Values (TLV) referred to in annex 2 of the recommendation is equally unclear.

A letter from the German Federal Office for risk assessment of 21 April 2004 (FBS-3822-37/04) explains that:

Even the United States requirements which are usually very detailed do not contain any specific reference data for concentrations of gas residues below the maximum workplace concentration (MAK) or TVL values. A typical formulation for container authorization after ventilation reads:

"The area of site must be monitored to ensure that liberation of gas from the treated commodity does not result in the development of unacceptable levels (i.e., over industrial hygiene levels of phosphine)."<sup>1</sup>

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<sup>1</sup> PESTCON SYSTEMS, INC.: Pestcon Fumitoxin Label Booklet. EPA EST. No. 5857-NC-001, WILSON, NC 27893, USA (17 September 1999).

The requirement of the TRGS 512 regulation applicable in Germany for fumigation, once it has been observed that no gas remains in the container (No. 11.3), defines as the lowest indication (detectability) of concentration that of the Dräger detector tube, but does not conform to the regulations of the principal port States.

It can be taken as a starting-point that a container may be considered to have been sufficiently ventilated when it has been placed with its front door wide-open into the wind for 24 hours. Fans should be used when the atmospheric conditions are not favourable. In the event of forced ventilation or fume extraction, two hours may be sufficient.<sup>2</sup>

It therefore seems that it is theoretically possible to arrive at the (definitive) absence of gas in fumigated transport units by ensuring their ventilation over a longer period. This method would not be accepted nationally or internationally in practice for economic reasons (services of personnel and time, costs resulting from the lack of availability of the goods, the transport unit and the fumigation area).

The question of reaching an international consensus on appropriate ventilation procedures or the establishment of limit values for the provisional or definitive authorization of fumigated and ventilated units (differing safety notices, different procedural techniques, different substances, etc.) cannot be raised internationally in a relatively near future for the reasons set out above.

It is therefore proposed that a special marking should be provided for transport units that have been ventilated after fumigation, in which gas generation when they are immobile cannot be completely excluded, on the basis of the following justification:

The transport unit has been ventilated in accordance with the regulations applicable (e.g. the IMDG Code), such that at the point of dispatch gas concentrations have at most reached the accepted values measured.

A hazard situation during carriage can only occur in the event of the unauthorized opening and entry of the container. Before this happens a warning must be issued. The container may otherwise be carried without restrictions (stowage/separation) or hazards for the personnel in charge of the operation, provided that it does not contain any other dangerous substance.

The marking must have the following consequences:

- It must indicate a less hazardous situation during carriage than that of transport units deliberately carried under fumigation (i.e. unventilated);

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<sup>2</sup> WorkSafe Victoria, Australia. Guidance Note: Fumigated shipping containers: Safe transport and unloading - a guide. Code of Practice for Hazardous Substances, June 2000.

- The transport units will not be subject during carriage to all the provisions relevant to units under fumigation. It must, however, be ensured that they can be closed in such a way as to reduce gas emissions to a minimum (IMDG Code, Chapter 3.3, special provision 910). **This means that ventilation slits should be kept covered.**

A variant may also be envisaged, namely, adequate ventilation of transport units to enable gas residues to be eliminated, by removing any leakproof materials fixed on or in transport units for fumigation purposes, so that possible gas residues can escape. This possibility is accepted in land transport according to current viewpoints on safety.

If carriage by sea is envisaged, **ventilation slits must remain covered** or provision made for stowage on deck or only in adequately ventilated loading areas. Gas measuring devices are necessary in the event of under-deck stowage.

- Reduction of transport costs, since no “dangerous goods” treatment is required;
- Increased acceptance by specifying/relativizing the danger description by means of a new marking for “Ventilation”, thus reducing problems during carriage and consequently transport costs.

Since the transport operations in question are not only by sea but also to a large extent concern land transport, identical regulations should be considered for land transport modes.

If transport mode regulations are harmonized, a relevant addition to the United Nations Model Regulations will be necessary.

**It is also necessary for this possibility to be accepted in each country’s legislation in each case.**

If the law is amended in this sense, it will still be necessary to monitor its application. It will be easier to implement and consequently better accepted.

## **2. Proposal:**

Marking/documentation for containers under fumigation as it exists to date.

A NEW MARKING is planned for ventilated containers but NO SPECIAL DOCUMENTATION where transport documents are concerned; agreement with the economic side of the transport operation to ensure that these containers can be carried with no special restrictions.

Proposal for external marking as follows:

- (a) Add the following sentence after the second sentence of 5.5.2.2:

“When the fumigated unit has been ventilated to remove harmful concentrations of fumigants, the warning sign according to 5.5.2.3 may be replaced by a warning sign according to 5.5.2.4.”

- (b) Add the following warning sign to 5.5.2.4:

**“Warning sign for wagons/vehicles, containers or tanks ventilated following fumigation**

<p style="text-align: center;"><b>Transport unit following fumigation</b> (Fumigant: .....) in accordance with 5.5.2.2 RID/ADR/ADN/IMDG Code</p>
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<p style="text-align: center;"><b>VENTILATED on:</b> (date) - Unrestricted carriage possible - <b>!!!AUTHORIZATION REQUIRED BEFORE ENTRY OR UNLOADING!!!</b></p>
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**3. Safety repercussions**

A hazard situation during carriage can only occur in the event of the unauthorized opening and entry of the container. Before this happens a warning must be issued. The container may otherwise be carried without restrictions (stowage/separation) or hazards for the personnel in charge of the operation, provided that it does not contain any other dangerous substance.

**4. Applicability**

Increased acceptance by specifying/relativizing the danger description by means of a new marking for “Ventilation”, thus reducing problems during carriage and consequently transport costs.

**5. Transitional measure**

Not necessary.

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