



REASSESSMENT OF THE RESPONSE TO RAIL SAFETY RECOMMENDATION R02-01 - R99T0256

BACKGROUND

At 1311 eastern daylight time on 23 September 1999, Canadian National freight train M304-41-21, destined for Toronto, Ontario, derailed 26 cars near the north siding switch at Mowat, near Britt, Ontario. The derailed equipment included 14 residue tank cars loaded with anhydrous ammonia. A loaded Liquefied Petroleum Gas (LPG) car and one anhydrous ammonia car were breached, each releasing product and igniting, resulting in several fires. At 1348, the loaded car of LPG exploded, projecting pieces of its tank and jacket in all directions. Approximately 127 000 pounds of LPG and 158 000 pounds of anhydrous ammonia were released. All the LPG and a large amount of the anhydrous ammonia were consumed by fire. The train crew was not injured; however, an Ontario Provincial Police officer, a local woodcutter, and two firemen suffered minor injuries as a result of contact with ammonia vapours.

The Board concluded its investigation and released report R99T0256 on 25 June 2002.

Board Recommendation R02-01 (25 June 2002)

The safety mark (i.e., green placard) presently required for bulk shipments of anhydrous ammonia can be misinterpreted, thus increasing the risk to the public. The green colour, which is used with products such as compressed air, is frequently interpreted to mean a product with lower risk, whereas the white colour, which was previously used for anhydrous ammonia, is associated with products that pose a higher risk. First responders such as fire-fighters and police in small communities, with little exposure to dangerous goods, may incorrectly make their first estimates of danger based in part on the colour and shape of a placard, instead of relying on the specific characteristics of the product. Therefore, the Board recommends that:

The Department of Transport review the classification and safety marks for anhydrous ammonia to ensure that it is in a class and division consistent with the risks it poses to the public.

R02-01

Response to R02-01 (25 September 2002)

With respect to safety marks, TC stated there are three sources of information which must be visible on the tank car:

- The words "ANHYDROUS AMMONIA" must appear in letters at least 100 mm high on each side of the tank.
- The words "Inhalation Hazard" or "Inhalation Hazard/Dangereux a inhaler" must appear in letters at least 100 mm high on each side of the tank.

- A placard must be visible on both sides and also on both ends to indicate the class assigned to anhydrous ammonia.

TC personnel were not aware of any instances in which the placard was the sole source of information for a rail tank car containing anhydrous ammonia, and they considered the name “ANHYDROUS AMMONIA” appearing on the side of the tank car more useful in identifying the product. Nevertheless TC stated it will be writing to all fire departments in Canada to ensure that their emergency personnel are aware of new provisions in the August 2001 Transportation of Dangerous Goods (TDG) regulations (Clear Language regulations) and will reconfirm that anhydrous ammonia must be treated as toxic, and that, in special circumstances, anhydrous ammonia can burn.

With respect to the classification of anhydrous ammonia, TC agreed that the United Nations (UN) classification of Class 2.3 (8) is an appropriate one. Under the current regulations TC will accept the UN classification for shipments within Canada. TC did attempt to have a special classification for anhydrous ammonia of Class 2.4 accepted at the UN, and within North America, but was unsuccessful. Subsequently, TC adopted a similar approach to that used in the United States. TC indicated that they will further consider the classification of anhydrous ammonia and will raise the matter at the next meeting of the Federal-Provincial Task Force and the Minister’s Advisory Council on the Transportation of Dangerous Goods.

Board Assessment of Response to R02-01 (27 January 2003).

TC believes that the words “Anhydrous Ammonia” and “Inhalation Hazard” written on the tank car provide sufficient information on the nature of the product. However, the current TDG regulations no longer contain a specific requirement to stencil the words “Anhydrous Ammonia” and “Inhalation Hazard”. The requirement for stenciling “Anhydrous Ammonia” is contained in the US Code of Federal Regulations, while “Inhalation Hazard” is mentioned in the CGSB Standard CAN/CGB - 43.147.

The Board does not intend to suggest that a placard is the sole source of information. Our recommendation addressed the issue of a possible misinterpretation by first responders who have had little exposure to dangerous goods, such as firefighters and police in small communities, or the general public. They may incorrectly make their first determination of danger based in part on the colour and shape of a placard, instead of relying on the specific characteristics of the product.

TC reviewed the classification and safety marks for anhydrous ammonia as recommended. TC acknowledges that the United Nations (UN) classification of Class 2.3(8) (toxic gas) is appropriate for anhydrous ammonia, despite being classified as 2.2 (8) (not-flammable, non-toxic gas). However, no specific action has been taken to reclassify this product. TC indicated that they will further consider the classification of anhydrous ammonia and they raised the matter at a meeting of the Federal-Provincial Task Force and also with the Minister’s Advisory Council on the Transportation of Dangerous Goods. In addition, meetings were planned with fire departments to reconfirm their knowledge of the toxic and flammable characteristics of anhydrous ammonia. However, the ambiguity created by having a product with toxic characteristics being associated with less harmful products still exists. The response to Recommendation R02-01 was assessed as being “**Satisfactory in part**”.

Next TSB Action (27 January 2003)

The Board followed up with TC to determine what further action would be implemented.

This file was assigned an “active” status.

Response to R02-01 (11 June 2004)

TC indicated their intention to proceed with an amendment to the TDG Regulations which would reclassify anhydrous ammonia to class 2.3(8). Transport Canada has also consulted the USDOT on the proposed change in classification and they do not foresee any immediate obstacles in cross border movements.

Board Reassessment of Response to R02-01 (22 December 2005)

Based on TC's intent to amend the TDG Regulations, the response was reassessed as “Satisfactory Intent”.

Next TSB Action (22 December 2005)

The Board followed up with TC to determine what action will be implemented.

This file was assigned an “active” status.

Response to R02-01 (28 July 2006)

TC forwarded an update which stated that TC is proceeding with an amendment to the TDG Regulations reclassifying anhydrous ammonia to class 2.3(8). The amendment is expected to be published in Part 1 of the Canada Gazette in Summer 2006.

This recommendation remains open for TC.

Board Reassessment of Response to R02-01 (25 October 2006)

With the publication of the amendment, in Part I of the Gazette on 30 September 2006, TC's response can now be assessed as “Fully Satisfactory”.

Response to R02-01 (20 February 2008)

Amendments to the TDG regulations have been finalized and made effective on 20 February 2008, which reclassifies Anhydrous Ammonia as Toxic gas Class 2.3, Subclass 8, Corrosive.

Next TSB Action

The amendments have been finalized and the Board considers that further action is unwarranted and the status of this assessment response is changed to “Closed”.