DEPARTMENT OF TRANSPORTATION

Research and Special Programs Administration

49 CFR Parts 171, 172, 173, 174, 175, 176, 177, 178, and 179

[Docket No. 181, Notice No. 88-7]
RIN Number 2137-AA01

Classification of Gases Which are Toxic by Inhalation

AGENCY: Research and Special Programs Administration (RSPA), DOT.

ACTION: Supplemental notice of proposed rulemaking; request for additional comments.

SUMMARY: RSPA is providing additional information and requesting additional comments concerning proposals in Docket HM-181, Notice 87-4 (52 FR 16482 and 52 FR 42772), for classifying certain hazardous materials as Division 2.3 poisonous gases. Of particular concern are the potential effects of the proposed reclassification of anhydrous ammonia as a poisonous gas. Numerous comments to the docket opposed the proposals. RSPA has reviewed the comments regarding the reclassification of anhydrous ammonia. As a result of these comments, RSPA believes that a Supplemental Notice of Proposed Rulemaking is necessary to (1) clarify the proposals, (2) solicit substantive information concerning potential impacts, and (3) describe possible regulatory alternatives that could be considered should the record demonstrate that the impact of a reclassification of anhydrous ammonia would be more severe than necessary to address transportation safety.

DATE: Comments must be received on or before March 9, 1989.

ADDRESSES: Address comments to the Dockets Unit, Research and Special Programs Administration, Department of Transportation, Washington, DC 20590. Comments should identify the docket and notice number and be submitted in five copies. Persons wishing to receive confirmation of receipt of their comments should include a self-addressed stamped postcard. The Dockets Unit is located in Room 8421 of the Nassif Building, 400 Seventh Street SW., Washington, DC 20590. Public dockets may be reviewed between the hours of 8:30 a.m., and 5:00 p.m., Monday through Friday, except holidays.

FOR FURTHER INFORMATION CONTACT: Edward T. Mazzullo, Chief, Standards Division, telephone (202) 366-4488, or James K. O'Steen, Chief, Technical Division, telephone (202) 366-4545, Office of Hazardous Materials Transportation, U.S. Department of Transportation, 400 Seventh Street SW., Washington, DC 20590.

SUPPLEMENTARY INFORMATION:

Background

On April 15, 1982, RSPA published (47 FR 16268) an advance notice of proposed rulemaking (ANPRM) in the **Federal Register** which proposed to adopt performance-oriented packaging standards for small, or "non-bulk", packagings. On May 5, 1987, RSPA published a notice of proposed rulemaking (NPRM) (Docket No. HM-181; Notice No. 87-4) in the **Federal Register** (52 FR 16482) which expanded the scope of the ANPRM and proposed sweeping changes to the Hazardous Materials Regulations (HMR) addressing not only performance-oriented standards for non-bulk packagings but also changes to hazard classification, hazard communication and bulk packaging. An extension of the comment period from November 2, 1987 to February 26, 1988 was published in the **Federal Register** (52 FR 33906) on September 8, 1987, due to a pending supplemental NPRM and in response to several requests for additional time to submit comments. On November 6, 1987, RSPA published the supplemental NPRM (52 FR 42772) containing corrections to the initial NPRM and additional proposals. The interested reader is referred to these prior publications for additional information concerning the purpose, scope and specific proposals contained in the notices.

Following publication of the supplemental NPRM, a public hearing was held on November 17 and 18, 1987 in Washington, DC. In early 1988, several commenters again indicated that additional time was needed to fully develop their responses to specific proposals, due to the size and scope of Notice No. 87-4. The specific areas of concern addressed by these commenters included proposed bulk packaging provisions, reclassification of certain materials such as anhydrous ammonia, and non-bulk packaging requirements for poisonous liquids which are toxic by inhalation. In a notice published April 14, 1988 (53 FR 12442), RSPA reopened the comment period for Notice No. 87-4 from February 26, 1988 to May 25, 1988.

Of the more than one thousand comments RSPA has received in response to Docket HM-181, at least seven hundred were addressed to the proposed classification criteria for poisonous gases, generally the proposal to reclassify anhydrous ammonia from a nonflammable gas to a poisonous gas. In this document, RSPA intends to clarify the proposal (in order to avoid any potential misunderstanding of the proposal or its effects), seek substantiation from the commenters regarding the adverse impacts they perceive in the proposal, and seek comment on whether adjustments to the proposal are necessary.

Hazard Classification System For Gases

The classification system proposed in Notice No. 87-4 sets forth nine numbered classes for hazardous materials, including Class 2 for gases. This system was selected for consideration because it provides an accurate means to establish and communicate the actual risks posed by hazardous materials. The accuracy of classification is critical to the success of emergency response and the protection of emergency responders.

As is the case with certain other Classes, Class 2 is further divided into three divisions: Division 2.1 (flammable gases), Division 2.2 (nonflammable compressed gases) and Division 2.3 (poisonous gases). For poisonous gases, RSPA proposed classification criteria designed to include materials that, if released, could disperse over a large area and endanger the lives and health of a large number of persons, (e.g., the operator of the vehicle carrying the material, passersby, emergency response personnel, and nearby residents).

The proposed criteria classify a gas as poisonous when the material is known to pose a threat to human health based on human experience or, in the absence of human data, the material is considered to be toxic to humans because when tested on laboratory animals the material has an LC50 equal to or less than 5000 parts per million (ppm). As used in the HMR, LC50 means the lethal concentration, present during an exposure period of one hour, at which half or more of a sample population of test animals would die within a fourteen-day observation period.

The proposal, based upon toxicity, further subdivides Division 2.3 poisonous gases into four categories: IA, IB, II and III, ranging from the most toxic (requiring packaging of the highest integrity) to the least toxic, respectively. Under the proposal, anhydrous ammonia would be assigned to category III, the least hazardous group of the proposed poisonous gas division.

The proposed "poisonous gas" classification does not equate to the

existing "Poison A" classification. In contrast to the reclassification proposal, the present regulations contain only a small list of poison gases called Poison A materials. Excluded from the list of Poison A materials are a number of gases that present a significant inhalation hazard and are classified as poisonous under international regulations. An example is chlorine which, although used as a chemical warfare agent in World War I, is presently classified as a nonflammable gas under the HMR.

The proposed definition and grouping scheme for poisonous gases allows for different packaging and operational controls commensurate with the hazard presented by each group. RSPA will develop proposals as appropriate, in conjunction with the respective DOT modal administrations, that could prescribe operational requirements commensurate with the hazards presented by each of the four groups in Division 2.3.

The Proposal as Related to Anhydrous Ammonia

Because anhydrous ammonia is but one of approximately 70 gases that would meet the proposed criteria for poisonous gas, RSPA previously did not fully discuss in the preamble to the notice the available information on the hazards of anhydrous ammonia used to support its proposed reclassification as a poisonous gas. Consequently, commenters did not have a complete explanation of the risks associated with anhydrous ammonia or its record in transportation. To address this situation, there follows a discussion of the hazards of anhydrous ammonia and some of the factual information on which RSPA based the proposed reclassification.

A. Technical Information

Anhydrous ammonia poses an inhalation hazard because of its alkaline corrosive properties that result in the destruction of tissues that are in contact with ammonia gas, liquid or solutions. Similar to many gases, the data for the lethal gas concentration are reported as a wide range of values for several species of animals. The Registry of Toxic Effects of Chemical Substances (RTECS) published by the National Institute for Occupational Safety and Health (NIOSH) lists the following acute toxicity values:

LCLo 2000 ppm/4hrs rat
LC50 4230 ppm/1hr mouse
LCLo 7000 ppm/1hr cat
LCLo 7000 ppm/1hr rabbit
LCLo 5000 ppm/5min mammal

Note: LCLo means "lethal concentration low", i.e., the lowest concentration of a material in air which has been reported to cause death in humans or animals.

Many commenters submitted a study done in the Netherlands (American Industrial Hygiene Association Journal; September 1982), which reported an LC50 (for rats) of 16,600 as evidence that anhydrous ammonia does not meet the proposed criteria for a poisonous gas. RSPA notes the more conservative RTECS values given in the preceding table, and the data on human experience discussed in the following section. Comments are requested as to whether these data are erroneous or otherwise inappropriate for assessing the degree of risk posed by anhydrous ammonia.

B. Transportation Record

In the Acute Hazardous Events Database compiled for the Environmental Protection Agency (EPA), ammonia was the second most common hazardous material in events involving death or injury (accounting for 6.8% of all events), second only to chlorine (9.6%). RSPA is aware of at least 1046 transportation incidents involving inhalation of ammonia in the United States between 1969 and 1987. These incidents resulted in 25 deaths and 602 injuries. When large scale transportation incidents are considered, the magnitude of the hazard is clear. For example, incidents involving the release of anhydrous ammonia in Crete, Nebraska (1969), Belle, West Virginia (1970), Houston, Texas (1976), and Pensacola, Florida (1977) resulted in a total of 13 deaths and 307 injuries.

C. Impacts of Reclassification

In considering the impacts of RSPA's proposal with respect to anhydrous ammonia it is important to note that the proposal is not intended to change, prohibit, or restrict the use of cargo tanks for shipments on public highways. In addition, the reclassification proposal would not change existing regulatory requirements that packages be marked with the 4-digit identification number (1005) and with the proper shipping name or, as an option on cargo tanks, with a common name (e.g., AMMONIA). Current regulations require the use of NONFLAMMABLE GAS labels and placards. These are green, square-on-point, with the symbol of a cylinder in the upper third of the design and bear the words "NONFLAMMABLE GAS". Under the proposed rule, anhydrous ammonia would be classified as a poisonous gas and would, therefore, have to bear a POISON GAS label and placard. These are white with a black "skull and crossbones" symbol but the words "POISON GAS" or "POISONOUS GAS" would not be required. Labels and placards could be configured in any one of three ways: without any text; with the words "POISON GAS" across the center; or, for placards only, with the identification number across the center. Additionally, each package would have to be marked with the words "INHALATION HAZARD".

The general public, community planners, and emergency response personnel should have access to the best information concerning the hazards associated with a release of anhydrous ammonia. RSPA wants to ensure that the hazards are adequately communicated by any classification system, and questions the adequacy of the present system. On the other hand, RSPA is well aware that anhydrous ammonia has been and can be safely transported and it plays an undeniably important role in this nation's economy. It is the purpose of this notice to establish the basis for striking the proper balance between these two important public policy considerations. In this context, RSPA points out that nothing in the proposal would substantively affect the ability of farmers or others to use or transport anhydrous ammonia, or require the use of different packagings or conveyances for the material. Only labeling, placarding, and shipping paper descriptions for the material would be changed.

In an effort to assure that the comments to the proposal provide the maximum value in resolving the issues in this rulemaking proceeding, RSPA is seeking substantive information on the potential impacts of reclassifying this material. A discussion of these issues follows.

a. *Increased transportation costs.* Numerous commenters have stated that the change in the classification of anhydrous ammonia will increase its transportation costs. However, more data is needed in order to fully evaluate the impact of a reclassification on freight rates. Specific questions on the issue of freight rates appear at the end of this section of this document.

A second cost issue of concern to commenters is the potential for adverse impact on insurance rates and the availability of insurance if anhydrous ammonia were classed as a poisonous gas. Commenters should submit information on this point; substantive data to support commenters' views would be particularly useful. RSPA additionally solicits information from shippers, insurance companies, and state insurance commissions regarding

the relationship of the proposed classification system and insurance rates.

With respect to the specific regulatory requirements regarding insurance, it should be noted that the proposed rule has no direct effect on the financial responsibility requirements for highway transport which are prescribed in section 30 of the Motor Carrier Act of 1980, as amended (Pub. L. 96-296) and codified in the Motor Carrier Safety Regulations (specifically, 49 CFR 387.9). Currently, anhydrous ammonia, because it is a hazardous substance, is subject to a financial responsibility requirement of $5 million for motor carriers that transport bulk packagings of more than 3,500 gallons capacity (in either intrastate or interstate transportation) and $1 million for other quantities (in interstate transportation only). Intrastate transportation of anhydrous ammonia in packages of 3,500 gallons or less is not subject to financial responsibility requirements.

b. *The displacement of anhydrous ammonia by more costly, less effective fertilizers.* Many commenters have stated that the new labeling requirements would alarm the public and lead to the displacement of anhydrous ammonia from the farm economy by other more costly materials. Additional comments to support this concern are requested; substantive data to support commenters' views would be particularly useful.

c. *Non-transportation impacts related to the reclassification of anhydrous ammonia.* Many concerns similar to those expressed about the transportation impacts of the reclassification of anhydrous ammonia have been expressed about fixed facilities, including siting restrictions, and employee health concerns. While siting restrictions for facilities and increased employee health protections are changes that may occur, these would result not from the reclassification of anhydrous ammonia but from environmental protection requirements mandated in 1986 in the Superfund Amendments and Reauthorization Act (SARA; Pub. L. 99-499).

A number of commenters expressed concern about potential adverse impacts on their businesses related to the appearance of skull and crossbones placards and labels on cylinders, storage tanks and transport vehicles containing anhydrous ammonia. In particular, businesses which use anhydrous ammonia in refrigeration systems and in diazo reproduction (i.e., blueprinting) systems believe that the proposed reclassification of anhydrous ammonia would result in extensive litigation based on employees' claims of exposure to a poisonous gas. Since the proposal would pertain to the same material now being used, and would not change packaging or containment requirements for it, it appears that any increased litigation risk would stem from changes to employee perceptions of anhydrous ammonia, based upon its reclassification. Is this characteristic correct? Additional comments are requested in order for RSPA to evaluate the actual impact of the proposal on the litigation exposure of employers.

Several commenters expressed concerns about the adverse public perception of poisonous gas being applied to the fields where crops are grown and to food products which are refrigerated in facilities using anhydrous ammonia refrigerating systems. These commenters stated that the public would perceive such food products to be tainted and that such products may not be exportable because foreign purchasers restrict the importation of foods treated with poisonous chemicals. RSPA requests information on whether the referenced restrictions apply to materials like anhydrous ammonia which do not leave a poisonous residue, or only to food products treated with certain poisonous fumigants and pesticides which in some instances may remain on the food product in residual form.

To assist RSPA in the further resolution of the issues discussed in this notice, interested parties are invited to comment on the foregoing issues, and in particular, on the following questions, supplying where possible any relevant analyses, studies or data.

1. (a) What are the current average freight charges, per ton, for transportation of anhydrous ammonia by rail tank car? By highway cargo tank? Upon what factors are these charges based?

(b) Assuming no changes in operating requirements, is there any basis for increasing freight rates for anhydrous ammonia as a result of the proposed reclassification of anhydrous ammonia as a "poisonous gas"? To what extent would rates be increased?

(Comments and data from rail and highway carriers would be particularly helpful.)

2. What are representative annual insurance rates for transportation of anhydrous ammonia in bulk (more than 3500 gallons) and non-bulk packages? Do rates differ for interstate and intrastate transportation?

3. How would the proposed classification of anhydrous ammonia impact insurance costs or availability for nurse tank operations?

4. What is the basis for increasing insurance rates for carriers of anhydrous ammonia as a result of the proposed reclassification of anhydrous ammonia as a "poisonous gas"? To what extent would rates be increased?

(Comments and data from state insurance commissions and insurance carriers with significant business with farm clients would be particularly helpful.)

Regulatory Alternatives

In addition to the issues discussed in the preceding section, RSPA also seeks substantive comments concerning available regulatory alternatives. RSPA is interested in achieving a practicable role that enhances public safety, is uniform where necessary for interstate commerce and secondarily for international commerce, and is not unduly burdensome or costly to those who must comply with the rule.

RSPA issued its proposal on the reclassification of gases which are toxic by inhalation as part of its continuing program to update and more accurately portray the hazards of toxic materials. Nevertheless, the number and tenor of comments to the public docket indicate that the notice may not have provided adequate explanation of the intent and effects of the proposal and may not have encouraged and elicited comments concerning all possible regulatory alternatives. Therefore, RSPA requests substantive comments concerning those regulatory alternatives available to it with respect to classification of gases, namely—

(1) Adoption of Class 2 (poisonous gas) as proposed in the original notice;

(2) Adoption of Class 2 as proposed, but with the inclusion of special provisions that would limit application of regulatory provisions (e.g., labeling, placarding, etc.), in whole or in part, for specific materials, quantities of materials, types of operations (e.g., transportation by farmers in nurse tanks), or other considerations;

(3) Alternative classification schemes. Examples might include substantive comments on the present nonflammable gas classification or the Canadian corrosive gas classification. This latter example is raised in light of a substantial number of comments that suggested this classification as an alternative to classification of anhydrous ammonia as a poisonous gas.

With these alternatives in mind, comments are solicited addressing the following questions:

(1) Is it important to communicate the health effects of anhydrous ammonia to the public and to emergency responders?

What is the best way to communicate these effects? If symbols and words are necessary, which are appropriate and adequate to communicate so that appropriate breathing apparatus, protective clothing, and emergency response can be taken?

(2) How would each alternative impact shippers' and carriers' costs and ability to do business? How would each affect transportation safety?

(3) For alternatives involving special provisions, to what materials or categories of hazardous materials should the special provisions apply? To what quantities of materials? To what specific operations? To what types of vehicles (e.g., farm vehicles) or packagings?

Commenters are not limited to responding to the questions raised above and may submit any facts and views consistent with the intent of this notice.

Issued in Washington, DC, on November 7, 1988, under authority delegated in 49 CFR Part 106, Appendix A.

Alan I. Roberts,

Director, Office of Hazardous Materials Transportation.

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