



U.S. Department
of Transportation
**Research and
Special Programs
Administration**

400 Seventh Street, S.W.
Washington, D.C. 20590

OCT 27 2000

Mr. Donald R. Silfies
Senior Safety Specialist
Air Products and Chemicals, Inc.
7201 Hamilton Boulevard
Allentown, Pennsylvania 18195

Ref. No. 00-0256

Dear Mr. Silfies:

This responds to your letter, dated September 8, 2000, concerning regulatory requirements for transporting hydrogen fluoride, anhydrous. Specifically, you ask about labeling and placarding requirements under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180).

Your understanding of the HMR requirements for hydrogen fluoride, anhydrous, is correct. Because it meets the definition of a material poisonous by inhalation (PIH) in § 171.8, shipments of hydrogen fluoride, anhydrous, must conform to specific shipping paper, package marking, and placarding regulations applicable to PIH materials. Thus, the shipping paper must include the words "Poison - Inhalation Hazard, Zone C" immediately following the shipping description (§ 172.203(m)(3)). Further, the package must be marked "Inhalation Hazard" (§ 172.313(a)). In addition, the transport vehicle or freight container must be placarded with a POISON INHALATION HAZARD placard in addition to any other required placards (§ 172.505(a)).

You are also correct that the labels required under the HMR for packages containing hydrogen fluoride, anhydrous, do not communicate that it is a PIH material. As you note, the regulations require a CORROSIVE label to indicate the material's primary hazard and a POISON label to indicate the material's subsidiary hazard. These requirements are consistent with international regulations in the UN Recommendations on the Transport of Dangerous Goods.

The HMR permit you to apply labels in addition to those listed in the Hazardous Materials Table (HMT) for a given hazardous material provided the label accurately represents a hazard of the hazardous material in the package. For hydrogen fluoride, anhydrous, you may use a POISON INHALATION HAZARD label in addition to the CORROSIVE and POISON labels listed in Column (6) of the HMT.



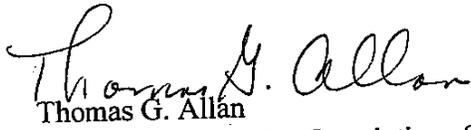
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We agree with you that the current HMR requirements for labeling packages of hydrogen fluoride, anhydrous, are confusing and do not accurately convey the hazard presented by the material. We plan to address this confusion in an upcoming rulemaking.

I hope this information is helpful. If you have further questions, please do not hesitate to contact this office.

Sincerely,

Handwritten signature of Thomas G. Allan in cursive script.

Thomas G. Allan

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Marking & Labeling
Placarding

Research and Special Programs Administration
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400 Seventh Street, SW.
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September 8, 2000

Subject: Request for Clarification
Hydrogen Fluoride Labeling

Dear Sir or Madam,

I am writing this letter to request an official clarification regarding the current USDOT regulations that apply to the labeling and placarding requirements for Hydrogen Fluoride, Anhydrous.

The 49 CFR 172.101 Table states that Hydrogen Fluoride, Anhydrous is classified as a Corrosive material, Hazard Class 8, in Packing Group I. The table lists a subsidiary hazard of 6.1 and also Special Provision Code 3 stating that Hydrogen Fluoride is a material poisonous by inhalation in Hazard Zone C.

The confusion comes into play in respect to the marking, labeling and placarding for the subsidiary inhalation hazard.

The Labeling table, shown in paragraph 172.400(b), specifies that the label for a Division 6.1 material other than inhalation hazard Zone A or B, is POISON (ref. 172.430). Using this information, it is our interpretation that in addition to the primary CORROSIVE (8) label, the subsidiary label for Hydrogen Fluoride is POISON (6.1).

The Marking regulations specify in paragraph 172.313(a) that materials poisonous by inhalation must be marked with the phrase, "Inhalation Hazard." The last sentence of this paragraph also states that when the "Inhalation Hazard" phrase appears on the label, the "Inhalation Hazard" marking is not required on the package.

According to subparagraph 172.203(m)(2) of the Shipping Paper regulations, Hydrogen Fluoride is subject to the additional description requirements for materials that are poisonous by inhalation.

In determining the additional subsidiary Placarding requirements, it is specified in paragraph 172.505(a) that transport vehicles containing materials subject to the "Poison Inhalation Hazard" shipping description must be placarded with a POISON INHALATION HAZARD or POISON GAS placard, as appropriate.

To quickly summarize, the marking, labeling, shipping paper, and placarding regulations specify the following:

- 1) The container must be marked with the phrase "Inhalation Hazard" because the material is poisonous by inhalation. NOTE: This marking would not be necessary however, if the label displayed the same phrase.
- 2) The cylinder must be labeled with a subsidiary POISON label, but not POISON INHALATION HAZARD because the Hazard Zone is not A or B.
- 3) The HM Shipping Paper description must include the phrase, "Poison-Inhalation Hazard", and
- 4) The transport vehicle must display a subsidiary POISON INHALATION HAZARD placard because the material is poisonous by inhalation.

Although the cylinder must display the phrase "Inhalation Hazard", the phrase cannot be displayed on the label because the label must be the POISON label. Yet, the transport vehicle must display a subsidiary POISON INHALATION HAZARD placard, even though the subsidiary label is a POISON label.

To the best of our knowledge, this is the only hazardous material listed in the entire 172.101 Table where the subsidiary hazard is division 6.1 with an assigned inhalation hazard zone other than Zone A or B. It is also the only material in the 172.101 Table where the mandated label and placard do not agree.

Using data as published in Pamphlet P-20 from the Compressed Gas Association, Inc., an analysis of comparable hazardous materials with inhalation hazards reveals the following interesting facts.

Item	Haz Class	Sub Risk	Haz Zone	LC50 Value
Hydrogen Fluoride	8	6.1	C	1,276 ppm
Hydrogen Chloride	2.3	8	C	3,120 ppm
Hydrogen Bromide	2.3	8	C	2,860 ppm
Sulfur Dioxide	2.3	8	C	2,520 ppm
Carbon Monoxide	2.3	2.1	D	3,760 ppm

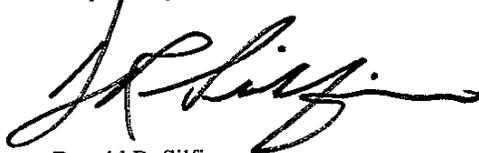
In evaluating the above listed information, it is obvious that although Hydrogen Fluoride is assigned a Primary risk of Corrosive (8), the inhalation toxicity is actually greater than the other gases listed. Based on the toxicity (inhalation hazard) value, it seems odd that the subsidiary risk label for Hydrogen Fluoride would not communicate this hazard, yet, the primary risk label for gases that are less toxic do communicate the inhalation hazard.

In summary: Considering 1) the above mentioned toxicity data, 2) that the regulations require containers of Hydrogen Fluoride to be marked with the phrase "Inhalation Hazard", 3) that the HM Shipping Paper must include the phrase, "Poison-Inhalation Hazard", and 4) that the transport vehicle must be placarded with subsidiary POISON INHALATION HAZARD placards, it is our opinion that the display of a subsidiary POISON label is contradictory and that the POISON INHALATION HAZARD label would be more appropriate, far less confusing, and would help to accurately communicate the hazard for this product.

It is very difficult for shipping personnel and carriers to understand and remember that for Hydrogen Fluoride, the placards offered and displayed must be different than the labels on the cylinder.

We are hopeful that after careful consideration, you agree with our assessment. We believe that this material is an exception to the rule. We would sincerely appreciate your prompt response to this matter.

Respectfully submitted,



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