



U.S. Department  
of Transportation

**Pipeline and  
Hazardous Materials Safety  
Administration**

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

APR 3 2007

Mr. Dennis Coleman  
President  
ISOTECH Laboratories, Inc.  
1308 Parkland Court  
Champaign, IL 61821-1826

Ref. No. 06-0283

Dear Mr. Coleman:

This responds to your letter dated December 21, 2006 regarding whether a sample mixture of natural gas containing a hydrogen sulfide ( $H_2S$ ) concentration level not exceeding 14% (on a molar basis) may be transported by all modes of transportation without labeling the sample toxic inhalation hazard.

Isotech Laboratories, Inc. (Isotech) analyzes natural gas samples for commercial consumers located in the United States and abroad. Samples are shipped to Isotech containing small amounts of  $H_2S$ . Based on your review of the Class 2 assignment of hazard zones in §173.116(a) and your calculations according to §173.133(b)(1), you determined that the concentration level of  $H_2S$  in a mixture of natural gas could reach 14% (on a molar basis) before being considered toxic-by-inhalation and requiring a 2.3 (Poison Gas) label. Specifically, you ask whether your calculated concentration level is correct; thus, allowing Isotech and its customers to ship natural gas samples containing an  $H_2S$  concentration not exceeding 14% (on a molar basis) classed as Division 2.1 (Flammable Gas) and not Division 2.3 (Poison Gas), which is toxic-by-inhalation, requiring display of a POISON GAS label.

Under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180), it is a shippers responsibility to classify a hazardous material (See §173.22). This Office does not perform that function. As currently prescribed in the HMR, a material described as "Hydrogen sulfide, 2.3, UN 1053" requires both Divisions 2.3 and 2.1 (Poison Gas and Flammable Gas) labels, and is toxic-by-inhalation. Based on the information you provided, it is our opinion that a sample mixture of natural gas containing a hydrogen sulfide ( $H_2S$ ) concentration level not exceeding 14% (on a molar basis) may be



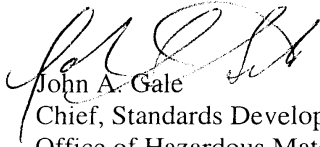
060283

173.11(a)  
173.22  
173.116  
173.133(b)(1)

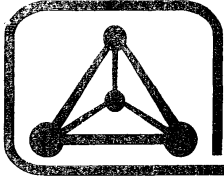
transported by all modes of transportation as a Division 2.1 (Flammable Gas) material without labeling the sample toxic inhalation hazard.

I hope this satisfies your inquiry. If we can be of further assistance, please contact us.

Sincerely,

A handwritten signature in black ink, appearing to read "John A. Gale". The signature is written in a cursive style with a large initial "J" and "G".

John A. Gale  
Chief, Standards Development  
Office of Hazardous Materials Standards



**ISOTECH**®

www.isotechlabs.com mail@isotechlabs.com

Isotech Laboratories, Inc. 1308 Parkland Court Champaign, IL 61821-1826 Telephone 217/398-3490 FAX 217/398-3493

Engram  
§ 172.101  
§ 173.115  
§ 173.116

December 21, 2006

Applicability  
06-0283

**Via UPS Next Day Air**

Office of Hazardous Material Standards  
Pipeline and Hazardous Materials Safety Administration  
Attn: PHH-10  
U.S. Department of Transportation  
400 7<sup>th</sup> Street, S.W.  
Washington, D.C. 20590-001

Re: Permissible Non-toxic Hydrogen Sulfide Concentrations

Dear Sir or Madam:

Isotech Laboratories, Inc. ("Isotech") analyzes natural gas samples for commercial consumers located in the United States and abroad.<sup>1</sup> Isotech seeks PHMSA's confirmation that a sample mixture of natural gas containing a hydrogen sulfide ("H<sub>2</sub>S") concentration level not exceeding 14% (on a molar basis) may be transported on all modes of transportation without labeling the sample as a toxic inhalation hazard.

On occasion, samples are shipped to Isotech containing small amounts of H<sub>2</sub>S. We reviewed the HAZMAT regulations and noted that H<sub>2</sub>S, in its pure form and at specific concentration levels, is considered a division 2.3 gas poisonous by inhalation and thus would require 2.3 labeling as a toxic inhalation hazard.<sup>2</sup> We then set out to determine what concentration of H<sub>2</sub>S would be permissible for transport, without 2.3 labeling, under all modes of transportation, assuming the quantity limitations of 49 CFR §172.101 columns 9(A), 9(B), and 10 were met. Based on our review of the Class 2 assignment of hazard zones (§173.116(a)) and our calculations per 49 CFR §173.133(b)(1), we determined that the concentration level of H<sub>2</sub>S in a mixture of natural gas could reach 14% (on a molar basis) before being considered toxic and, therefore, requiring class 2.3 labeling. Although we have received tentative verbal confirmation from a PHMSA chemist that our calculated concentration level is correct, out of an abundance of caution we seek PHMSA's written confirmation that:

Isotech and its customers may ship natural gas samples containing an H<sub>2</sub>S concentration not exceeding 14% (on a molar basis) as Flammable Gas,

<sup>1</sup> See www.isotechlabs.com.

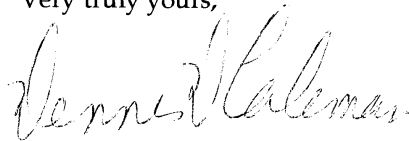
<sup>2</sup> See 49 CFR §§173.115, 172.416.

Office of Hazardous Material Standards  
December 21, 2006  
Page 2

Class 2.1, on all allowable modes of transportation without labeling the sample as a toxic inhalation hazard.

We thank you in advance for providing us with the above-requested confirmation. If you have any questions or require additional information, please do not hesitate to contact me at the above-listed number.

Very truly yours,

A handwritten signature in cursive script that reads "Dennis D. Coleman".

Dennis D. Coleman  
President