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C. Smith  
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in

William F. O'Keefe  
Vice President

June 28, 1984

Contains No CBI



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Mr. Martin Greif  
Executive Secretary  
TSCA Interagency Testing Committee  
Environmental Protection Agency (TS-792)  
East Tower Room 539C  
401 M Street, SW  
Washington, DC 20460

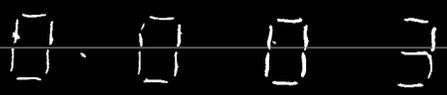
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Dear Mr. Greif:

The American Petroleum Institute (API) is submitting the attached information on cumene in response to your March 9, 1984 letter notifying us that the TSCA Interagency Testing Committee (ITC) will be reviewing information on this compound. As the attached profile reflects, cumene occurs naturally in crude oil and may be produced incidentally in the refining process. Thus, the petroleum refining industry does not intentionally manufacture cumene and should not be considered major producers, as your letter suggests. It is API's belief, as the ITC's Information Review on Cumene accurately reflects, that the major producers of cumene are the petrochemical manufacturing subsidiaries of our member companies.

Nonetheless, through surveying our members, some quantitative data on the levels of cumene in refinery process streams and finished products were obtained; the concentrations reported were low and are consistent with the production of cumene. In addition, information from three air monitoring studies supports our belief that human exposure to minor components of complex mixtures, such as cumene in gasoline, is expected to be quite low. Even for gasoline delivery truck drivers, the observed levels ranged from less than 0.01 to 0.1 part per million (ppm).

Given its relevance to the ITC's ongoing review of cumene, the API would like to reiterate the industry's firm belief that it is inefficient and of questionable relevance to initiate testing of minor components of complex mixtures

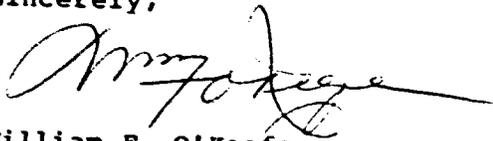


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prior to evaluating the mixture itself. Instead, API endorses, and is in fact pursuing, the evaluation of our commercially available hydrocarbon mixtures. It is only upon completion of the mixture's evaluation that logical decisions can be made regarding the follow-up testing of components or fractions suspected to be biologically active. The API believes that this approach to assessing the health effects of complex mixtures is more logical, scientifically appropriate and cost effective than component by component analysis because it allows the identification and reduction of risk to be accomplished more efficiently.

If you should have any questions regarding the enclosed information, please feel free to contact Amy Shepard of my staff at 682-8475.

Sincerely,



William F. O'Keefe

Enclosures

## API REFINING PROFILE OF CUMENE

Cumene, also known as isopropylbenzene, is a  $C_9H_{12}$  alkybenzene with a molecular weight of 120.195 and a boiling point of 306.34 F° (152.41 C°). The vapor pressure of cumene at 100 F° is 0.188 pounds per square inch. Cumene occurs naturally in crude oil, typically comprising approximately 0.1 weight percent of most crudes, but concentrations as high as 1.0 weight percent have been reported.

The petroleum refining industry does not intentionally manufacture cumene. Cumene is produced incidentally during crude distillation, catalytic cracking and reforming. Cumene is reported to occur at very low concentrations in the following intermediate process streams: reformat; light catalytic cycle oil; straight run, catalytic, and coker gasolines; and several naphtha streams. (See Table 1.)

These intermediate process streams may be directly blended into finished products to achieve certain physical properties and performance requirements. Cumene, therefore, may be detected in finished gasoline and distillate products. As indicated in Table 1, the reported concentrations of cumene in gasoline ranged from less than 0.05 volume percent to a high of 0.51 volume percent. One company reported that based on 24 measurements of different grades of gasoline, cumene concentrations ranged from 0.14 to 0.51 volume percent, and the average cumene concentration was 0.3 volume percent.

API is aware of only three health and safety studies conducted on cumene by the petroleum industry. One company reported results of a 1977 monitoring study where cumene exposure levels around refinery operating units were measured at 0.05 to 0.38 parts per million (ppm). These exposure levels were considerably below the OSHA and ACGIH cumene limits of 50 ppm. Another company reported that in an air sampling study, conducted in 1983 in selected refinery workplaces, the highest levels of iso-propylbenzene detected for reformer and catalytic cracker workers were less than 0.1 ppm and 0.12 ppm, respectively. Table 2 summarizes a 1983 employee exposure monitoring study conducted on gasoline delivery truck drivers. The cumene concentrations in this study ranged from less than 0.01 to 0.1 ppm.

**Table 1**  
**CONCENTRATIONS OF CUMENE IN REFINERY PROCESS**  
**STREAMS AND FINISHED PETROLEUM PRODUCTS <sup>a</sup>**

<u>Process Streams</u>	<u>Concentra'tions</u>	<u># of company responses</u>
1) Straight run gasoline	None detected - 0.13 vol. %	(3)
a) Light	none detected	(2)
b) Heavy	0.13 vol. %	(1)
2) Naphtha streams		(4)
a) Heavy hydrocracked	0.03 vol. %	(1)
b) Light hydrocracked	none detected	(1)
3) Catalytic gasoline	<0.05 - 0.1 vol. %	(3)
4) Light catalytic cycle oil	0.15 wt. %	(1) <sup>b</sup>
5) Reformate	<0.1 vol. % - 1.0%	(4)
a) Heavy reformate	0.58 - 0.98 wt.%	(1) <sup>c</sup>
6) Alkylate	none detected	(1) <sup>b</sup>
7) Coker gasoline	0.1 - 0.13 vol. %	(1)
8) C <sub>9</sub> Aromatics	0.65 vol. %	(1)
 <u>Finished Products</u>		
1) Gasoline	<0.05 <sup>d</sup> - 0.51 vol. % 0.15 - 0.26 wt. %	(6) (1)
a) Leaded	<0.05 vol. % - 0.3%	(2) <sup>b</sup>
b) Unleaded	<0.1 vol. %	(1) <sup>b</sup>
c) Unleaded premium	0.28 wt. %	(1) <sup>b</sup>
2) Premium diesel fuel	0.86 wt.%	(1) <sup>b</sup>
3) Furnace oil (No.2)	0.60 wt.%	(1) <sup>b</sup>

<sup>a</sup> These data were compiled from reports by 14 major oil companies.

<sup>b</sup> Analyses performed on single samples.

<sup>c</sup> Data based upon three samples.

<sup>d</sup> Detection Limit = 0.05%

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Table 2

Personal Vapor Exposure Sample Results-1983

(Gasoline Delivery Truck Drivers)

<u>Activity</u>	<u># Samples</u>	<u>Length of Sample Time</u>	<u>Cumene (Isopropyl Benzene)</u>
Truck-toploading (no vapor recovery)	5 7	586-658 min. 21-35 min.	.01-.02ppm <.01-.04ppm
Truck-bottom loading (vapor recovery)	10	582-725 min.	<.01-0.1ppm



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Data produced 7 11 97 Barbara Smith  
(Month) (Day) (Year) Camera Operator

Place Syracuse New York  
(City) (State)