



Misunderstood MTBE

Your recent article panning methyl-*tert*-butyl ether use (*EHP* 102:913) was extremely misleading and focused on unpublished, and therefore not critically reviewed data, which is inconsistent with standards of scientific journals. Given the confusion caused by the article, you should provide more accurate information to your readers on why methyl-*tert*-butyl ether (MTBE) is in gasoline and how it is being managed in a manner protective of public health.

In 1990, Congress passed the Clean Air Act Amendments, which contained a requirement to include oxygen in fuel to reduce carbon monoxide (CO) emissions from motor vehicles. Once oxygenates were required by law, the industry began the process of tooling up for the production of oxygenated fuels. Either alcohols or ethers can be added to provide oxygen and both have been used previously. During the 1979 fuel crisis, alcohols had been added to gasoline to form gasohol. MTBE was added to gasoline as an octane enhancer after the lead phase-out. MTBE had also been used in a three-year pilot CO reduction program in the Southwest beginning in the winter of 1989–1990.

There was a considerable body of toxicological data on MTBE, including neurotoxicity studies, genetic toxicity studies, and reproduction and developmental studies. In addition, preliminary results were available from chronic bioassays in rats and mice prior to the onset of the winter fuels program. These results did not suggest MTBE would be hazardous, particularly at the low concentrations likely to be encountered in fuel use. Thus, required by law to add an oxygenate, industry legitimately made MTBE its principal choice. Ethanol, however, is also widely used, and other compounds such as ethyl-*tert*-butyl ether, *tert*-amyl methyl ether, and *tert*-butyl alcohol are being considered. Oxygenates have been added to winter fuel in 39 cities since November 1992 for CO reduction and are now in reformulated gasoline, which has been required to be sold in approximately 35 geographic areas to reduce ozone since January 1, 1995.

How has the oxygenate program fared? From the standpoint of CO reduction, it has been successful. EPA estimates that “a reduction of over 2 billion pounds of carbon monoxide annually is associated with the winter program.” There have been a few complaints from

users about reactions to the new product, something not surprising given MTBE’s very distinctive ether odor. In 1989, there were a few complaints in the Southwest, but they disappeared in 1990 and 1991. With the initiation of the winter fuel program in 1992, there were scattered complaints in New York, Montana, and more frequent complaints in Alaska and New Jersey. Industry responded by collaborating with EPA to conduct several studies to assess exposure during normal activities and attempting to duplicate exposures to assess health effects in human volunteers in controlled laboratory situations.

The results of these studies were reassuring. Exposures during refueling and commuting were consistently low, averaging 0.3–0.5 ppm during refueling. Acute symptoms described in the complaints could not be replicated in clinical chamber studies (1). Finally, in a study comparing healthy garage workers exposed to high and low MTBE concentrations, no differences in self-reported symptoms could be demonstrated that were attributable to MTBE exposure (2).

We still hear reference to complaints in New Jersey, although principally from representatives of groups, not from individuals. We find these complaints perplexing since New Jersey law minimizes exposures by requiring stage II vapor recovery systems throughout the state and by not allowing self-service fueling stations. It is also interesting to note that oxygenated fuels are widely used in various parts of the United States, yet the complaints appear to be focused in New Jersey.

In summary, the government mandated the use of oxygenates in fuels, and the industry is complying with that mandate. There is a large body of toxicologic data about MTBE, which makes up the largest fraction of oxygenates currently in use. That data do not suggest untoward health effects from the very limited exposures encountered during normal use of gasoline. Both government and industry have managed introduction of MTBE and responded to legitimate complaints in an appropriate manner. The article you published was incorrect and misleading and not representative of the quality of articles that should appear in your publication.

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REFERENCES

1. Prah JD, Goldstein GM, Devlin R, Otto D, Ashley D, House D, Cohen KL, Gerrity T. Sensory, symptomatic, inflammatory, and ocular responses to and the metabolism of methyl tertiary butyl ether in a controlled human exposure experiment. *Inhal Toxicol* 6:521–528 (1994).
2. Mohr SN, Fiedler N, Weisel C, Kelly-McNeil K. Health effects of MTBE among New Jersey garage workers. *Inhal Toxicol* 6:553–562 (1994).

Clarification

The November 1994 issue of *EHP* contained a forum article on methyl-*tert*-butyl ether that referred to the North Carolina scientific Advisory Board’s review of the carcinogenicity data for MTBE. The conclusion of the article stated that “The Board concluded that the state should consider requesting that the EPA remove MTBE from gasoline because of the uncertainties surrounding it.” This statement is incorrect. We did not make such a recommendation. The following summary represents our report to the North Carolina Department of Environment, Health and Natural Resources.

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North Carolina Scientific Advisory Board
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Summary of the Carcinogenicity Assessment of MTBE conducted by the Secretary’s Scientific Advisory Board on Toxic Air Pollutants

Abstract. The Secretary’s Scientific Advisory Board on Toxic Air Pollutants (SAB) examined the scientific evidence pertaining to MTBE carcinogenicity and came to a consensus agreement that, according to the National Toxicology Program (NTP) classification of carcinogenic activity, there is “some evidence” for carcinogenicity of MTBE in animals. The SAB agreed “some evidence” approximately corresponds to the “C” classification by the EPA. In an exception to the SAB policy of not quantifying risk for group C carcinogens, a range of exposures that could be associated with a potential