LPG content of Mexico City air.

We are aware that the Instituto del Petroleo scientists had identified propane as a significant hydrocarbon in their earlier studies (reference 3 in their comment is reference 7 in our report) and that they had also qualitatively identified LPG as a source for propane (reference 9 in their comment). Nevertheless, as we discussed in our report, the 1994 MARI report (which cites both references 3 and 9 of their comment) states (*1*, vol. 3, p. 82), without any mention of LPG emissions, that

> [T]he major sources of VOCs in the atmosphere include exhaust and evaporative emissions from motor vehicles, evaporative emissions from chemical and petroleum industries. Recently, the importance of biogenic emissions (emissions from vegetation) has been pointed out as a major source of VOCs.

The most prominent LPG alkane in our data is propane, and there is no mention of measured propane concentrations in Mexico City anywhere in the five-volume report. The MARI report also provides an emissions inventory for VOCs in which "residential combustion" accounts for 331.2 metric tons per year out of a total of 624,954.3 metric tons per year (*1*, vol. 3, p. 88). We commented in our report that this 1994 MARI estimate of 331 metric tons from "residential combustion" seemed much too small for an area with annual sales exceeding 2 million tons and that LPG leakage needed to be included in the calculations. We agree that further research on the composition and reactivity of all of the hydrocarbons in Mexico City air is urgently needed if major progress is to be made toward solution of their serious air pollution problem.

The statement at the end of the third paragraph of their comment—"the absence of this compound [toluene] in Blake and Rowland's samples may be attributed to their sampling protocol"—is puzzling, because toluene was present in all of our samples and was so reported. Our table 1 reported the measured abundances of 25 hydrocarbons in four typical samples from our 1993 experiments, and toluene was reported as present in all of them. Indeed, when expressed in the units "ppbC" used in the MARI reports, toluene is the third most abundant hydrocarbon after methane and propane in the noontime Zocalo sample of table 1 in our report. However, the trend in our own data for toluene does not support the statement that "toluene concentration drops significantly at about 11:00 a.m." We have regularly observed more toluene at noon than at 6:00 a.m., as noted in our report. This difference could be the result of a more complicated diurnal dependence, as well as our use of samples, each collected in less than 1 minute rather than 3 hours. We prefer the near instantaneous collection procedure because we are greatly interested in the correlations among the individual hydrocarbon concentrations and believe the mixing of aliquots of air collected over several hours tends to complicate these signals.

As everyone recognizes, changing the composition of LPG gas toward higher total vapor pressure (for example, toward more propane) and lower chemical reactivity is not likely to be helpful with an overall system that already has a high rate of leakage. Our recommended reduction in the butene composition does not have this problem because the vapor pressures of the butanes and butenes are similar. If the composition of LPG sample M134 in table 3 of our report were hypothetically altered by substitution of *n*-butane for all of the C4 unsaturated compounds, then the total hydrocarbon reactivity would be reduced by about a factor of 2. For major overall hydrocarbon reduction in the LPG sector, however, the loss of unburned LPG at all stages of its handling must be addressed. This is obviously a difficult task because it involves about 5 million individual heating and cooking sources.

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References and Notes

1. The Mexico City Air Quality Initiative (MARI) is described in a five-volume study produced by a collaboration between the Los Alamos National Laboratory and the Instituto Mexicano del Petroleo and published as *Los Alamos Rep. LA-12699* (1994).

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Climate Change Consensus

I would like to reply to a letter by S. Fred Singer (2 Feb., p. 581). I also attended the Madrid meeting of the United Nations–sponsored Intergovernmental Panel on Climate Change (IPCC) in November 1995 and remember Singer's presence. As a nongovernmental organization (NGO) representative along with others in the environmental- and industry-sponsored lobbying groups, he was invited to attend and allowed to participate. Although he disputes the records of temperature change in his letter, I remember him asking only one question on ozone depletion and ultraviolet-B. He had full access to all meetings and on several occasions sought for and was given one-on-one meetings with several of the scientists present.

The IPCC summary is indeed a summary and does not include every piece of information that went into the full report. Much more supporting material, including most of the eclectic collection of facts highlighted

by Singer are noted, referenced, and used by the scientists in drawing their conclusions. The supporting technical document (not formally approved by the IPCC) was reviewed by more than a hundred scientists worldwide as well as the governments participating in IPCC and the NGOs like Singer's. The brief summary document of Working Group I from Madrid in this case involves a choice of wordings agreed upon by the scientists and governments present.

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HIV Viral Load Assay

The splendid Article "Toward an understanding of the correlates of protective immunity to HIV infection" by Barton F. Haynes *et al.* (19 Jan., p. 324) states (p. 327) that "More sensitive and inexpensive assays of HIV viral load are needed to determine the level of HIV infection in various tissues." A sensitive, inexpensive (on a scale of magnetic resonance imaging scans) method for estimates of viral RNA in tissues (*1*) has been available for several years (Fuji Medical Systems USA, Stanford, Connecticut). Other nonradioactive assays of viral amplification including proviral DNA are under intensive development.

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References

1. C. H. Fox, S. Hoover, V. R. Currall, H. J. Bahre, M. Cottler-Fox, *Nature* **370**, 256 (1994).

Response: We appreciate Fox bringing this assay to our attention. This and related assays need consideration and further study in clinical research studies.

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Letters to the Editor

Letters may be submitted by e-mail (at science_letters@aaas.org), fax (202-289-7562), or regular mail (*Science*, 1333 H Street, NW, Washington, DC 20005, USA). Letters are not routinely acknowledged. Full addresses, signatures, and daytime phone numbers should be included. Letters should be brief (300 words or less) and may be edited for reasons of clarity or space. Letter writers are not consulted before publication.