pared a vaccine from ICRC killed by gamma irradiation. The vaccine has been administered to more than 50 leprosy patients, most of whom have the lepromatous (LL) variety. We have specifically chosen the LL patients because they are lepromin-negative and continue to remain so in spite of prolonged treatment with drugs. In our study (*1*), lepromin conversion was observed in 50 percent of the LL patients and in 80 percent of the BB/BL (borderline) patients 4 months after vaccination. In a follow-up study (*2*), 70 percent of the vaccinated LL patients exhibited a positive lepromin (Mitsuda) reaction 8 months after vaccination. There is strong evidence that the Mitsuda reaction is an indication of the host immunity against *M. leprae*. This development therefore holds great promise, and we shall soon be conducting multicentric field trials of our vaccine.

M. G. DEO

Cancer Research Institute,
Tata Memorial Centre,
Parel, Bombay 400 012, India

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Soot-Catalyzed Reactions

A recent letter by Herbert Rosenkranz (23 Apr., p. 360) discusses some of the potential health effects associated with increasing soot emissions from diesel vehicles. We would like to point out another potential problem associated with soot particles in the atmosphere, namely, the catalytic activity of such particles for certain atmospheric chemical reactions, including the oxidation of sulfur dioxide (SO_2) to sulfate.

Conversion of SO_2 to sulfate is widely recognized as a major source of acidity in clouds and rain water. The conversion is generally assumed to occur in the gas phase, with subsequent condensation or solution, or both, of the product sulfate. Gas phase conversion of SO_2 to sulfate implies that reduction of SO_2 emissions should result in roughly proportional reductions in sulfate and acidity. However, reductions in SO_2, when actually accomplished, have not resulted in corresponding reductions in sulfate (*1–2*). This is the well-known "urban sulfate anomaly," which has provoked considerable debate (*1, 3*).

A possible explanation for this anomaly is that a significant component of atmospheric sulfate may be generated by heterogeneous (multiphase) reactions rather than gas phase reactions (*3*). Heterogeneous conversion of SO_2 to sulfate on soot particles was demonstrated in laboratory studies by T. Novakov and co-workers in 1974 (*4*). Subsequent laboratory investigations by these and other investigators have confirmed and extended this finding (*5–7*). For example, water (liquid or vapor) has been found to enhance carbon-catalyzed sulfate formation and, in fact, to effectively prevent saturation of the reaction (*6, 7*). Furthermore, carbon has been shown to catalyze oxidation of SO_2 by the trace oxidant NO_2 as well as by O_2 (*6–8*). The range of other atmospherically important reactions that may also be catalyzed by carbon is not known.

Serious consideration of heterogeneous reactions in the atmosphere is a relatively recent phenomenon, and much more research will have to be done before the importance of soot-catalyzed reactions is fully established. Nevertheless, in view of existing laboratory results it seems advisable to consider the catalytic properties of soot when assessing the potential impact of increasing diesel emissions.

DAVID R. SCHRYER
ROBERT S. ROGOWSKI

Laser Systems and Measurements Branch, Flight Electronics Division, Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665

WESLEY R. COFER, III

Environmental Chemistry Branch, Marine and Applications Technology Division, Langley Research Center

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Erratum. In the report "Bronchoconstrictor effects of leukotriene C in humans" by J. W. Weiss *et al.* (9 Apr., p. 196), the second sentence of the abstract should have read: "Leukotriene C was 600 to 9500 times more potent than histamine on a molar basis in producing an equivalent decrement in the maximum expiratory flow rate at 30 percent of vital capacity above residual volume."

Erratum. Howard A. Meyerhoff, former AAAS official, died in Tulsa, Oklahoma, *not* Tucson, Arizona, as stated in AAAS News (7 May, p. 613).