Letters

Propranolol Study

A Research News article (13 Nov., p. 774) by Gina Bari Kolata indicates that a study of propranolol made by the National Heart, Lung, and Blood Institute was ended early because the drug so clearly prolonged the lives of heart attack patients that it would be unethical to continue giving half of the study's participants placebos rather than propranolol.

Clearly, the drug had relatively dramatic effects, but these effects appear to be confined to the first year following a heart attack. For months 12 to 30, the data suggest that the mortality rate of the early survivors was independent of treatment. If this is so, there is no compelling reason either why patients who have been on placebos for a year should be switched to propranolol (an implied recommendation) or why those on the drug for a year should not be switched to placebos to permit a more complete experiment.

KYLE R. BARBEHENN
8208 Thoreau Drive,
Bethesda, Maryland 20817

Plutonium Production

The article "Weapons builders eye civilian reactor fuel" (News and Comment, 16 Oct., p. 307) by Colin Norman, quotes various advocates of reprocessing civilian nuclear fuel. Similarly, opponents of civilian reprocessing generally oppose the use of laser isotope separation for obtaining "weapons grade" plutonium from civilian reactor fuel.

As a coauthor of *Nuclear Power: Issues and Choices* (Ballinger, Cambridge, Mass., 1977) and *Energy: The Next Twenty Years* (Ballinger, Cambridge, Mass., 1979) and a long-time developer and connoisseur of nuclear weapons, I believe that the opposition of the United States and the Soviet Union to the proliferation of nuclear weapons throughout the world is of extreme importance to the security of these two countries and to the rest of the world.

Nevertheless, I believe that reprocessing of civilian reactor fuel, only to the extent necessary to obtain the weapons-grade plutonium stockpile desired for nuclear weapons in this country, should proceed instead of the building of new plutonium production reactors.

It would be a tragedy if a *general* reprocessing of civilian spent fuel occurred on the pretext of the need for additional weapons plutonium. It would be an economic insult if we were arbitrarily forced to build new production reactors (to produce the same amount of plutonium) rather than take the lower-cost approach of laser isotope separation (LIS) of chemically separated plutonium.

Also, I do not understand why tens of millions of dollars have been committed to a plutonium-handling facility at the Lawrence Livermore Laboratory. There is no indication that the atomic vapor LIS process being developed at Livermore is superior to the molecular vapor LIS process under development at the Los Alamos National Laboratory, where there is already a major plutonium facility.

Whether or not we *need* additional plutonium for nuclear weapons is another question; we certainly do not need additional production reactors, and we do not need vast investments in new plutonium-handling facilities.

RICHARD L. GARWIN
Thomas J. Watson Research Center,
IBM Corporation, Box 218,
Yorktown Heights, New York 10598

Emissions Standards

R. Jeffrey Smith's article discussing the National Research Council's report on acid rain (News and Comment, 2 Oct., p. 38) says that the Administration's proposal to return to the 1980 standards for automotive oxides of nitrogen was "particularly remarkable in light of the details of the research panel's report." This statement implies that the difference between the 1980 and 1981 standards for oxides of nitrogen emissions (2 grams per mile versus 1 gram per mile) from automobiles might somehow produce a significant change in the acid rain situation. If the current debate over what to do about this phenomenon is to come to the right conclusion, further discussion is necessary.

It should be recognized first that automobile emissions are not a significant part of the constituents thought to cause acid rain in the northeastern United States. A change of 1 gram per mile in emissions from cars would change the potential excess acidity attributable to these constituents by less than 2 percent, which is not a compelling argument for the more stringent standard.

Furthermore, a return to the 1980 standard still would achieve a significant reduction in total automobile NO_x emissions. The vast majority of cars now on the road were designed to control NO_x emissions to no lower than 3 grams per mile. As new cars meeting the 2-gram-per-mile standard replace older ones, total NO_x emissions from automobiles will continue to decline, despite the Administration proposal "to double the statutory limit on emissions of nitrogen oxide from automobiles in 1983 and beyond."

With the exception of five counties in southern California, the nation is in attainment of the NO_2 ambient air quality standard. The 1981 standard of 1 gram per mile thus is not required to achieve this health-based air quality goal.

Unfortunately, the cost of controlling nitrogen oxides to the 1981 standard is very high. (The $60 cited in the article is General Motors' estimate of the cost of changes in the carbon monoxide regulations.) We have estimated that reducing oxides of nitrogen from 2 grams to 1 gram per mile added $420 on the average to the cost of emissions control hardware on our 1981 gasoline cars. That means, even with depressed sales, that the additional cost to General Motors customers alone in the 1981 model year was around $1.5 billion.

In spite of this enormous added cost, General Motors has never contended that emission rules should be relaxed to help Detroit out of its present economic difficulties. We have consistently stated that emission regulations for both mobile and stationary sources should be based on two key considerations:

1) How much reduction in a particular pollutant from all sources is necessary to meet the health-based National Ambient Air Quality Standards, or, in this case, bring about meaningful reductions in the acidity of rainfall?

2) Which of all possible sources of a pollutant can be controlled—and to which levels—for the least cost?