Letters

More on Chemical Carcinogenesis

Miriam Meisler and Ernest E. McConnell (Letters, 16 Oct., p. 259) are critical of Philip H. Abelson's editorial "Cancer phobia" (31 July, p. 473). Abelson discusses shortcomings of the animal tests used by regulatory agencies to gauge human susceptibilities to carcinogenic chemicals. Both Meisler and McConnell favor continued use of the present procedures. However, in their critiques they disregard the basic reasons for Abelson's reservations about animal tests. As he points out, many major substances have erroneously been labeled as carcinogens because of questionable evidence provided by animal tests. In support of this allegation he refers to the fact that "there has been no overall increase in cancer," provided cancer-mortality data are adjusted to eliminate the effects of cigarette smoking.

This all-important observation deserves some amplification. A decade ago, John Cairns (*1*) stated:

> In fact, with the exception of lung cancer, all common cancers have been common since the 19th century. For example, in the United States, there has been little change in the incidence and death rate from cancer as a whole in the last 30 years during which time the annual production of pesticides, synthetic rubber and plastics has risen more than 100-fold.

This statement was more accurately defined by John C. Bailar III and Elaine M. Smith (*2*). Using age-adjusted mortality rates and excluding lung cancer, cancer of the stomach, and cancer of the cervix, these authors determined shifts in overall cancer mortality from 130.1 in 1950 to 128.9 in 1982, a change of less than 1% in three decades.

On the basis of these data, there cannot be any doubt that the ever-increasing production of new and old industrial chemicals—many of which have been labeled "hazardous" by rodent tests—has not resulted in an increase of cancer mortality. Nor has an increase occurred but remained confined to the work force at chemical plants, a situation that would have been just as unacceptable as an increase for the whole population. The Dow Chemical Company, a past producer of Agent Orange, reported recently (*3*) that the health of all employees at its Midland and Bay City plants had been monitored between 1940 and 1982. A survey of the data has established that these employees have not experienced statistically significant higher rates of death from any cause, including all cancers.

With the realization that the increasing production of industrial chemicals has not brought about a rise in cancer mortality, there can no longer be confidence in the teachings of rodent cancer tests. Abelson's editorial is a document of sound scientific judgment.

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REFERENCES

1. J. Cairns, *Cancer: Science and Society* (Freeman, San Francisco, 1978), p. 57.
2. J. C. Bailar III and E. M. Smith, *N. Engl. J. Med.* **314**, 1226 (1986).
3. *Chem. Eng. News* **65**, 7 (14 September 1987).

. . .Abelson is correct in regretting that so much effort has gone into routine bioassays of little or no value ("counting lumps and bumps") when we could well be much further ahead had the same resources been devoted to fundamental research on mechanisms of carcinogenesis. The real problem is not one of rating carcinogens by potency with the use of data from high-dose, long-term animal feeding tests. The unresolved critical issue, to which far more thought and effort must go, is determining the relevance of such results to human circumstances.

It is doubtful, for example, that public health has been advanced by the results of the National Toxicology Program's bioassay which found that, under the conditions of the tests, allyl isothiocyanate was carcinogenic in male rats, equivocally carcinogenic in female rats, and noncarcinogenic in mice (*1*). Those results have been widely—and wisely—ignored.

No one has yet suggested that, because broccoli, cauliflower, cabbage, and mustard contain allyl isothiocyanate, we should forego them. Instead, our National Cancer Institute urges us to eat more of them in the hope of decreasing the risk of cancer.

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REFERENCES

1. National Toxicology Program, *Carcinogenesis Bioassay of Allyl Isothiocyanate (CAS NO 57-06-7) in F344/N Rats and B6C3F$_1$ Mice (Gavage Study)* (Technical Report Series No. 234, Department of Health and Human Services, Washington, DC, October 1982).

Agricultural R&D

In considering Don Holt's proposal for agricultural research and development (Policy Forum, 18 Sept., p. 1401), it is useful to remember that for most of its history the U.S. Department of Agriculture (USDA) supported projects designed to promote both short- and long-term farm productivity. It was only recently that USDA, prompted by the National Academy of Sciences, shifted the emphasis of some of its programs toward basic research. The purpose of this shift was to provide basic biochemical information to promote the development of new products by private enterprise and to provide necessary information needed for rational programs in molecular biology. Many large commercial research organizations specifically asked the USDA to provide this type of support.

Holt is now proposing relatively large expenditures for support to farmers on site with situation-specific information. The USDA already provides such support through its extension service. Although it would be unfair to say categorically that increased funding for such programs would provide no benefit, it is fair to ask if increased funding would provide maximum benefit to the United States, especially when one considers the likely possibility that a portion of the funding will come at the expense of basic research.

Holt states that the U.S. share of the world market for certain commodities has declined from 60% to 40%, and he predicts ominous consequences for U.S. farmers if declines continue. However, this share decrease is due to increased world production, not to decreased U.S. production. Given large increases in world population, we should give thanks that world production is up, rather than complaining about it. While the last few years have not been the best for U.S. farmers, it will come as a pleasant surprise to some that this year overall farm income (inflation-adjusted) will be back to its average (computed since 1959) (*1*). This recovery has as its basis the decline in the U.S. dollar and a more sensible government farm policy. It has nothing to do with any particular breakthrough in agricultural technology. By the same token it is unfair to say that existing agricultural research programs are ineffective or were in any way responsible for the recent difficulties that beset our farm industry. If farm income is now back up to its average, is a new expensive program really needed?

Holt states that his proposed programs would ultimately reduce production costs and thereby increase our competitiveness worldwide. Regrettably most of the barriers to increased U.S. farm exports are not economic, but political. Those countries that have the most money to buy our products have in place strong import barriers designed to protect their own domestic agriculture. Any progress that is made in reduc-