of Carcinogenic Risks to Humans, we would like to make the following points.

1) The IARC does not "certify" that agents are (or are not) carcinogenic. It reviews all the evidence relevant to carcinogenicity and classifies agents according to the strength of the evidence for (or against) their carcinogenicity. The IARC monographs are composed in a way that expressly permits the reader to follow the reasoning of the IARC working groups that made the evaluations. Readers may therefore make their own decisions to accept or reject them.

2) The IARC monographs and their associated evaluations and classifications are prepared by scientists actively working in the different areas of cancer research, spanning human and experimental pathology, epidemiology, genetics, molecular biology, and toxicology. These scientists are invited to participate on the basis of their expertise and their ability to make objective evaluations of evidence relevant to carcinogenicity. The scientists who participate in the preparation of any particular monographs are listed in the front of the relevant volume of monographs so that anyone can see who has done the work.

3) For the sake of consistency in evaluation and classification, comprehensive descriptions are given of the approach used by each IARC working group in both evaluating the evidence and arriving at a classification. These descriptions, prepared by a working group of scientists expert in the study of carcinogenesis, are not rigid rules, but rather guidelines for use by each working group. The evaluations as well as the assignment of an agent or exposure to one of the IARC classification groups is, and will remain, a matter of scientific judgment.

4) As of this date, no agent has been described in an IARC monograph as "carcinogenic to humans" without there being sufficient evidence of its carcinogenicity in epidemiological studies in exposed humans.

5) Since October 1991, the IARC monographs have presented data on the possible mechanisms of action of potentially carcinogenic agents. Where this evidence is of itself adequate, it may be used to either strengthen or weaken inferences about the carcinogenicity of the agent to humans.

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Choose Your Poison

Philip H. Abelson recently provided an insightful response (Letters, 4 June, p. 1410) to criticism of his 26 February edito-

rial, "Pesticides and food" (p. 1235). In their comments on the editorial, David and Marcia Pimentel (Letters, 4 June, p. 1409) state that pesticides "cause serious health and environmental problems" and that "[m]ore than 67,000 human pesticide poisonings occur annually in the United States." Abelson's refutation of the spurious statistic on the number of pesticide poisonings is especially important because D. Pimentel published the same statement in *Science* several years ago without being challenged (Letters, 19 Apr. 1991, p. 358).

Abelson correctly identifies some of the fallacies in the way the Pimentels used data from the 1989 annual report of the American Association of Poison Control Centers (*1*). He could also have added that the same report shows that more than 56% of the potential exposures to pesticides in 1989 involved children less than 6 years old. Large numbers of young children are unlikely to be exposed to pesticides in the workplace, so one must assume that most of these potential exposures involved accidental exposures in noncommercial arenas (probably at home). Pesticide applicators in most commercial and agricultural settings receive extensive safety training and must be licensed. Homeowners, by comparison, are often unaware of the dangers posed by the pesticides they purchase at their local garden stores. Much of the human exposure to and misuse of pesticides could be avoided if pesticides were unavailable to homeowners and could be purchased only by licensed applicators. Of course, human welfare could also be improved if sales of all household cleaners and personal cosmetics were also limited to licensed applicators: More than 200,000 children under 6 years old were reportedly exposed to poisoning by household cleaners and personal cosmetics in 1989 (*1*).

I wish I could suggest an equally simple solution for reducing exposure to the intellectual "poisoning" that occurs when statistical information is misapplied by scientists in their efforts to generate support for their personal viewpoints on controversial subjects.

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