(*Continued from page 14*)

The panel further speculates, on the basis of some "crude approximate calculations," that the leukemia incidence in the power line corridor is actually lower than in the Swedish population as a whole.

One cannot do reasonable approximations of cancer incidence on the basis of the data available in our report; but we have performed the necessary calculations based on the original data, and for all childhood cancers together we observed 142 cases as compared with an expected number of 138 based on the number of person years in the power line corridor population and incidence rates from the Swedish Cancer Registry.

We are aware of nine studies, including our own and a Danish study that so far has been presented only orally (*2–10*), with information about leukemia in children and exposure to EMF. The ORAU panel makes several comparisons between our study and the study by Tomenius (*5*). However, although the study by Tomenius was not published until 1986, it was actually conducted shortly after the original study by Wertheimer and Leeper (*6*) and shares some problems with other early studies in this field. Tomenius used as an exposure measure the presence of a 220-kilovolt line within 200 meters and alternatively a short-term EMF reading outside the front door of the building, often an apartment building. We have now clear indications that neither of these provides a valid EMF assessment in the home. The 200-meter range is much too wide to be meaningful, and a short-term reading outside the front door is only a reasonable predictor of indoor EMF if there is a dominant external EMF source, such as a nearby high-voltage line. Although this does not explain all aspects of the results, it might explain the absence of an association for leukemia in children and it is sufficient to give the study minimal weight when combining results across studies.

Two other studies should also be given minimal weight when evaluating the childhood leukemia studies. One has been criticized for having a control selection bias with the potential for explaining the lack of an association (*7, 11*), and another does not have a sufficient number of subjects with considerable exposure to provide meaningful information in this context (*8*). Thus, we are left with six studies of childhood leukemia and EMF.

We believe that we have good reasons to prefer exposure assessments based on the presence of nearby lines and other installations over short-term readings. If the corresponding results are used, one obtains a fairly clear consistency across studies, with all six relative risk estimates in the range of 1.5 and 3.0 and with only two of the studies having 95% confidence intervals with lower bounds below unity (*9, 10*).

It would indeed be appealing if all available evidence—from residential and occupational studies, from children and adults, and from studies on different types of cancer—fit together in an intelligible pattern, but this does not appear to be the case. However, in our view, the evidence on leukemia in children is actually fairly consistent, and inconsistent results from studies on other types of cancer or on adults should not detract from this (*12*).

We agree with the ORAU panel that there is no known mechanism by which EMF might play a role in cancer development. However, this may be viewed from two directions. One could conclude that the lack of a known mechanism makes the link between EMF and cancer a priori unlikely and, therefore, that further research should not be given high priority. Alternatively, one could conclude that, if this link exists, there appears to be an as yet unknown mechanism through which EMF interacts with human cells. It could then follow that research should be pursued in order to explore this potentially important knowledge.

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Drug Abuse Research

I would like to congratulate *Science* on the 18 December article "Pot, heroin unlock new areas for neuroscience" by Marcia Barinaga (Research News, p. 1882) and point out that the National Institute on Drug Abuse (NIDA) has funded pioneering neuroscience research for 20 years, including that done by most of the grantees identified in the article. We also provided support to the National Institute of Mental Health laboratory that was cited. In fact, NIDA supports 88% of all drug abuse research conducted in the United States.

To be precise, of course, it is the American taxpayer who supports research about drug abuse and other health problems. The American taxpayer needs to know that knowledge gained through research is helping to address some of our more wrenching health and social problems.

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Corrections and Clarifications

The references in Philip H. Abelson's editorial of 5 February, "Science, technology, and national goals" (p. 743), were incorrect. The first reference should have read, "H. T. Shapiro, *The Bridge* **22** (no. 3), 14 (1992)." The second reference should have read, "R. E. Gomory, *ibid.* (no. 2), p. 18."