

Public safety: scientists' responsibility

Public safety has not only become one of the paramount topics of discussion in the media but also one of the main avenues through which scientists get involved in public affairs. Defined broadly, the issue of public safety relates to matters ranging from the proper design of household step ladders to comparing alternate strategies of nuclear weapon systems. As pointed out in a fascinating new book, *Of Acceptable Risk* by William Lowrance, many thousands of scientists and engineers have traditionally been involved over the years in safety-related matters as a result of their daily work in research, design, development or testing; it is only more recently that scientists and others with technical training have been taking public positions for the benefit of the media that are clearly advocacy and at times verge on irresponsibility.

Lowrance's book is the result of a study he conducted under the auspices of the National Academy of Sciences in collaboration with the Academy's Panel on Science and the Determination of Safety. One of the main conclusions of the study is that we need a much more deliberate involvement of scientists in public safety issues—to educate policy-makers and the public on the meaning and limitations of safety determinations and encourage scientists to contribute their efforts in responsible ways to the enormous amount of work that remains to be done in this area.

An important point for the public (and many scientists as well) to understand is that scientists and engineers can *not* evaluate safety—they can only measure or estimate risk. Once the risks have been made known, then the public or its representatives must decide whether a product or course of action is safe—that is, whether the attendant risks are acceptable. Lowrance's book does an excellent job of portraying how enormously complicated safety issues can become, reaching out to involve basic decisions confronting our society and challenging all our efforts of analysis. Thus, for example, the familiar issue of nuclear safety is intimately involved with the energy crisis and questions of foreign policy and environmental pollution. But policymakers still do not have all the information needed to make an intelligent decision possible on the relative safety of nuclear energy because complete risk-benefit analyses for nuclear, coal and other competing energy sources are not available. Therefore we are not able yet to compare the acceptability of alternative mixes of these sources for our national economy. Part of the problem is

that in some areas basic data (of the type that must be provided by physical and biological scientists) still do not exist.

Nevertheless, *de facto* judgments on nuclear safety and other issues are currently being made in the form of headlines in the media almost every day. Physicists and other members of the scientific community should take it upon themselves to expose any such misrepresentations or overstatements by calling the editors to task with letters or phone calls. In his book Lowrance reminds us that we have a special responsibility to the rest of society to play a watchdog role in matters of risks that affect public safety. It is a fact that only those with technical training are in a position to estimate safety risks in a definitive way. And it is to be expected that when qualified people present their findings they will do so with customary objectivity, so that rational decisions may be made between alternatives. In summarizing the Academy's responsible and effective analysis of an important problem in our society, Lowrance's book serves as an excellent model of such a presentation.

We recommend that each scientist and engineer acknowledge his personal obligation in the area of public safety and resolve to take the initiative in making responsible contributions whenever opportunities occur.

—Harold L. Davis