

Good Public Policy Requires Good Science

Everyone knows that there are many different languages spoken around the world—a phenomenon that the Old Testament tells us was God's punishment to Noah's descendents who embarked on building the Tower of Babel after surviving the great flood.

But even though we all acknowledge the differences *between* languages—English, French, German, Russian, and so on—we seldom recognize, much less acknowledge, the difference *within* a language. And yet, there are differences and at times those differences can be highly significant.

For example, the vast majority of our readers are over 30 years of age. And those who are over 30 probably have encountered the difficulty in conversing with someone under 20 although they are both from the same country, and presumably speak the same native tongue; in fact, they may even be family members from the same household!

Similarly, there is a major difference between the language of the scientist and the language of the layperson—even though both claim to speak the same tongue or native language.

However, the language of scientists is really unique to them; it is very carefully precise and qualified; it often focuses on the exceptions—their occurrence, their frequency, their seriousness, etc. On the other hand, the layperson or the general public speaks another language—one that deals in simple absolutes, and also involves instincts, intuition, psychology, and moods.

The public asks whether a drug is effective or not; whether it is safe or not. The idea that it may be judged "effective" when it only works in three out of four patients, or 75% of the time, is incomprehensible. And the concept that a drug is classified as "safe" when it causes minor side effects in one out of five patients, major side effects in one out of a thousand patients, and death in one out of a hundred thousand patients, is mind-boggling to virtually everyone outside of the field of science.

We were recently reminded of this vast communication gap, as we read reports relating to the issuance of revised cancer guidelines from the White House Office of Science and Technology Policy (OSTP). The June 1 issue of the *Washington Post* headlined its article "Drastic Revision from 1982 Draft." The story itself then started out by describing the background to this report:

"The Reagan Administration has issued dramatically revised draft principles to guide federal policy-makers in cancer regulation, stating that cancer-causing substances can be dangerous even at extremely low levels.

"The massive White House science office document also says that materials that cause cancer in animals are 'suspected human carcinogens.'

"The report reverses many of the positions laid out in a draft issued 18 months ago, according to experts in the field. Designed as the basis for setting cancer policy across the federal government, it appears to have succeeded in creating consensus out of the chaos caused by earlier efforts."

The "earlier efforts" referred to was the former approach to the regulation of potential carcinogens as promoted most vigorously by the Environmental Protection Agency (EPA) during the very early days of the Reagan Administration.

Efforts were then felt necessary to overcome the "doomsday" interpretation that the public had come to associate with the theory that

"everything and anything can be harmful and cause cancer if given in a large enough dose, for a long enough period of time, and via certain peculiar conditions of exposure" that was then being espoused by many scientists. The EPA responded by discounting the value of animal tests in determining the risk of cancer in humans; it criticized the way high doses given to animals were being used to predict human reactions; and it stated that a threshold probably existed below which doses of a suspected carcinogen would not cause cancer.

This approach calmed public fears and anxiety, but was roundly criticized by the scientific community at large.

The chief toxicologist for the Environmental Defense Fund is quoted as saying that the original policy draft "got blasted across the board because people were appalled at the bad science in it." A spokesman for the industry-supported American Industrial Health Council commented that the former policy draft "just wasn't accurate scientifically. It has to be defensible scientifically."

In contrast, the current draft comes close to drawing "rave reviews" from the great majority of scientists who have examined it to date. Moreover, those scientists represent the full spectrum of philosophical thinking from the environmental and consumer groups at one end, to the industrial and trade groups on the other end.

Specifically, the current report carefully describes the present state of knowledge as to how cancer is caused and to what degree science can determine whether a given substance is carcinogenic. It also provides a number of guidelines for federal agency use in helping agency officials decide how to regulate suspected carcinogens.

Although the document does not constitute binding policy or regulatory requirements, it does set benchmarks of agreement and understanding for those who regulate and those who are regulated. It also provides a standard of measurement for other interested parties such as consumer groups and environmental coalitions. For these reasons, there is general recognition of the significance of the report, despite its lack of obligatory standing. A key feature of the statement is the listing of 31 separate principles designed to help at least 10 different federal agencies prepare their own guidelines to shape their regulatory programs and activities.

OSTP Director George A. Keyworth II—who also serves as President Reagan's Science Advisor—characterized the document as "one of the most ambitious attempts yet to examine data on cancer causation and their implications for regulatory policy. It responds to society's need for better balance and objectivity in how we regulate man-made and naturally occurring chemicals that may cause cancer."

If there is a lesson to be learned from this experience, it is that good science is a basic need for good public policy. Furthermore, in communicating with the public, efforts must be made to enable the public to understand and comprehend the risks, the benefits, the costs, and so on that may be involved. And in doing so, great efforts must be made to translate the language of science into that which the public can grasp, understand, accept, and place in proper perspective. Finally, and most important, it is essential to maintain the factual accuracy and fundamental integrity of the information itself.

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