

Politics, Science All Mixed Up

'U' scientist assays confusion on fallout peril

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To the Editor: As I listen to and in a minor way participate in the controversy over the present or future danger to mankind, the radioactive fallout associated with bomb testing, I am becoming more and more sympathetic with the non-scientists in our society who must be getting more and more confused by the day. I am therefore encouraged to try to clarify the situation for the non-scientist.

LETTER to the EDITOR

There are as I see it three main reasons for the confusion. The first is that literally no one really "knows" what damage to the human race can be expected from low levels of radiation from the radio-active elements produced in bombing.

We know a great deal about high level radioactivity damage. We can extrapolate from information on lower animals such as mice and flies at various levels of radiation and deduce that as to genetic damage there is a linear relation between radiation dose and damaging effect. This would mean that any additional radiation would mean additional damage.

Very few persons seriously challenge the validity of this extrapolation. Those who do only point out that the magnitude of the damage at present levels of radiation due to bomb testing would be very small. They argue further that even if it did produce an additional 15,000 defectives per generation per bomb, it would be worth the cost to society as a whole.

But the fact that the magnitude of the damage is just an "educated guess" is the first great difficulty. The real effect may easily be only one tenth or it might be 10 times as great. No one actually knows.

The same is true in an even more extreme way in connection with the cancer-producing effects of radioactive elements. We think, but do not really know, that strontium 90 is the main hazard as far as cancer is concerned with low level radioactivity from fallout. Furthermore, we do not really know how little strontium 90 will produce cancer.

The public should know that it will be absolutely impossible to "know" how dangerous this element is for at least 20 years, which is the time we have found it takes for similar radioactive substances to produce cancer. The public should know that we scientists have no actual data on the carcinogenic (cancer-producing) activity of low levels of strontium 90.

We are simply making "educated guesses" again as to what it will probably do.

These guesses or extrapolations are based on comparisons with radium, about which we do know something because of unfortunate industrial accidents which led to many deaths in the luminous dial industry. The guesses are probably correct within a ten fold range, up or down, but no scientist would dare say that he positively knows what the lower limit of damaging effect is.

In other words, here again we are dealing with a substance which we know is damaging to the point of lethality and we are

guessing that it will not do much or any harm below a certain dose level.

The second reason for our confusion is secrecy. Right now the most extensive data on strontium 90 in milk in the United States are in the hands of the U.S. atomic energy commission. On March 6, 1958, I was shown these data which are marked "For Official Use" and I am therefore now not privileged to disclose the facts they contain.

There is one point about this situation that disturbs me greatly. It is that the top administrative officials do not have confidence in the intelligence of the American people. They act as though they did not really believe in the democratic system.

The facts in question have no conceivable military significance. They are important only as background information for policy decisions. To withhold them from the public means one of two things, either that our Washington administrators do not trust our intelligence, or that they hope to control opinion by monopolizing information.

Either conclusion would be distressing to me as one who believes in the democratic process, because it would mean that we are imitating the practices of authoritarianism, which I abhor.

The third reason for confusion is, I believe, the fact that scientists who talk and write about this problem mix up science and public policy.

We should all be more careful to point out exactly what is fact, what is guess and what is opinion as to public policy. I firmly believe that this is the only way in which scientists can be really useful to society in public policy questions.

Scientists have some special competence regarding knowledge of facts, and even in being able to make the most probable "guesses" about situations in which specific facts are not available. But they have no special competence in arriving at policy judgments.

Policy in a democracy must be based on informed public judgment and therefore clear distinctions between fact, guess and policy judgment must be made. I hope that in the future this will be done by every scientist who undertakes to deal with this or other questions of public policy depending on scientific information.

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