ESTIMATING RISKS OF KNOWN AND UNKNOWN CARCINOGENS

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ABSTRACT

Risk assessment is well accepted for those carcinogens for which there is human epidemiology. When there is only an animal bioassay, or only toxicity data, the calculated risk is very uncertain. Many people reject the idea of calculating risks and suggest that only a priority order is possible. But a risk still exists, however uncertain its calculation. A priority order based on uncertainty of information is different from one based on risk; yet it is the latter that is needed to improve public health.

KEY WORDS: Magnitude of risk, Priority, Non-carcinogen, Comparison, and Interspecies.

INTRODUCTION

This talk follows the two excellent talks by Dr. Elizabeth Anderson and by Dr. Roy Albert. They have been estimating risks for many years in the Carcinogen Assessment Group (CAG) of the Environmental Protection Agency (EPA). Their primary purpose is to address those toxic chemicals of concern to the Agency, with a view to deciding upon possible regulation. They make assumptions, some of them arbitrary, but assumptions that are deemed necessary to get the job done. I and my colleagues, particularly Dr. E.A.C. Crouch and Dr. L. Zeise, have been estimating risks with a particular aim of studying the assumptions, and with an effort to be logically complete. To the extent that our numbers agree with those of CAG, we help to give a logical underpinning; to the extent they disagree, we suggest that the disagreement be examined so that perspective can be gained. In addition we believe that deciding upon possible regulation is only one of the uses of risk assessment, and probably the least important use. We argue that public health can often be improved by steps that do not involve regulation, and that finding ways to continuously improve public health is a more important use.

In performing a risk assessment for a toxic chemical, we all will agree upon the first rule: use human data whenever it is available. The proper study of man is man. The human data is rare, and very precious. The exposures were high because of ignorance, accident, or stupidity, and we hope not to repeat such high exposures for any toxic chemical. Table I gives a partial list of some of the chemicals for which adequate human data are available.