

# RADIATION AND RISK— THE SOURCE DATA

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“A likely impossibility is always preferable to  
an unconvincing possibility”  
Aristotle—from the *Poetics*

## 1. Introduction

We have seen evidence in the past several years of a growing concern on the part of the general public over the possible risks to which they may be subjected as a result of man's increasing uses of ionizing radiations.

The specific benefits derived from the uses of ionizing radiations in medicine and industry may be a matter of particular debate, but it seems generally to be accepted that benefits do in fact accrue. Public concern is centered on what risk, if any, is involved in such activities. In the words of the International Commission on Radiological Protection (ICRP), “If the quantitative relationship between dose and the risk of an effect were known, societies or individuals could judge the degree of risk that would be acceptable, taking into account the particular circumstances requiring a radiation exposure. Ideally, such a judgment would involve a balancing of the benefits or necessities of the practice against the risks of the given exposure, which could also be related to that of other risks in the particular society.” [1]

With respect to physical and chemical components in the natural environment other than radiation, it would seem that man has, through evolutionary processes, been adapted to function adequately over a rather broad range of exposure. Examples of this are carbon dioxide concentration in air, temperature, and barometric pressure. Observing this, we might be tempted to posit that man's response to radiation exposure would be similar. However, as scientists we must stress that we do not know the effect of small exposures to radiation on human beings. We do not know whether such exposures are deleterious, of no consequence, or beneficial.

It is perhaps true that more is known of man's response to ionizing radiations than to any other self-inflicted pollutant of his environment. This is largely due to the experience of radiation injury resulting from early uses of X-rays and radioactive substances, particularly radium. From these early experiences and

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