

SMITHSONIAN INSTITUTION  
THE NATIONAL MUSEUM OF HISTORY AND TECHNOLOGY  
WASHINGTON, D.C. 20560

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DOCKET NUMBER  
PROPOSED RULE PR-Misc Notice  
Reg Guide

Secretary of the Commission  
US Nuclear Regulatory Commission  
Washington, DC 20555  
Attention: Docketing and Service Branch



Dear Sirs,

I would comment on the Appendix to Draft Regulatory Guide OH 902-  
1 recently issued by the US Nuclear Regulatory Commission. I wholeheartedly concur with the policy of soliciting public comment during the development of a regulatory position, and hope that these comments will be thoughtfully considered.

Words such as "radiation", "hazardous waste", "cancer" and "radiation exposure" are buzz words that carry, to many people in America today, frightening connotations. To eliminate this wide-spread and possibly irrational fear there is a great need to disseminate information concerning the nuclear systems and policies, both military and commercial, in operation in America today.

Yet not only should such information be accurate, it should be fairly presented. Where conflicting scientific theories are involved, or where the data is incomplete, there should be a great effort to make this fact clear. Only in this manner can citizens make the informed decisions upon which this democracy depends.

As stated in the above mentioned Appendix, the main concern to industry workers should be the effects of low dosage rates received over relatively lengthy periods of time. The lack of one universally accepted theory concerning the dangers of low dosage exposures should not deter the dissemination of current theories and the vigorous discussion of the various advantages of each.

In the Appendix, it is stated: "At low dose levels, it is possible that the risk could be zero" (page 11). This is certainly true, just as it is also true that the risk might not be zero. The fact that the risks from low dosage rates are not agreed upon universally is not made sufficiently clear in this Appendix. This problem is further aggravated by the use of studies involving high doses and high dose rates. I would urge a close examination of the Appendix with this fact in mind; it often appears that the scientific community is united on the question of the risks concerning low doses. I believe, however, that this is not the case.

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ACKNOWLEDGED BY CARD. 6/27/80 mdv.

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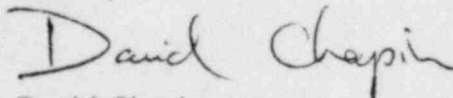
For example, in discussing collective dose (page 16), it is stated: "For a given collective dose, the number of health effects is believed to be the same even if a larger number of people share the dose. Therefore, spreading the dose out may reduce the individual risk, but not that of the population." This is generally believed to be the case at high dosages, where the risk of cancer (or incidence per unit population sample) has been fairly well documented to vary linearly with the individual dose. However, the evidence is still incomplete at lower dosages.

It is true that halving the individual dose will halve the individual risk only if the relationship between risk and dose is linear and has a unit slope. If this is indeed the case, as is believed for high doses, then the collective dose will remain constant regardless of the population size. If, however, the slope is not one, or if the dependence is not linear the collective risk could remain constant, decrease, or even increase as the number of individuals sharing a given dose changes. Thus the section on page 16 is strictly valid only under conditions known to hold at high dosages, and this fact is never stated, much less made amply clear.

Another statement that is strictly true but is subject to various interpretations is that on page 24: "Restricting the worker from additional job exposure during the quarter would have no effect one way or the other on the risk from the 2 rems already received from medical exposure." Though the risk from 2 rems of radiation remains constant whether or not the exposure is occupational or medical, any additional exposure does increase the total dose, and therefore, presumably, the total risk. If one is attempting to keep the total exposure ALARA one should count both medical and occupational exposure together when determining individual dose for any calendar quarter. For this reason, one should also sum the external and internal doses received by a worker.

I would be interested in receiving a copy of the completed report when it becomes available.

Sincerely Yours,



David Chapin  
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Division of Electricity and Modern Physics