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BETHLEHEM STEEL

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PROPOSED RULE PR-Misc Notice
Reg Guide

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Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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USNRC
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Office of the Secretary
Docketing & Service
Branch
mdv

Attention: Docketing and Service Branch

Gentlemen:

Re: Draft Regulatory Guide - Instruction Concerning Risk from Occupational Radiation Exposure, Division 8, Task OH 902-1, May 1980

Bethlehem Steel Corporation is taking this opportunity to submit comments on the referenced document prior to the closing date of July 21, 1980.

As stated in the sections entitled "Introduction" and Regulatory Positions," the information contained in the Appendix of the Draft Regulatory Guide is that which is recommended by the NRC to be presented to workers and supervisors. This being the case, we feel several items in the Appendix are in need of clarification or modification. Bethlehem's suggestions for accomplishing this are set out in detail in the attached comments and we request that serious consideration be given to these suggestions prior to the finalization of the referenced document.

Sincerely yours,

David M. Anderson

David M. Anderson
Corporate Director
Environmental Affairs

Attachment

Acknowledged by card 7/21/80 mdv

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Regarding the U.S. Nuclear Regulatory Commission's
Draft Regulatory Guide on Instruction Concerning
Risk from Occupational Radiation Exposure,
Division 8, Task OH 902-1, May 1980

The comments presented below are set out according to the question numbers listed in the Appendix of the Draft Regulatory Guide. The underlined portions are the suggested changes.

2. The first sentence in the second paragraph of the response to this question should be rewritten as shown below to provide examples of dose levels required to cause the effects listed.

   "The studies mentioned, however, involve levels of radiation exposure that are much higher (e.g. greater than 25 to 100 rems) than those permitted occupationally today (5 rems)."

6. The next to the last sentence of this response should be rewritten as shown below to clarify the point that science is not groping in the dark and waiting for the first bits of information on this matter. Rather, a wealth of data exists which shows no likelihood of increased cancer incidence from low dose irradiation.

   "An increased incidence of cancer has not been observed at low radiation levels (e.g. 5-15 rems per year) from past studies. However, this is an area of continuous research and studies are being performed and the data evaluated. Higher incidence rates of cancer can be produced in laboratory animals by high levels of radiation."

7. The fourth sentence of the first paragraph in this response should be clarified as shown below.

"There is proven evidence that the human body will repair greater than 99 percent of the damage at dose levels encountered occupationally (5 rems per year)."

It is also suggested that the phrase, "in a few people," be added at the end of the last sentence of the next to the last paragraph in this response.

8. It is felt that the response to Question 8 is misleading. The response fails to point out that the cancer risk estimates are extrapolated from high dose effects. While it is convenient to express the risk as "per 1 rem," the actual risk is most likely well below the published numbers. The numbers are, therefore, not averages but actually maxima, and possibly unrealistically high maxima, when photons alone are considered. The first paragraph following Table 1 should be rewritten as shown below.

"To put these estimates (of Table 1) into perspective, we will use the maximum projected incidence of 300 excess cancer cases per million people, each exposed to 1 rem of ionizing radiation. It should be noted that most scientists believe that 300 is a high estimate of risk and should be considered an upper limit. This means that if in a group of 10,000 workers, each receives 1 rem, a maximum of three would be predicted to develop cancer because of that exposure, although the actual number could be more or less than three (including none) simply because of chance. The most likely estimate would be less than three."

It is also important to be continually reminded of the warning expressed by the NCRP concerning the attempt to try to make low dose risk estimates appear to have a high degree of accuracy or reliability. Their position on this matter as it appears in NCRP Publication 43 is presented below.

> "The NCRP continues to hold the view that risk estimates for radiogenic cancers at low doses and low dose rates derived on the basis of linear (proportional) extrapolation from the rising portions of the dose-incidence curves at high doses and high dose rates, as described and discussed in subsequent sections of this report, cannot be expected to provide realistic estimates of the actual risks from low level, low-LET radiations, and have such a high probability of overestimating the actual risk as to be of only marginal value, if any, for purposes of realistic risk-benefit evaluation."

11. Table 2, in its attempt to present estimated life expectancy loss from both acute and chronic causes, is misleading. For example, 5 rems/yr for 30 years is calculated to reduce a person's life expectancy by 150 days. This may be a valid use of reduced life expectancy; however, to make the comparison with a 200 day reduction in life expectancy from an acute event such as an auto accident is not valid.

The comparisons made in Table 3 are even more invalid since death risks are specifically excluded from other environmental hazards such as toxic chemicals, dusts or unusual temperatures. Thus the reduction in life expectancy attributed to radiation would include both acute and chronic exposure while the reduction in life expectancy calculated for various industries only includes acute hazards. For example, the 328 days of life expectancy loss for mining and quarrying appears to include only losses from acute accidents; when in fact, it should also include life expectancy loss from such chronic diseases as black lung, emphysema or chronic lung cancers if it is to be compared with chronic life expectancy loss from radiation exposure.

It is suggested that the last three entries in the table be eliminated or that the days of life expectancy loss from chronic hazards be factored in for all industry types. If the differences were set out just in the narrative, they would be lost to the vast majority of people using this guide because the people will focus only on the table.

In Table 4, the contents of the last sentence in the paragraph preceding Table 4 should be noted below the heading as follows.

"These figures do not include death from possible causes such as exposure to toxic chemicals or radiation."

14. It is felt that this response is misleading. The following should be added as a second sentence.

"At low doses in the range of the occupational dose limits, 5 rems per year, it is impossible to detect any increase in cancer incidence at all. Therefore, the question of dose rate effect has no meaning."

Additionally, the third sentence should be changed as follows.

"Spreading the dose...numbers of people has no real effect on the overall collective risk."

19. The intent of the wording in the last sentence of this response is confusing. The phrase, "...workers who received a measurable dose ..." is used. It is assumed that the number, "1,260,000 workers" refers to only those workers who received a measurable dose and not to all workers who were monitored. Also, it is assumed that the 0.34 rem average refers to only those workers who received a measurable dose. It seems that if one is interested in the true average exposure, the non-detectables would be included in this average. These workers are potentially exposed to radiation but, through good work practices or other reasons, they did not receive a detectable dose. To not include them into the averaging process is misleading.

30. A worker's radiation dose may also be calculated by using area monitoring data and factoring in occupancy times. This is a valid health physics practice and should be presented. The first sentence should be rewritten as follows.

"A worker's radiation dose may be calculated from area monitoring data using factors for the amount of time spent in a radiation field or by wearing radiation-measuring devices."