

THE UNIVERSITY OF MICHIGAN

SCHOOL OF PUBLIC HEALTH

ANN ARBOR, MICHIGAN 48109

Department of Environmental
and Industrial Health

Dr. Margarete Ehrlich
Dosimetry Section, Room C-210
National Bureau of Standards
Washington D.C. 20234

June 10, 1980

Dear Greta:

The purpose of this letter is to discuss two hot items concerning the Standard: choice of NBS X-ray techniques and choice of C_x values.

Choice of X-ray Techniques

In Eric Clarke's letter of May 23, he listed several techniques together with his preferences and mine. Eric and I both agree that the number of techniques specified in the Standard can be limited to five, and that four of them should be L-I, L-K, MFG, and MFI. We disagree on whether the fifth technique should be L-G ($\bar{E} = 19.7$ keV) or MFK ($\bar{E} = 91.1$ keV). I would like to argue for L-G and against MFK for two reasons. First, the average energy, effective energy and spectral shape of MFK is not significantly different from those of MFI. My experience with film and TL dosimeters suggests that their energy response flattens at or just beyond MFI. Thus, if MFI and cesium-137 are included, no new information will be gained by including MFK in the Standard.

Second, even though few people find themselves standing in a primary beam similar to L-G, I suspect it is a good representation of scattered and attenuated radiation to which most radiation workers are exposed. Also, it represents a reasonable challenge to a dosimetry processor. I feel very strongly that we should change our minimum energy from 20 keV back to 15 keV where it was before the Denver meeting, and that we should include L-G as one of the five X-ray techniques.

Choice of C_x values

We now have three sets of C_x values: Oak Ridge, GSF/PTB, and BNW. In some cases, the values differ significantly among themselves. I don't know which is the best set to use (if any), but I do feel very strongly that the C_x values published in the final version of the Standard should be defensible in a court of law, which is exactly what will be required eventually. The C_x values will have a profound impact on the doses assigned to radiation workers throughout the United States and, therefore, will not go unchallenged. If the HPSSC adopts the Standard without being able to defend the C_x values, they will jeopardize the credibility of the Standard and the Health Physics Society. Our committee should not let the HPSSC approve the Standard until we are reasonably sure that the C_x values will not be changed. Related to this issue is the fact that some processors may have to change the design of their dosimeters to accommodate the terminology of the Standard. If such items as the C_x values are changed a year or so after the Standard has been adopted, these processors may join the labor unions, individual radiation workers, and public interest

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groups that will eventually sue everyone connected with a dosimetry testing program

Sincerely,

Phil

Phillip Plato

cc: Eric Clarke

PP/bs