

Chevron



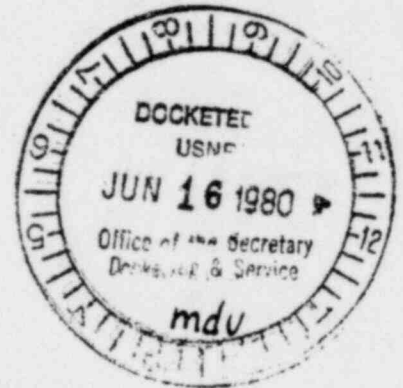
Chevron Research Company

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DOCKET NUMBER
PROPOSED RULE PR-Misc Notice
Reg Guide

Comment on Draft
Regulatory Guide



Secretary of the Commission
Attention: Docketing and Service Branch
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

I wish to comment on the draft regulatory guide, Measurement of Radiation Levels on Surfaces of Packages of Radioactive Materials, December 1979, received by our library on June 2, 1980, well past the closing date of March 25, 1980, for comments.

The purpose of the guide is to provide assistance for compliance to a difficult measurement. The difficulty lies in the definition of the surface dose rate, and this kind of problem arises when absolute values are incorporated into regulations when the means to make the measurements are inexact.

Perhaps the simplest solution would be to redefine the surface dose rate as that measured when the Geiger tube of a survey meter (or any other detector with an effective diameter less than 1 inch) is held in contact with the surface of the package. These Geiger tubes typically have dimensions of .5 to 0.75 inches diameter and lengths of ca. 3 inches but fit within protective shields about 1-inch diameter. The error as shown in Table 1, page 3, for the smallest package is 20%, but this is not outside the quoted nonlinearity of commercial survey meters plus the nonlinearity of Geiger tube response versus gamma-ray energy (see for example, pages 198 and 199, Shapiro, Radiation Protection, Harvard University Press, 1972) plus the assumption that the radioactivity is contained as a point source.

The use of a 3-inch diameter ionization detector for surface measurements of a 4-inch package is so inappropriate that it

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should not be acceptable. Perhaps its use should be limited only to packages 20 inches or greater in size. A special case is made for radiographic sources (Table 2) on the basis that their shielding is unique and that they behave more like line or volume sources than point sources, and hence, do not obey the square law. However, any other heavily shielded quantity of radioactivity in a small package also has considerable radiation scattering within the shielding and the square law is only an approximation at short distances.

If the redefinition of surface dose rate proposed above were accepted, Tables 1 and 2 and Appendix A could all be eliminated.

An alternative to the above proposal to handle those individuals who must rely on ionization detectors or for those questionable cases where the survey meter reading hovers around the 200 mr/hr limit and the surveying person is unsure whether his package qualifies. The surface reading could be calculated by the square law from the transport index (3 feet from the surface of the package) or from another closer location, say, where the dose rate is 50 to 100 mr/hr. At any of these distances, the detector size becomes immaterial, the source becomes more like a point source, and the square law is more valid.

I also wish to comment on another part of Paragraph 20.205, specifically 20.205 (b)(1). This additional comment is not appropriate to the draft guide but is also a point upon which guidance is needed.

Paragraph 20.205 (b)(1) requires that certain packages must be monitored for external surface contamination no later than 18 hours after receipt if received after normal working hours. It is not realistic to expect that packages delivered very late Friday afternoon will be monitored either that evening or by Saturday morning on an overtime work basis. The receiving dock personnel are not qualified, and the professional individual, who has access to the equipment necessary to detect and quantify contamination as small as 0.01 microcuries, may be unavailable over a weekend. Waiting for a Monday morning adds another 48 hours, but it would seem reasonable to make this an exception for the limited number of instances that fall into late Friday delivery.

Very truly yours,

Bernard A. Fries
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BAF:jmm