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Bill M. Morris  
56858256 1/18/92  
Northern States Power Company

Prairie Island Nuclear Generating Plant

1717 Wakonade Dr East  
Welch, Minnesota 55081

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Branch Chief, Mr. D.L. Meyer  
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Dear Mr. Meyer,

Thank you for the opportunity to comment on the Draft Reg Guide DG-8005, Assessing External Doses from Airborne Radioactive Materials.

#### Section C.4

On page 3 and 4 it states that the deep and shallow doses from exposure to isotopes in Table 1 should not be calculated from concentration measurements but should be ESTIMATED from surveys instruments or personnel dosimeters. I have two problems with this method.

Firstly, I disagree with the statement that "airborne concentration measurements are unreliable and the radioactive decay correction errors could be large" for Argon-41 and Fluorine-18.

Most sample methods for these two isotopes rely on purging a container about 5 to 10 times to ensure a representative sample is obtained. Our method takes 10 minutes and has 25 sample volume turn overs in that time and we have a LLD (Lower Limit of Detection) of about 2 E-8 uCi/cc (dose of less than 0.1 mrem). Typically, our samples are counted within 5 minutes after the sample is taken. Our samples are automatically decayed corrected between sampling time and counting time and also decay corrected for decay during the counting time. Our total error for Ar-41 and Fl-18 is less than 10 percent which is the error associated with portable survey meters.

Would it be more appropriate to specify a time limit from the start of the grab sample to the end of the counting time to ensure an accurate sample is taken for Ar-41 and Fl-18?

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The second reason for feeling that the survey method is inaccurate, especially for Ar-41 and Fl-18, has to do with mixtures of radioactive gases. Typical power reactor containment or drywell environments are going to have a mixture of radioactive gases and the concentration of each isotope is going to vary. Therefore, the correction factor to be applied to a survey meter for determining shallow dose equivalent is going to vary with the amount of each isotope present in the atmosphere. The only way to know what correction factor to be applied is to know the concentration of each isotope which would require a grab sample or a portable gamma spectrometer or to have an instrument that would determine the true dose rate to the skin. This meter is not available. The survey for beta radiation can have errors of greater than 100%. Air sampling is much more accurate than survey meters.

Respectfully submitted,



Al Johnson  
Rad Prot Supv