

*J. Noggle (R1)*

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**Date:** Wed, Jan 17, 2007 4:43 PM  
**Subject:** Rg 1.109 dose calc on Roseton fish

Jim....

This simple eval does not account or discuss any of the finer elements of error propagation, critical level, environmental BKGD or constants for non-random error, and other improvements we are discussing with labs... but simply chugging through the RG 1.109 model I get:

> With 25 pCi/kg of Sr-90 in fish, and ONLY looking at fish, we just  
 > multiply this by RG 1.109 ingestion dose factors in mrem/pCi, and  
 > usage factors, in kg/yr.

>  
 > /----RG 1.109 = ODCM-----\  
 > Field mrem/pCi kg/yr  
 > expected human dose term, annually,  
 > conc dose factor usage factor to  
 > the BONE, critical organ.

>  
 > Adult 25 \* 7.58E-3 \* 21 = 3.98 mrem in a year  
 > 39.8 % \  
 > Teen 25 \* 8.30E-3 \* 16 = 3.32 mrem in a year  
 > 33.2 % Annual Limit  
 > Child 25 \* 1.70E-2 \* 6.9 = 2.93 mrem in a year  
 > 29.3 % /  
 > Infant 25 \* 1.85E-2 \* 0 = 0

>  
 > (IPEC uses these numbers in the ODCM... standard RG 1.109  
 > values, nothing site specific here....)

> This indicates to me that the 25 pCi/kg at Roseton, if consumed like  
 > our ODCM says for our critical receptor, would result in less than 40%  
 > of the annual limits.

>  
 > Or we could say that about 62.5 pCi/kg = the 10CFR50 human dose  
 > limit for bone dose of 10 mrem.

>  
 > Clearly all the other assumptions of the model make this very  
 > conservative, but it's a starting point.

I hope this is in the ball field of what you were looking  
 for.... We have a lot more work to do with the lab, including sending  
 some blanks, splits, spikes, from OUR chem lab and working out an  
 INTERLAB program form someone. Adding some degree of Reg Guide 4.15 to  
 GW is in our corrective action program due in March, but of course we  
 are working on it now.

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