

TO: Dr. Hardin B. Jones
FROM: Howard G. Parker
SUBJECT: Question for Miss Theony Valcana's Master's degree examination in Bioradiology.

Open book question (if this is undesirable in connection with the rest of the exam, administer this question without reference books and let me know which way it was done).

Outline the parameters, physical and biological that would go into a calculation of (1) whole-body and (2) thyroid doses to (a) pregnant mother and (b) her fetus due to I^{131} from explosion of a nuclear weapon at a nearby test site.

Begin with the weapon itself and trace through to actual delivery of the doses, trying to be as specific as possible. Though this will be hard to do for some parameters, once the material has entered the mother's body please be very specific, and give at least order of magnitude numbers for the parameters.

(The more definite you can be about what parts of the calculation are well understood now, with representative calculations, the better. And where the variability is very high and prediction difficult, explain why. If you show specific calculations or equations, explain the assumptions on which they are based, show reasonable values for the parameters, what sort of experiments they are based on, and don't worry about detailed numerical results.)

Howard G. Parker

HGP/mcw

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