September 5, 2000

1. Below is a table containing the dose conversion factors you requested. MACCS calculates the early fatality risk as a combination of the dose to the lungs and red marrow.

2. Iodine is important for reactor accidents, because of its high inventory in the core and its high thyroid dose conversion factor. Table 4.1 of NUREG/CR-4982 shows the following inventories (in Curies) for an equilibrium core for Millstone 1:

I-131	4.74E7
Ru-106	2.48E7
Cs-137	5.84E6

3. One of your health physicists (e.g., Steve LaVie) might be able to provide further insight into the importance of iodine.

Dose Conversion Factors for I-131, Ru-106, and Cs-137*

	organ	cloud-shine (Sv sec/ Bq m^3)	ground-shine (Sv sec/ Bq m^2)	inhalation/ acute (Sv/Bq)	inhalation/ chronic (Sv/Bq)	ingestion (Sv/Bq)
I-131	lungs	1.41E-14	2.97E-16	4.54E-10	6.57E-10	1.02E-10
	red marrow	1.45E-14	3.06E-16	3.52E-11	6.26E-11	9.44E-11
Ru-106	lungs	7.90E-15	1.58E-16	2.09E-08	1.04E-06	1.44E-09
	red marrow	8.05E-15	1.61E-16	8.74E-11	1.77E-09	1.48E-09
Cs-137	lungs	2.18E-14	4.35E-16	8.29E-10	8.80E-09	1.27E-08
	red marrow	2.22E-14	4.41E-16	5.63E-10	8.30E-09	1.32E-08
Ratio of Ru-106 to Cs-137	lungs	.4	.4	25	118	.1
	red marrow	.4	.4	.2	.2	.1

*The dose conversion factors are from the MACCS input file DOSDATA.INP.

Acute Lung

$$\frac{Ru\text{-}106}{I\text{-}131} = \frac{2.1E\text{-}08}{4.5E\text{-}10} = 47$$

$$\frac{1.00E\text{-}10}{6.57E\text{-}10}$$

$$\frac{10.4E\text{-}3}{6.\text{--}}$$

$$\frac{17.7E\text{-}10}{6.3E\text{-}11}$$

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