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ERRATA SHEET

for

NUREG/CR-2612
ORNL/TM-8099

VARIABILITY IN DOSE ESTIMATES ASSOCIATED WITH THE
FOOD CHAIN TRANSPORT AND INGESTION OF SELECTED RADIONUCLIDES

Prepared by

Oak Ridge National Laboratory

for the

U.S. Nuclear Regulatory Commission

Please make the following corrections. See attached List of Revisions
for insertions and deletions.

DIVISION OF TECHNICAL INFORMATION
AND
DOCUMENT CONTROL

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LIST OF REVISIONS

to

Variability in Dose Estimates Associated with the Food Chain
Transport and Ingestion of Selected Radionuclides;
NUREG/CR-2612; ORNL/TM-8099; by F. O. Hoffman,
R. H. Gardner, and K. F. Eckerman

Please make the following changes in your copy of the above manuscript to conform with changes in input data used in the analysis.

Page vii, line 16: Change 24th to 21st.

Page 16, lines 2 and 8, column 10 of Table 1: Change $0.28 \text{ m}^2/\text{kg}$ to $0.10 \text{ m}^2/\text{kg}$.

Page 17, line 3, column 10 of Table 1: Change footnote i to footnote h.

Page 18, lines 6 and 8, column 10 of Table 2: Change 4×10^{-3} to 1×10^{-2} .

Page 18, line 10, column 10 of Table 2: Change 1.5×10^{-2} to 4×10^{-2} .

Page 19, line 6, column 10 of Table 2: Change $4.4 \times 10^{-3} \text{ d/kg}$ to $4.0 \times 10^{-3} \text{ d/kg}$.

Pages 24 and 25: Replace with new Tables 3 and 4 (enclosed).

Page 28, line 9, column 2 of Table 6: Change U_n to U_m .

Page 33, line 12: Change 99.9th to 99th.

Page 33, line 13: Change 99th to 95th.

Pages 34 and 35: Replace with new Tables 7 and 8 (enclosed).

Page 36: Replace with new page 36 (enclosed).

Page 47, line 6: Change the words "at least" to "about."

Table 3. Variability in predicted dose equivalents to the bone surface for ^{90}Sr ingested via selected food chain pathways

Pathway	X_m^a	s_g^b	NRC ^c (percentile) ^d	Method ^e
Water-Fish-Man (mrem per pCi/l)	0.25	7.2	4.8 (0.93)	A
Deposition-Leafy Vegetables- Man (mrem per pCi/m ² ·d)	0.27	3.0	1.1 (0.90)	B
Deposition-Non-leafy Vegetables-Man (mrem per pCi/m ² ·d)	0.34	3.7	8.8 (>0.99)	B
Deposition-Pasture-Milk- Man (mrem per pCi/m ² ·d)	0.15	3.7	0.43 (0.79)	B
Deposition-Pasture-Meat- Man (mrem per pCi/m ² ·d)	0.055	4.2	0.13 (0.73)	B
Deposition-All Terrestrial Pathways-Man (mrem per pCi/m ² ·d)	1.2	2.4	10.3 (>0.99)	B

^aGeometric mean.

^bGeometric standard deviation, unitless.

^cPredicted dose equivalent for total bone using values in Regulatory Guide 1.109 (USNRC, 1977).

^dCumulative probability associated with NRC prediction.

^eExplanation of method used for error propagation of model parameters: A = lognormal statistics (Section 2.2.1); B = Monte Carlo computer techniques (Section 2.2.2).

Table 4. Variability in predicted dose equivalents to the whole body for ^{137}Cs ingested via selected food chain pathways

Pathway	\bar{x}_m^a	s_g^b	NRC ^c (percentile) ^d	Method ^e
Water-Fish-Man (mrem per pCi/L)	0.67	3.3	3.3 (0.91)	A
Deposition-Leafy Vegetables- Man (mrem per pCi/m ² ·d)	1.4×10^{-3}	2.4	1.1×10^{-2} (>0.99)	B
Deposition-Non-leafy Vegetables-Man (mrem per pCi/m ² ·d)	3.4×10^{-3}	3.3	8.7×10^{-2} (>0.99)	B
Deposition-Pasture-Milk- Man (mrem per pCi/m ² ·d)	8.2×10^{-3}	3.2	6.4×10^{-2} (0.96)	B
Deposition-Pasture-Meat- Man (mrem per pCi/m ² ·d)	2.1×10^{-2}	2.9	9.0×10^{-3} (0.21)	B
Deposition-All Terrestrial Pathways-Man (mrem per pCi/m ² ·d)	4.4×10^{-2}	2.2	0.17 (0.96)	B

^aGeometric mean.

^bGeometric standard deviation, unitless.

^cPredicted dose equivalent for total bone using values in Regulatory Guide 1.109 (USNRC, 1977).

^dCumulative probability associated with NRC prediction.

^eExplanation of method used for error propagation of model parameters: A = lognormal statistics (Section 2.2.1); B = Monte Carlo computer techniques (Section 2.2.2).

Table 7. Variability in predicted ^{90}Sr food concentrations for selected terrestrial pathways

Pathway	X_m^a	s_g^b	NRC ^c (percentile) ^d
Deposition-Leafy Vegetables [Eq. (8)] ^e	9.0 pCi/kg	2.6	2.2 pCi/kg (0.07)
Deposition-Non-leafy Vegetables [Eq. (8)]	4.5 pCi/kg	2.7	2.2 pCi/kg (0.24)
Deposition-Pasture-Milk [Eq. (8) and (9)]	0.96 pCi/L	2.7	0.18 pCi/L (0.05)
Deposition-Pasture-Meat [Eq. (8) and (10)]	0.35 pCi/kg	3.7	0.15 pCi/kg (0.26)

^aGeometric mean.

^bGeometric standard deviation, unitless.

^cPredicted food concentrations using values in Regulatory Guide 1.109 (USNRC, 1977).

^dCumulative probability associated with NRC prediction.

^eFood concentrations resulting from a constant deposition of 1 pCi/m²·d over a period of 15 years; error propagation performed using Monte Carlo computer techniques (Section 2.2.2).

Table 8. Variability in predicted ^{137}Sr food concentrations for selected terrestrial pathways

Pathway	X_m^a	s_g^b	NRC ^c (percentile) ^d
Deposition-Leafy Vegetables [Eq. (8)] ^e	2.1 pCi/kg	2.0	2.1 pCi/kg (0.50)
Deposition-Non-leafy Vegetables [Eq. (8)]	2.1 pCi/kg	2.4	2.1 pCi/kg (0.50)
Deposition-Pasture-Milk [Eq. (8) and (9)]	2.4 pCi/L	2.2	2.6 pCi/L (0.54)
Deposition-Pasture-Meat [Eq. (8) and (10)]	6.2 pCi/kg	2.4	1.0 pCi/kg (0.02)

^aGeometric mean.

^bGeometric standard deviation, unitless.

^cPredicted food concentrations using values in Regulatory Guide 1.109 (USNRC, 1977).

^dCumulative probability associated with NRC prediction.

^eFood concentrations resulting from a constant deposition of 1 pCi/m²·d over a period of 15 years; error propagation performed using Monte Carlo computer techniques (Section 2.2.2).

predictions of dose. The most pronounced indication of potential NRC underestimation of food concentrations is for the prediction of ^{90}Sr in milk and leafy vegetables, and for ^{137}Cs in meat. The predicted NRC concentrations for ^{90}Sr in leafy vegetables and milk, and for ^{137}Cs in meat are factors of 4.1, 5.3, and 6.2, respectively, lower than the predicted geometric mean. These concentrations occur respectively at the 7th, 5th, and 2nd cumulative percentile of the distributions of food concentrations produced using Monte Carlo computer techniques.