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ERRATA FOR
RADIATION SHIELDING

J. Kenneth Shultis and Richard E. Faw
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Location (Discoverer)	**As Is**	**Change to**
p. 39, middle row of table, value for ϑ_s; (Bielajew)	$\pi/2$	$\tan^{-1} A$
p. 39, Eq. (3.44); (Tsoulfanidis)	This expression simplifies. To the righthand side add "$= E$"	
p. 44, 4 lines after Eq. (3.56)	K-shell electron,	K-shell electron.
p. 61, line 7, Sec. 3.6	...of secondary...	...that produce secondary...
p. 67, Fig. 3.12, y-axis label	(MeV cm^2 g^{-1})	(MeV g cm^{-2})
p. 67, caption Fig. 3.12	ρL	L/ρ
p. 67, 3rd line	in terms of Δ ...	in terms of E_{cut} ...
p. 70, Fig. 3.15 (R. Mayo)	labels "ELECTRONS"/"PROTONS"	switch these labels
p. 70, Fig. 3.15, y-axis label	CSDA range	CSDS mass-thickness range $\rho\Lambda$
p. 71, 2nd line in Table caption	(cm^2/g)	(g/cm^2)
p. 80, last line	10^{-7} s	10^{-14} s
p. 81, 2nd line of last paragraph	...important isotopes...	...important isotope...
p. 84, Table 4.3 (Solomon)	table labels "T_w E_w"	switch to "E_w T_w"
p. 88, 5th line after Table	...dominant...	...dominate...
p. 92, last sentence of Sec. 4.1.5 (Knoll)	...up to 10^9 14-MeV neutrons...	...up to 10^{11} 14-MeV neutrons...
p. 97, 2 lines after Eq. (4.11) (Nixon)	date	data
p. 112, Table 4.11, row 8, col. 2	$L_{\beta 1}$	$K_{\beta 1}$
p. 150, 6th entry in Table 5.5	0–100 keV	10–100 keV
p. 154, Problem 5, line 2	...less that...	...less than...
p. 162, line before Eq. (6.24) (Garland)	Eq. (6.12)	Eq. (6.11)
p. 172, Fig. 6.7 caption (Garland)	...radius a and height b...	... height a and radious b
p. 174, footnote (Garland)	Section 5.9.2	Section 5.8.2

(cont.)

Location (Discoverer)	**As Is**	**Change to**
p. 176, line above Eq. (6.83) (Garland)	If the medium is uniform in composition, but of variable density, the point kernel can be approximated as	If the medium is heterogeneous, the point kernel can be writted as
p. 188, line after Eq. (6.112) (Garland)	$\mathcal{G}^o(r) = e^{-\mu r}/(4\pi r^2)$	$\mathcal{G}^o(r) = \mathcal{R}e^{-\mu r}/(4\pi r^2)$
p. 188, line after Eq. (6.114) (Garland)	Eq. (6.32)	Eq. (6.31)
p. 212, Problem 24	$\dfrac{L}{4R}, \quad r \geq L$	$\dfrac{L}{2R}, \quad r \geq L$
p. 221 (Garland)	Add to the end of Eq. (7.4) the condition $\sum_{i=1}^{I} A_i = 1$	
p. 221, line after Eq. (7.27) (Garland)	Tables E.1	Tables E.10
p. 232, Eq. (7.29)	$D(P) =$	$D^o(P) =$
p. 240/241, Eqs. (7.54) and (7.55)	$...\sigma_{ce}(E_o, \vartheta_s)...$	$...\sigma_{ce}(E_o, \vartheta_s)/Z...$
p. 245, Eq. (7.60)	$\int_0^1 d\omega\ \Phi_o(\omega)$	$2\pi \int_0^1 d\omega\ \Phi_o(\omega)$
p. 246, 2 lines above Eq. (7.63)	$\omega_o = \sqrt{1+\beta^2}$	$\omega_o = 1/\sqrt{1+\beta^2}$
p. 247, first line	Eq. (7.56)	Eq. (7.64)
p. 247, Eq. (7.67); (Khan)	$1-(1+\beta)^{m/2}$	$1-(1+\beta)^{-m/2}$
p. 248, Eq. (7.71)	$\int_o^{\omega_o}$	$\int_{\omega_o}^{1}$
p. 249, Fig. 7.21; (Khan)	Wall-reflection components in this figure are incorrect — replace by revised figure on next page	
p. 250, line after Eq. (7.75) (Khan)	$\vartheta_1 = \tan^{-1}[\beta/u]$ and $\vartheta_2 = \tan^{-1}[\beta/(1-u)]$	$\vartheta_1 = \cot^{-1}[\beta/u]$ and $\vartheta_2 = \cot^{-1}[\beta/(1-u)]$
p. 254, nmerator of Eq. (7.87)	$(\mu' - \mu)v\delta$	$-(\mu' - \mu)v\delta$
p. 255, Fig. 7.24	reverse curve labels from $\mathbf{v} = \mathbf{1.0}, \mathbf{0.8}, ..., \mathbf{0.0}$ to $\mathbf{v} = \mathbf{0.0}, \mathbf{0.2}, ..., \mathbf{1.0}$	
p. 259, Eq. (7.98) (Nixon)	$B(E', \lambda)$	$B(E, \lambda)$
p. 264, Problem 1	point source	point source emitting a 1-MeV photon per decay
p. 265, 3rd line Problem 9	...is mR h^{-1}...	...is 1 mR h^{-1}...
p. 267, Problem 17(a) and 17(c) (Nixon)	0.667-	0.662-
p. 276, Fig. 8.3 caption (Garland)	Eqs. (8.4) and (8.7)	Eqs. (8.6) and (8.9)

(cont.)

Location (Discoverer)	**As Is**	**Change to**
p. 277, first paragraph (Garland)	...fluence falls of...	...fluence falls off...
p. 282, Eq. (8.23) (Garland)	$A^{1.3}$	$A^{1/3}$
p 283, Eq. (8.24) (Garland)	$1=1$	$i=1$
p. 283, last sentence (Garland)	...hydrogen dose $D(r)$...	...hydrogen dose $D_{\mathrm{H}}(r)$...
p. 293, Table 8.7, heading	μ_a (cm)	μ_a (cm^{-1})
p. 309, Fig. 8.13 caption (Garland)	NBS Type 03	NBS Type 04
p. 311, Fig. 8.15 caption (Garland)	NBS Type 03	NBS Type 04
p. 318, 4 lines from bottom (Garland)	...must be correct...	... must be corrected...
p. 323, Eq. (8.109)	$(\rho/\rho_o)^2$	$\kappa(\rho/\rho_o)^2$
p. 331, Prob. 18	^{252}U	^{252}Cf
p. 335, 4 lines above Eq. (9.1)	$\sqrt{E^2+2m_ec^2}$	$\sqrt{E^2+2m_ec^2}/c$
p. 338, Fig. 9.3, x-axis caption (Hagler)	Dimensional distance	Dimensionless distance
pp. 339–341; (Kase)	In Section 9.3.2, references in the text to Fig. 1.x or Table 1.y should be Fig. 9.x or Table 9.y. There are thirteen occurrences.	
p. 360, first line of Eq. (10.11)	$\phi(x,y,z,\vartheta,\psi)$	$\phi(x,y,z,E,\vartheta,\psi)$
p. 367, line after Eq. (10.31)	Thompson	Thomson
p. 385, Eq. (10.101)	$\ldots\mu_s(\mathbf{r},E'\to E,\mathbf{\Omega}'\to\mathbf{\Omega})W(E)\ldots$	$\ldots\mu_s(\mathbf{r},E'\to E,\mathbf{\Omega}'\to\mathbf{\Omega})W(E')\ldots$
p. 406, Eq. (10.160)	$(a_i+1)^2$	$(A_i+1)^2$
p. 406, line after Eq. (10.160); (Carron)	$(a_iE'_m)$	$(A_iE'_m)$
p. 407, Prob. 16, 1st equation	$\frac{\mu_s}{4\pi}$ and $\frac{\mu_s}{2}$	$\frac{\mu_s}{4\pi\omega_o}$ and $\frac{\mu_s}{2\omega_o}$
p. 407, Prob. 16, 2nd equation	$\frac{\omega_o}{\omega+\omega_o}H(\kappa,\omega)H(\kappa,\omega_o)$	$\frac{1}{\lvert\omega\rvert+\omega_o}H(\kappa,\lvert\omega\rvert)H(\kappa,\omega_o)$
p. 419, line before Eq. (11.24)	$\sin\vartheta'\sin\psi'$	$\sin\vartheta'\cos\psi'$
p. 432, Table A.3	10^{18} exa G	10^{18} exa E
p. 433, Eq. (B.8) (Hagler)	$e^{b\sec x}$	$e^{-b\sec x}$
p. 447, Table C.1, col. 2	abundances: ^{6}Li 92.5, ^{7}Li 7.5	abundances: ^{6}Li 7.5, ^{7}Li 92.5
p. 454, Table heading	Iron ($Z=82$)	Iron ($Z=26$)
p. 507, Table G.3, col. 2, row 9 (Jenquin)	1.573(+01)	1.573(−01)

Replacement Figure:

Figure 7-12 is incorrect. The corrected figure is shown below.

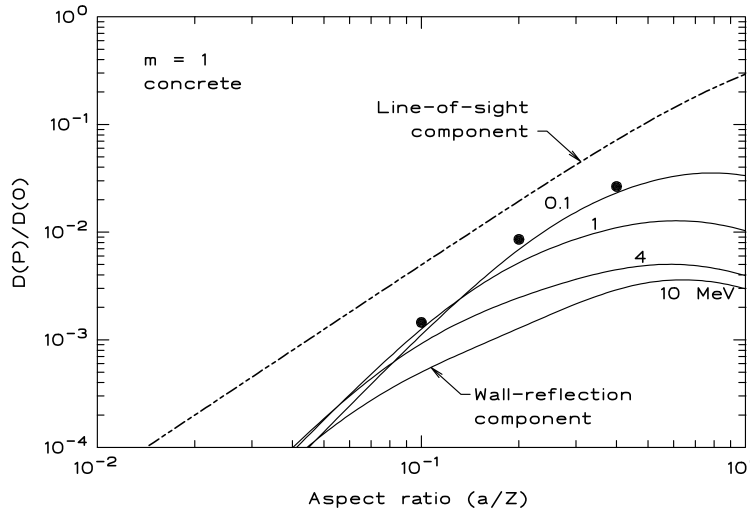

Figure 7.21. Line-of-sight and single wall-reflection component for photons incident with isotropic fluence on a straight cylindrical duct in a concrete wall. The independent variable is β, the aspect ratio, and the parameter is the photon energy. The data points represent the multiple-reflection component for a 0.1-MeV equivalent point source at the entry of a cylindrical duct in a 2-m thick concrete wall, computed using the MCNP Monte Carlo radiation-transport computer code.

Clarifications:

1. Page 449 (Table C.3) and page 450 (Table C.4):
   The data in these tables are for only resolved capture gamma photons and do not include contributions from the *continuum* or unresolved photons. For some elements, notably cadmium, the contribution from unresolved photons can exceed that from the resolved data. Data that include both resolved and unresolved capture gamma photons are provided by V.J. Orphan, N.C. Rasmussen, and T.L. Harper, *Line and Continuum Gamma-Ray Yields from Thermal Neutron Capture in 75 Elements*, Report GA-10248, Gulf General Atomic, Inc., San Diego, CA, 1970. A short summary table based on these data is given in Table A3.9 in A.B. Chilton, J.K. Shultis, and R.E. Faw, *Principles of Radiation Shielding*, Prentice Hall, Englewood Cliffs, NJ, 1984

Correction for Table C.6, p. 456:

The data for lithium are incorrect (they are a repeat of the helium data). The correct data are as follows.

E (MeV)	Lithium ($Z = 3$)		
	μ/ρ	μ_{tr}/ρ	μ_{en}/ρ
0.01	2.647−1	1.387−1	1.387−1
0.015	1.774−1	3.910−2	3.910−2
0.02	1.608−1	1.885−2	1.885−2
0.03	1.524−1	1.138−2	1.138−2
0.04	1.481−1	1.131−2	1.131−2
0.05	1.443−1	1.237−2	1.237−2
0.06	1.406−1	1.361−2	1.361−2
0.08	1.337−1	1.588−2	1.588−2
0.10	1.277−1	1.776−2	1.776−2
0.15	1.152−1	2.099−2	2.098−2
0.20	1.057−1	2.290−2	2.290−2
0.30	9.197−2	2.482−2	2.481−2
0.40	8.241−2	2.553−2	2.552−2
0.50	7.527−2	2.571−2	2.569−2
0.60	6.964−2	2.560−2	2.559−2
0.80	6.119−2	2.501−2	2.499−2
1.00	5.501−2	2.421−2	2.419−2
1.25	4.920−2	2.315−2	2.312−2
1.50	4.475−2	2.213−2	2.210−2
2.00	3.829−2	2.032−2	2.028−2
3.00	3.042−2	1.760−2	1.753−2
4.00	2.572−2	1.571−2	1.561−2
5.00	2.257−2	1.433−2	1.422−2
6.00	2.030−2	1.330−2	1.316−2
8.00	1.725−2	1.184−2	1.167−2
10.00	1.529−2	1.088−2	1.066−2
15.00	1.252−2	9.482−3	9.182−3
20.00	1.109−2	8.766−3	8.385−3
30.00	9.687−3	8.097−3	7.564−3
40.00	9.034−3	7.822−3	7.148−3
50.00	8.683−3	7.702−3	6.892−3
60.00	8.481−3	7.656−3	6.715−3
80.00	8.289−3	7.662−3	6.471−3
100.0	8.214−3	7.708−3	6.283−3

Update of Web Addresses:

Since the book's publication, several of the organizations mentioned in Section 1.2 (page 7) have changed their names or web addresses. At the moment, Section 1.2 should read as follows.

1.2 RADIATION SHIELDING INSTITUTIONS

An institution of enormous benefit to the radiation shielding community is the Radiation Safety Information Computational Center (RSICC) at Oak Ridge National Laboratory. Until a few years ago, this Center was named the Radiation Shielding Information Center (RSIC). This center maintains a comprehensive collection of literature, computer programs, and data libraries contributed by shielding specialists from around the world. Throughout this book, there are references to many codes and data libraries available through RSIC (or now RSICC), and this is the first place a shielding analyst should contact to obtain a particular code or data library. RSICC may be addressed at P.O. Box 2008, Oak Ridge National Laboratory, Oak Ridge, TN 37831-6362, and can be reached through the world wide web (www) at URL `http://www-rsicc.ornl.gov/rsic.html`. Other important institutions providing shielding information are:

- National Nuclear Data Center, Bldg. 197D, Brookhaven National Laboratory, Upton, NY 11973-5000. Provides basic cross-section and nuclear data through the internet at the www URL `http://www.nndc.bnl.gov`.

- International Atomic Energy Agency, P.O. Box 100, A-1400 Vienna, Austria. Provides many publications and, through its Nuclear Data Section, provides basic nuclear data and reports. The Nuclear Data Section may be reached through the internet at IAEA's www URL `http://www.iaea.or.at`.

- OECD Nuclear Energy Agency Data Bank, 12, boulevard des Iles, 92130, Issy-les-Moulineaux, France. Provides nuclear data and other shielding information through the Data Bank. The internet address is the www URL `http://www.nea.fr/html/databank/`.

- National Institute of Standards and Technology, US Dept. of Commerce, Gaithersburg, MD 20899-0001, through its Physics Laboratory issues reports, programs and nuclear and atomic data. Reachable through the www at URL `http://physics.nist.gov`.

- National Council on Radiation Protection and Measurements (NCRP), at 7910 Woodmont Avenue, Suite 800, Bethesda, MD 20814-3095, issues various guidelines and recommendations for the United States. It may be reached through the internet at `http://www.ncrp.com`.

- International Commission on Radiation Units and Measurements (ICRU), at 7910 Woodmont Avenue, Suite 800, Bethesda, MD 20814-3095, issues international shielding and dosimetry guidelines and recommendations. This organization may be reached at www URL `http:`
`users.erols.com/icru/index.htm`).

- The German Institute of Radiation Protection, an institute of the Forschungszentrum für Umvelt und Gesundheit (GSF), provides shielding and dosimetry reports for Germany. It may be reached at Ingolstädter Landstraße 1, D-85764 Neuherberg, Germany, or at the www URL `http:`
`www.gsf.de/englischhtml`.

- National Radiological Protection Board, Chilton, Didcot, Oxon OX11 0RQ, England. Provides shielding and dosimetry reports for the United Kingdom. It may be reached at `http:`
`www.nrpb.uk`.

- Radiation Protection and Shielding Division of the American Nuclear Society, 555 North Kensington Avenue, La Grange Park, IL 60526 (internet `www.ans.org/main.html`). Provides shielding standards, conference proceedings, and journals. See the www URL `http://www-rsic.ornl.gov/rspd.html`.

- International Commission on Radiological Protection (ICRP), SE-171 16 Stockholm, Sweden, publishes international shielding and radiological guidelines and recommendations. It mat be reached through the internet at URL `http:`
`www.icrp.org`.

- Health Physics Society, 1313 Dolley Madison Boulevard, Suite 402, McLean, VA 22101. It issues dosimetry standards and the *Health Physics* journal, and may be reached through the internet at `http:`
`www.hps.org`.