

M-263

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Formerly Utilized Sites Remedial Action Program (FUSRAP)

ADMINISTRATIVE RECORD

for Maywood, New Jersey



U.S. Department of Energy



Department of Energy

Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831— 8723

July 29, 1993

Ms. Carol Connell
Agency for Toxic Substances Disease Registry
Executive Park, Building 33
1600 Clifton Road, E-56
Atlanta, Georgia 30333

Dear Ms. Connell:

MAYWOOD SITE -- BASELINE RISK ASSESSMENT - TRANSMITTAL OF ERRATA SHEET

The purpose of this letter is to provide to you a copy of the errata sheet for the final Baseline Risk Assessment for the Maywood site. This errata sheet identifies and corrects an error that was uncovered in the Baseline Risk Assessment after it had been placed in the administrative record file in April 1993. The error occurred when the actual gamma radiation measurements taken indoors at Maywood property unit 7H were entered into the database as outdoor measurements, and vice-versa. This resulted in an overestimation of the risk present at this property unit, as reported in the final Baseline Risk Assessment.

The errata sheet has been reviewed and approved by EPA Region II, and is now an integral part of the final Baseline Risk Assessment. It will be issued with all future copies of the final Baseline Risk Assessment.

If you have any questions, please call me at (615) 576-5724.

Sincerely,

A handwritten signature in cursive script that reads "Susan M. Cange".

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosures



Department of Energy

Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831— 8723

July 29, 1993

Mr. Nicholas Marton
Bureau of Federal Case Management
New Jersey Department of Environmental
Protection and Energy
401 East State Street
CN 028
Trenton, New Jersey 08625-0028

Dear Mr. Marton:

MAYWOOD SITE -- BASELINE RISK ASSESSMENT - TRANSMITTAL OF ERRATA SHEET

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Sincerely,

A handwritten signature in cursive script that reads "Susan M. Cange".

Susan M. Cange, Site Manager
Former Sites Restoration Division

Enclosures

Maywood Baseline Risk Assessment Correction to Final Document

Actual gamma radiation measurements taken indoors at Maywood Property Unit 7H were entered into the database as outdoor data, and vice-versa. This resulted in an overestimation of the risk present at Property Unit 7H, due to the differences in exposure assumptions. The actual interior readings for this property unit range from 8 to 13 $\mu\text{R/hr}$ and the exterior readings range from 10 to 146 $\mu\text{R/hr}$.

Based on this correction, the following changes are required to the Maywood Baseline Risk Assessment:

- p. 3-44, Table 3-6, "Total Exposure Dose Summary": Under the Current Use Scenario, change the Unit 7H Employee mean to 67 (from 141); change the RME to 117 (from 281). Under the Future Use Scenario, change the Unit 7H Resident mean to 240 (from 499); change the RME to 341 (from 859).
- p. 3-60, Figure 3-10, "Annual Radiological Exposure in the Current Use Scenario (Mean)": Change the 7H exposure range to 25 to 100 mrem/yr (from 100 - 500 mrem/yr).
- p. 3-63, Figure 3-11a, "Annual Radiological Exposure in the Future Use Scenario (RME)": Change the 7H Exposure Range to 100-500 mrem/yr (from > 500mrem/yr).
- p. 5-5, Figure 5-1, "Excess Radiological Cancer Risk for the Current Use Scenario (Mean)": Change the risk range designation for Property Unit 7H to 10^{-4} (from 10^{-3}).
- p. 5-9, Section 5.2.1.1, paragraph 3: Change the second sentence to read: "RME risks range from 3×10^{-3} to 2×10^{-4} ." Change the third sentence to read: "The employees at Property Unit 7H (Sears/Desaussure) are estimated to receive an excess carcinogenic risk of 3×10^{-4} and 2×10^{-3} for the mean and RME conditions, respectively."
- p. 5-10, Table 5-1, "Radiological Risk Summary": Change the Property Unit 7H Current Use Scenario for the Employee to 3×10^{-4} and 2×10^{-3} for the mean and RME conditions, respectively (from 6×10^{-4} and 4×10^{-3} , respectively). Under the Future Use Scenario for the Resident, change to 1×10^{-3} and 6×10^{-3} for the mean and RME conditions, respectively (from 3×10^{-3} and 2×10^{-2} , respectively)
- p. 5-11, Section 5.2.1.2, paragraph 1: Change the third sentence to read "Maximum estimated risks are for the future residents at Property Unit 6B, which exceeds 5×10^{-2} ."
- p. C-2, Table C-1, "Estimated Exposure Dosage - Current Employee": For Property Unit 7H, change the direct radiation mean to 34 (from 108), and RME to 66 (from 230). Change the total dose mean to 66.8 (from 140.8), and RME to 116.86 (from 280.86).

- p. C-8, Table C-7, "Estimated Exposure Dosage - Future Resident (Child)": For Property Unit 7H, change the direct radiation mean to 32 (from 351), and RME to 49 (from 748). Change the total dose mean to 239.8 (from 558.8) and RME to 350.6 (from 1049.6).
- p. C-9, Table C-8, "Estimated Exposure Dosage - Future Resident (Adult)": For Property Unit 7H, change the direct radiation mean to 32 (from 351), and RME to 49 (from 748). Change the total dose mean to 59.89 (from 378.89), and RME to 111.73 (from 810.73).
- p. C-10, Table C-9, "Estimated Exposure Dosage - Future Resident (Adult and Child)": For Property Unit 7H, change direction radiation for the mean to 32 (from 351), and RME to 49 (from 748). Change total dose mean to 240.23 (from 498.89), and RME to 341.09 (from 858.51).
- p. D-9, Table D-7, "Actual Measured Data for the Maywood Site": For Property Unit 7H, beginning with indoor gamma, change the numbers in the row to 2 (from 4), 4 (from 61), 5 (from 130), and 5 (from 140). For outdoor gamma, change the numbers to 4 (from 2), 61 (from 4), 130 (from 5), and 140 (from 5).
- p. D-10, Table D-8, "Radiological Dose from Actual Measured Values": For Property Unit 7H, change the numbers in the first four columns for direct gamma to 34 (from 108), 66 (from 230), 32 (from 351), and 49 (from 748).
- p. G-2, Table G-1, "Slope Factor Risk - Current Employee": For Property Unit 7H, change the direct radiation mean to $9E-05$ (from $3E-04$), and RME to $6E-04$ (from $2E-03$). For total without radon, change the mean to $9E-05$ (from $3E-04$), and RME to $7E-04$ (from $2E-03$). For total dose, change the mean to $2E-04$ (from $3E-04$), and RME to $8E-04$ (from $2E-03$).
- p. G-8, Table G-7, "Slope Factor Risk - Future Resident (Child)": For Property Unit 7H, change the direct radiation mean to $7E-05$ (from $7E-04$), and RME to $1E-04$ from $(2E-03)$. For total without radon, change the mean to $9E-05$ (from $7E-04$), and RME to $1E-04$ (from $2E-03$). For total dose, change the mean to $6E-04$ (from $1E-03$), and RME to $8E-04$ (from $3E-03$).
- p. G-9, Table G-8, "Slope Factor Risk - Future Resident (Adult)": For Property Unit 7H, change the direct radiation mean to $1E-04$ (from $1E-03$), and RME to $6E-04$ (from $8E-03$). For total without radon, change the mean to $1E-04$ (from $1E-03$), and RME to $7E-04$ (from $9E-03$). For total dose, change the mean to $6E-04$ (from $2E-03$), and RME to $1E-03$ (from $9E-03$).

- p. G-10, Table G-9, "Slope Factor Risk - Future Resident (Adult and Child)": For Property Unit 7H, change the direct radiation mean to $9E-05$ (from $1E-03$), and RME to $5E-04$ (from $7E-03$). Change the total without radon mean to $1E-04$ (from $1E-03$), and RME to $6E-04$ (from $7E-03$). Change the total dose mean to $6E-04$ (from $1E-03$), and RME to $1E-03$ (from $8E-03$).
- p. G-12, Table G-11, "Dose Factor vs. Slope Factor Risk Comparison": For Property Unit 7H, under the current use scenario, change the employee risk mean to 0.8 (from 1.7), and RME to 0.9 (from 2.1). For the future use scenario, change the resident risk mean to 0.9 (from 1.8), and the RME to 0.8 (from 1.9)

Note: Amended tables are attached.

Table 3-6. Total Exposure Dose Summary

CURRENT USE SCENARIO (mrem/yr)							
LOCATION	PROPERTY UNIT	Employee		Resident		Transient	
		Mean	RME	Mean	RME	Mean	RME
RESIDENTIAL	UNIT 1			51	246		
	UNIT 2			6	12		
STEPAN	UNIT 3	21	43			0.04	5
	UNIT 3H	53	78				
MUNICIPAL PARKS	UNIT 4					0.3	5
COMMERCIAL/ GOVERNMENT	UNIT 5	9	15				
	UNIT 6 (MISS)	114	142			3	24
	UNIT 6H	171	207			16	189
	UNIT 6B (BALLOD)					2	10
	UNIT 7	9	30				
	UNIT 7H	67	117				
UNIT 8					3	18	
FUTURE USE SCENARIO (mrem/yr)							
LOCATION	PROPERTY UNIT	Employee		Resident		Transient	
		Mean	RME	Mean	RME	Mean	RME
RESIDENTIAL	UNIT 1			51	246		
	UNIT 2			6	12		
STEPAN	UNIT 3	21	43				
	UNIT 3H	55	85				
MUNICIPAL PARKS	UNIT 4			32	54		
COMMERCIAL/ GOVERNMENT	UNIT 5			30	43		
	UNIT 6 (MISS)	116	146			3	24
	UNIT 6H	210	331			17	191
	UNIT 6B (BALLOD)			1060	2799		
	UNIT 7			45	123		
	UNIT 7H			240	341		
UNIT 8		193	475				

RME = Reasonable Maximum Exposure

Denotes revision from Final BRA, March '93

Table 5-1. Radiological Risk Summary

CURRENT USE SCENARIO							
LOCATION	PROPERTY UNIT	Employee		Resident		Transient	
		Mean	RME	Mean	RME	Mean	RME
RESIDENTIAL	UNIT 1			3E-04	4E-03		
	UNIT 2			3E-05	2E-04		
STEPAN	UNIT 3	9E-05	6E-04			2E-07	9E-05
	UNIT 3H	2E-04	1E-03				
MUNICIPAL PARKS	UNIT 4					2E-06	9E-05
COMMERCIAL/ GOVERNMENT	UNIT 5	4E-05	2E-04				
	UNIT 6 (MISS)	5E-04	2E-03			2E-05	4E-04
	UNIT 6H	7E-04	3E-03			9E-05	3E-03
	UNIT 6B (BALLOD)					1E-05	2E-04
	UNIT 7	4E-05	4E-04				
	UNIT 7H	3E-04	2E-03				
	UNIT 8					2E-05	3E-04
FUTURE USE SCENARIO							
LOCATION	PROPERTY UNIT	Employee		Resident		Transient	
		Mean	RME	Mean	RME	Mean	RME
RESIDENTIAL	UNIT 1			3E-04	4E-03		
	UNIT 2			3E-05	2E-04		
STEPAN	UNIT 3	9E-05	6E-04				
	UNIT 3H	2E-04	1E-03				
MUNICIPAL PARKS	UNIT 4			2E-04	1E-03		
COMMERCIAL/ GOVERNMENT	UNIT 5			2E-04	8E-04		
	UNIT 6 (MISS)	5E-04	2E-03			2E-05	9E-05
	UNIT 6H	9E-04	5E-03			9E-05	3E-03
	UNIT 6B (BALLOD)			6E-03	5E-02		
	UNIT 7			2E-04	2E-03		
	UNIT 7H			1E-03	6E-03		
	UNIT 8	8E-04	7E-03				

RME = Reasonable Maximum Exposure

Denotes revision from Final BRA, March '93

Table C-1. Estimated Exposure Dosage - Current Employee

mrem/yr

LOCATION	PROPERTY UNIT	SOIL INGESTION		WATER INGESTION		INHALATION		DIRECT RAD.		TOTAL w/o Rn		RADON		TOTAL DOSE	
		X	RME	X	RME	X	RME	X	RME	X	RME	X	RME	X	RME
RESIDENTIAL	UNIT 1														
	UNIT 2														
STEPAN	UNIT 3	0.024	0.059	NP	NP	0.261	1.029	4	4	4.286	5.088	17	38	21.29	43.09
	UNIT 3H	0.115	0.238	NP	NP	1.13	3.665	10	12	11.24	15.9	41.28	61.86	52.52	77.76
MUNICIPAL PARKS	UNIT 4														
COMMERCIAL/ GOVERNMENT	UNIT 5	0.016	0.032	NP	NP	0.186	0.584	9	14	9.202	14.62	0	0	9.202	14.62
	UNIT 6 (MISS)	0.077	0.172	NP	NP	0.875	3.158	76	87	76.95	90.33	37	52	114	142.3
	UNIT 6H							138	149	138	149	32.95	57.7	171	206.7
	UNIT 6B (BALLOD)														
	UNIT 7	0.154	0.332	NP	NP	1.854	6.363	7	10	9.008	16.7	0	13	9.008	29.7
	UNIT 7H	0.315	0.696	NP	NP	3.666	12.99	34	66	37.98	79.69	28.82	37.17	66.3	116.9
	UNIT 8														

Bold cells indicate doses from actual measured values

X = Mean

RME = Reasonable Maximum Exposure

NP = No Pathway

ND = No Data

 Denotes revision from Final BRA, March '93

Table C-7. Estimated Exposure Dosage - Future Resident (Child)

LOCATION	PROPERTY UNIT	mrem/yr															
		SOIL INGESTION		WATER INGESTION		INHALATION		DIRECT RAD.		PLANT ING.		TOTAL W/O Rn		RADON		TOTAL DOSE	
		X	RME	X	RME	X	RME	X	RME	X	RME	X	RME	X	RME	X	RME
RESIDENTIAL	UNIT 1	0.2017	0.4738	0	0	0.2	0.6507	27	57	1.4066	2.6659	28.808	60.79	22	186	50.808	246.79
	UNIT 2	0.5582	1.385	0	0	0.5785	2.001	1	3	3.5353	6.777	5.672	13.163	0	0	5.672	13.163
STEPAN	UNIT 3																
	UNIT 3H																
MUNICIPAL PARKS	UNIT 4	0.118	0.3344	0.0064	0.1317	0.111	0.4389	31	51	0.8533	1.8918	32.089	53.797	0	0	32.089	53.797
COMMERCIAL/ GOVERNMENT	UNIT 5	0.1648	0.3909	0	0	0.1452	0.4731	28	40	1.0513	2.0347	29.361	42.899	0	0	29.361	42.899
	UNIT 6 (MISS)																
	UNIT 6H																
	UNIT 6B (BALLOD)	4.76	25.35	1.826	7.243	4.024	29.57	934.7	2482	104.08	284.63	1049.4	2828.8	14.4	30.79	1063.8	2859.6
	UNIT 7	1.523	4.929	2.381	4.5409	1.246	5.797	12	13	23.15	55.419	40.3	83.686	0	43	40.3	126.69
	UNIT 7H	3.167	8.383	0	0	2.863	10.51	32	49	20.57	55.786	58.6	123.68	181.2	226.97	239.8	350.65
	UNIT 8																

Bold cells indicate doses from actual measured values

X = Mean

RME = Reasonable Maximum Exposure

NP = No Pathway

 Denotes revision from Final BRA, March '93

Table C-8. Estimated Exposure Dosage - Future Resident (Adult)

mrem/yr

LOCATION	PROPERTY UNIT	SOIL		WATER				DIRECT RAD.		PLANT ING.		TOTAL W/O Rn		RADON		TOTAL DOSE	
		INGESTION		INGESTION		.INHALATION		X	RME	X	RME	X	RME	X	RME	X	RME
		X	RME	X	RME	X	RME	X	RME	X	RME	X	RME	X	RME	X	RME
RESIDENTIAL	UNIT 1	0.121	0.2369	0	0	0.1823	0.5769	27	57	2.2501	2.3809	29.553	60.195	22	186	51.553	246.19
	UNIT 2	0.3349	0.6926	0	0	0.5273	1.744	1	3	5.655	6.031	7.5172	11.468	0	0	7.5172	11.468
STEPAN	UNIT 3																
	UNIT 3H																
MUNICIPAL PARKS	UNIT4	0.0706	0.1692	0.1637	0.3292	0.1012	0.3891	31	51	1.355	1.6219	32.69	53.509	0	0	32.69	53.509
COMMERCIAL/ GOVERNMENT	UNIT 5	0.0989	0.1955	0	0	0.1323	0.4194	28	40	1.6823	1.8207	29.913	42.436	0	0	29.913	42.436
	UNIT 6 (MISS)																
	UNIT 6H																
	UNIT 6B (BALLOD)	2.855	12.68	4.46	18.81	3.657	26.22	935.8	2482	104.89	244.07	1051.7	2783.8	0	0	1051.7	2783.8
	UNIT 7	0.8504	2.465	3.5005	11.35	1.027	5.14	12	13	38.167	47.647	55.545	79.602	0	43	55.545	122.6
	UNIT 7H	1.9	4.192	0	0	2.61	9.322	32	49	23.38	49.216	59.89	111.73	0	0	59.89	111.73
	UNIT 8																

Bold cells indicate doses from actual measured values

X = Mean

RME = Reasonable Maximum Exposure

NP = No Pathway

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Table C-9. Estimated Exposure Dosage - Future Resident (Adult and Child)

mrem/yr

LOCATION	PROPERTY UNIT	SOIL		WATER		INHALATION		DIRECT RAD.		PLANT ING.		TOTAL W/O Rn		RADON		TOTAL DOSE		
		INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION
		X	RME	X	RME	X	RME	X	RME	X	RME	X	RME	X	RME	X	RME	X
RESIDENTIAL	UNIT 1	0.1748	0.2843	0	0	0.1941	0.5917	27	57	1.6878	2.4379	29.057	60.314	18.69	21.41	51.057	246.31	
	UNIT 2	0.4838	0.8311	0	0	0.5614	1.7954	1	3	4.2419	6.1802	6.2871	11.807	39.73	44.75	6.2871	11.807	
STEPAN	UNIT 3																	
	UNIT 3H																	
MUNICIPAL PARKS	UNIT 4	0.1022	0.2022	0.0588	0.2897	0.1077	0.3991	31	51	1.0205	1.6759	32.289	53.567	6.4	8.67	32.289	53.567	
COMMERCIAL/ GOVERNMENT	UNIT 5	0.1428	0.2346	0	0	0.1409	0.4301	28	40	1.2616	1.8635	29.545	42.528	11.56	13.5	29.545	42.528	
	UNIT 6 (MISS)																	
	UNIT 6H																	
	UNIT 6B (BALLOD)	4.125	15.214	2.704	16.497	3.9017	26.89	935.07	2482	104.35	252.19	1050.1	2792.8	14.4	30.79	1059.7	2798.9	
	UNIT 7	1.2988	2.9578	2.7542	9.988	1.173	5.2714	12	13	28.156	49.202	45.382	80.419	157.61	258.76	45.382	123.42	
	UNIT 7H	2.7447	5.0302	0	0	2.7787	9.5596	32	49	21.507	50.53	59.03	114.12	181.2	226.97	240.23	341.09	
	UNIT 8																	

Bold cells indicate doses from actual measured values

X = Mean

RME = Reasonable Maximum Exposure

NP = No Pathway

 Denotes revision from Final BRA, March '93

TABLE D-7. ACTUAL MEASURED DATA FOR THE MAYWOOD SITE*

LOCATION	PROPERTY UNIT	INDOOR RADON (pCi/l)				OUTDOOR RADON (pCi/l)			
		n	mean	UCL 95	max	n	mean	UCL 95	max
RESIDENTIAL	UNIT 1	25	0.1	1.2	12				
	UNIT 2	8	0	0	0				
STEPAN	UNIT 3	7	0.4	0.8	1				
	UNIT 3H								
MUNICIPAL PARKS	UNIT 4	2	0	0	0				
COMMERCIAL/ GOVERNMENT	UNIT 5	7	0	0	0				
	UNIT 6 (MISS)					11	1	1	3
	UNIT 6H	1	0	0	0	2	1	1	1
	UNIT 6B (BALLOD)								
	UNIT 7	5	0	0.3	1				
	UNIT 7H								
	UNIT 8								

LOCATION	PROPERTY UNIT	INDOOR GAMMA (uR/hour)				OUTDOOR GAMMA (uR/hour)			
		n	mean	UCL 95	max	n	mean	UCL 95	max
RESIDENTIAL	UNIT 1	19	5	10	56	232	5	5	43
	UNIT 2	6	0	0.3	1	62	6	7	41
STEPAN	UNIT 3	81	2	2	11	157	1	2	31
	UNIT 3H	189	2	3	27	341	14	16	142
MUNICIPAL PARKS	UNIT 4		5	9	59	30	7	11	74
COMMERCIAL/ GOVERNMENT	UNIT 5	2	5	7	7	66	2	4	68
	UNIT 6 (MISS)		33	38	362	242	41	47	452
	UNIT 6H	1	79	85	79	85	310	368	1392
	UNIT 6B (BALLOD)								
	UNIT 7	2	2	2	2	15	8	16	68
	UNIT 7H	2	4	5	5	7	8	130	140
	UNIT 8								

MAX VALUES USED FOR UCL95- when n<3 or UCL95>max

 = .8*OUTDOOR WHEN NO INDOOR GAMMA AVAILABLE

*BACKGROUND SUBTRACTED

ZERO EXPOSURE VALUES ARE BELOW BACKGROUND

 Denotes revision from Final BRA, March '93

D-8. RADIOLOGICAL DOSE FROM ACTUAL MEASURED VALUES*

RADON (mrem/yr)							
LOCATION	PROPERTY UNIT	Employee		Resident		Transient	
		Mean	RME	Mean	RME	Mean	RME
RESIDENTIAL	UNIT 1			22	186		
	UNIT 2			0	0		
STEPAN	UNIT 3	17	38			ND	ND
	UNIT 3H	ND	ND				
MUNICIPAL PARKS	UNIT 4			0	0	0	0
COMMERCIAL/ GOVERNMENT	UNIT 5	0	0	0	0		
	UNIT 6 (MISS)	37	52			1	1
	UNIT 6H	0	0			1	9
	UNIT 6B (BALLOD)			ND	ND	ND	ND
	UNIT 7	0	13	0	43		
	UNIT 7H	ND	ND	ND	ND		
	UNIT 8	ND	ND			ND	ND
DIRECT GAMMA (mrem/yr)							
LOCATION	PROPERTY UNIT	Employee		Resident		Transient	
		Mean	RME	Mean	RME	Mean	RME
RESIDENTIAL	UNIT 1			27	57		
	UNIT 2			1	3		
STEPAN	UNIT 3	4	4			0	1
	UNIT 3H	10	12				
MUNICIPAL PARKS	UNIT 4			31	51	0.3	5
COMMERCIAL/ GOVERNMENT	UNIT 5	9	14	28	40		
	UNIT 6 (MISS)	76	87			2	23
	UNIT 6H					15	180
	UNIT 6B (BALLOD)			ND	ND	ND	ND
	UNIT 7	7	10	12	13		
	UNIT 7H	34	66	32	49		
	UNIT 8	ND	ND			ND	ND

RME=REASONABLE MAXIMUM EXPOSURE

ND=NO MEASURED DATA AVAILABLE FOR SCENARIO

*BACKGROUND SUBTRACTED

ZERO EXPOSURE VALUES ARE BELOW BACKGROUND

Denotes revision from Final BRA, March '93

Table G-1. Slope Factor Risk - Current Employee

LOCATION	PROPERTY UNIT	SOIL INGESTION		WATER INGESTION		INHALATION		DIRECT RAD.		TOTAL w/o Rn		RADON		TOTAL DOSE	
		X	RME	X	RME	X	RME	X	RME	X	RME	X	RME	X	RME
RESIDENTIAL	UNIT 1														
	UNIT 2														
STEPAN	UNIT 3	8E-09	7E-08	NP	NP	1E-07	2E-06	1E-05	3E-05	1E-05	3E-05	5E-05	1E-04	6E-05	1E-04
	UNIT 3H	4E-08	3E-07	NP	NP	5E-07	6E-06	3E-05	9E-05	3E-05	1E-04	1E-04	2E-04	1E-04	3E-04
MUNICIPAL PARKS	UNIT 4														
COMMERCIAL/ GOVERNMENT	UNIT 5	5E-09	4E-08	NP	NP	1E-07	1E-06	2E-05	1E-04	2E-05	1E-04	0E+00	0E+00	2E-05	1E-04
	UNIT 6 (MISS)	2E-08	2E-07	NP	NP	5E-07	6E-06	2E-04	8E-04	2E-04	8E-04	1E-04	1E-04	3E-04	9E-04
	UNIT 6H	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	4E-04	1E-03	4E-04	1E-03	7E-05	6E-04	4E-04	2E-03
	UNIT 6B (BALLOD)														
	UNIT 7	4E-08	3E-07	NP	NP	1E-06	1E-05	2E-05	8E-05	2E-05	9E-05	0E+00	4E-05	2E-05	1E-04
	UNIT 7H	9E-08	7E-07	NP	NP	2E-06	2E-05	9E-05	6E-04	9E-05	7E-04	8E-05	1E-04	2E-04	8E-04
	UNIT 8														

Bold cells indicate risk from actual measured values

X = Mean

RME = Reasonable Maximum Exposure

NP = No Pathway

ND = No Data

 Denotes revision from Final BRA, March '93

Table G-7. Slope Factor Risk - Future Resident (Child)

	PROPERTY UNIT	SOIL		WATER		INHALATION		DIRECT RAD.		PLANT ING.		TOTAL W/O Rn		RADON		TOTAL DOSE		
		INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION	INGESTION
		X	RME	X	RME	X	RME	X	RME	X	RME	X	RME	X	RME	X	RME	X
RESIDENTIAL	UNIT 1	5E-08	1E-07	0E+00	0E+00	9E-08	3E-07	6E-05	1E-04	7E-07	1E-06	6E-05	1E-04	7E-05	5E-04	1E-04	6E-04	
	UNIT 2	1E-07	3E-07	0E+00	0E+00	3E-07	9E-07	2E-06	8E-06	2E-06	3E-06	4E-06	1E-05	0E+00	0E+00	4E-06	1E-05	
STEPAN	UNIT 3																	
	UNIT 3H																	
MUNICIPAL PARKS	UNIT 4	3E-08	8E-08	2E-08	4E-08	4E-08	2E-07	7E-05	1E-04	4E-07	8E-07	7E-05	1E-04	0E+00	0E+00	7E-05	1E-04	
	UNIT 5	4E-08	1E-07	0E+00	0E+00	7E-08	2E-07	6E-05	9E-05	5E-07	1E-06	6E-05	9E-05	0E+00	0E+00	6E-05	9E-05	
COMMERCIAL/ GOVERNMENT	UNIT 6 (MISS)																	
	UNIT 6H																	
	UNIT 6B (BALLOD)	1E-06	7E-06	9E-07	4E-06	2E-06	1E-05	2E-03	6E-03	5E-05	1E-04	2E-03	6E-03	4E-05	9E-05	2E-03	6E-03	
	UNIT 7	5E-07	1E-06	8E-07	2E-06	6E-07	2E-06	3E-05	3E-05	1E-05	3E-05	4E-05	6E-05	0E+00	1E-04	4E-05	2E-04	
	UNIT 7H	8E-07	2E-06	0E+00	0E+00	1E-06	4E-06	7E-05	1E-04	1E-05	3E-05	9E-05	1E-04	5E-04	7E-04	6E-04	8E-04	
	UNIT 8																	

Bold cells indicate risk from actual measured values

X = Mean

RME = Reasonable Maximum Exposure

NP = No Pathway

 Denotes revision from Final BRA, March '93

Table G-8. Slope Factor Risk - Future Resident (Adult)

	PROPERTY UNIT	SOIL INGESTION		WATER INGESTION		INHALATION		DIRECT RAD.		PLANT ING.		TOTAL W/O Rn		RADON		TOTAL DOSE	
		X	RME	X	RME	X	RME	X	RME	X	RME	X	RME	X	RME	X	RME
RESIDENTIAL	UNIT 1	5E-08	3E-07	0E+00	0E+00	1E-07	1E-06	9E-05	7E-04	2E-06	6E-06	9E-05	7E-04	7E-05	5E-04	2E-04	1E-03
	UNIT 2	1E-07	9E-07	0E+00	0E+00	4E-07	4E-06	3E-06	3E-05	4E-06	1E-05	8E-06	4E-05	0E+00	0E+00	8E-06	4E-05
STEPAN	UNIT 3																
	UNIT 3H																
MUNICIPAL PARKS	UNIT 4	3E-08	4E-07	8E-08	5E-07	6E-08	1E-06	1E-04	7E-04	8E-07	4E-06	1E-04	7E-04	0E+00	0E+00	1E-04	7E-04
	UNIT 5	4E-08	3E-07	0E+00	0E+00	9E-08	9E-07	1E-04	4E-04	1E-06	5E-06	1E-04	4E-04	0E+00	0E+00	1E-04	4E-04
COMMERCIAL/ GOVERNMENT	UNIT 6 (MISS)																
	UNIT 6H																
	UNIT 6B (BALLOD)	1E-06	2E-05	5E-06	4E-05	3E-06	5E-05	3E-03	3E-02	5E-05	6E-04	3E-03	3E-02	4E-05	9E-05	3E-03	3E-02
	UNIT 7	4E-07	4E-06	3E-06	2E-05	8E-07	1E-05	4E-05	1E-04	3E-05	1E-04	7E-05	3E-04	0E+00	1E-04	7E-05	4E-04
	UNIT 7H	7E-07	5E-06	0E+00	0E+00	2E-06	2E-05	1E-05	5E-04	2E-05	1E-04	1E-04	7E-04	5E-04	7E-04	6E-04	1E-03
	UNIT 8																

Bold cells indicate risk from actual measured values

X = Mean

RME = Reasonable Maximum Exposure

NP = No Pathway

 Denotes revision from Final BRA, March '93

Table G-9. Slope Factor Risk - Future Resident (Adult and Child)

	PROPERTY UNIT	SOIL		WATER				DIRECT RAD.		PLANT ING.		TOTAL W/O Rn		RADON		TOTAL DOSE	
		INGESTION X	RME	INGESTION X	RME	INHALATION X	RME	X	RME	X	RME	X	RME	X	RME	X	RME
RESIDENTIAL	UNIT 1	5E-08	3E-07	0E+00	0E+00	1E-07	1E-06	7E-05	6E-04	1E-06	5E-06	7E-05	6E-04	7E-05	5E-04	1E-04	1E-03
	UNIT 2	1E-07	8E-07	0E+00	0E+00	3E-07	3E-06	2E-06	2E-05	2E-06	1E-05	5E-06	4E-05	0E+00	0E+00	5E-06	4E-05
STEPAN	UNIT 3																
	UNIT 3H																
MUNICIPAL PARKS	UNIT 4	3E-08	3E-07	4E-08	4E-07	5E-08	1E-06	8E-05	6E-04	5E-07	3E-06	8E-05	6E-04	0E+00	0E+00	8E-05	6E-04
COMMERCIAL/ GOVERNMENT	UNIT 5	4E-08	2E-07	0E+00	0E+00	7E-08	8E-07	7E-05	4E-04	8E-07	4E-06	7E-05	4E-04	0E+00	0E+00	7E-05	4E-04
	UNIT 6 (MISS)																
	UNIT 6H																
	UNIT 6B (BALLOD)	1E-06	2E-05	2E-06	4E-05	2E-06	4E-05	2E-03	2E-02	5E-05	5E-04	3E-03	2E-02	4E-05	9E-05	3E-03	2E-02
	UNIT 7	4E-07	3E-06	1E-06	2E-05	6E-07	9E-06	3E-05	1E-04	2E-05	1E-04	5E-05	3E-04	0E+00	1E-04	5E-05	4E-04
	UNIT 7H	8E-07	5E-06	0E+00	0E+00	1E-06	2E-05	3E-05	1E-04	1E-05	1E-04	1E-05	6E-04	5E-04	7E-04	6E-04	1E-03
	UNIT 8																

Bold cells indicate risk from actual measured values

X = Mean

RME = Reasonable Maximum Exposure

NP = No Pathway

 Denotes revision from Final BRA, March '93

Table G-11. Dose Factor vs. Slope Factor Risk Comparison*

CURRENT USE SCENARIO							
LOCATION	PROPERTY UNIT	Employee		Resident		Transient	
		Mean	RME	Mean	RME	Mean	RME
RESIDENTIAL	UNIT 1			2.0	4.1		
	UNIT 2			6.4	5.6		
STEPAN	UNIT 3	1.5	4.8			1.85	3.6
	UNIT 3H	1.7	4.0				
MUNICIPAL PARKS	UNIT 4					1.6	1.4
COMMERCIAL/ GOVERNMENT	UNIT 5	1.7	1.7				
	UNIT 6 (MISS)	1.8	2.4			1.5	1.9
	UNIT 6H	1.8	1.5			1.7	1.8
	UNIT 6B (BALLOD)					0.7	0.6
	UNIT 7	2.1	3.3				
	UNIT 7H	0.8	0.9				
	UNIT 8					1.6	3.7
FUTURE USE SCENARIO							
LOCATION	PROPERTY UNIT	Employee		Resident		Transient	
		Mean	RME	Mean	RME	Mean	RME
RESIDENTIAL	UNIT 1			2.0	4.1		
	UNIT 2			6.4	5.6		
STEPAN	UNIT 3	1.5	4.8				
	UNIT 3H	1.8	4.0				
MUNICIPAL PARKS	UNIT 4			2.1	1.7		
COMMERCIAL/ GOVERNMENT	UNIT 5			2.2	2.1		
	UNIT 6 (MISS)	1.6	2.4			1.5	1.9
	UNIT 6H	2.3	1.7			1.4	1.6
	UNIT 6B (BALLOD)			2.2	2.0		
	UNIT 7			4.9	6.3		
	UNIT 7H			0.9	0.8		
	UNIT 8	1.6	1.7				

* Dose factor risk/slope factor risk

Denotes revision from Final BRA, March '93