

# ANALYSIS OF PATHWAYS OF EXPOSURE

Application for Amendment of the  
Envirocare of Utah, Inc.  
License for Disposal of 11.e(2) Wastes

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Momeni and Associates  
Environmental and Radiological Consultants  
122 Augie Court  
Chatham, Illinois 62629  
217/463-4660

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# ANALYSIS OF PATHWAYS OF EXPOSURE

Application for Amendment of

License for Disposal of 11.e(2) Wastes

## 1. INTRODUCTION

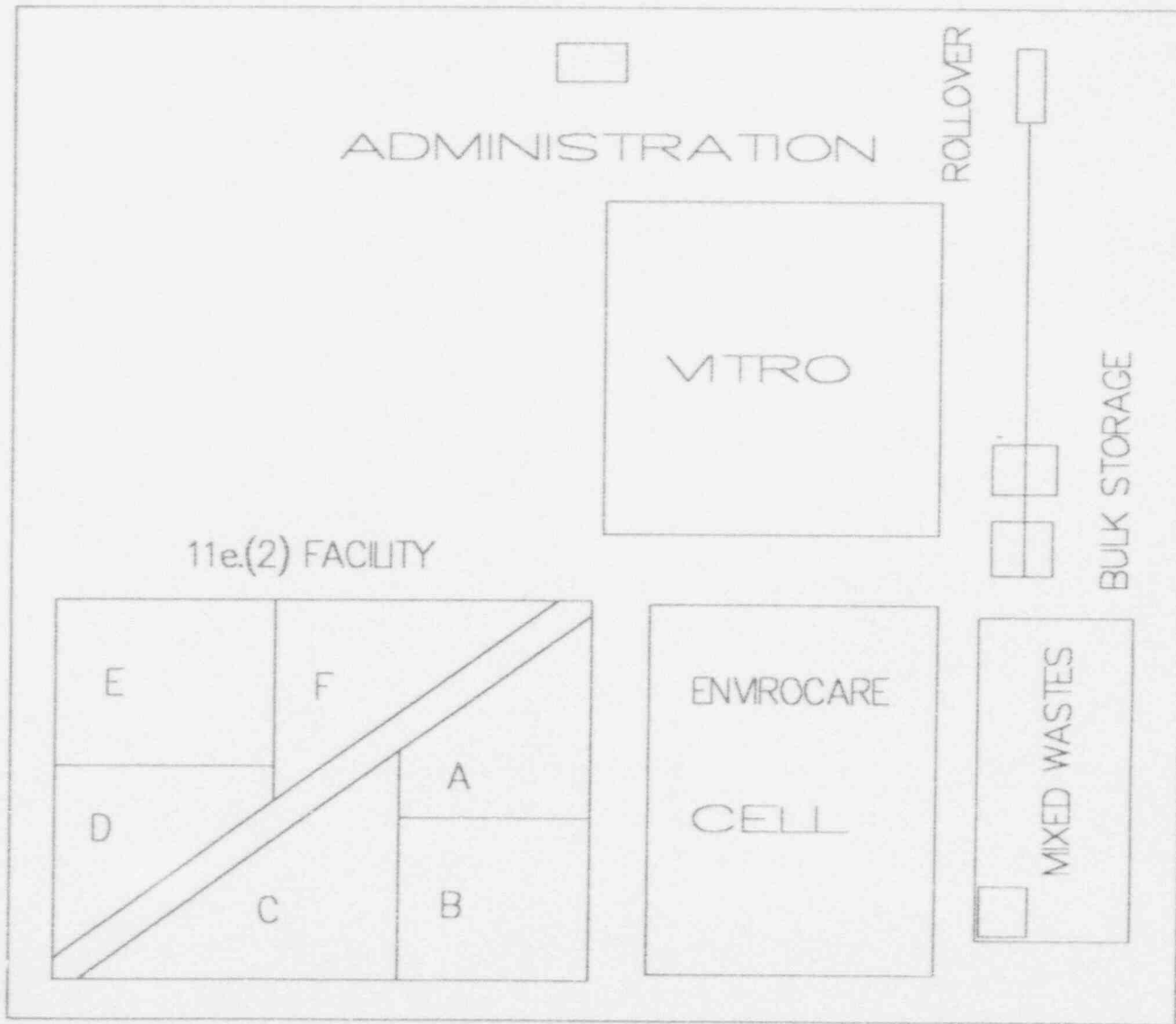
### 1.1 Objectives

The United States Nuclear Regulatory Commission (NRC) granted Envirocare Of Utah, Inc. a license to dispose 11e.(2) wastes at Clive, Utah, in November of 1993 (Fig. 1). The application for the license was based on our analysis of the volumes and radiological characteristics of 11e.(2) wastes previously reported for 30 mill tailings sites in the United States including the West Chicago, Illinois, Rare Earth Facility. The generic analysis suggested that about 90% of the wastes have an average bulk radioactivity concentration of about 500 pCi/g for each of the radionuclides in the uranium and thorium series.

Figure 1. The Envirocare Waste Disposal Site

# ENVIROCARE OF UTAH, INC.

GUARD RESIDENCE



SW

FIGURE 1

M&A/94

Further, the remaining 10% of the wastes have an average bulk radioactivity concentration of about 1000 pCi/g. In the application for the license, we assumed that over the life cycle of the Envirocare Waste Disposal Facility the disposed wastes will have an average bulk activity of about 500 pCi/g with 10% having an average bulk activity of about 1000 pCi/g (Fig. 2). These assumptions would be reasonable over the assumed 16 years of life of the site; however, in practice they could deviate annually from the assumed average concentrations. In addition, Envirocare could not control the average annual waste activity for each of the radionuclides. At the end of any single year, the annual average bulk activity concentrations can be estimated from the total volume and the activities of the wastes accepted for disposal at the site. However, Envirocare can control the total annual volume of the wastes accepted and, with each shipment, reject the activities that exceed the permitted maximum concentrations. Envirocare can also modify its operations on the basis of anticipated shipping schedules. The objective of this application for amendment of the license is to extricate the restrictions imposed by the license for the annual waste characteristics, i.e., 90% with an annual average activity of 500 pCi/g and 10% with an annual average activity of 1000 pCi/g.



Figure 2. The Envirocare Waste Disposal Operation

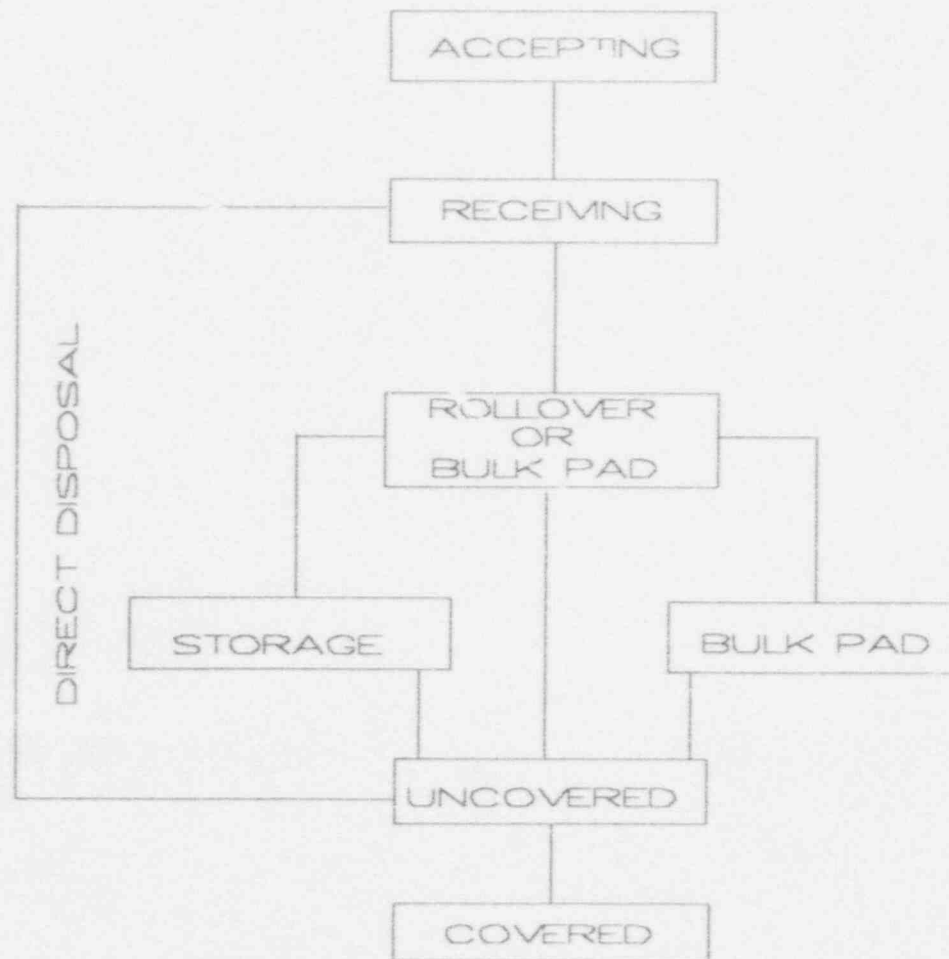


FIGURE 2

We have identified 21 major potential sources for release of radioactivity into the environment. In addition, two of these sources may be used for waste unloading, storage or both. These potential sources, their locations and their areas are listed in the Table 1. We have estimated airborne concentrations of a particulate, radon and thoron from each of these sources at 220 locations both on the Envirocare disposal site and distances up to 80 km from the site. The Cartesian coordinates for 28 of these 220 receptors, those located either on Envirocare's property or in close proximity to the site, are listed in Table 2. In addition, we have estimated the airborne concentrations at 192 receptors, 12 radial distances and 16 directions. In each calculation the normalized concentration of the activity in the wastes was 1 pCi/g for each of the radionuclides.

Table 1. The Cartesian Coordinates of the Potential Sources at the Envirocare Waste Disposal Facility

Source	Name	X (km)	Y (km)	Z (m)	Area (m <sup>2</sup> )
Waste Receiving					
1	Rollover	1.37	1.55	0.0	200
2	Pad	0.54	0.49	5.0	1,700
3	Bulk storage	1.39	0.74	1.0	200
Waste Storage					
2	Pad	0.54	0.49	5.0	1,700
3	Bulk storage	1.39	0.74	1.0	200
Waste Disposal					
4	Direct A	0.68	0.36	1.0	38,472
5	Direct B	0.65	0.19	1.0	38,472
6	Direct C	0.37	0.29	1.0	38,472
7	Direct D	0.20	0.34	1.0	38,472
8	Direct E	0.22	0.25	1.0	38,472
9	Direct F	0.54	0.49	1.0	38,472
10	Active A	0.68	0.36	1.0	38,472
11	Active B	0.65	0.19	1.0	38,472
12	Active C	0.37	0.29	1.0	38,472
13	Active D	0.20	0.34	1.0	38,472
14	Active E	0.22	0.25	1.0	38,472
15	Active F	0.54	0.49	1.0	38,472
16	Covered A	0.68	0.36	1.0	38,472
17	Covered B	0.65	0.19	1.0	38,472
18	Covered C	0.37	0.29	1.0	38,472
19	Covered D	0.20	0.34	1.0	38,472
20	Covered E	0.22	0.25	1.0	38,472
21	Covered F	0.54	0.49	1.0	38,472

Table 2. The Cartesian Coordinates for Selected Receptors Located Within the Envirocare Waste Disposal Facility or Within Close Distances to the Site

Receptor	Location	X(km)	Y(km)	Z(m)	Distance(km)
1	Guard Residence	0.83	1.74	0.00	1.93
2	Admin Bldg	0.78	1.58	0.00	1.76
3	A1	0.81	1.63	0.00	1.82
4	A2	1.34	1.58	0.00	2.07
5	A3	0.80	0.54	0.00	0.97
6	A5	0.78	0.04	0.00	0.78
7	A6	0.80	1.27	0.00	1.50
8	A7	1.27	0.94	0.00	1.58
9	A11	0.37	0.03	0.00	0.37
10	A12	0.65	0.66	0.00	0.93
11	A13	0.07	0.16	0.00	0.17
12	SW	0.00	0.00	0.00	0.00
13	W1	0.00	0.40	0.00	0.40
14	W2	0.00	0.80	0.00	0.80
15	W3	0.00	1.21	0.00	1.21
16	NW	0.00	1.61	0.00	1.61
17	N1	0.40	1.61	0.00	1.66
18	N3	1.21	1.61	0.00	2.01
19	NE	1.61	1.61	0.00	2.28
20	E1	1.61	0.40	0.00	1.66
21	E2	1.61	0.08	0.00	1.61
22	E3	1.61	1.21	0.00	2.01

Table 2. The Cartesian Coordinates of the Individual Receptors at the Envirocare Waste Disposal Facility

Receptor	Location	X(km)	Y(km)	Z(m)	Distance (km)
23	SE	1.61	0.00	0.00	1.61
24	S1	0.40	0.00	0.00	0.40
25	S2	0.80	0.00	0.00	0.80
26	S3	1.21	0.00	0.00	1.21
27	USPCI	-1.61	0.60	0.00	1.72
28	APTUS	10.40	6.80	0.00	12.40

At each receptor, the total normalized concentrations are sums of the concentrations contributed by each of the sources. The actual concentration at each receptor is a product of the activity in the wastes by the predicted normalized concentrations calculated using 1 pCi/g for each of the radionuclides. Envirocare's staff can estimate the potential contributions from each of the sources and thus choose the disposal options that lead to the least total airborne concentration in the environment. This procedure, coupled with the continuous environmental monitoring of the key radionuclides at the site, will lead to a demonstration of compliance with the 10CFR20, Appendix B limits for annual average airborne concentrations.

## **1.2 Methods For The Analyses**

The analyses reported in this document are based on the methods and input parameters we previously documented in the application to NRC for the license to dispose 11e.(2) wastes. For these analyses we also assumed the identical design for the site, waste receiving, waste disposing and engineered soil cap structure.

## 1.2a Computer Codes

We used MILDOS-AREA (UDAD version IV) and TDAD codes to calculate the dispersion of the radioactive materials into the environment. We revised TDAD to utilize an identical set of dispersion input parameters as those incorporated in MILDOS-AREA code. We previously used the same two codes for the preparation of the application for the 11e.(2) license.

We used M&A TRANS computer codes for the calculation of radon flux, radon transport and thoron flux. This same code was also used for the preparation of the application for the 11e.(2) license. However, we modified the code by introducing an internal adjustment for the moisture on the diffusion coefficients. The functional relationship between the moisture, the porosity, the density in a soil or waste media and the corresponding diffusion coefficients have been previously reported (NUREG/CR-3533, 1984).

## 1.2b Input Parameters

We assumed a maximum annual waste disposal rate of 500,000 short tons ( $4.5 \times 10^{11}$ g). We previously used the same value for the preparation of the license application.



We divided the engineered disposal area into six sub-sections.

The coordinates for the center of each of the sub-sections and the surface area assumed for modelling purposes are listed in Table 1.

Figure 1 shows the location for each of the sub-sections relative to the site boundaries.

The annual and total disposal areas are equivalent to the areas we previously assumed for the license application.

We assumed a size of 1 micron for the airborne particles.

But, we used the NRC recommended input values for the calculation of radon flux and radon transport.

Waste:

porosity = 40%

fraction of the saturated moisture = 24%

bulk density =  $1.59 \text{ g cm}^{-3}$

radon emanation coefficient = 0.35

thoron emanation coefficient = 0.10

diffusion coefficient =  $1.2 \times 10^{-2} \text{ cm}^2 \text{ s}^{-1}$

Soil Cover:

porosity = 0.30

fraction of the saturated moisture = 62%

diffusion coefficient =  $1.5 \times 10^{-3} \text{ cm}^2 \text{ s}^{-1}$

We assumed an activity concentration of 1 pCi/g for each of the radionuclides in the uranium and thorium series.

Table 3 lists radon flux as a function of the thickness of the disposed wastes within the Envirocare engineered disposal facility. The specific flux for a 300 cm thick waste is 1.40 pCi/m<sup>2</sup>.s per pCi/g of <sup>226</sup>Ra. The table also provides the average radon flux calculated for the duration of disposing a 300 cm thick waste. The average flux is 1.04 pCi/m<sup>2</sup>.s per pCi/g of <sup>226</sup>Ra. The average flux is 74% of the maximum flux. Conservatively, we used the maximum value to estimate the environmental radon concentrations.

Table 4 lists the fraction of the radon transported through a soil cap as a function of the cap thickness. The design thickness of the cap is 240 cm. The fraction of radon transported through the cover is 1.37%. Thus, the radon flux through the cover is  $1.92 \times 10^{-2}$  pCi/m<sup>2</sup>.s from a waste containing 1 pCi/g <sup>226</sup>Ra.

Table 5 lists thoron flux as a function of the waste thickness. Thoron flux estimated over a thick deposit of waste is 29.88 pCi/m<sup>2</sup>.s. per pCi/g of <sup>224</sup>Ra.

Table 3. Radon Flux as a Function of Thickness of 11e.(2) Wastes Containing 1 pCi g<sup>-1</sup> of <sup>226</sup>Ra Was Calculated Using the Following Parameters:

Porosity = 0.40  
 Diffusion Coefficient = 0.12E-01  
 Bulk Density = 1.59  
 Emanation Coefficient = 0.35  
 Radium Concentration = 1.00  
 Moisture Saturation Fraction = 0.2400

\*\*\*\*\*

THICKNESS [cm]                      FLUX [pCi/m<sup>2</sup>\*s]  
 \*\*\*\*\*

5.00	0.06
10.00	0.12
15.00	0.17
20.00	0.23
25.00	0.29
30.00	0.34
35.00	0.40
40.00	0.45
45.00	0.50
50.00	0.55
55.00	0.60
60.00	0.65
65.00	0.69
70.00	0.74
75.00	0.78
80.00	0.82
85.00	0.86
90.00	0.89
95.00	0.93
100.00	0.96
105.00	0.99
110.00	1.02
115.00	1.05
120.00	1.08
125.00	1.10
130.00	1.12
135.00	1.14
140.00	1.16
145.00	1.18
150.00	1.20
155.00	1.22
160.00	1.23
165.00	1.25
170.00	1.26
175.00	1.27

\*\*\*\*\*  
THICKNESS [cm]                      FLUX [pCi/m2\*s]  
\*\*\*\*\*

180.00	1.28
185.00	1.29
190.00	1.30
195.00	1.31
200.00	1.32
205.00	1.33
210.00	1.34
215.00	1.34
220.00	1.35
225.00	1.35
230.00	1.36
235.00	1.36
240.00	1.37
245.00	1.37
250.00	1.38
255.00	1.38
260.00	1.38
265.00	1.39
270.00	1.39
275.00	1.39
280.00	1.39
285.00	1.40
290.00	1.40
295.00	1.40
300.00	1.40

\*\*\*\*\*  
AVERAGE RADON FLUX FOR THE PERIOD = 1.04[pCi/m2\*s]  
\*\*\*\*\*

M&A TRANS computer code

Table 4. Radon Transport Through a Soil Cap as a Function of Cap Thickness  
 Was Calculated Using the Following Parameters:

Cover Porosity = 0.30  
 Waste Porosity = 0.40  
 Cover Diffusion Coefficient = 0.15E-02  
 Waste Diffusion Coefficient = 0.12E-01  
 Cover Moisture Fraction = 0.62  
 Waste Moisture Fraction = 0.24  
 Waste Emanation Fraction = 0.35

\*\*\*\*\*

THICKNESS [cm]	FLUX REDUCTION FACTOR
5.00	0.994E+00
10.00	0.978E+00
15.00	0.951E+00
20.00	0.915E+00
25.00	0.873E+00
30.00	0.825E+00
35.00	0.774E+00
40.00	0.721E+00
45.00	0.668E+00
50.00	0.616E+00
55.00	0.566E+00
60.00	0.518E+00
65.00	0.472E+00
70.00	0.430E+00
75.00	0.391E+00
80.00	0.354E+00
85.00	0.321E+00
90.00	0.291E+00
95.00	0.263E+00
100.00	0.238E+00
105.00	0.215E+00
110.00	0.194E+00
115.00	0.175E+00
120.00	0.158E+00
125.00	0.143E+00
130.00	0.129E+00
135.00	0.117E+00
140.00	0.105E+00
145.00	0.950E-01
150.00	0.858E-01
155.00	0.774E-01
160.00	0.699E-01
165.00	0.631E-01
170.00	0.570E-01

\*\*\*\*\*

THICKNESS [cm]                      FLUX REDUCTION FACTOR

\*\*\*\*\*

175.00	0.515E-01
180.00	0.465E-01
185.00	0.420E-01
190.00	0.379E-01
195.00	0.343E-01
200.00	0.309E-01
205.00	0.280E-01
210.00	0.253E-01
215.00	0.228E-01
220.00	0.206E-01
225.00	0.186E-01
230.00	0.168E-01
235.00	0.152E-01
240.00	0.137E-01
245.00	0.124E-01
250.00	0.112E-01
255.00	0.101E-01
260.00	0.916E-02
265.00	0.828E-02
270.00	0.748E-02
275.00	0.676E-02
280.00	0.611E-02
285.00	0.552E-02
290.00	0.499E-02
295.00	0.451E-02
300.00	0.408E-02

\*\*\*\*\*

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Table 5. Thoron Flux as a Function of Thickness of 11e.(2) Wastes Containing 1 pCi g<sup>-1</sup> of <sup>224</sup>Ra Was Calculated Using the Following Parameters:

Porosity = 0.35  
 Diffusion Coefficient = 0.11E-01  
 Bulk Density = 1.59  
 Emanation Coefficient = 0.10  
 Radium-224 Concentration = 1.00  
 Moisture Saturation Fraction = 0.2400

```
*****
THICKNESS [cm]          FLUX [pCi/m2*s]
*****
```

1.00	16.58
2.00	25.35
3.00	28.51
4.00	29.48
5.00	29.76
6.00	29.84
7.00	29.87
8.00	29.88
9.00	29.88
10.00	29.88

```
*****
AVERAGE THORON FLUX = 27.90 [pCi/m2*s]
*****
```

M&A TRANS computer code



## 2. ANALYSIS OF AIRBORNE CONCENTRATIONS

Figure 2 schematically shows the procedures for waste acceptance, receiving and disposal at the Envirocare disposal facility. We identified for these procedures 23 potential situations to release radioactivity into the environment. We calculated the airborne concentrations of a particulate, radon and thoron for 21 of these sources and scaled the other two sources to two of those previously modelled. We assumed that the concentration of radioactivity in the waste is equal to 1 pCi/g for each of the radionuclides in the uranium and thorium series. Thus, at each location the airborne concentration of the particulates would be normalized to the actual concentrations in waste.

In this report we calculated normalized airborne concentrations of the particulates, radon and thoron at 220 individual locations within an 80 km distance from the site. The analyses were based on a concentration of 1 pCi/g of each radionuclide in the wastes for release of radioactivity into the atmosphere from the sources described. These normalized concentrations create a database for management of the environmental and occupational impacts from disposal of 11e.(2) wastes at Clive, Utah. The Envirocare staff could estimate the airborne concentrations from the database and the

characteristics of each shipment of the wastes accepted for disposal at the site. The model provides the staff with an estimate of the annual average airborne concentration (X) at a receptor site from the contribution of each shipment or waste management period.

## 2.1 Waste Receiving

Bulk truck shipments may be unloaded on the bulk storage pad or on the storage pad, or may be placed directly into the disposal cell. Bulk rail shipments of wastes accepted for disposal at Envirocare's disposal site may be received by using either the rollover facility or a backhoe mounted on a rail car at the bulk storage pad. The waste may be stored on the storage pad or bulk storage pad. These stored wastes will later be disposed at the engineered disposal area. The waste may also be directly transported to the disposal area for unloading. These procedures for waste acceptance and unloading were previously discussed in the application for the license. In this report we have assumed that the entire annual disposal quantity of the waste (500,000 short tons) will be received at each waste receiving station.

## 2.1a Rollover Facility

We estimated an annual rate of release of  $6.4 \times 10^{-6}$  Ci per pCi/g in waste for any one of the particulates from the rollover operation. We previously presented the procedure for this estimation in the license application.

The annual rates of release (Q) of radon and thoron were estimated at  $9.4 \times 10^{-2}$  and  $4.4 \times 10^{-2}$  Ci, respectively, for radon and thoron. The procedure for estimation of these release rates was based on:

$$Q = \epsilon \times [\text{Ra}] \times M \times (1 - e^{-0.693 t/T})$$

where:

t = 10 days, the period between the loading and unloading of the wastes;

T = radiological half-life of radon and thoron;

M =  $4.5 \times 10^{11}$  g;

[Ra] = 1.0 pCi/g, concentration of radium,  $\text{Ra}^{226}$  or  $\text{Ra}^{228}$ , in the wastes;

$\epsilon$  = 0.25 for radon and 0.1 for thoron.

Table 6.1 lists the airborne concentrations of a particulate ( $^{230}\text{Th}$ ) and radon as a function of 16 directions and 12 radial distances (Figures 3 and 4) in rollover waste receiving operations. Table 6.2 lists the airborne concentration of thoron at the same locations (Figure 5). Table 6.3 lists the airborne concentration of a particulate and radon at 28 individual receptors. Table 6.4 lists the airborne concentration of thoron at the same 28 receptors also from the rollover waste receiving operations.

### **2.1b Waste Storage Pad**

Radon, thoron and particulate releases during unloading operations were conservatively estimated to be the same as for the rollover facility. Expected concentrations at receptor sites can be scaled from the model results for storage at this location.

### **2.2c Bulk Storage Pad**

(Same as above.)

Figure 3. Airborne Concentration of a Particulate From the Rollover Waste Receiving Facility (Series 1: angle 0 degrees, the northern direction; Series 2: angle 67 degrees, the direction of the maximum airborne radioactivity transport; Series 3: angle 90 degrees, the eastern direction; Series 4: angle 180 degrees, the southern direction; Series 5: angle 270 degrees, the western direction).

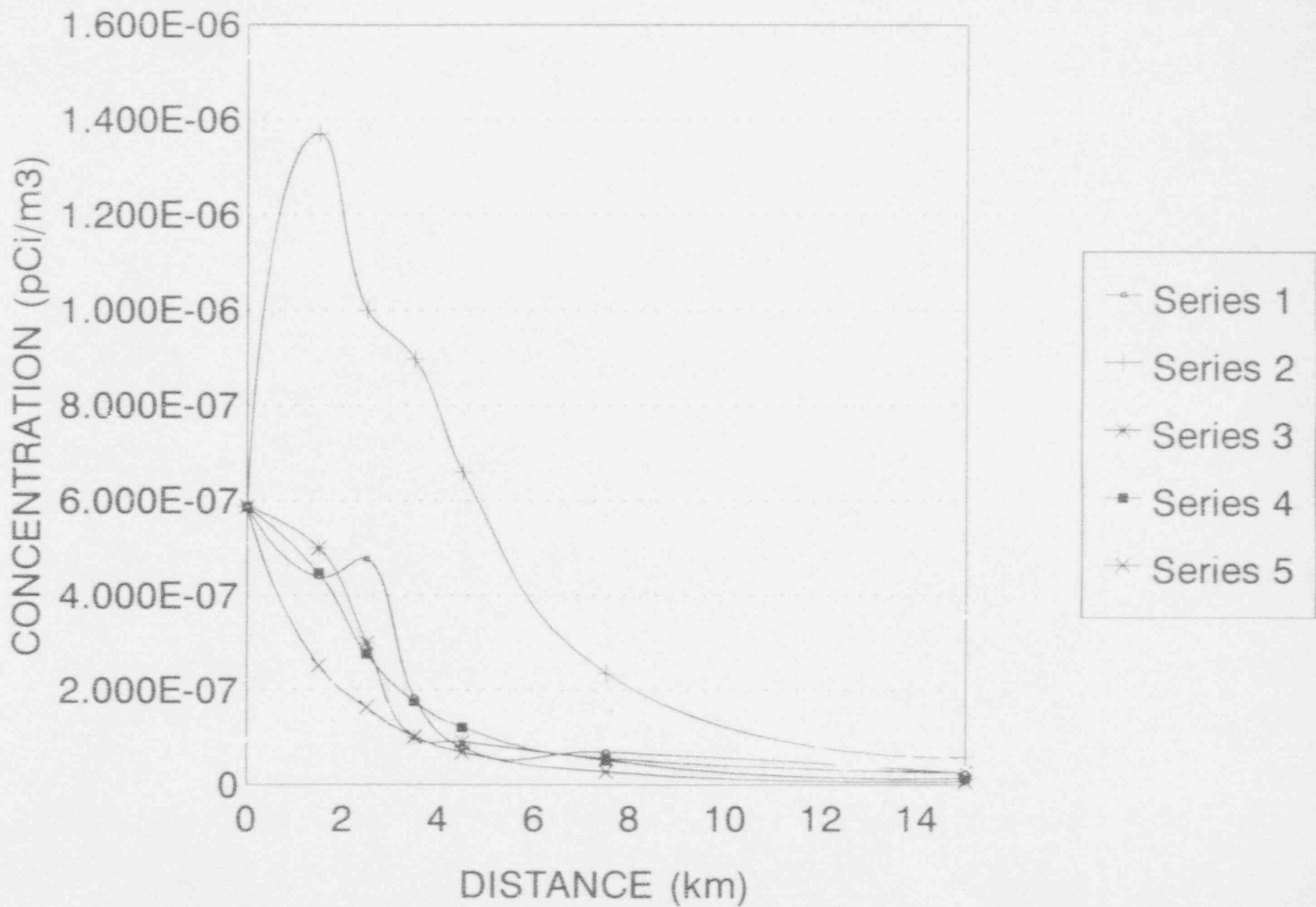


Figure 3

Figure 4. Airborne Concentration of Radon From the Rollover Waste Receiving Facility (Series 1: angle 0 degrees, the northern direction; Series 2: angle 67 degrees, the direction of the maximum airborne radioactivity transport; Series 3: angle 90 degrees, the eastern direction; Series 4: angle 180 degrees, the southern direction; Series 5: angle 270 degrees, the western direction).

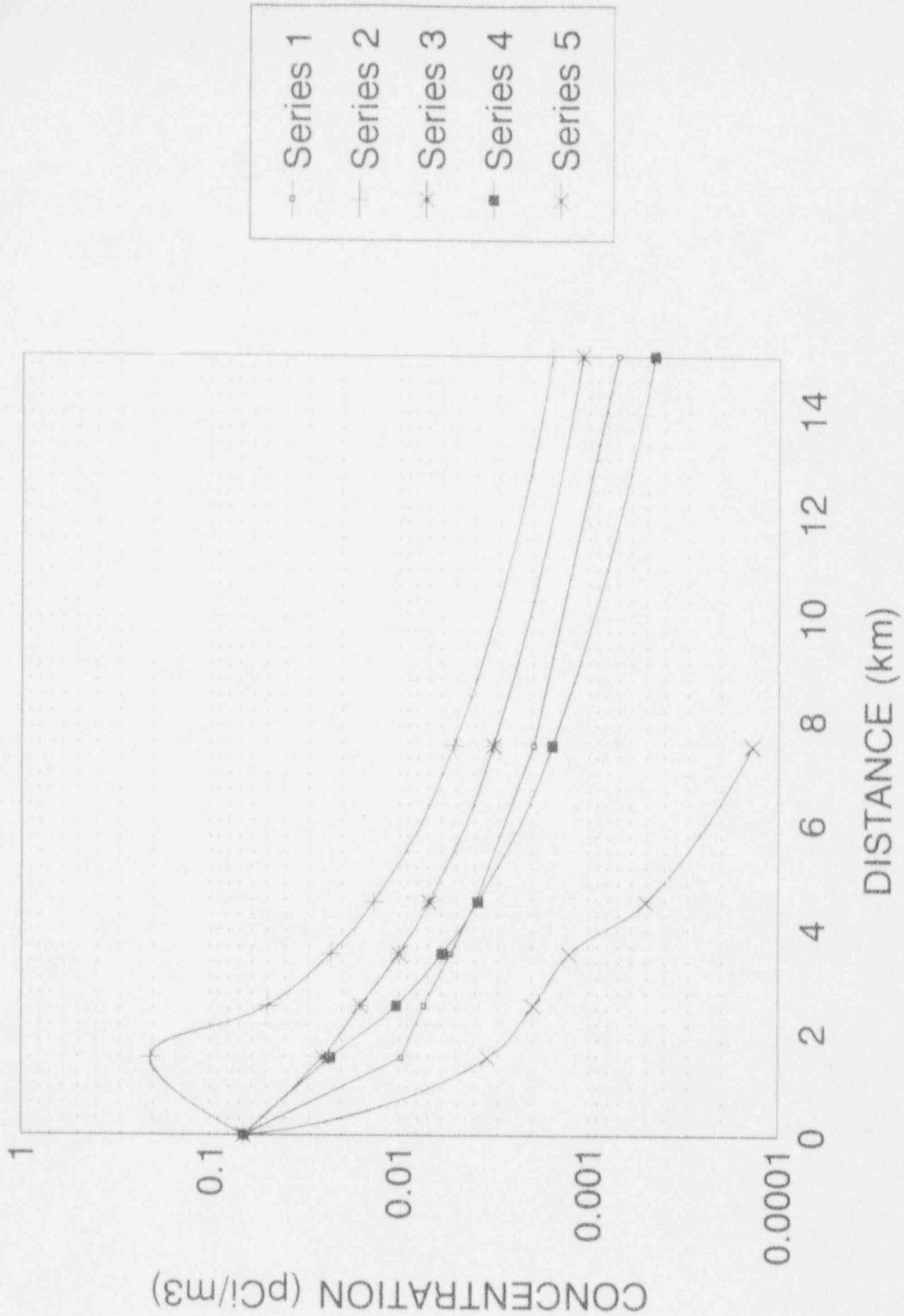


Figure 4



Figure 5. Airborne Concentration of Thoron From the Rollover Waste Receiving Facility (Series 1: angle 0 degrees, the northern direction; Series 2: angle 67 degrees, the direction of the maximum airborne radioactivity transport; Series 3: angle 90 degrees, the eastern direction; Series 4: angle 180 degrees, the southern direction; Series 5: angle 270 degrees, the western direction).

# Airborne Concentration Of Thoron

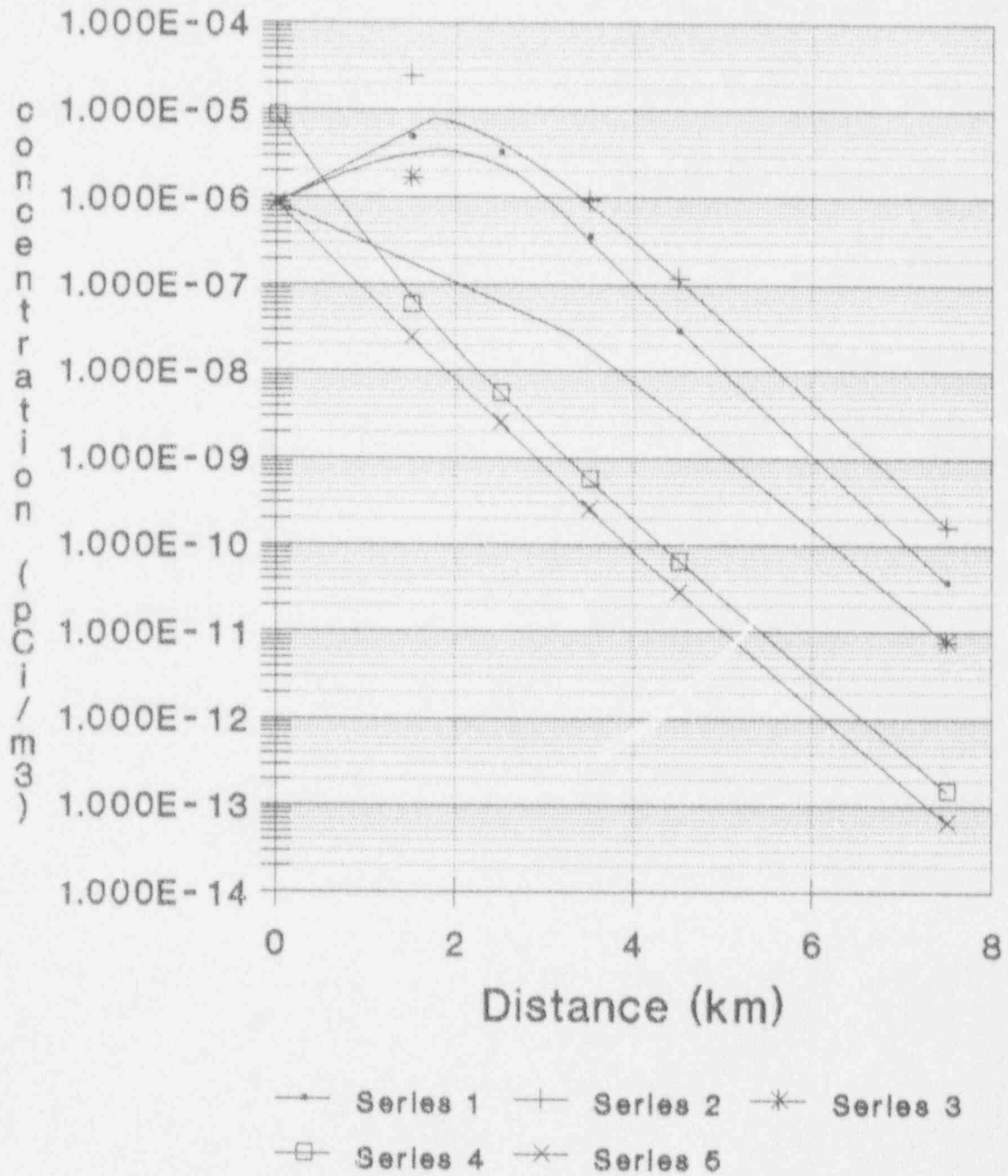


Figure 5

Table 6.1 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Rollover Waste Receiving Operations.

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	4.399E-07	5.091E-04
0.0	2.5	4.772E-07	5.766E-04
0.0	3.5	1.855E-07	2.194E-04
0.0	4.5	7.781E-08	9.803E-05
0.0	7.5	6.883E-08	9.783E-05
0.0	15.0	2.462E-08	3.992E-05
0.0	25.0	1.009E-08	1.832E-05
0.0	35.0	5.621E-09	1.100E-05
0.0	45.0	3.114E-09	7.549E-06
0.0	55.0	2.581E-09	5.583E-06
0.0	65.0	1.935E-09	4.341E-06
0.0	75.0	1.509E-09	3.497E-06
22.5	1.5	2.131E-06	2.527E-03
22.5	2.5	1.034E-06	1.165E-03
22.5	3.5	1.153E-06	1.451E-03
22.5	4.5	7.167E-07	9.752E-04
22.5	7.5	2.313E-07	3.555E-04
22.5	15.0	5.496E-08	9.944E-05
22.5	25.0	1.999E-08	4.153E-05
22.5	35.0	1.040E-08	2.386E-05
22.5	45.0	6.439E-09	1.595E-05
22.5	55.0	4.394E-09	1.161E-05
22.5	65.0	3.189E-09	8.911E-06
22.5	75.0	2.419E-09	7.102E-06
45.0	1.5	8.489E-06	9.987E-03
45.0	2.5	2.528E-05	2.964E-02
45.0	3.5	2.894E-06	3.731E-03
45.0	4.5	1.110E-06	1.509E-03
45.0	7.5	2.650E-07	3.986E-04
45.0	15.0	5.827E-08	1.014E-04
45.0	25.0	2.105E-08	4.153E-05
45.0	35.0	1.100E-08	2.372E-05
45.0	45.0	6.836E-09	1.578E-05
45.0	55.0	4.677E-09	1.143E-05
45.0	65.0	3.408E-09	8.744E-06
45.0	75.0	2.598E-09	6.957E-06

Table 6.1 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Rollover Waste Receiving Operations.

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	1.370E-06	1.766E-03
67.5	2.5	0.000E+00	0.000E+00
67.5	3.5	8.972E-07	1.269E-03
67.5	4.5	6.598E-07	9.584E-04
67.5	7.5	2.355E-07	3.565E-04
67.5	15.0	5.781E-08	9.776E-05
67.5	25.0	2.139E-08	4.029E-05
67.5	35.0	1.135E-08	2.309E-05
67.5	45.0	7.143E-09	1.541E-05
67.5	55.0	4.949E-09	1.122E-05
67.5	65.0	3.659E-09	8.666E-06
67.5	75.0	2.823E-09	6.945E-06
90.0	1.5	5.002E-07	6.712E-04
90.0	2.5	0.000E+00	0.000E+00
90.0	3.5	0.000E+00	0.000E+00
90.0	4.5	0.000E+00	0.000E+00
90.0	7.5	5.522E-08	9.215E-05
90.0	15.0	2.609E-08	5.118E-05
90.0	25.0	1.109E-08	2.516E-05
90.0	35.0	6.104E-09	1.537E-05
90.0	45.0	3.874E-09	1.057E-05
90.0	55.0	2.676E-09	7.810E-06
90.0	65.0	1.958E-09	6.056E-06
90.0	75.0	1.494E-09	4.863E-06
112.5	1.5	3.590E-07	4.966E-04
112.5	2.5	1.619E-08	2.278E-05
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 6.1 The Normalized Airborne Concentrations ( $\mu\text{Ci}/\text{m}^3$ ) of a Particulate and Radon from the Rollover Waste Receiving Operations.

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	4.023E-07	5.421E-04
135.0	2.5	1.183E-07	1.718E-04
135.0	3.5	3.730E-08	5.551E-05
135.0	4.5	2.964E-09	4.506E-06
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	4.475E-07	5.961E-04
157.5	2.5	1.969E-07	2.773E-04
157.5	3.5	8.871E-08	1.351E-04
157.5	4.5	5.608E-08	8.754E-05
157.5	7.5	1.843E-08	3.062E-05
157.5	15.0	3.263E-09	6.081E-06
157.5	25.0	7.734E-10	1.611E-06
157.5	35.0	2.716E-10	6.176E-07
157.5	45.0	1.150E-10	2.816E-07
157.5	55.0	5.361E-11	1.400E-07
157.5	65.0	2.594E-11	7.176E-08
157.5	75.0	1.229E-11	3.583E-08
180.0	1.5	4.482E-07	5.958E-04
180.0	2.5	2.770E-07	3.793E-04
180.0	3.5	1.765E-07	2.492E-04
180.0	4.5	1.211E-07	1.757E-04
180.0	7.5	5.155E-08	8.028E-05
180.0	15.0	1.422E-08	2.532E-05
180.0	25.0	5.222E-09	1.061E-05
180.0	35.0	2.663E-09	5.997E-06
180.0	45.0	1.599E-09	3.927E-06
180.0	55.0	1.059E-09	2.805E-06
180.0	65.0	7.491E-10	2.121E-06
180.0	75.0	5.580E-10	1.676E-06

Table 6.1 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Rollover Waste Receiving Operations.

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	3.258E-07	4.430E-04
202.5	2.5	2.287E-07	3.177E-04
202.5	3.5	1.693E-07	2.400E-04
202.5	4.5	1.308E-07	1.887E-04
202.5	7.5	7.122E-08	1.078E-04
202.5	15.0	2.698E-08	4.473E-05
202.5	25.0	1.213E-08	2.202E-05
202.5	35.0	6.976E-09	1.358E-05
202.5	45.0	4.573E-09	9.446E-06
202.5	55.0	3.235E-09	7.036E-06
202.5	65.0	2.410E-09	5.488E-06
202.5	75.0	1.865E-09	4.427E-06
225.0	1.5	2.015E-07	2.852E-04
225.0	2.5	1.252E-07	1.836E-04
225.0	3.5	8.581E-08	1.298E-04
225.0	4.5	6.272E-08	9.754E-05
225.0	7.5	3.185E-08	5.290E-05
225.0	15.0	1.137E-08	2.126E-05
225.0	25.0	4.892E-09	1.027E-05
225.0	35.0	2.837E-09	6.382E-06
225.0	45.0	1.872E-09	4.447E-06
225.0	55.0	1.338E-09	3.323E-06
225.0	65.0	1.009E-09	2.601E-06
225.0	75.0	7.917E-10	2.107E-06
247.5	1.5	2.138E-07	3.003E-04
247.5	2.5	1.430E-07	2.057E-04
247.5	3.5	1.021E-07	1.502E-04
247.5	4.5	7.671E-08	1.152E-04
247.5	7.5	3.957E-08	6.262E-05
247.5	15.0	1.406E-08	2.460E-05
247.5	25.0	6.090E-09	1.176E-05
247.5	35.0	3.473E-09	7.197E-06
247.5	45.0	2.259E-09	4.960E-06
247.5	55.0	1.603E-09	3.700E-06
247.5	65.0	1.201E-09	2.897E-06
247.5	75.0	9.351E-10	2.345E-06

Table 6.1 The Normalized Airborne Concentrations ( $\text{pCi}/\text{m}^3$ ) of a Particulate and Radon from the Rollover Waste Receiving Operations.

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	2.523E-07	3.468E-04
270.0	2.5	1.636E-07	2.296E-04
270.0	3.5	1.012E-07	1.440E-04
270.0	4.5	6.792E-08	9.776E-05
270.0	7.5	2.748E-08	4.078E-05
270.0	15.0	7.058E-09	1.105E-05
270.0	25.0	2.484E-09	4.083E-06
270.0	35.0	1.322E-09	2.216E-06
270.0	45.0	8.434E-10	1.430E-06
270.0	55.0	5.956E-10	1.018E-06
270.0	65.0	4.492E-10	7.732E-07
270.0	75.0	3.545E-10	6.139E-07
292.5	1.5	2.828E-07	3.798E-04
292.5	2.5	1.239E-07	1.644E-04
292.5	3.5	5.139E-08	6.541E-05
292.5	4.5	3.140E-08	3.965E-05
292.5	7.5	2.089E-08	3.019E-05
292.5	15.0	7.956E-09	1.344E-05
292.5	25.0	3.428E-09	6.594E-06
292.5	35.0	1.992E-09	4.127E-06
292.5	45.0	1.326E-09	2.896E-06
292.5	55.0	9.557E-10	2.175E-06
292.5	65.0	7.264E-10	1.709E-06
292.5	75.0	5.740E-10	1.389E-06
315.0	1.5	2.829E-07	3.646E-04
315.0	2.5	9.805E-08	1.213E-04
315.0	3.5	9.095E-08	1.231E-04
315.0	4.5	7.202E-08	1.030E-04
315.0	7.5	3.259E-08	4.793E-05
315.0	15.0	9.190E-09	1.400E-05
315.0	25.0	3.515E-09	5.624E-06
315.0	35.0	1.967E-09	3.232E-06
315.0	45.0	1.303E-09	2.179E-06
315.0	55.0	9.424E-10	1.600E-06
315.0	65.0	7.217E-10	1.242E-06
315.0	75.0	5.754E-10	1.002E-06

Table 6.1 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Rollover Waste Receiving Operations.

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	2.958E-07	3.602E-04
337.5	2.5	2.357E-07	3.093E-04
337.5	3.5	1.528E-07	1.985E-04
337.5	4.5	9.009E-08	1.130E-04
337.5	7.5	2.972E-08	3.823E-05
337.5	15.0	6.561E-09	9.622E-06
337.5	25.0	2.190E-09	3.625E-06
337.5	35.0	1.157E-09	2.041E-06
337.5	45.0	7.538E-10	1.373E-06
337.5	55.0	5.418E-10	1.009E-06
337.5	65.0	4.146E-10	7.839E-07
337.5	75.0	3.314E-10	6.334E-07



Table 6.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Rollover Waste Receiving Operations.

Angle (degrees)	Distance (km)	Thoron
0.0	1.5	4.841E-06
0.0	2.5	3.235E-06
0.0	3.5	3.507E-07
0.0	4.5	2.899E-08
0.0	7.5	3.701E-11
0.0	15.0	1.207E-17
0.0	25.0	9.317E-26
0.0	35.0	1.414E-33
0.0	45.0	2.931E-41
0.0	55.0	0.000E+00
0.0	65.0	0.000E+00
0.0	75.0	0.000E+00
22.5	1.5	9.470E-05
22.5	2.5	5.581E-05
22.5	3.5	4.124E-06
22.5	4.5	2.231E-07
22.5	7.5	1.529E-10
22.5	15.0	4.666E-17
22.5	25.0	2.377E-25
22.5	35.0	1.696E-33
22.5	45.0	1.368E-41
22.5	55.0	0.000E+00
22.5	65.0	0.000E+00
22.5	75.0	0.000E+00
45.0	1.5	7.293E-04
45.0	2.5	2.939E-03
45.0	3.5	2.274E-05
45.0	4.5	8.752E-07
45.0	7.5	5.906E-10
45.0	15.0	1.493E-16
45.0	25.0	6.935E-25
45.0	35.0	4.957E-33
45.0	45.0	4.298E-41
45.0	55.0	0.000E+00
45.0	65.0	0.000E+00
45.0	75.0	0.000E+00

Table 6.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Rollover Waste Receiving Operations.

Angle (degrees)	Distance (km)	Thoron
67.5	1.5	2.468E-05
67.5	2.5	0.000E+00
67.5	3.5	9.704E-07
67.5	4.5	1.157E-07
67.5	7.5	1.570E-10
67.5	15.0	4.604E-17
67.5	25.0	2.269E-25
67.5	35.0	1.972E-33
67.5	45.0	1.954E-41
67.5	55.0	0.000E+00
67.5	65.0	0.000E+00
67.5	75.0	0.000E+00
90.0	1.5	1.674E-06
90.0	2.5	0.000E+00
90.0	3.5	0.000E+00
90.0	4.5	0.000E+00
90.0	7.5	7.563E-12
90.0	15.0	3.661E-18
90.0	25.0	1.832E-26
90.0	35.0	1.471E-34
90.0	45.0	1.953E-42
90.0	55.0	0.000E+00
90.0	65.0	0.000E+00
90.0	75.0	0.000E+00
112.5	1.5	2.379E-07
112.5	2.5	3.682E-09
112.5	3.5	0.000E+00
112.5	4.5	0.000E+00
112.5	7.5	0.000E+00
112.5	15.0	0.000E+00
112.5	25.0	0.000E+00
112.5	35.0	0.000E+00
112.5	45.0	0.000E+00
112.5	55.0	0.000E+00
112.5	65.0	0.000E+00
112.5	75.0	0.000E+00

Table 6.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Rollover Waste Receiving Operations.

Angle (degrees)	Distance (km)	Thoron
135.0	1.5	1.923E-07
135.0	2.5	2.802E-09
135.0	3.5	1.228E-10
135.0	4.5	1.354E-12
135.0	7.5	0.000E+00
135.0	15.0	0.000E+00
135.0	25.0	0.000E+00
135.0	35.0	0.000E+00
135.0	45.0	0.000E+00
135.0	55.0	0.000E+00
135.0	65.0	0.000E+00
135.0	75.0	0.000E+00
157.5	1.5	1.012E-07
157.5	2.5	6.576E-09
157.5	3.5	3.508E-11
157.5	4.5	1.674E-12
157.5	7.5	2.339E-16
157.5	15.0	1.480E-25
157.5	25.0	1.838E-37
157.5	35.0	0.000E+00
157.5	45.0	0.000E+00
157.5	55.0	0.000E+00
157.5	65.0	0.000E+00
157.5	75.0	0.000E+00
180.0	1.5	5.731E-08
180.0	2.5	5.454E-09
180.0	3.5	5.562E-10
180.0	4.5	6.420E-11
180.0	7.5	1.456E-13
180.0	15.0	9.545E-20
180.0	25.0	1.184E-27
180.0	35.0	2.078E-35
180.0	45.0	0.000E+00
180.0	55.0	0.000E+00
180.0	65.0	0.000E+00
180.0	75.0	0.000E+00

Table 6.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Rollover Waste Receiving Operations.

Angle (degrees)	Distance (km)	Thoron
202.5	1.5	2.674E-08
202.5	2.5	2.826E-09
202.5	3.5	3.361E-10
202.5	4.5	4.278E-11
202.5	7.5	1.064E-13
202.5	15.0	5.353E-20
202.5	25.0	3.294E-28
202.5	35.0	2.454E-36
202.5	45.0	0.000E+00
202.5	55.0	0.000E+00
202.5	65.0	0.000E+00
202.5	75.0	0.000E+00
225.0	1.5	8.368E-09
225.0	2.5	5.940E-10
225.0	3.5	5.156E-11
225.0	4.5	4.945E-12
225.0	7.5	8.072E-15
225.0	15.0	3.147E-21
225.0	25.0	1.604E-29
225.0	35.0	1.434E-37
225.0	45.0	0.000E+00
225.0	55.0	0.000E+00
225.0	65.0	0.000E+00
225.0	75.0	0.000E+00
247.5	1.5	1.097E-08
247.5	2.5	1.105E-09
247.5	3.5	1.281E-10
247.5	4.5	1.622E-11
247.5	7.5	4.096E-14
247.5	15.0	2.161E-20
247.5	25.0	1.442E-28
247.5	35.0	1.276E-36
247.5	45.0	0.000E+00
247.5	55.0	0.000E+00
247.5	65.0	0.000E+00
247.5	75.0	0.000E+00

Table 6.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Rollover Waste Receiving Operations.

Angle (degrees)	Distance (km)	Thoron
270.0	1.5	2.397E-08
270.0	2.5	2.501E-09
270.0	3.5	2.489E-10
270.0	4.5	2.813E-11
270.0	7.5	6.286E-14
270.0	15.0	4.198E-20
270.0	25.0	5.392E-28
270.0	35.0	9.798E-36
270.0	45.0	0.000E+00
270.0	55.0	0.000E+00
270.0	65.0	0.000E+00
270.0	75.0	0.000E+00
292.5	1.5	5.859E-08
292.5	2.5	4.574E-09
292.5	3.5	2.002E-10
292.5	4.5	1.364E-11
292.5	7.5	1.684E-13
292.5	15.0	9.773E-20
292.5	25.0	5.491E-28
292.5	35.0	4.906E-36
292.5	45.0	0.000E+00
292.5	55.0	0.000E+00
292.5	65.0	0.000E+00
292.5	75.0	0.000E+00
315.0	1.5	1.734E-07
315.0	2.5	1.292E-08
315.0	3.5	3.030E-09
315.0	4.5	4.783E-10
315.0	7.5	1.835E-12
315.0	15.0	1.034E-18
315.0	25.0	7.968E-27
315.0	35.0	1.221E-34
315.0	45.0	1.953E-42
315.0	55.0	0.000E+00
315.0	65.0	0.000E+00
315.0	75.0	0.000E+00

Table 6.2 The Normalized Airborne Concentration ( $\mu\text{Ci}/\text{m}^3$ ) of Thoron from the Rollover Waste Receiving Operations.

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Angle (degrees)	Distance (km)	Thoron
337.5	1.5	6.972E-07
337.5	2.5	1.917E-07
337.5	3.5	3.722E-08
337.5	4.5	4.668E-09
337.5	7.5	1.130E-11
337.5	15.0	5.471E-18
337.5	25.0	4.088E-26
337.5	35.0	6.103E-34
337.5	45.0	1.368E-41
337.5	55.0	0.000E+00
337.5	65.0	0.000E+00
337.5	75.0	0.000E+00

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Table 6.3 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Rollover Waste Receiving Operations

Site	Location	Particulate	Radon
1	Guard Res	3.429E-06	4.032E-03
2	Admin Bldg	2.068E-06	2.300E-03
3	A1	2.740E-06	3.117E-03
4	A2	4.749E-04	4.782E-01
5	A3	2.538E-06	3.122E-03
6	A5	1.569E-06	1.964E-03
7	A6	4.759E-06	5.711E-03
8	A7	6.134E-06	7.336E-03
9	A11	1.034E-06	1.324E-03
10	A12	1.939E-06	2.421E-03
11	A13	6.153E-07	8.156E-04
12	SW	5.873E-07	7.784E-04
13	W1	6.756E-07	8.903E-04
14	W2	9.227E-07	1.185E-03
15	W3	8.482E-07	1.055E-03
16	NW	4.102E-07	4.738E-04
17	N1	8.238E-07	9.420E-04
18	N3	3.479E-05	3.809E-02
19	NE	7.005E-05	8.052E-02
20	E1	5.157E-07	6.757E-04
21	E2	4.110E-07	5.501E-04
22	E3	0.000E+00	0.000E+00
23	SE	3.876E-07	5.214E-04
24	S1	1.064E-06	1.360E-03
25	S2	1.477E-06	1.855E-03
26	S3	9.549E-07	1.235E-03
27	USPCI	2.374E-07	3.202E-04
28	APTUS	9.273E-08	1.502E-04

Table 6.4 The Normalized Airborne Concentrations ( $\mu\text{Ci}/\text{m}^3$ ) of Thoron from the Rollover Waste Receiving Operations

Site	Location	Thoron
1	Guard Residence	2.818E-04
2	Admin Bldg	1.913E-04
3	A1	2.570E-04
4	A2	1.972E-01
5	A3	4.683E-05
6	A5	9.475E-06
7	A6	3.143E-04
8	A7	4.650E-04
9	A11	3.586E-06
10	A12	3.282E-05
11	A13	1.172E-06
12	SW	8.758E-07
13	W1	1.696E-06
14	W2	4.805E-06
15	W3	7.352E-06
16	NW	4.582E-06
17	N1	2.685E-05
18	N3	9.823E-03
19	NE	1.492E-02
20	E1	5.522E-06
21	E2	1.733E-06
22	E3	0.000E+00
23	SE	1.300E-06
24	S1	3.659E-06
25	S2	8.221E-06
26	S3	5.609E-06
27	USPCI	3.162E-08
28	APTUS	2.145E-14



## 2.2 Waste Storage

The wastes may be stored either at the waste storage site or on the bulk storage site prior to disposal of the wastes. We assumed 100% of wastes received may be stored on either of these two storage sites. The procedure for estimation of the rate of release of a particulate was previously detailed in the license application and our responses to the FSER. We assumed a semi-spherical storage pile with a bulk density of  $1.5 \text{ g cm}^{-3}$  and a radius of 16.5 m. This waste pile would have an area of approximately  $1710 \text{ m}^2$ . We assumed an area of  $200 \text{ m}^2$  for the bulk waste pile. The rates of release of the particulates from the surface of the pile were estimated using the procedure detailed in the user manual for the UDAD computer code (Chapter 4, pp. 16 - 29).

We estimated the rate of releases ( $Q_d$ ) of radon and thoron from disturbing the waste from:

$$Q_d = \epsilon [\text{Ra}] M (1 - e^{-0.003VT})$$

where

$$\epsilon = 0.25 \text{ for radon, } \epsilon = 0.10 \text{ for thoron}$$

$$[\text{Ra}] = 1.0 \text{ pCi/g}$$

$$M = 4.5 \times 10^{11} \text{ g}$$

$$t = 365 \text{ days}$$

$T = 3.82$  days for radon,  $T = 6.36 \times 10^4$  days for thoron

$Q_d = 0.113$  Ci/year for radon

$Q_d = 0.045$  Ci/year for thoron

We assumed identical values for the rate of releases from disturbing the bulk waste pile.

The releases of radon and thoron from the surfaces of the waste storage area and the bulk waste storage area are based on:

$$Q = \Phi_s A [Ra] \Delta t$$

where

$$\Phi_s = 0.64 \text{ (pCi}^{222}\text{Rn m}^{-2}\text{s}^{-1}\text{)/(pCi}^{220}\text{Rn g}^{-1}\text{) for radon}$$

$$\Phi_s = 23.7 \text{ (pCi}^{220}\text{Rn m}^{-2}\text{s}^{-1}\text{)/(pCi}^{224}\text{Rn g}^{-1}\text{) for thoron}$$

$$\Delta t = 3.1 \times 10^7 \text{ seconds/year}$$

$$[Ra] = 1 \text{ pCi/g radium}$$

From the Storage Area  $Q_r = 3.4 \times 10^{-2}$  Ci/year radon  
 $Q_t = 1.26$  Ci/year thoron

From the Bulk Storage Area  $Q_r = 4.0 \times 10^{-3}$  Ci/year radon  
 $Q_t = 0.15$  Ci/year thoron

The total rate of release ( $Q_t$ ) from both the disturbance of the waste and the release from the surfaces is:

From the Storage Area             $Q_t = 0.15$  Ci/year radon  
                                          $Q_t = 1.31$  Ci/year thoron

From the Bulk Storage Area     $Q_t = 0.12$  Ci/year radon  
                                          $Q_t = 0.20$  Ci/year thoron

Tables 7.1 through 7.4 list the normalized airborne concentrations of particulate, radon and thoron from the waste storage operations (Figs. 6, 7, 8). Similarly, Tables 8.1 through 8.4 list the normalized airborne concentrations of particulate, radon and thoron from the bulk waste storage operations. Figures 6, 7 and 8 show the normalized airborne concentration distributions of a particulate, radon and thoron from the waste storage operation as a function of the distance from the site marker at the southwestern corner of the Envirocare facility. Figures 9, 10 and 11 show the normalized airborne concentration distributions of a particulate, radon and thoron from the bulk storage operation as a function of the distance.

Figure 6. Airborne Concentration of a Particulate From the Waste Storage Facility (Series 1: angle 0 degrees, the northern direction; Series 2: angle 67 degrees, the direction of the maximum airborne radioactivity transport; Series 3: angle 90 degrees, the eastern direction; Series 4: angle 180 degrees, the southern direction; Series 5: angle 270 degrees, the western direction).

# Airborne Particulate Concentration

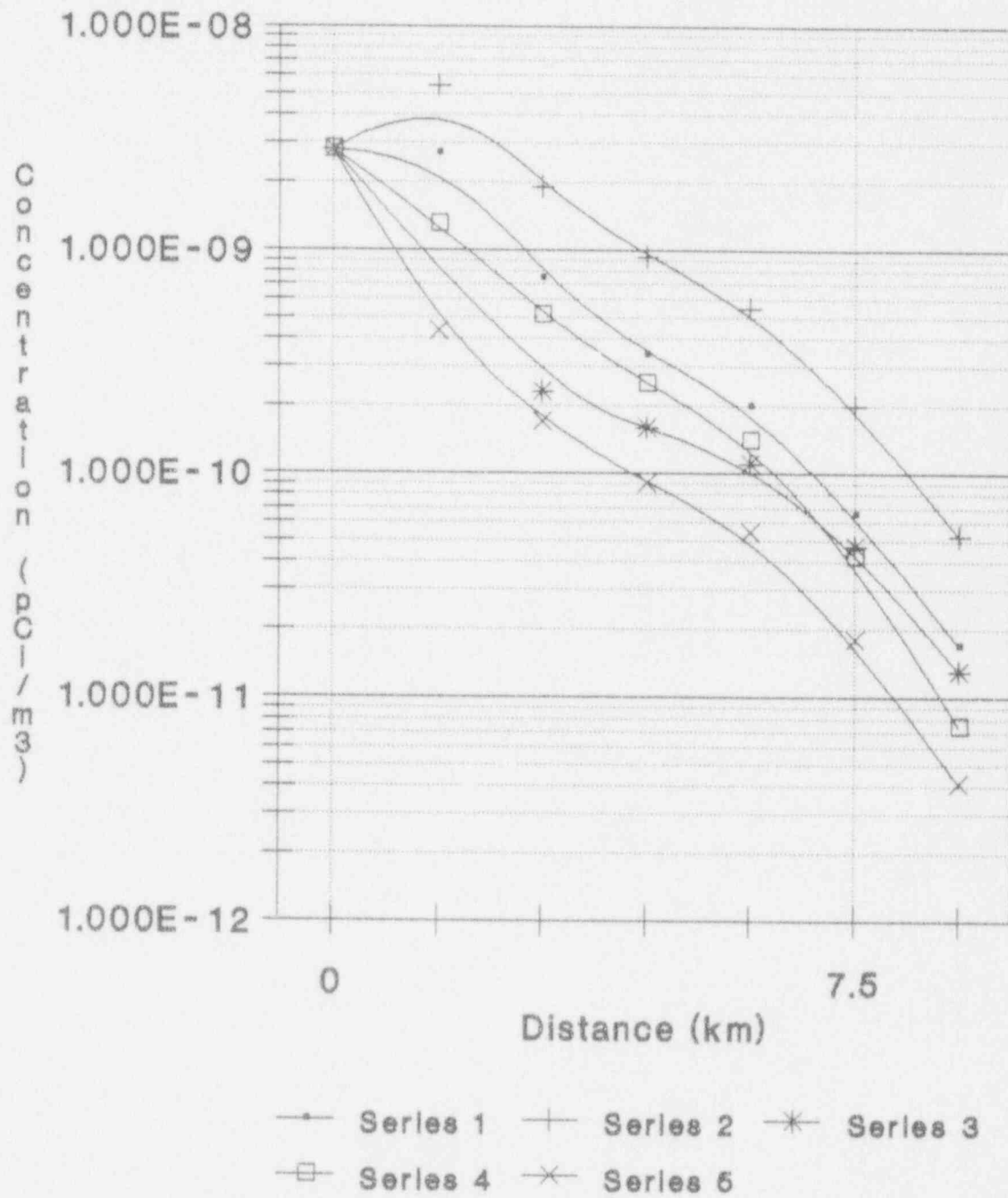


Figure 6

Figure 7. Airborne Concentration of Radon From the Waste Storage Facility  
(Series 1: angle 0 degrees, the northern direction; Series 2: angle 67 degrees, the direction of the maximum airborne radioactivity transport; Series 3: angle 90 degrees, the eastern direction; Series 4: angle 180 degrees, the southern direction; Series 5: angle 270 degrees, the western direction).

# Airborne Concentration Of Radon

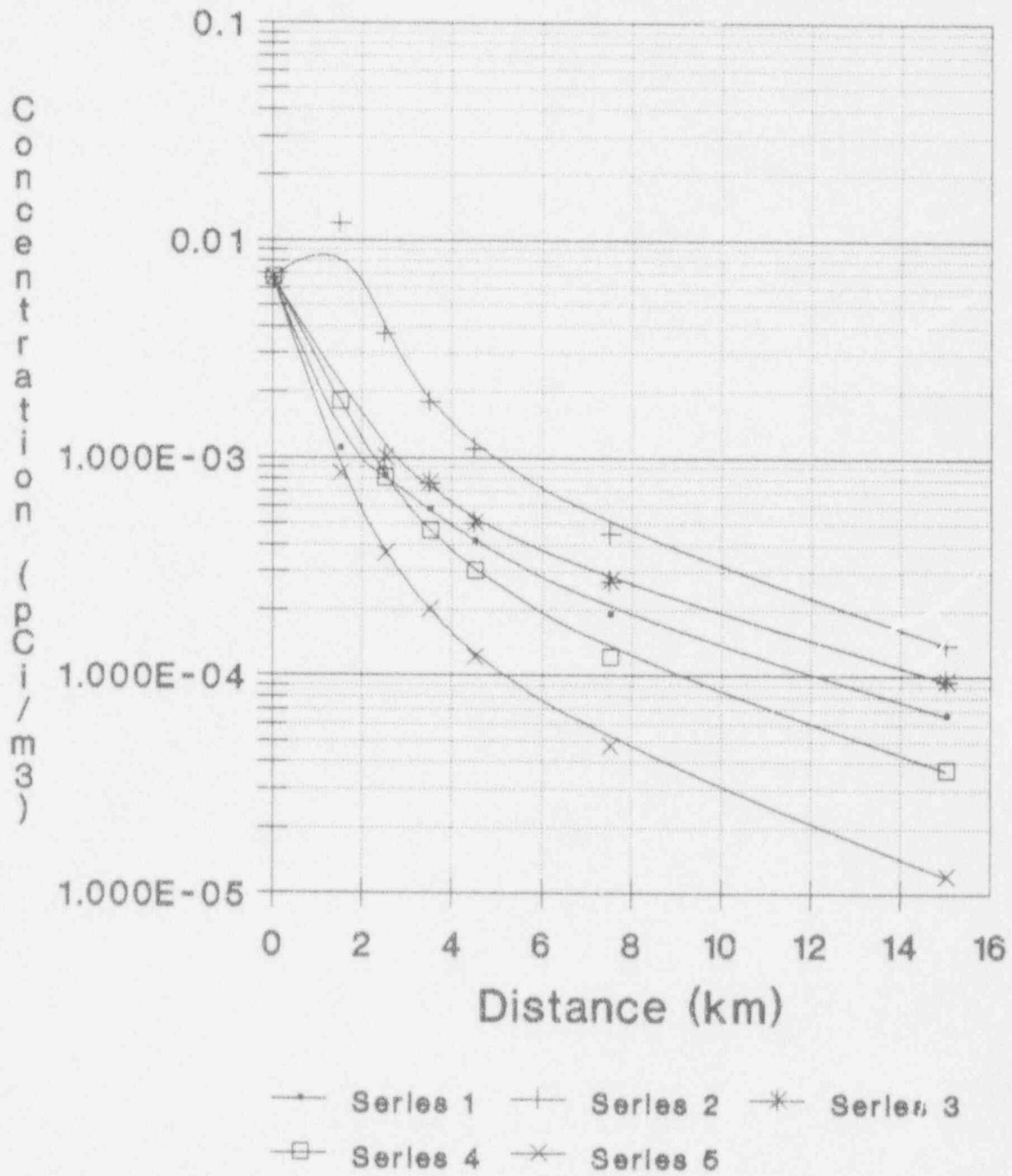


Figure 7

Figure 8. Airborne Concentration of Thoron From the Waste Storage Facility (Series 1: angle 0 degrees, the northern direction; Series 2: angle 67 degrees, the direction of the maximum airborne radioactivity transport; Series 3: angle 90 degrees, the eastern direction; Series 4: angle 180 degrees, the southern direction; Series 5: angle 270 degrees, the western direction).



# Airborne Concentration Of Thoron

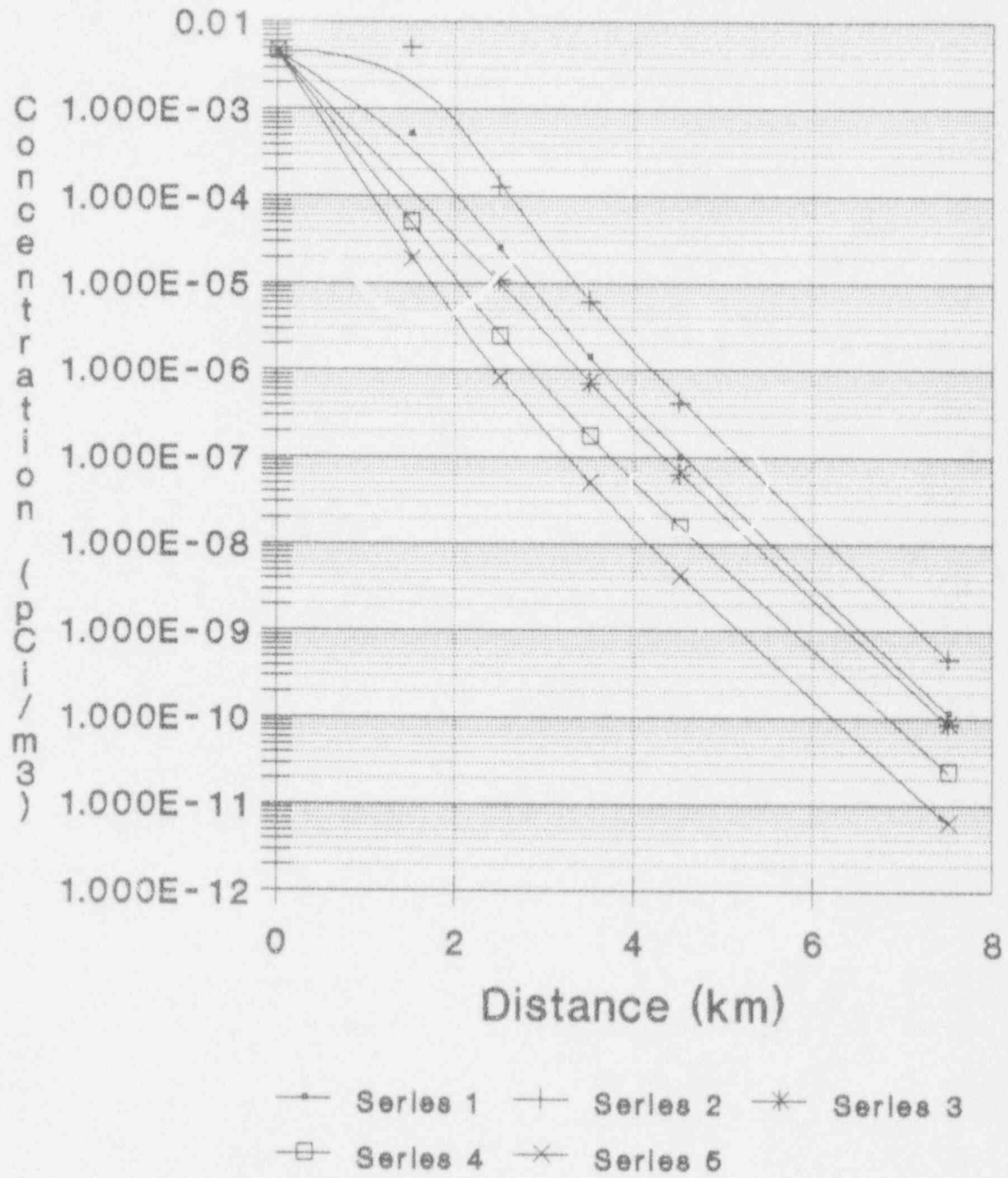


Figure 8

Figure 9. Airborne Concentration of a Particulate From the Bulk Waste Storage Facility (Series 1: angle 0 degrees, the northern direction; Series 2: angle 67 degrees, the direction of the maximum airborne radioactivity transport; Series 3: angle 90 degrees, the eastern direction; Series 4: angle 180 degrees, the southern direction; Series 5: angle 270 degrees, the western direction).

# Airborne Particulate Concentration

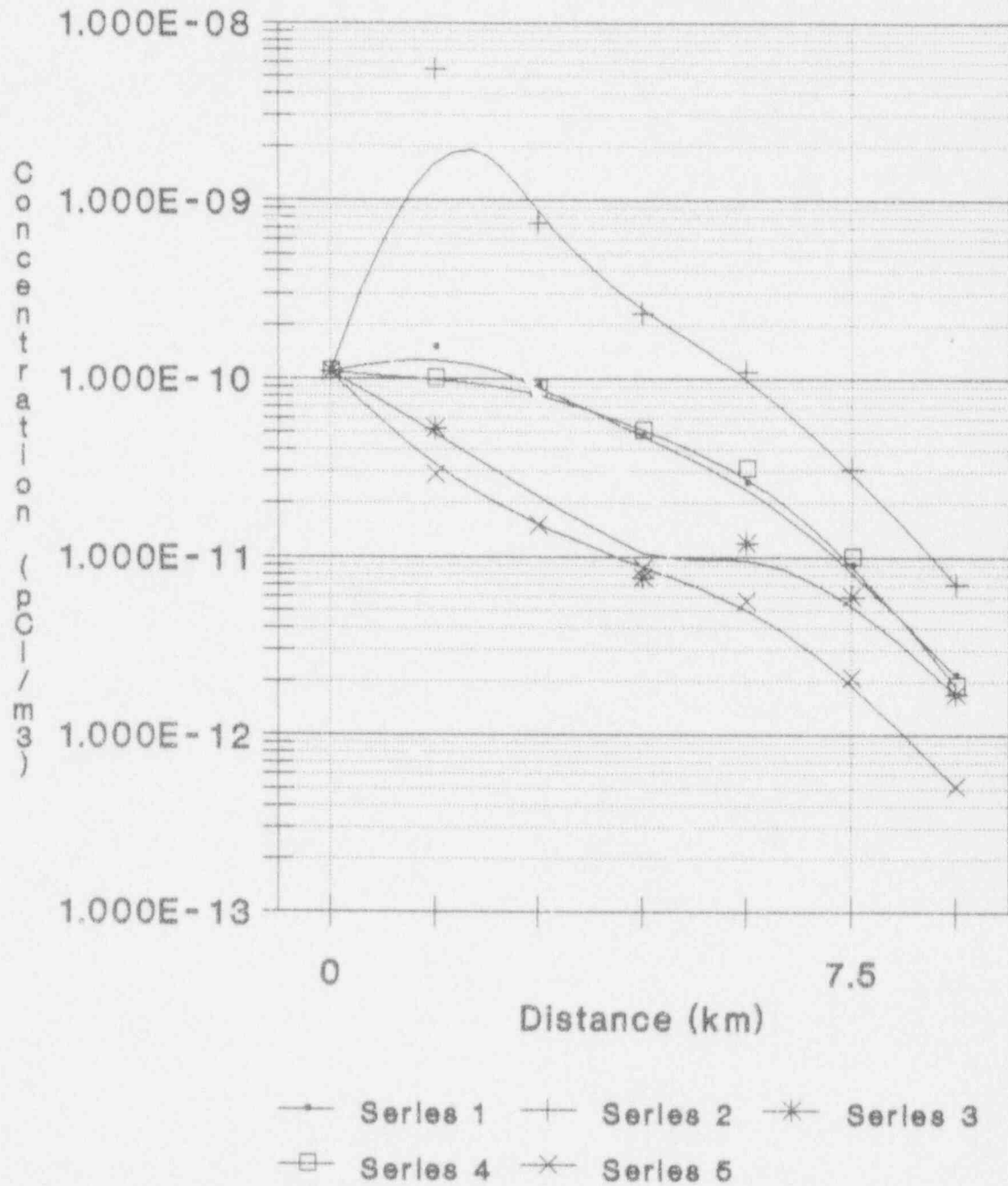


Figure 9

Figure 10. Airborne Concentration of Radon From the Bulk Waste Storage Facility (Series 1: angle 0 degrees, the northern direction; Series 2: angle 67 degrees, the direction of the maximum airborne radioactivity transport; Series 3: angle 90 degrees, the eastern direction; Series 4: angle 180 degrees, the southern direction; Series 5: angle 270 degrees, the western direction).

# Airborne Concentration Of Radon

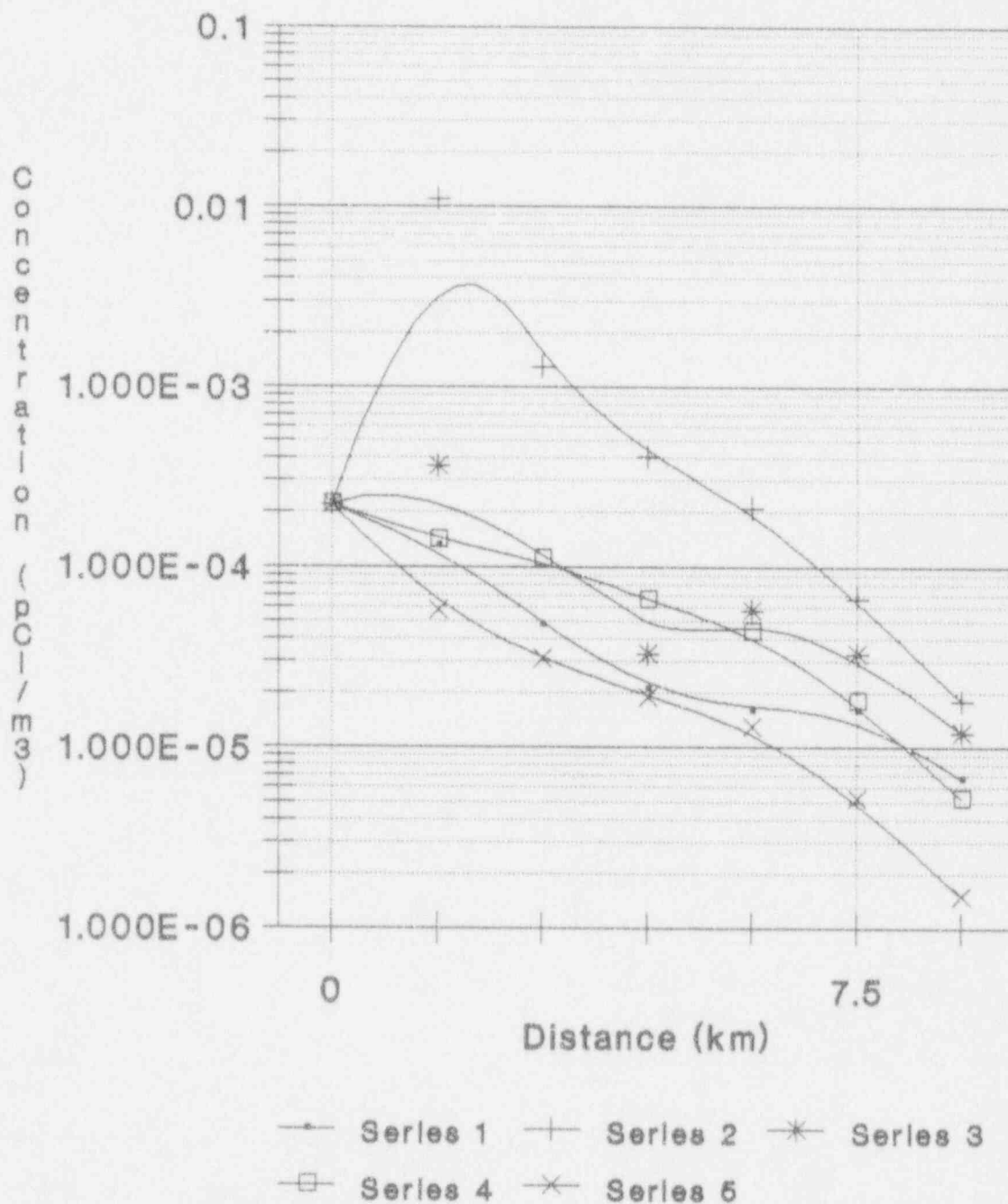


Figure 10

Figure 11. Airborne Concentration of Thoron From the Bulk Waste Storage Facility (Series 1: angle 0 degrees, the northern direction; Series 2: angle 67 degrees, the direction of the maximum airborne radioactivity transport; Series 3: angle 90 degrees, the eastern direction; Series 4: angle 180 degrees, the southern direction; Series 5: angle 270 degrees, the western direction).

# Airborne Concentration Of Thoron

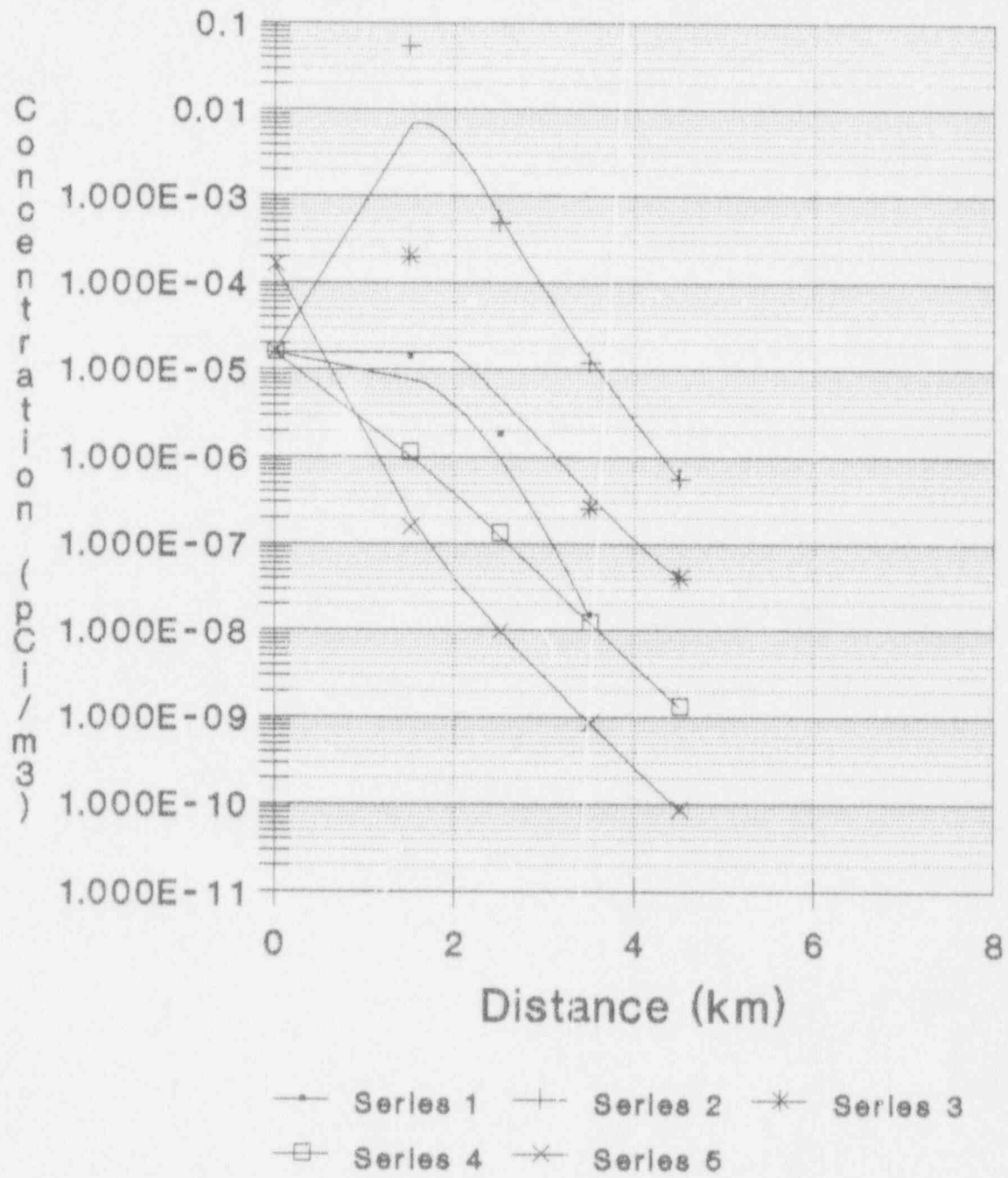


Figure 11

Table 7.1 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Waste Storage Operations.

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	2.726E-09	1.112E-03
0.0	2.5	7.511E-10	8.247E-04
0.0	3.5	3.427E-10	5.788E-04
0.0	4.5	1.952E-10	4.112E-04
0.0	7.5	6.615E-11	1.922E-04
0.0	15.0	1.680E-11	6.557E-05
0.0	25.0	6.371E-12	2.943E-05
0.0	35.0	3.704E-12	1.763E-05
0.0	45.0	2.576E-12	1.210E-05
0.0	55.0	1.932E-12	8.949E-06
0.0	65.0	1.522E-12	6.960E-06
0.0	75.0	1.243E-12	5.609E-06
22.5	1.5	3.107E-09	8.270E-03
22.5	2.5	1.138E-09	3.187E-03
22.5	3.5	5.751E-10	1.692E-03
22.5	4.5	3.510E-10	1.073E-03
22.5	7.5	1.334E-10	4.425E-04
22.5	15.0	3.766E-11	1.404E-04
22.5	25.0	1.515E-11	6.204E-05
22.5	35.0	8.796E-12	3.665E-05
22.5	45.0	5.977E-12	2.477E-05
22.5	55.0	4.398E-12	1.811E-05
22.5	65.0	3.412E-12	1.394E-05
22.5	75.0	2.747E-12	1.113E-05
45.0	1.5	1.436E-08	1.731E-02
45.0	2.5	3.265E-09	4.031E-03
45.0	3.5	1.469E-09	1.898E-03
45.0	4.5	8.478E-10	1.140E-03
45.0	7.5	3.027E-10	4.520E-04
45.0	15.0	8.124E-11	1.402E-04
45.0	25.0	3.168E-11	6.096E-05
45.0	35.0	1.860E-11	3.571E-05
45.0	45.0	1.294E-11	2.406E-05
45.0	55.0	9.726E-12	1.756E-05
45.0	65.0	7.686E-12	1.351E-05
45.0	75.0	6.292E-12	1.080E-05



Table 7.1 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Waste Storage Operations.

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	5.405E-09	1.238E-02
67.5	2.5	1.896E-09	3.717E-03
67.5	3.5	9.297E-10	1.848E-03
67.5	4.5	5.539E-10	1.135E-03
67.5	7.5	1.998E-10	4.485E-04
67.5	15.0	5.242E-11	1.378E-04
67.5	25.0	2.000E-11	6.065E-05
67.5	35.0	1.212E-11	3.585E-05
67.5	45.0	8.762E-12	2.431E-05
67.5	55.0	6.787E-12	1.783E-05
67.5	65.0	5.497E-12	1.377E-05
67.5	75.0	4.595E-12	1.104E-05
90.0	1.5	0.000E+00	0.000E+00
90.0	2.5	2.340E-10	9.911E-04
90.0	3.5	1.641E-10	7.640E-04
90.0	4.5	1.120E-10	5.604E-04
90.0	7.5	4.677E-11	2.715E-04
90.0	15.0	1.334E-11	9.499E-05
90.0	25.0	5.189E-12	4.310E-05
90.0	35.0	3.223E-12	2.568E-05
90.0	45.0	2.375E-12	1.744E-05
90.0	55.0	1.865E-12	1.279E-05
90.0	65.0	1.526E-12	9.871E-06
90.0	75.0	1.286E-12	7.898E-06
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 7.1 The Normalized Airborne Concentrations ( $\text{pCi}/\text{m}^3$ ) of a Particulate and Radon from the Waste Storage Operations.

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	3.659E-11	2.577E-04
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	1.278E-10	9.110E-04
157.5	2.5	4.348E-11	3.192E-04
157.5	3.5	1.995E-11	1.499E-04
157.5	4.5	1.079E-11	8.269E-05
157.5	7.5	2.842E-12	2.286E-05
157.5	15.0	3.690E-13	3.230E-06
157.5	25.0	5.566E-14	5.281E-07
157.5	35.0	6.321E-15	6.387E-08
157.5	45.0	0.000E+00	0.000E+00
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	1.344E-09	1.777E-03
180.0	2.5	5.058E-10	8.023E-04
180.0	3.5	2.478E-10	4.561E-04
180.0	4.5	1.412E-10	2.955E-04
180.0	7.5	4.225E-11	1.210E-04
180.0	15.0	7.417E-12	3.650E-05
180.0	25.0	1.926E-12	1.543E-05
180.0	35.0	8.778E-13	9.014E-06
180.0	45.0	5.682E-13	6.162E-06
180.0	55.0	3.985E-13	4.534E-06
180.0	65.0	2.952E-13	3.504E-06
180.0	75.0	2.274E-13	2.805E-06

Table 7.1 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Waste Storage Operations.

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	1.245E-09	1.659E-03
202.5	2.5	7.338E-10	9.509E-04
202.5	3.5	4.887E-10	6.294E-04
202.5	4.5	3.520E-10	4.539E-04
202.5	7.5	1.716E-10	2.251E-04
202.5	15.0	5.972E-11	8.241E-05
202.5	25.0	2.634E-11	3.866E-05
202.5	35.0	1.535E-11	2.339E-05
202.5	45.0	1.021E-11	1.600E-05
202.5	55.0	7.350E-12	1.179E-05
202.5	65.0	5.576E-12	9.127E-06
202.5	75.0	4.394E-12	7.321E-06
225.0	1.5	3.064E-10	9.253E-04
225.0	2.5	1.485E-10	4.933E-04
225.0	3.5	8.856E-11	3.153E-04
225.0	4.5	6.019E-11	2.246E-04
225.0	7.5	2.629E-11	1.090E-04
225.0	15.0	7.994E-12	3.891E-05
225.0	25.0	3.217E-12	1.782E-05
225.0	35.0	2.041E-12	1.079E-05
225.0	45.0	1.488E-12	7.424E-06
225.0	55.0	1.158E-12	5.501E-06
225.0	65.0	9.411E-13	4.282E-06
225.0	75.0	7.883E-13	3.453E-06
247.5	1.5	5.047E-10	1.059E-03
247.5	2.5	2.756E-10	5.696E-04
247.5	3.5	1.772E-10	3.642E-04
247.5	4.5	1.252E-10	2.570E-04
247.5	7.5	5.941E-11	1.230E-04
247.5	15.0	2.033E-11	4.363E-05
247.5	25.0	8.975E-12	2.041E-05
247.5	35.0	5.188E-12	1.236E-05
247.5	45.0	3.423E-12	8.480E-06
247.5	55.0	2.445E-12	6.263E-06
247.5	65.0	1.842E-12	4.860E-06
247.5	75.0	1.442E-12	3.906E-06

Table 7.1 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Waste Storage Operations.

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	4.266E-10	8.380E-04
270.0	2.5	1.730E-10	3.612E-04
270.0	3.5	8.993E-11	1.973E-04
270.0	4.5	5.390E-11	1.234E-04
270.0	7.5	1.828E-11	4.649E-05
270.0	15.0	4.051E-12	1.234E-05
270.0	25.0	1.331E-12	4.757E-06
270.0	35.0	7.554E-13	2.871E-06
270.0	45.0	5.187E-13	2.030E-06
270.0	55.0	3.839E-13	1.539E-06
270.0	65.0	2.988E-13	1.221E-06
270.0	75.0	2.411E-13	1.002E-06
292.5	1.5	2.202E-10	4.271E-04
292.5	2.5	1.981E-10	2.898E-04
292.5	3.5	1.389E-10	1.979E-04
292.5	4.5	9.967E-11	1.436E-04
292.5	7.5	4.574E-11	7.064E-05
292.5	15.0	1.402E-11	2.523E-05
292.5	25.0	5.583E-12	1.153E-05
292.5	35.0	3.680E-12	7.002E-06
292.5	45.0	2.805E-12	4.859E-06
292.5	55.0	2.257E-12	3.628E-06
292.5	65.0	1.882E-12	2.842E-06
292.5	75.0	1.609E-12	2.304E-06
315.0	1.5	8.743E-10	9.318E-04
315.0	2.5	4.939E-10	4.487E-04
315.0	3.5	2.910E-10	2.512E-04
315.0	4.5	1.895E-10	1.609E-04
315.0	7.5	7.562E-11	6.457E-05
315.0	15.0	2.083E-11	1.908E-05
315.0	25.0	7.954E-12	7.954E-06
315.0	35.0	5.080E-12	4.704E-06
315.0	45.0	3.820E-12	3.255E-06
315.0	55.0	3.060E-12	2.458E-06
315.0	65.0	2.543E-12	1.946E-06
315.0	75.0	2.168E-12	1.593E-06

Table 7.1 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Waste Storage Operations.

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	1.781E-09	1.121E-03
337.5	2.5	7.211E-10	3.766E-04
337.5	3.5	3.704E-10	1.943E-04
337.5	4.5	2.219E-10	1.184E-04
337.5	7.5	7.771E-11	4.403E-05
337.5	15.0	1.901E-11	1.218E-05
337.5	25.0	6.845E-12	4.916E-06
337.5	35.0	4.362E-12	2.895E-06
337.5	45.0	3.348E-12	2.021E-06
337.5	55.0	2.723E-12	1.533E-06
337.5	65.0	2.289E-12	1.218E-06
337.5	75.0	1.970E-12	1.001E-06

Table 7.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Waste Storage Operations.

Angle (degrees)	Distance (km)	Thoron
0.0	1.5	5.111E-04
0.0	2.5	2.538E-05
0.0	3.5	1.443E-06
0.0	4.5	1.013E-07
0.0	7.5	1.064E-10
0.0	15.0	3.155E-17
0.0	25.0	1.421E-25
0.0	35.0	4.616E-34
0.0	45.0	0.000E+00
0.0	55.0	0.000E+00
0.0	65.0	0.000E+00
0.0	75.0	0.000E+00
22.5	1.5	3.838E-03
22.5	2.5	8.720E-05
22.5	3.5	3.846E-06
22.5	4.5	2.642E-07
22.5	7.5	3.301E-10
22.5	15.0	1.130E-16
22.5	25.0	5.775E-25
22.5	35.0	4.300E-33
22.5	45.0	5.760E-41
22.5	55.0	0.000E+00
22.5	65.0	0.000E+00
22.5	75.0	0.000E+00
45.0	1.5	1.066E-02
45.0	2.5	1.886E-04
45.0	3.5	9.589E-06
45.0	4.5	7.528E-07
45.0	7.5	1.028E-09
45.0	15.0	3.304E-16
45.0	25.0	1.640E-24
45.0	35.0	1.222E-32
45.0	45.0	1.152E-40
45.0	55.0	0.000E+00
45.0	65.0	0.000E+00
45.0	75.0	0.000E+00

Table 7.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Waste Storage Operations.

Angle (degrees)	Distance (km)	Thoron
67.5	1.5	5.101E-03
67.5	2.5	1.298E-04
67.5	3.5	6.096E-06
67.5	4.5	4.217E-07
67.5	7.5	4.768E-10
67.5	15.0	1.337E-16
67.5	25.0	6.008E-25
67.5	35.0	4.753E-33
67.5	45.0	5.760E-41
67.5	55.0	0.000E+00
67.5	65.0	0.000E+00
67.5	75.0	0.000E+00
90.0	1.5	0.000E+00
90.0	2.5	1.092E-05
90.0	3.5	7.467E-07
90.0	4.5	6.173E-08
90.0	7.5	8.588E-11
90.0	15.0	2.719E-17
90.0	25.0	1.266E-25
90.0	35.0	1.016E-33
90.0	45.0	0.000E+00
90.0	55.0	0.000E+00
90.0	65.0	0.000E+00
90.0	75.0	0.000E+00
112.5	1.5	0.000E+00
112.5	2.5	0.000E+00
112.5	3.5	0.000E+00
112.5	4.5	0.000E+00
112.5	7.5	0.000E+00
112.5	15.0	0.000E+00
112.5	25.0	0.000E+00
112.5	35.0	0.000E+00
112.5	45.0	0.000E+00
112.5	55.0	0.000E+00
112.5	65.0	0.000E+00
112.5	75.0	0.000E+00

Table 7.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Waste Storage Operations.

Angle (degrees)	Distance (km)	Thoron
135.0	1.5	1.188E-05
135.0	2.5	0.000E+00
135.0	3.5	0.000E+00
135.0	4.5	0.000E+00
135.0	7.5	0.000E+00
135.0	15.0	0.000E+00
135.0	25.0	0.000E+00
135.0	35.0	0.000E+00
135.0	45.0	0.000E+00
135.0	55.0	0.000E+00
135.0	65.0	0.000E+00
135.0	75.0	0.000E+00
157.5	1.5	1.642E-05
157.5	2.5	4.167E-07
157.5	3.5	1.438E-08
157.5	4.5	5.841E-10
157.5	7.5	6.447E-14
157.5	15.0	2.903E-23
157.5	25.0	2.225E-35
157.5	35.0	0.000E+00
157.5	45.0	0.000E+00
157.5	55.0	0.000E+00
157.5	65.0	0.000E+00
157.5	75.0	0.000E+00
180.0	1.5	5.118E-05
180.0	2.5	2.373E-06
180.0	3.5	1.650E-07
180.0	4.5	1.499E-08
180.0	7.5	2.400E-11
180.0	15.0	1.001E-17
180.0	25.0	5.061E-26
180.0	35.0	0.000E+00
180.0	45.0	0.000E+00
180.0	55.0	0.000E+00
180.0	65.0	0.000E+00
180.0	75.0	0.000E+00



Table 7.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Waste Storage Operations.

Angle (degrees)	Distance (km)	Thoron
202.5	1.5	3.588E-05
202.5	2.5	2.310E-06
202.5	3.5	2.060E-07
202.5	4.5	2.231E-08
202.5	7.5	4.531E-11
202.5	15.0	1.942E-17
202.5	25.0	1.108E-25
202.5	35.0	8.289E-34
202.5	45.0	0.000E+00
202.5	55.0	0.000E+00
202.5	65.0	0.000E+00
202.5	75.0	0.000E+00
225.0	1.5	8.953E-06
225.0	2.5	3.898E-07
225.0	3.5	2.557E-08
225.0	4.5	2.323E-09
225.0	7.5	3.697E-12
225.0	15.0	1.249E-18
225.0	25.0	5.982E-27
225.0	35.0	5.029E-35
225.0	45.0	0.000E+00
225.0	55.0	0.000E+00
225.0	65.0	0.000E+00
225.0	75.0	0.000E+00
247.5	1.5	1.571E-05
247.5	2.5	8.514E-07
247.5	3.5	6.839E-08
247.5	4.5	7.026E-09
247.5	7.5	1.368E-11
247.5	15.0	5.737E-18
247.5	25.0	3.321E-26
247.5	35.0	2.461E-34
247.5	45.0	0.000E+00
247.5	55.0	0.000E+00
247.5	65.0	0.000E+00
247.5	75.0	0.000E+00

Table 7.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Waste Storage Operations.

Angle (degrees)	Distance (km)	Thoron
270.0	1.5	1.846E-05
270.0	2.5	7.848E-07
270.0	3.5	4.883E-08
270.0	4.5	4.089E-09
270.0	7.5	6.093E-12
270.0	15.0	2.419E-18
270.0	25.0	7.859E-27
270.0	35.0	0.000E+00
270.0	45.0	0.000E+00
270.0	55.0	0.000E+00
270.0	65.0	0.000E+00
270.0	75.0	0.000E+00
292.5	1.5	1.720E-05
292.5	2.5	1.223E-06
292.5	3.5	1.064E-07
292.5	4.5	1.116E-08
292.5	7.5	2.079E-11
292.5	15.0	7.558E-18
292.5	25.0	3.711E-26
292.5	35.0	3.118E-34
292.5	45.0	0.000E+00
292.5	55.0	0.000E+00
292.5	65.0	0.000E+00
292.5	75.0	0.000E+00
315.0	1.5	6.075E-05
315.0	2.5	4.547E-06
315.0	3.5	3.900E-07
315.0	4.5	3.922E-08
315.0	7.5	6.725E-11
315.0	15.0	2.435E-17
315.0	25.0	1.350E-25
315.0	35.0	1.137E-33
315.0	45.0	0.000E+00
315.0	55.0	0.000E+00
315.0	65.0	0.000E+00
315.0	75.0	0.000E+00

Table 7.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Waste Storage Operations.

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Angle (degrees)	Distance (km)	Thoron
337.5	1.5	2.231E-04
337.5	2.5	1.124E-05
337.5	3.5	8.543E-07
337.5	4.5	8.192E-08
337.5	7.5	1.318E-10
337.5	15.0	4.547E-17
337.5	25.0	2.465E-25
337.5	35.0	1.857E-33
337.5	45.0	0.000E+00
337.5	55.0	0.000E+00
337.5	65.0	0.000E+00
337.5	75.0	0.000E+00

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Table 7.3 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Waste Storage Operations

Site	Location	Particulate	Radon
1	Guard Residence	2.240E-09	6.013E-03
2	Admin Bldg	2.844E-09	7.531E-03
3	A1	2.658E-09	7.061E-03
4	A2	4.537E-09	6.764E-03
5	A3	5.980E-08	1.027E-01
6	A5	0.000E+00	0.000E+00
7	A6	5.576E-09	1.422E-02
8	A7	1.192E-08	1.501E-02
9	A11	2.001E-08	2.326E-02
10	A12	1.328E-07	1.844E-01
11	A13	5.046E-09	1.069E-02
12	SW	2.793E-09	6.691E-03
13	W1	3.818E-09	7.407E-03
14	W2	7.900E-09	5.492E-03
15	W3	4.502E-09	1.980E-03
16	NW	2.261E-09	9.014E-04
17	N1	2.109E-09	3.568E-03
18	N3	4.142E-09	7.230E-03
19	NE	4.141E-09	5.074E-03
20	E1	1.434E-09	5.410E-03
21	E2	1.985E-10	7.490E-04
22	E3	5.691E-09	7.375E-03
23	SE	0.000E+00	0.000E+00
24	S1	1.568E-08	1.935E-02
25	S2	0.000E+00	0.000E+00
26	S3	0.000E+00	0.000E+00
27	USPCI	1.882E-10	3.599E-04
28	APTUS	9.868E-11	2.004E-04

Table 7.4 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Thoron from the Waste Storage Operations

Site	Location	Thoron
1	Guard Residence	7.835E-04
2	Admin Bldg	1.587E-03
3	A1	1.253E-03
4	A2	8.174E-04
5	A3	3.247E-01
6	A5	0.000E+00
7	A6	6.550E-03
8	A7	8.222E-03
9	A11	4.204E-02
10	A12	7.263E-01
11	A13	1.258E-02
12	SW	4.562E-03
13	W1	1.140E-02
14	W2	7.153E-03
15	W3	1.676E-03
16	NW	3.241E-04
17	N1	9.866E-04
18	N3	9.196E-04
19	NE	4.048E-04
20	E1	7.358E-04
21	E2	1.019E-04
22	E3	1.257E-03
23	SE	0.000E+00
24	S1	3.260E-02
25	S2	0.000E+00
26	S3	0.000E+00
27	USPCI	8.096E-06
28	APTUS	5.674E-14

Figure 12.

Airborne Concentration of a Particulate From the Active Waste Disposal Area A (Series 1: angle 0 degrees, the northern direction; Series 2: angle 67 degrees, the direction of the maximum airborne radioactivity transport; Series 3: angle 90 degrees, the eastern direction; Series 4: angle 180 degrees, the southern direction; Series 5: angle 270 degrees, the western direction).

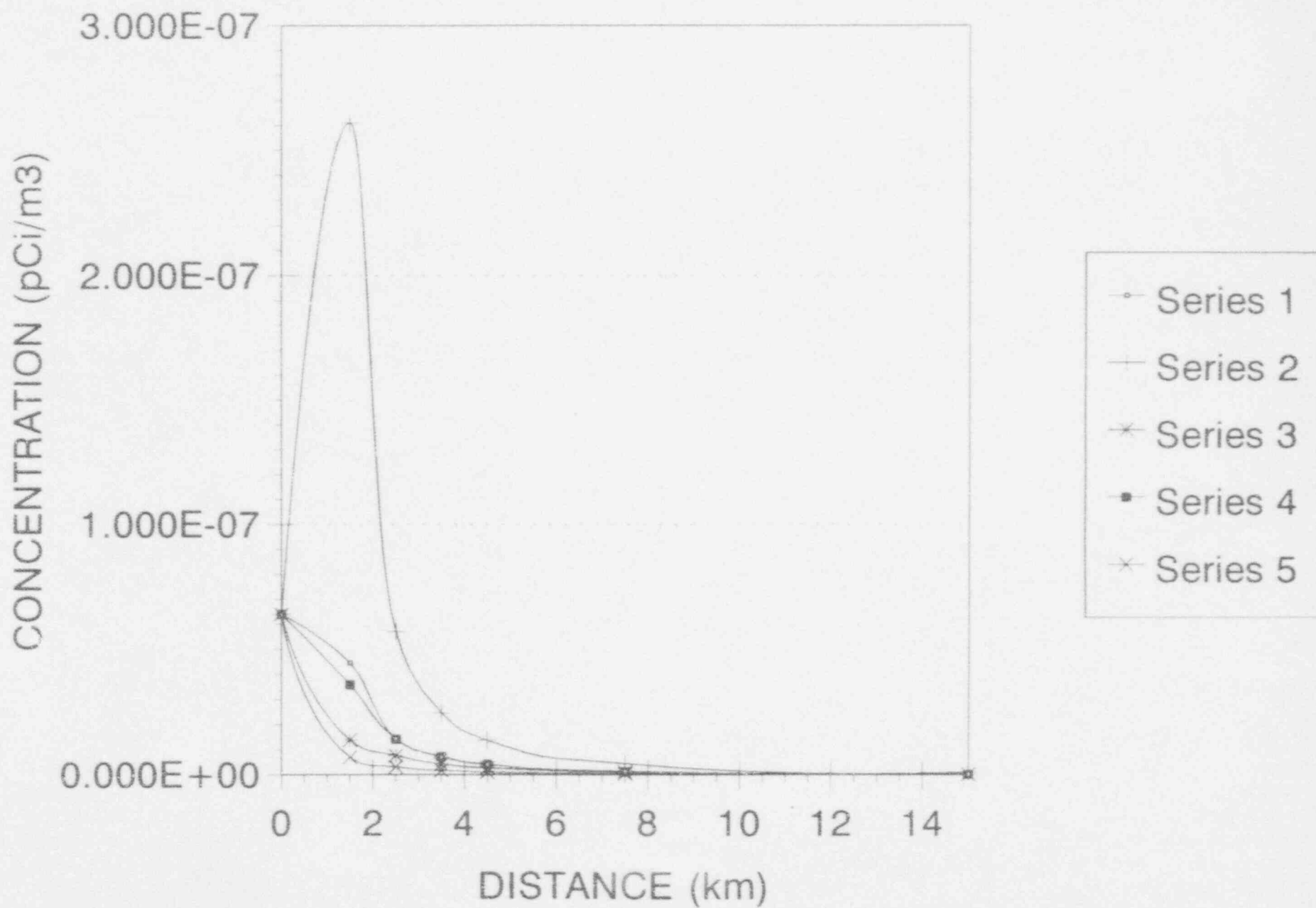


Figure 12

Figure 13.

Airborne Concentration of Radon From the Active Waste disposal Area A (Series 1: angle 0 degrees, the northern direction; Series 2: angle 67 degrees, the direction of the maximum airborne radioactivity transport; Series 3: angle 90 degrees, the eastern direction; Series 4: angle 180 degrees, the southern direction; Series 5: angle 270 degrees, the western direction).



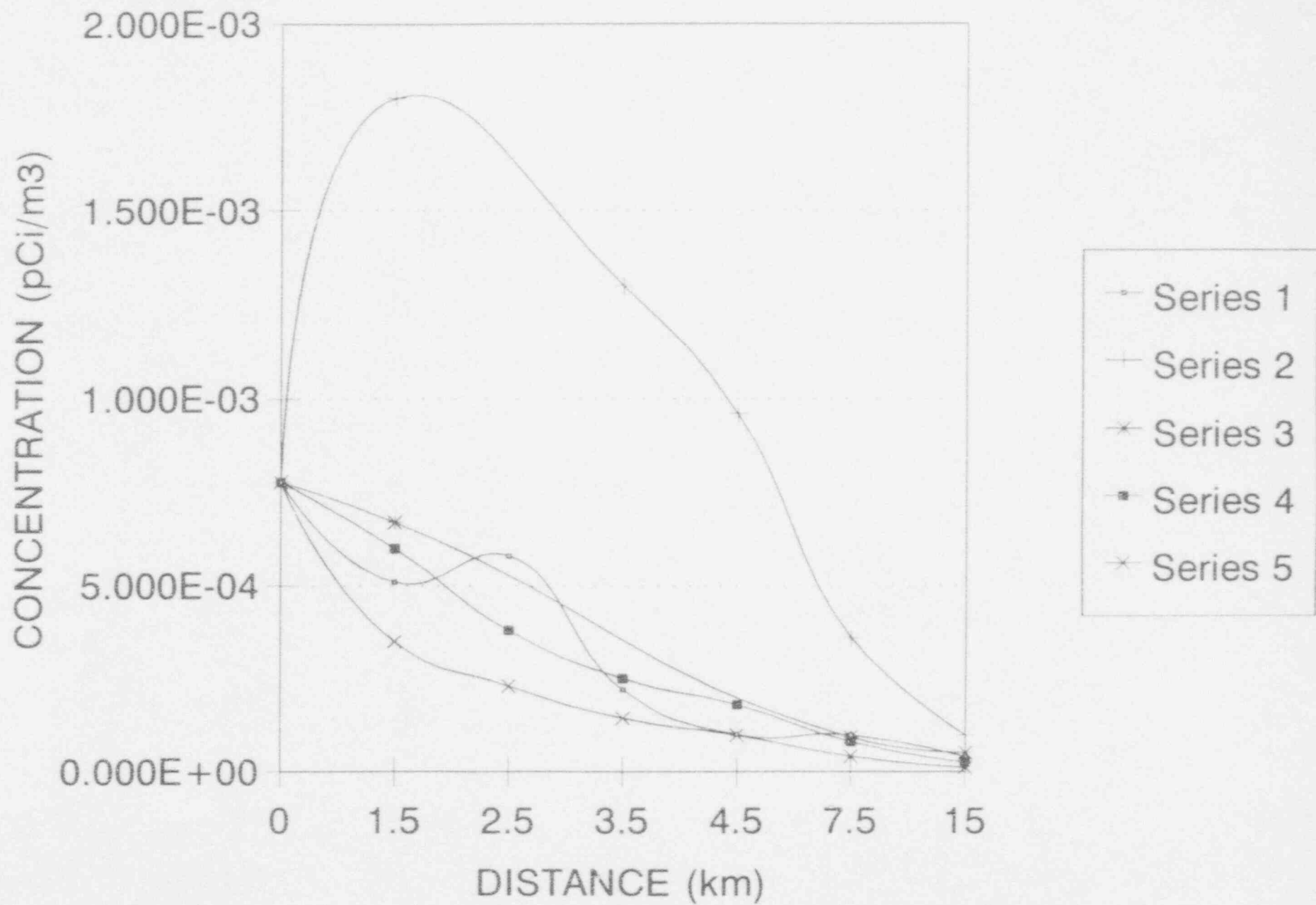


Figure 13

Figure 14.

Airborne Concentration of Thoron From the Active Waste Disposal Area A (Series 1: angle 0 degrees, the northern direction; Series 2: angle 67 degrees, the direction of the maximum airborne radioactivity transport; Series 3: angle 90 degrees, the eastern direction; Series 4: angle 180 degrees, the southern direction; Series 5: angle 270 degrees, the western direction).

# Airborne Concentration Of Thoron

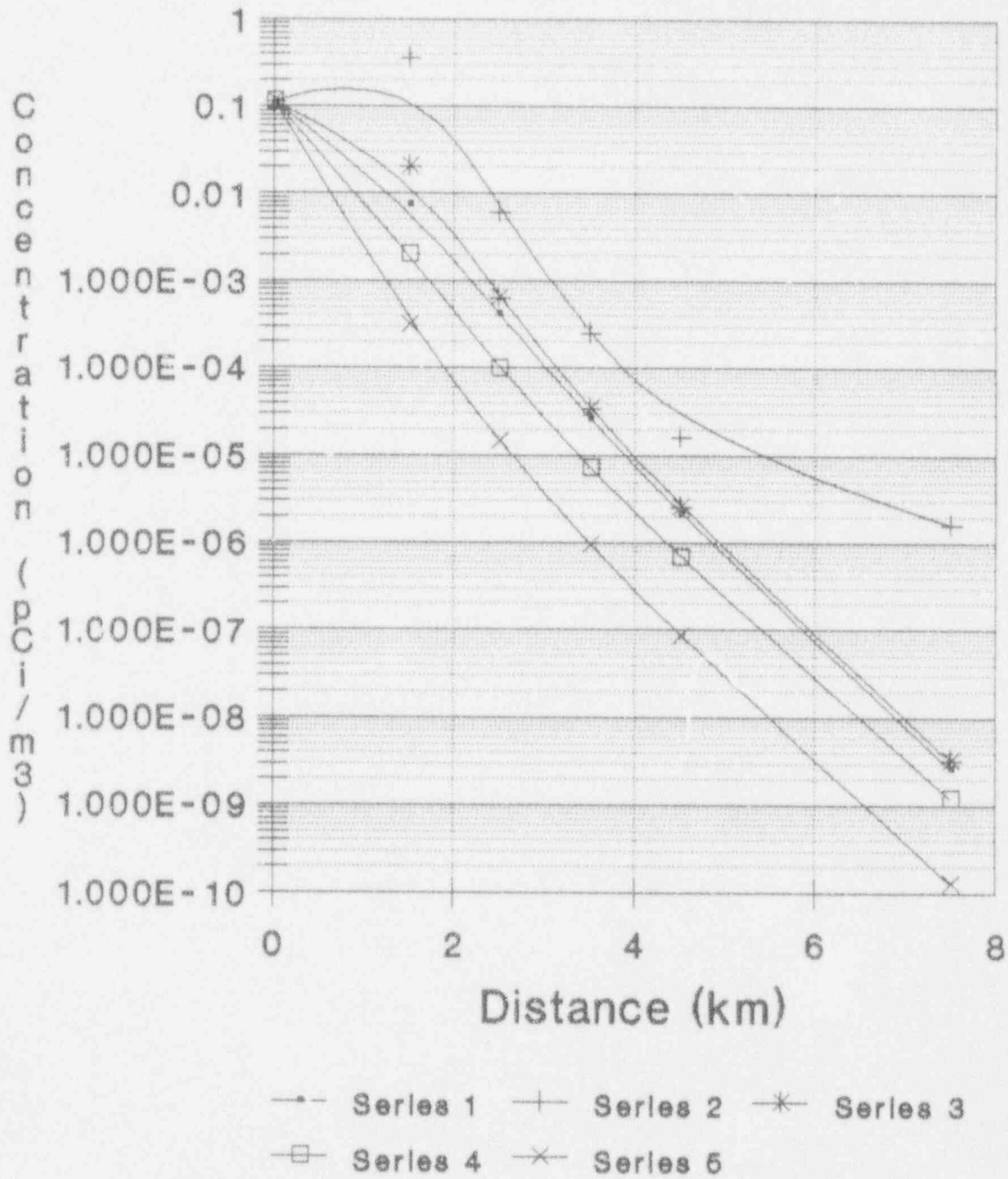


Figure 14

Table 8.1 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Bulk Waste Storage Operations

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	1.524E-10	1.269E-04
0.0	2.5	9.335E-11	4.783E-05
0.0	3.5	4.652E-11	2.147E-05
0.0	4.5	2.632E-11	1.627E-05
0.0	7.5	8.943E-12	1.640E-05
0.0	15.0	2.150E-12	6.889E-06
0.0	25.0	7.887E-13	3.260E-06
0.0	35.0	4.502E-13	1.989E-06
0.0	45.0	3.077E-13	1.376E-06
0.0	55.0	2.274E-13	1.022E-06
0.0	65.0	1.770E-13	7.977E-07
0.0	75.0	1.430E-13	6.443E-07
22.5	1.5	3.854E-10	2.321E-04
22.5	2.5	1.420E-10	1.411E-04
22.5	3.5	4.686E-11	1.401E-04
22.5	4.5	3.465E-11	1.082E-04
22.5	7.5	1.542E-11	5.139E-05
22.5	15.0	4.461E-12	1.666E-05
22.5	25.0	1.783E-12	7.303E-06
22.5	35.0	1.024E-12	4.278E-06
22.5	45.0	6.933E-13	2.878E-06
22.5	55.0	5.090E-13	2.097E-06
22.5	65.0	3.957E-13	1.618E-06
22.5	75.0	3.193E-13	1.295E-06
45.0	1.5	1.882E-09	9.026E-04
45.0	2.5	4.112E-10	1.068E-03
45.0	3.5	2.225E-10	4.004E-04
45.0	4.5	1.250E-10	2.076E-04
45.0	7.5	4.053E-11	6.617E-05
45.0	15.0	1.003E-11	1.767E-05
45.0	25.0	3.788E-12	7.263E-06
45.0	35.0	2.193E-12	4.220E-06
45.0	45.0	1.525E-12	2.841E-06
45.0	55.0	1.145E-12	2.073E-06
45.0	65.0	9.050E-13	1.594E-06
45.0	75.0	7.407E-13	1.273E-06

Table 8.1 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Bulk Waste Storage Operations

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	5.461E-09	1.128E-02
67.5	2.5	7.384E-10	1.346E-03
67.5	3.5	2.268E-10	4.088E-04
67.5	4.5	1.097E-10	2.067E-04
67.5	7.5	3.112E-11	6.612E-05
67.5	15.0	7.069E-12	1.823E-05
67.5	25.0	2.552E-12	7.657E-06
67.5	35.0	1.488E-12	4.429E-06
67.5	45.0	1.065E-12	2.970E-06
67.5	55.0	8.197E-13	2.163E-06
67.5	65.0	6.612E-13	1.663E-06
67.5	75.0	5.509E-13	1.328E-06
90.0	1.5	5.265E-11	3.554E-04
90.0	2.5	0.000E+00	0.000E+00
90.0	3.5	7.643E-12	3.290E-05
90.0	4.5	1.218E-11	5.739E-05
90.0	7.5	5.967E-12	3.344E-05
90.0	15.0	1.664E-12	1.165E-05
90.0	25.0	6.342E-13	5.213E-06
90.0	35.0	3.838E-13	3.081E-06
90.0	45.0	2.821E-13	2.085E-06
90.0	55.0	2.211E-13	1.525E-06
90.0	65.0	1.807E-13	1.174E-06
90.0	75.0	1.521E-13	9.384E-07
112.5	1.5	2.974E-11	2.073E-04
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 8.1 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Bulk Waste Storage Operations

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	1.433E-10	2.179E-04
135.0	2.5	6.185E-12	4.502E-05
135.0	3.5	9.818E-13	7.287E-06
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	1.794E-10	2.084E-04
157.5	2.5	4.734E-11	8.384E-05
157.5	3.5	4.426E-12	3.345E-05
157.5	4.5	2.665E-12	2.053E-05
157.5	7.5	7.712E-13	6.226E-06
157.5	15.0	1.228E-13	1.078E-06
157.5	25.0	2.769E-14	2.633E-07
157.5	35.0	9.369E-15	9.483E-08
157.5	45.0	3.783E-15	4.036E-08
157.5	55.0	1.634E-15	1.826E-08
157.5	65.0	6.867E-16	7.994E-09
157.5	75.0	2.325E-16	2.810E-09
180.0	1.5	1.009E-10	1.397E-04
180.0	2.5	8.835E-11	1.045E-04
180.0	3.5	5.050E-11	6.544E-05
180.0	4.5	3.058E-11	4.369E-05
180.0	7.5	1.009E-11	1.814E-05
180.0	15.0	1.937E-12	5.237E-06
180.0	25.0	5.296E-13	2.109E-06
180.0	35.0	2.195E-13	1.172E-06
180.0	45.0	1.116E-13	7.604E-07
180.0	55.0	6.393E-14	5.398E-07
180.0	65.0	3.959E-14	4.065E-07
180.0	75.0	2.588E-14	3.191E-07

Table 8.1 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Bulk Waste Storage Operations

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	3.013E-11	7.683E-05
202.5	2.5	3.554E-11	6.238E-05
202.5	3.5	3.055E-11	4.837E-05
202.5	4.5	2.526E-11	3.821E-05
202.5	7.5	1.494E-11	2.160E-05
202.5	15.0	6.022E-12	8.746E-06
202.5	25.0	2.815E-12	4.242E-06
202.5	35.0	1.684E-12	2.597E-06
202.5	45.0	1.136E-12	1.789E-06
202.5	55.0	8.245E-13	1.324E-06
202.5	65.0	6.301E-13	1.032E-06
202.5	75.0	4.992E-13	8.325E-07
225.0	1.5	2.817E-11	7.108E-05
225.0	2.5	1.572E-11	4.376E-05
225.0	3.5	9.975E-12	3.003E-05
225.0	4.5	6.874E-12	2.210E-05
225.0	7.5	3.008E-12	1.123E-05
225.0	15.0	8.834E-13	4.141E-06
225.0	25.0	3.444E-13	1.923E-06
225.0	35.0	2.270E-13	1.195E-06
225.0	45.0	1.676E-13	8.328E-07
225.0	55.0	1.315E-13	6.223E-07
225.0	65.0	1.074E-13	4.873E-07
225.0	75.0	9.036E-14	3.947E-07
247.5	1.5	3.588E-11	7.106E-05
247.5	2.5	2.253E-11	4.468E-05
247.5	3.5	1.569E-11	3.122E-05
247.5	4.5	1.166E-11	2.332E-05
247.5	7.5	6.007E-12	1.224E-05
247.5	15.0	2.228E-12	4.811E-06
247.5	25.0	1.010E-12	2.306E-06
247.5	35.0	5.909E-13	1.413E-06
247.5	45.0	3.925E-13	9.754E-07
247.5	55.0	2.815E-13	7.232E-07
247.5	65.0	2.127E-13	5.627E-07
247.5	75.0	1.669E-13	4.533E-07

Table 8.1 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Bulk Waste Storage Operations

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	2.893E-11	5.731E-05
270.0	2.5	1.467E-11	3.049E-05
270.0	3.5	8.633E-12	1.868E-05
270.0	4.5	5.591E-12	1.254E-05
270.0	7.5	2.131E-12	5.234E-06
270.0	15.0	5.119E-13	1.484E-06
270.0	25.0	1.713E-13	5.800E-07
270.0	35.0	8.871E-14	3.318E-07
270.0	45.0	5.858E-14	2.298E-07
270.0	55.0	4.368E-14	1.754E-07
270.0	65.0	3.417E-14	1.399E-07
270.0	75.0	2.767E-14	1.152E-07
292.5	1.5	1.343E-11	3.193E-05
292.5	2.5	7.880E-12	1.650E-05
292.5	3.5	8.109E-12	1.399E-05
292.5	4.5	6.913E-12	1.139E-05
292.5	7.5	3.953E-12	6.573E-06
292.5	15.0	1.417E-12	2.642E-06
292.5	25.0	6.002E-13	1.264E-06
292.5	35.0	4.114E-13	7.852E-07
292.5	45.0	3.164E-13	5.485E-07
292.5	55.0	2.560E-13	4.108E-07
292.5	65.0	2.143E-13	3.223E-07
292.5	75.0	1.840E-13	2.625E-07
315.0	1.5	2.695E-11	4.113E-05
315.0	2.5	2.789E-11	3.467E-05
315.0	3.5	2.062E-11	2.485E-05
315.0	4.5	1.567E-11	1.728E-05
315.0	7.5	7.461E-12	7.615E-06
315.0	15.0	2.279E-12	2.333E-06
315.0	25.0	8.995E-13	9.709E-07
315.0	35.0	5.858E-13	5.709E-07
315.0	45.0	4.413E-13	3.897E-07
315.0	55.0	3.519E-13	2.885E-07
315.0	65.0	2.914E-13	2.253E-07
315.0	75.0	2.479E-13	1.825E-07



Table 8.1 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Bulk Waste Storage Operations

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	6.896E-11	7.733E-05
337.5	2.5	5.496E-11	4.446E-05
337.5	3.5	3.513E-11	2.296E-05
337.5	4.5	2.331E-11	1.453E-05
337.5	7.5	9.203E-12	5.776E-06
337.5	15.0	2.329E-12	1.589E-06
337.5	25.0	8.351E-13	6.264E-07
337.5	35.0	5.264E-13	3.622E-07
337.5	45.0	3.979E-13	2.466E-07
337.5	55.0	3.189E-13	1.826E-07
337.5	65.0	2.654E-13	1.426E-07
337.5	75.0	2.268E-13	1.157E-07

Table 8.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Bulk Waste Storage Operations.

Angle (degrees)	Distance (km)	Thoron
0.0	1.5	1.352E-05
0.0	2.5	1.843E-06
0.0	3.5	1.619E-07
0.0	4.5	1.531E-08
0.0	7.5	2.325E-11
0.0	15.0	8.927E-18
0.0	25.0	7.364E-26
0.0	35.0	1.180E-33
0.0	45.0	2.711E-41
0.0	55.0	0.000E+00
0.0	65.0	0.000E+00
0.0	75.0	0.000E+00
22.5	1.5	1.198E-04
22.5	2.5	1.320E-05
22.5	3.5	8.198E-07
22.5	4.5	6.743E-08
22.5	7.5	9.497E-11
22.5	15.0	3.713E-17
22.5	25.0	2.102E-25
22.5	35.0	1.773E-33
22.5	45.0	2.033E-41
22.5	55.0	0.000E+00
22.5	65.0	0.000E+00
22.5	75.0	0.000E+00
45.0	1.5	2.305E-03
45.0	2.5	2.050E-04
45.0	3.5	8.285E-06
45.0	4.5	5.374E-07
45.0	7.5	5.929E-10
45.0	15.0	1.813E-16
45.0	25.0	8.395E-25
45.0	35.0	5.924E-33
45.0	45.0	5.421E-41
45.0	55.0	0.000E+00
45.0	65.0	0.000E+00
45.0	75.0	0.000E+00

Table 8.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Bulk Waste Storage Operations.

Angle (degrees)	Distance (km)	Thoron
67.5	1.5	5.309E-02
67.5	2.5	4.938E-04
67.5	3.5	1.161E-05
67.5	4.5	5.470E-07
67.5	7.5	3.755E-10
67.5	15.0	8.945E-17
67.5	25.0	3.823E-25
67.5	35.0	2.882E-33
67.5	45.0	2.711E-41
67.5	55.0	0.000E+00
67.5	65.0	0.000E+00
67.5	75.0	0.000E+00
90.0	1.5	1.962E-04
90.0	2.5	0.000E+00
90.0	3.5	2.473E-07
90.0	4.5	3.990E-08
90.0	7.5	5.278E-11
90.0	15.0	1.601E-17
90.0	25.0	7.290E-26
90.0	35.0	5.662E-34
90.0	45.0	6.777E-42
90.0	55.0	0.000E+00
90.0	65.0	0.000E+00
90.0	75.0	0.000E+00
112.5	1.5	1.917E-05
112.5	2.5	0.000E+00
112.5	3.5	0.000E+00
112.5	4.5	0.000E+00
112.5	7.5	0.000E+00
112.5	15.0	0.000E+00
112.5	25.0	0.000E+00
112.5	35.0	0.000E+00
112.5	45.0	0.000E+00
112.5	55.0	0.000E+00
112.5	65.0	0.000E+00
112.5	75.0	0.000E+00

Table 8.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Bulk Waste Storage Operations.

Angle (degrees)	Distance (km)	Thoron
135.0	1.5	1.042E-05
135.0	2.5	1.343E-07
135.0	3.5	2.942E-09
135.0	4.5	0.000E+00
135.0	7.5	0.000E+00
135.0	15.0	0.000E+00
135.0	25.0	0.000E+00
135.0	35.0	0.000E+00
135.0	45.0	0.000E+00
135.0	55.0	0.000E+00
135.0	65.0	0.000E+00
135.0	75.0	0.000E+00
157.5	1.5	3.838E-06
157.5	2.5	2.135E-07
157.5	3.5	1.584E-09
157.5	4.5	7.158E-11
157.5	7.5	8.668E-15
157.5	15.0	4.783E-24
157.5	25.0	5.476E-36
157.5	35.0	0.000E+00
157.5	45.0	0.000E+00
157.5	55.0	0.000E+00
157.5	65.0	0.000E+00
157.5	75.0	0.000E+00
180.0	1.5	1.057E-06
180.0	2.5	1.291E-07
180.0	3.5	1.205E-08
180.0	4.5	1.266E-09
180.0	7.5	2.514E-12
180.0	15.0	1.492E-18
180.0	25.0	1.778E-26
180.0	35.0	3.081E-34
180.0	45.0	6.777E-42
180.0	55.0	0.000E+00
180.0	65.0	0.000E+00
180.0	75.0	0.000E+00

Table 8.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Bulk Waste Storage Operations.

Angle (degrees)	Distance (km)	Thoron
202.5	1.5	1.941E-07
202.5	2.5	3.281E-08
202.5	3.5	4.219E-09
202.5	4.5	5.532E-10
202.5	7.5	1.429E-12
202.5	15.0	7.334E-19
202.5	25.0	4.625E-27
202.5	35.0	3.836E-35
202.5	45.0	0.000E+00
202.5	55.0	0.000E+00
202.5	65.0	0.000E+00
202.5	75.0	0.000E+00
225.0	1.5	1.314E-07
225.0	2.5	8.961E-09
225.0	3.5	8.069E-10
225.0	4.5	8.635E-11
225.0	7.5	1.669E-13
225.0	15.0	6.498E-20
225.0	25.0	1.550E-28
225.0	35.0	1.365E-36
225.0	45.0	0.000E+00
225.0	55.0	0.000E+00
225.0	65.0	0.000E+00
225.0	75.0	0.000E+00
247.5	1.5	1.421E-07
247.5	2.5	1.090E-08
247.5	3.5	1.090E-09
247.5	4.5	1.259E-10
247.5	7.5	2.751E-13
247.5	15.0	1.272E-19
247.5	25.0	7.545E-28
247.5	35.0	5.651E-36
247.5	45.0	0.000E+00
247.5	55.0	0.000E+00
247.5	65.0	0.000E+00
247.5	75.0	0.000E+00

Table 8.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Bulk Waste Storage Operations.

Angle (degrees)	Distance (km)	Thoron
270.0	1.5	1.491E-07
270.0	2.5	9.615E-09
270.0	3.5	8.225E-10
270.0	4.5	8.569E-11
270.0	7.5	1.704E-13
270.0	15.0	9.275E-20
270.0	25.0	8.075E-28
270.0	35.0	5.302E-36
270.0	45.0	0.000E+00
270.0	55.0	0.000E+00
270.0	65.0	0.000E+00
270.0	75.0	0.000E+00
292.5	1.5	1.350E-07
292.5	2.5	8.437E-09
292.5	3.5	1.377E-09
292.5	4.5	1.904E-10
292.5	7.5	4.824E-13
292.5	15.0	2.116E-19
292.5	25.0	1.117E-27
292.5	35.0	9.846E-36
292.5	45.0	0.000E+00
292.5	55.0	0.000E+00
292.5	65.0	0.000E+00
292.5	75.0	0.000E+00
315.0	1.5	4.458E-07
315.0	2.5	6.011E-08
315.0	3.5	7.564E-09
315.0	4.5	1.106E-09
315.0	7.5	2.748E-12
315.0	15.0	1.301E-18
315.0	25.0	9.587E-27
315.0	35.0	1.404E-34
315.0	45.0	0.000E+00
315.0	55.0	0.000E+00
315.0	65.0	0.000E+00
315.0	75.0	0.000E+00

Table 8.2 The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Bulk Waste Storage Operations.

Angle (degrees)	Distance (km)	Thoron
337.5	1.5	2.119E-06
337.5	2.5	3.472E-07
337.5	3.5	3.622E-08
337.5	4.5	4.225E-09
337.5	7.5	1.033E-11
337.5	15.0	4.722E-18
337.5	25.0	3.542E-26
337.5	35.0	5.300E-34
337.5	45.0	1.355E-41
337.5	55.0	0.000E+00
337.5	65.0	0.000E+00
337.5	75.0	0.000E+00

Table 8.3 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Bulk Waste Storage Operations

Site	Location	Particulate	Radon
1	Guard Residence	3.227E-10	1.329E-04
2	Admin Bldg	4.057E-10	1.802E-04
3	A1	3.843E-10	1.651E-04
4	A2	3.883E-10	8.315E-04
5	A3	5.338E-10	9.706E-04
6	A5	3.273E-10	6.006E-04
7	A6	6.583E-10	3.502E-04
8	A7	6.932E-09	2.593E-03
9	A11	1.453E-10	3.250E-04
10	A12	2.018E-10	4.171E-04
11	A13	1.339E-10	2.488E-04
12	SW	1.085E-10	2.187E-04
13	W1	9.909E-11	1.916E-04
14	W2	4.353E-11	8.629E-05
15	W3	1.343E-10	1.405E-04
16	NW	1.509E-10	1.154E-04
17	N1	2.488E-10	1.421E-04
18	N3	4.261E-10	5.290E-04
19	NE	5.272E-10	1.362E-03
20	E1	0.000E+00	0.000E+00
21	E2	1.966E-11	1.322E-04
22	E3	2.089E-09	4.246E-03
23	SE	2.286E-11	1.547E-04
24	S1	1.398E-10	3.242E-04
25	S2	4.029E-10	6.453E-04
26	S3	8.499E-10	1.102E-03
27	USPCI	1.033E-11	2.563E-05
28	APTUS	1.360E-11	2.655E-05



Table 8.4 The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Thoron from Bulk Waste Storage Operations

Site	Location	Thoron
1	Guard Residence	6.108E-05
2	Admin Bldg	1.092E-04
3	A1	9.393E-05
4	A2	4.923E-04
5	A3	1.078E-03
6	A5	2.557E-04
7	A6	3.649E-04
8	A7	1.173E-02
9	A11	5.409E-05
10	A12	3.834E-04
11	A13	2.631E-05
12	SW	1.595E-05
13	W1	2.355E-05
14	W2	1.463E-05
15	W3	1.629E-05
16	NW	1.193E-05
17	N1	3.977E-05
18	N3	3.038E-04
19	NE	5.268E-04
20	E1	0.000E+00
21	E2	9.535E-05
22	E3	5.106E-03
23	SE	8.537E-05
24	S1	5.363E-05
25	S2	2.817E-04
26	S3	8.913E-04
27	USPCI	5.964E-08
28	APTUS	3.503E-14

## 2.3 Waste Disposal

### 2.3a Direct Disposal Operation

The wastes accepted for disposal at the site may be directly transported and placed at the waste disposal area. We previously estimated the rate of release of a particulate, from the unloading  $4.5 \times 10^{10}$  g of moist, containerized waste, to be  $2 \times 10^{-3}$  Ci/year for a waste containing 1000 pCi/g of a radionuclide. We do not expect a waste containing an activity concentration of 1.0 pCi/g and a mass of  $4.5 \times 10^{11}$  g would release a particulate in excess of  $2 \times 10^{-5}$  Ci per year.

We previously estimated an annual rate of release,  $9.4 \times 10^{-2}$  Ci  $^{222}$  Rn and  $4.4 \times 10^{-2}$  Ci  $^{220}$  Rn from the direct disposal of wastes in the engineered disposal areas. We assumed that 100% of the ingrown radon and thoron gases, generated during the 10 day transit between loading of the wastes at the point of shipping and unloading at the Envirocare site, were released at the disposal site.

Table 9.1a and 9.2a list the normalized airborne concentrations of one of the particulates ( $^{230}$ Th), radon and thoron at 192 locations, from direct disposal of wastes at sub-section A. Figures 12, 13 and 14 show the concentration distributions as a function of distance and the direction of dispersion. Similarly,

Tables 9.3a and 9.4a list the normalized airborne concentrations of a particulate, radon and thoron at 28 receptors. Tables 9.1b through 9.4f list the normalized airborne concentrations of a particulate, radon and thoron from direct disposal of wastes at sub-sections B, C, D, E and F at 220 receptors within the 80 km distance from the site.

Table 9.1a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Direct Waste Disposal Operations at the Sub-disposal Area A

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	0.000E+00	5.397E-04
0.0	2.5	0.000E+00	4.110E-04
0.0	3.5	0.000E+00	2.978E-04
0.0	4.5	0.000E+00	2.194E-04
0.0	7.5	0.000E+00	1.090E-04
0.0	15.0	0.000E+00	3.911E-05
0.0	25.0	0.000E+00	1.792E-05
0.0	35.0	0.000E+00	1.083E-05
0.0	45.0	0.000E+00	7.450E-06
0.0	55.0	0.000E+00	5.530E-06
0.0	65.0	0.000E+00	4.312E-06
0.0	75.0	0.000E+00	3.482E-06
22.5	1.5	0.000E+00	2.895E-03
22.5	2.5	0.000E+00	1.599E-03
22.5	3.5	0.000E+00	9.165E-04
22.5	4.5	0.000E+00	6.045E-04
22.5	7.5	0.000E+00	2.617E-04
22.5	15.0	0.000E+00	8.578E-05
22.5	25.0	0.000E+00	3.808E-05
22.5	35.0	0.000E+00	2.246E-05
22.5	45.0	0.000E+00	1.524E-05
22.5	55.0	0.000E+00	1.119E-05
22.5	65.0	0.000E+00	8.635E-06
22.5	75.0	0.000E+00	6.911E-06
45.0	1.5	0.000E+00	1.007E-02
45.0	2.5	0.000E+00	2.560E-03
45.0	3.5	0.000E+00	1.238E-03
45.0	4.5	0.000E+00	7.476E-04
45.0	7.5	0.000E+00	2.869E-04
45.0	15.0	0.000E+00	8.593E-05
45.0	25.0	0.000E+00	3.698E-05
45.0	35.0	0.000E+00	2.189E-05
45.0	45.0	0.000E+00	1.483E-05
45.0	55.0	0.000E+00	1.086E-05
45.0	65.0	0.000E+00	8.381E-06
45.0	75.0	0.000E+00	6.707E-06

Table 9.1a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Direct Waste Disposal Operations at the Sub-disposal Area A

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	0.000E+00	1.141E-02
67.5	2.5	0.000E+00	2.745E-03
67.5	3.5	0.000E+00	1.277E-03
67.5	4.5	0.000E+00	7.578E-04
67.5	7.5	0.000E+00	2.869E-04
67.5	15.0	0.000E+00	8.750E-05
67.5	25.0	0.000E+00	3.842E-05
67.5	35.0	0.000E+00	2.266E-05
67.5	45.0	0.000E+00	1.534E-05
67.5	55.0	0.000E+00	1.125E-05
67.5	65.0	0.000E+00	8.682E-06
67.5	75.0	0.000E+00	6.956E-06
90.0	1.5	0.000E+00	1.409E-03
90.0	2.5	0.000E+00	8.910E-04
90.0	3.5	0.000E+00	5.585E-04
90.0	4.5	0.000E+00	3.854E-04
90.0	7.5	0.000E+00	1.771E-04
90.0	15.0	0.000E+00	6.056E-05
90.0	25.0	0.000E+00	2.730E-05
90.0	35.0	0.000E+00	1.622E-05
90.0	45.0	0.000E+00	1.101E-05
90.0	55.0	0.000E+00	8.065E-06
90.0	65.0	0.000E+00	6.221E-06
90.0	75.0	0.000E+00	4.976E-06
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 9.1a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Direct Waste Disposal Operations at the Sub-disposal Area A

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	0.000E+00	3.684E-04
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	0.000E+00	9.926E-04
157.5	2.5	0.000E+00	2.321E-04
157.5	3.5	0.000E+00	1.134E-04
157.5	4.5	0.000E+00	6.435E-05
157.5	7.5	0.000E+00	1.884E-05
157.5	15.0	0.000E+00	2.978E-06
157.5	25.0	0.000E+00	6.127E-07
157.5	35.0	0.000E+00	1.635E-07
157.5	45.0	0.000E+00	3.321E-08
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	0.000E+00	1.279E-03
180.0	2.5	0.000E+00	5.744E-04
180.0	3.5	0.000E+00	3.301E-04
180.0	4.5	0.000E+00	2.142E-04
180.0	7.5	0.000E+00	8.668E-05
180.0	15.0	0.000E+00	2.527E-05
180.0	25.0	0.000E+00	1.040E-05
180.0	35.0	0.000E+00	5.867E-06
180.0	45.0	0.000E+00	3.845E-06
180.0	55.0	0.000E+00	2.822E-06
180.0	65.0	0.000E+00	2.184E-06
180.0	75.0	0.000E+00	1.751E-06

Table 9.1a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Direct Waste Disposal Operations at the Sub-disposal Area A

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	0.000E+00	9.217E-04
202.5	2.5	0.000E+00	5.503E-04
202.5	3.5	0.000E+00	3.720E-04
202.5	4.5	0.000E+00	2.716E-04
202.5	7.5	0.000E+00	1.372E-04
202.5	15.0	0.000E+00	5.100E-05
202.5	25.0	0.000E+00	2.389E-05
202.5	35.0	0.000E+00	1.441E-05
202.5	45.0	0.000E+00	9.896E-06
202.5	55.0	0.000E+00	7.313E-06
202.5	65.0	0.000E+00	5.673E-06
202.5	75.0	0.000E+00	4.557E-06
225.0	1.5	0.000E+00	6.038E-04
225.0	2.5	0.000E+00	3.265E-04
225.0	3.5	0.000E+00	2.082E-04
225.0	4.5	0.000E+00	1.461E-04
225.0	7.5	0.000E+00	6.883E-05
225.0	15.0	0.000E+00	2.379E-05
225.0	25.0	0.000E+00	1.083E-05
225.0	35.0	0.000E+00	6.619E-06
225.0	45.0	0.000E+00	4.578E-06
225.0	55.0	0.000E+00	3.403E-06
225.0	65.0	0.000E+00	2.656E-06
225.0	75.0	0.000E+00	2.145E-06
247.5	1.5	0.000E+00	6.264E-04
247.5	2.5	0.000E+00	3.430E-04
247.5	3.5	0.000E+00	2.213E-04
247.5	4.5	0.000E+00	1.569E-04
247.5	7.5	0.000E+00	7.590E-05
247.5	15.0	0.000E+00	2.734E-05
247.5	25.0	0.000E+00	1.280E-05
247.5	35.0	0.000E+00	7.758E-06
247.5	45.0	0.000E+00	5.323E-06
247.5	55.0	0.000E+00	3.932E-06
247.5	65.0	0.000E+00	3.052E-06
247.5	75.0	0.000E+00	2.453E-06

Table 9.1a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Direct Waste Disposal Operations at the Sub-disposal Area A

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	0.000E+00	3.993E-04
270.0	2.5	0.000E+00	1.891E-04
270.0	3.5	0.000E+00	1.088E-04
270.0	4.5	0.000E+00	7.029E-05
270.0	7.5	0.000E+00	2.778E-05
270.0	15.0	0.000E+00	7.635E-06
270.0	25.0	0.000E+00	2.977E-06
270.0	35.0	0.000E+00	1.793E-06
270.0	45.0	0.000E+00	1.269E-06
270.0	55.0	0.000E+00	9.630E-07
270.0	65.0	0.000E+00	7.650E-07
270.0	75.0	0.000E+00	6.280E-07
292.5	1.5	0.000E+00	2.887E-04
292.5	2.5	0.000E+00	1.747E-04
292.5	3.5	0.000E+00	1.178E-04
292.5	4.5	0.000E+00	8.567E-05
292.5	7.5	0.000E+00	4.268E-05
292.5	15.0	0.000E+00	1.550E-05
292.5	25.0	0.000E+00	7.142E-06
292.5	35.0	0.000E+00	4.357E-06
292.5	45.0	0.000E+00	3.024E-06
292.5	55.0	0.000E+00	2.262E-06
292.5	65.0	0.000E+00	1.774E-06
292.5	75.0	0.000E+00	1.439E-06
315.0	1.5	0.000E+00	5.248E-04
315.0	2.5	0.000E+00	2.421E-04
315.0	3.5	0.000E+00	1.424E-04
315.0	4.5	0.000E+00	9.400E-05
315.0	7.5	0.000E+00	3.936E-05
315.0	15.0	0.000E+00	1.193E-05
315.0	25.0	0.000E+00	5.002E-06
315.0	35.0	0.000E+00	2.963E-06
315.0	45.0	0.000E+00	2.035E-06
315.0	55.0	0.000E+00	1.527E-06
315.0	65.0	0.000E+00	1.211E-06
315.0	75.0	0.000E+00	9.923E-07



Table 9.1a The Normalized Airborne Concentrations ( $\text{pCi}/\text{m}^3$ ) of a Particulate and Radon from the Direct Waste Disposal Operations at the Sub-disposal Area A

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	0.000E+00	5.513E-04
337.5	2.5	0.000E+00	2.003E-04
337.5	3.5	0.000E+00	1.106E-04
337.5	4.5	0.000E+00	7.003E-05
337.5	7.5	0.000E+00	2.731E-05
337.5	15.0	0.000E+00	7.725E-06
337.5	25.0	0.000E+00	3.125E-06
337.5	35.0	0.000E+00	1.839E-06
337.5	45.0	0.000E+00	1.265E-06
337.5	55.0	0.000E+00	9.494E-07
337.5	65.0	0.000E+00	7.562E-07
337.5	75.0	0.000E+00	6.223E-07

Table 9.2a The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Direct Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Thoron
0.0	1.5	8.964E-06
0.0	2.5	4.991E-07
0.0	3.5	3.202E-08
0.0	4.5	2.512E-09
0.0	7.5	3.164E-12
0.0	15.0	1.140E-18
0.0	25.0	7.941E-27
0.0	35.0	8.866E-35
0.0	45.0	0.000E+00
0.0	55.0	0.000E+00
0.0	65.0	0.000E+00
0.0	75.0	0.000E+00
22.5	1.5	5.562E-05
22.5	2.5	1.925E-06
22.5	3.5	9.446E-08
22.5	4.5	6.818E-09
22.5	7.5	9.126E-12
22.5	15.0	3.380E-18
22.5	25.0	1.826E-26
22.5	35.0	1.313E-34
22.5	45.0	1.958E-42
22.5	55.0	0.000E+00
22.5	65.0	0.000E+00
22.5	75.0	0.000E+00
45.0	1.5	3.042E-04
45.0	2.5	5.822E-06
45.0	3.5	3.101E-07
45.0	4.5	2.486E-08
45.0	7.5	3.499E-11
45.0	15.0	1.161E-17
45.0	25.0	5.446E-26
45.0	35.0	4.099E-34
45.0	45.0	3.914E-42
45.0	55.0	0.000E+00
45.0	65.0	0.000E+00
45.0	75.0	0.000E+00

Table 9.2a The Normalized Airborne Concentration ( $\mu\text{Ci}/\text{m}^3$ ) of Thoron from the Direct Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Thoron
67.5	1.5	4.424E-04
67.5	2.5	7.275E-06
67.5	3.5	3.031E-07
67.5	4.5	1.948E-08
67.5	7.5	1.928E-11
67.5	15.0	5.287E-18
67.5	25.0	2.380E-26
67.5	35.0	1.874E-34
67.5	45.0	1.958E-42
67.5	55.0	0.000E+00
67.5	65.0	0.000E+00
67.5	75.0	0.000E+00
90.0	1.5	2.373E-05
90.0	2.5	7.643E-07
90.0	3.5	4.074E-08
90.0	4.5	3.079E-09
90.0	7.5	3.942E-12
90.0	15.0	1.213E-18
90.0	25.0	5.603E-27
90.0	35.0	4.469E-35
90.0	45.0	0.000E+00
90.0	55.0	0.000E+00
90.0	65.0	0.000E+00
90.0	75.0	0.000E+00
112.5	1.5	0.000E+00
112.5	2.5	0.000E+00
112.5	3.5	0.000E+00
112.5	4.5	0.000E+00
112.5	7.5	0.000E+00
112.5	15.0	0.000E+00
112.5	25.0	0.000E+00
112.5	35.0	0.000E+00
112.5	45.0	0.000E+00
112.5	55.0	0.000E+00
112.5	65.0	0.000E+00
112.5	75.0	0.000E+00

Table 9.2a The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Direct Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Thoron
135.0	1.5	1.343E-06
135.0	2.5	0.000E+00
135.0	3.5	0.000E+00
135.0	4.5	0.000E+00
135.0	7.5	0.000E+00
135.0	15.0	0.000E+00
135.0	25.0	0.000E+00
135.0	35.0	0.000E+00
135.0	45.0	0.000E+00
135.0	55.0	0.000E+00
135.0	65.0	0.000E+00
135.0	75.0	0.000E+00
157.5	1.5	2.951E-06
157.5	2.5	2.566E-08
157.5	-	8.489E-10
157.5	4.5	3.546E-11
157.5	7.5	4.145E-15
157.5	15.0	2.088E-24
157.5	25.0	2.014E-36
157.5	35.0	0.000E+00
157.5	45.0	0.000E+00
157.5	55.0	0.000E+00
157.5	65.0	0.000E+00
157.5	75.0	0.000E+00
180.0	1.5	2.431E-06
180.0	2.5	1.174E-07
180.0	3.5	8.580E-09
180.0	4.5	8.102E-10
180.0	7.5	1.418E-12
180.0	15.0	7.296E-19
180.0	25.0	6.968E-27
180.0	35.0	7.924E-35
180.0	45.0	0.000E+00
180.0	55.0	0.000E+00
180.0	65.0	0.000E+00
180.0	75.0	0.000E+00

Table 9.2a The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Direct Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Thoron
202.5	1.5	1.109E-06
202.5	2.5	7.579E-08
202.5	3.5	6.952E-09
202.5	4.5	7.683E-10
202.5	7.5	1.626E-12
202.5	15.0	7.322E-19
202.5	25.0	4.293E-27
202.5	35.0	3.140E-35
202.5	45.0	0.000E+00
202.5	55.0	0.000E+00
202.5	65.0	0.000E+00
202.5	75.0	0.000E+00
225.0	1.5	3.890E-07
225.0	2.5	1.932E-08
225.0	3.5	1.400E-09
225.0	4.5	1.314E-10
225.0	7.5	2.177E-13
225.0	15.0	7.210E-20
225.0	25.0	1.939E-28
225.0	35.0	1.646E-36
225.0	45.0	0.000E+00
225.0	55.0	0.000E+00
225.0	65.0	0.000E+00
225.0	75.0	0.000E+00
247.5	1.5	4.434E-07
247.5	2.5	2.414E-08
247.5	3.5	1.957E-09
247.5	4.5	2.024E-10
247.5	7.5	3.970E-13
247.5	15.0	1.680E-19
247.5	25.0	9.738E-28
247.5	35.0	7.219E-36
247.5	45.0	0.000E+00
247.5	55.0	0.000E+00
247.5	65.0	0.000E+00
247.5	75.0	0.000E+00

Table 9.2a The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Direct Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Thoron
270.0	1.5	3.786E-07
270.0	2.5	1.725E-08
270.0	3.5	1.140E-09
270.0	4.5	1.003E-10
270.0	7.5	1.626E-13
270.0	15.0	6.970E-20
270.0	25.0	2.678E-28
270.0	35.0	0.000E+00
270.0	45.0	0.000E+00
270.0	55.0	0.000E+00
270.0	65.0	0.000E+00
270.0	75.0	0.000E+00
292.5	1.5	4.476E-07
292.5	2.5	2.828E-08
292.5	3.5	2.449E-09
292.5	4.5	2.578E-10
292.5	7.5	4.854E-13
292.5	15.0	1.796E-19
292.5	25.0	8.914E-28
292.5	35.0	7.564E-36
292.5	45.0	0.000E+00
292.5	55.0	0.000E+00
292.5	65.0	0.000E+00
292.5	75.0	0.000E+00
315.0	1.5	1.436E-06
315.0	2.5	9.487E-08
315.0	3.5	8.321E-09
315.0	4.5	8.622E-10
315.0	7.5	1.559E-12
315.0	15.0	6.043E-19
315.0	25.0	3.731E-27
315.0	35.0	4.015E-35
315.0	45.0	0.000E+00
315.0	55.0	0.000E+00
315.0	65.0	0.000E+00
315.0	75.0	0.000E+00

Table 9.2a The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from the Direct Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Thoron
337.5	1.5	3.671E-06
337.5	2.5	2.189E-07
337.5	3.5	1.810E-08
337.5	4.5	1.827E-09
337.5	7.5	3.172E-12
337.5	15.0	1.207E-18
337.5	25.0	7.721E-27
337.5	35.0	8.768E-35
337.5	45.0	0.000E+00
337.5	55.0	0.000E+00
337.5	65.0	0.000E+00
337.5	75.0	0.000E+00

Table 9.3a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from the Direct Waste Disposal Operations at the Sub-area A

Site	Location	Particulate	Radon
1	Guard Residence	0.000E+00	2.742E-03
2	Admin Bldg	0.000E+00	3.326E-03
3	A1	0.000E+00	3.143E-03
4	A2	0.000E+00	3.882E-03
5	A3	0.000E+00	6.043E-02
6	A5	0.000E+00	6.296E-03
7	A6	0.000E+00	5.564E-03
8	A7	0.000E+00	1.108E-02
9	A11	0.000E+00	1.174E-02
10	A12	0.000E+00	2.370E-02
11	A13	0.000E+00	4.527E-03
12	SW	0.000E+00	3.677E-03
13	W1	0.000E+00	2.932E-03
14	W2	0.000E+00	1.859E-03
15	W3	0.000E+00	8.979E-04
16	NW	0.000E+00	4.860E-04
17	N1	0.000E+00	1.340E-03
18	N3	0.000E+00	4.362E-03
19	NE	0.000E+00	3.174E-03
20	E1	0.000E+00	5.972E-03
21	E2	0.000E+00	1.935E-03
22	E3	0.000E+00	5.079E-03
23	SE	0.000E+00	1.385E-03
24	S1	0.000E+00	1.201E-02
25	S2	0.000E+00	4.726E-03
26	S3	0.000E+00	9.146E-04
27	USPCI	0.000E+00	2.424E-04
28	APTUS	0.000E+00	1.266E-04



Table 9.4a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area A

Site	Location	Thoron
1	Guard Residence	1.581E-05
2	Admin Bldg	3.135E-05
3	A1	2.498E-05
4	A2	2.170E-05
5	A3	1.237E-02
6	A5	1.012E-03
7	A6	1.208E-04
8	A7	3.419E-04
9	A11	1.211E-03
10	A12	3.939E-03
11	A13	2.658E-04
12	SW	1.384E-04
13	W1	1.761E-04
14	W2	8.477E-05
15	W3	2.540E-05
16	NW	6.438E-06
17	N1	1.467E-05
18	N3	2.627E-05
19	NE	1.223E-05
20	E1	1.088E-04
21	E2	2.242E-05
22	E3	4.935E-05
23	SE	1.605E-05
24	S1	1.237E-03
25	S2	6.620E-04
26	S3	4.490E-05
27	USPCI	2.167E-07
28	APTUS	2.121E-15

Table 9.1b The Normalized Airborne Concentrations ( $\mu\text{Ci}/\text{m}^3$ ) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	0.000E+00	5.797E-04
0.0	2.5	0.000E+00	4.081E-04
0.0	3.5	0.000E+00	2.893E-04
0.0	4.5	0.000E+00	2.129E-04
0.0	7.5	0.000E+00	1.066E-04
0.0	15.0	0.000E+00	3.862E-05
0.0	25.0	0.000E+00	1.778E-05
0.0	35.0	0.000E+00	1.077E-05
0.0	45.0	0.000E+00	7.419E-06
0.0	55.0	0.000E+00	5.512E-06
0.0	65.0	0.000E+00	4.300E-06
0.0	75.0	0.000E+00	3.474E-06
22.5	1.5	0.000E+00	2.546E-03
22.5	2.5	0.000E+00	1.398E-03
22.5	3.5	0.000E+00	8.343E-04
22.5	4.5	0.000E+00	5.625E-04
22.5	7.5	0.000E+00	2.510E-04
22.5	15.0	0.000E+00	8.405E-05
22.5	25.0	0.000E+00	3.762E-05
22.5	35.0	0.000E+00	2.226E-05
22.5	45.0	0.000E+00	1.512E-05
22.5	55.0	0.000E+00	1.111E-05
22.5	65.0	0.000E+00	8.587E-06
22.5	75.0	0.000E+00	6.878E-06
45.0	1.5	0.000E+00	7.596E-03
45.0	2.5	0.000E+00	2.251E-03
45.0	3.5	0.000E+00	1.147E-03
45.0	4.5	0.000E+00	7.090E-04
45.0	7.5	0.000E+00	2.797E-04
45.0	15.0	0.000E+00	8.506E-05
45.0	25.0	0.000E+00	3.657E-05
45.0	35.0	0.000E+00	2.159E-05
45.0	45.0	0.000E+00	1.468E-05
45.0	55.0	0.000E+00	1.077E-05
45.0	65.0	0.000E+00	8.320E-06
45.0	75.0	0.000E+00	6.665E-06

Table 9.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	0.000E+00	9.837E-03
67.5	2.5	0.000E+00	2.605E-03
67.5	3.5	0.000E+00	1.242E-03
67.5	4.5	0.000E+00	7.445E-04
67.5	7.5	0.000E+00	2.846E-04
67.5	15.0	0.000E+00	8.662E-05
67.5	25.0	0.000E+00	3.819E-05
67.5	35.0	0.000E+00	2.256E-05
67.5	45.0	0.000E+00	1.529E-05
67.5	55.0	0.000E+00	1.122E-05
67.5	65.0	0.000E+00	8.663E-06
67.5	75.0	0.000E+00	6.942E-06
90.0	1.5	0.000E+00	2.814E-03
90.0	2.5	0.000E+00	1.142E-03
90.0	3.5	0.000E+00	6.498E-04
90.0	4.5	0.000E+00	4.297E-04
90.0	7.5	0.000E+00	1.879E-04
90.0	15.0	0.000E+00	6.225E-05
90.0	25.0	0.000E+00	2.774E-05
90.0	35.0	0.000E+00	1.641E-05
90.0	45.0	0.000E+00	1.110E-05
90.0	55.0	0.000E+00	8.123E-06
90.0	65.0	0.000E+00	6.258E-06
90.0	75.0	0.000E+00	5.002E-06
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 9.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	0.000E+00	3.588E-04
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	0.000E+00	1.155E-03
157.5	2.5	0.000E+00	2.432E-04
157.5	3.5	0.000E+00	1.142E-04
157.5	4.5	0.000E+00	6.320E-05
157.5	7.5	0.000E+00	1.774E-05
157.5	15.0	0.000E+00	2.656E-06
157.5	25.0	0.000E+00	5.080E-07
157.5	35.0	0.000E+00	1.158E-07
157.5	45.0	0.000E+00	7.173E-09
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	0.000E+00	1.534E-03
180.0	2.5	0.000E+00	6.351E-04
180.0	3.5	0.000E+00	3.547E-04
180.0	4.5	0.000E+00	2.263E-04
180.0	7.5	0.000E+00	8.928E-05
180.0	15.0	0.000E+00	2.556E-05
180.0	25.0	0.000E+00	1.046E-05
180.0	35.0	0.000E+00	5.886E-06
180.0	45.0	0.000E+00	3.856E-06
180.0	55.0	0.000E+00	2.839E-06
180.0	65.0	0.000E+00	2.196E-06
180.0	75.0	0.000E+00	1.759E-06

Table 9.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	0.000E+00	9.917E-04
202.5	2.5	0.000E+00	5.833E-04
202.5	3.5	0.000E+00	3.898E-04
202.5	4.5	0.000E+00	2.825E-04
202.5	7.5	0.000E+00	1.408E-04
202.5	15.0	0.000E+00	5.171E-05
202.5	25.0	0.000E+00	2.410E-05
202.5	35.0	0.000E+00	1.450E-05
202.5	45.0	0.000E+00	9.931E-06
202.5	55.0	0.000E+00	7.334E-06
202.5	65.0	0.000E+00	5.687E-06
202.5	75.0	0.000E+00	4.567E-06
225.0	1.5	0.000E+00	6.745E-04
225.0	2.5	0.000E+00	3.553E-04
225.0	3.5	0.000E+00	2.229E-04
225.0	4.5	0.000E+00	1.548E-04
225.0	7.5	0.000E+00	7.160E-05
225.0	15.0	0.000E+00	2.433E-05
225.0	25.0	0.000E+00	1.087E-05
225.0	35.0	0.000E+00	6.611E-06
225.0	45.0	0.000E+00	4.573E-06
225.0	55.0	0.000E+00	3.401E-06
225.0	65.0	0.000E+00	2.654E-06
225.0	75.0	0.000E+00	2.144E-06
247.5	1.5	0.000E+00	6.111E-04
247.5	2.5	0.000E+00	3.340E-04
247.5	3.5	0.000E+00	2.158E-04
247.5	4.5	0.000E+00	1.534E-04
247.5	7.5	0.000E+00	7.538E-05
247.5	15.0	0.000E+00	2.758E-05
247.5	25.0	0.000E+00	1.287E-05
247.5	35.0	0.000E+00	7.788E-06
247.5	45.0	0.000E+00	5.339E-06
247.5	55.0	0.000E+00	3.942E-06
247.5	65.0	0.000E+00	3.058E-06
247.5	75.0	0.000E+00	2.458E-06

Table 9.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	0.000E+00	3.472E-04
270.0	2.5	0.000E+00	1.625E-04
270.0	3.5	0.000E+00	9.341E-05
270.0	4.5	0.000E+00	6.054E-05
270.0	7.5	0.000E+00	2.428E-05
270.0	15.0	0.000E+00	6.887E-06
270.0	25.0	0.000E+00	2.922E-06
270.0	35.0	0.000E+00	1.817E-06
270.0	45.0	0.000E+00	1.283E-06
270.0	55.0	0.000E+00	9.712E-07
270.0	65.0	0.000E+00	7.705E-07
270.0	75.0	0.000E+00	6.319E-07
292.5	1.5	0.000E+00	3.267E-04
292.5	2.5	0.000E+00	1.874E-04
292.5	3.5	0.000E+00	1.237E-04
292.5	4.5	0.000E+00	8.886E-05
292.5	7.5	0.000E+00	4.359E-05
292.5	15.0	0.000E+00	1.566E-05
292.5	25.0	0.000E+00	7.185E-06
292.5	35.0	0.000E+00	4.385E-06
292.5	45.0	0.000E+00	3.049E-06
292.5	55.0	0.000E+00	2.277E-06
292.5	65.0	0.000E+00	1.784E-06
292.5	75.0	0.000E+00	1.446E-06
315.0	1.5	0.000E+00	4.660E-04
315.0	2.5	0.000E+00	2.260E-04
315.0	3.5	0.000E+00	1.336E-04
315.0	4.5	0.000E+00	8.866E-05
315.0	7.5	0.000E+00	3.760E-05
315.0	15.0	0.000E+00	1.158E-05
315.0	25.0	0.000E+00	4.905E-06
315.0	35.0	0.000E+00	2.922E-06
315.0	45.0	0.000E+00	2.027E-06
315.0	55.0	0.000E+00	1.533E-06
315.0	65.0	0.000E+00	1.215E-06
315.0	75.0	0.000E+00	9.953E-07

Table 9.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	0.000E+00	5.128E-04
337.5	2.5	0.000E+00	1.808E-04
337.5	3.5	0.000E+00	1.015E-04
337.5	4.5	0.000E+00	6.503E-05
337.5	7.5	0.000E+00	2.592E-05
337.5	15.0	0.000E+00	7.493E-06
337.5	25.0	0.000E+00	3.063E-06
337.5	35.0	0.000E+00	1.814E-06
337.5	45.0	0.000E+00	1.252E-06
337.5	55.0	0.000E+00	9.501E-07
337.5	65.0	0.000E+00	7.567E-07
337.5	75.0	0.000E+00	6.226E-07

Table 9.2b The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Thoron
0.0	1.5	6.496E-06
0.0	2.5	3.199E-07
0.0	3.5	2.068E-08
0.0	4.5	1.668E-09
0.0	7.5	2.203E-12
0.0	15.0	8.070E-19
0.0	25.0	5.546E-27
0.0	35.0	5.836E-35
0.0	45.0	0.000E+00
0.0	55.0	0.000E+00
0.0	65.0	0.000E+00
0.0	75.0	0.000E+00
22.5	1.5	2.987E-05
22.5	2.5	1.080E-06
22.5	3.5	5.768E-08
22.5	4.5	4.428E-09
22.5	7.5	6.387E-12
22.5	15.0	2.438E-18
22.5	25.0	1.339E-26
22.5	35.0	9.939E-35
22.5	45.0	0.000E+00
22.5	55.0	0.000E+00
22.5	65.0	0.000E+00
22.5	75.0	0.000E+00
45.0	1.5	1.402E-04
45.0	2.5	3.460E-06
45.0	3.5	2.038E-07
45.0	4.5	1.725E-08
45.0	7.5	2.591E-11
45.0	15.0	9.069E-18
45.0	25.0	4.436E-26
45.0	35.0	3.128E-34
45.0	45.0	1.958E-42
45.0	55.0	0.000E+00
45.0	65.0	0.000E+00
45.0	75.0	0.000E+00



Table 9.2b The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Thoron
67.5	1.5	3.062E-04
67.5	2.5	5.983E-06
67.5	3.5	2.686E-07
67.5	4.5	1.829E-08
67.5	7.5	1.950E-11
67.5	15.0	4.411E-18
67.5	25.0	1.995E-26
67.5	35.0	1.578E-34
67.5	45.0	1.958E-42
67.5	55.0	0.000E+00
67.5	65.0	0.000E+00
67.5	75.0	0.000E+00
90.0	1.5	4.275E-05
90.0	2.5	9.055E-07
90.0	3.5	4.421E-08
90.0	4.5	3.222E-09
90.0	7.5	3.951E-12
90.0	15.0	1.180E-18
90.0	25.0	5.389E-27
90.0	35.0	4.282E-35
90.0	45.0	0.000E+00
90.0	55.0	0.000E+00
90.0	65.0	0.000E+00
90.0	75.0	0.000E+00
112.5	1.5	0.000E+00
112.5	2.5	0.000E+00
112.5	3.5	0.000E+00
112.5	4.5	0.000E+00
112.5	7.5	0.000E+00
112.5	15.0	0.000E+00
112.5	25.0	0.000E+00
112.5	35.0	0.000E+00
112.5	45.0	0.000E+00
112.5	55.0	0.000E+00
112.5	65.0	0.000E+00
112.5	75.0	0.000E+00

Table 9.2b The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Thoron
135.0	1.5	2.166E-06
135.0	2.5	0.000E+00
135.0	3.5	0.000E+00
135.0	4.5	0.000E+00
135.0	7.5	0.000E+00
135.0	15.0	0.000E+00
135.0	25.0	0.000E+00
135.0	35.0	0.000E+00
135.0	45.0	0.000E+00
135.0	55.0	0.000E+00
135.0	65.0	0.000E+00
135.0	75.0	0.000E+00
157.5	1.5	5.256E-06
157.5	2.5	4.011E-08
157.5	3.5	1.382E-09
157.5	4.5	5.628E-11
157.5	7.5	6.307E-15
157.5	15.0	3.009E-24
157.5	25.0	2.699E-36
157.5	35.0	0.000E+00
157.5	45.0	0.000E+00
157.5	55.0	0.000E+00
157.5	65.0	0.000E+00
157.5	75.0	0.000E+00
180.0	1.5	4.396E-06
180.0	2.5	1.898E-07
180.0	3.5	1.303E-08
180.0	4.5	1.181E-09
180.0	7.5	1.965E-12
180.0	15.0	9.741E-19
180.0	25.0	8.988E-27
180.0	35.0	9.504E-35
180.0	45.0	0.000E+00
180.0	55.0	0.000E+00
180.0	65.0	0.000E+00
180.0	75.0	0.000E+00

Table 9.2b The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Thoron
202.5	1.5	1.692E-06
202.5	2.5	1.122E-07
202.5	3.5	9.971E-09
202.5	4.5	1.082E-09
202.5	7.5	2.253E-12
202.5	15.0	1.007E-18
202.5	25.0	5.907E-27
202.5	35.0	4.385E-35
202.5	45.0	0.000E+00
202.5	55.0	0.000E+00
202.5	65.0	0.000E+00
202.5	75.0	0.000E+00
225.0	1.5	6.161E-07
225.0	2.5	2.966E-08
225.0	3.5	2.102E-09
225.0	4.5	1.950E-10
225.0	7.5	3.252E-13
225.0	15.0	1.241E-19
225.0	25.0	4.132E-28
225.0	35.0	2.122E-36
225.0	45.0	0.000E+00
225.0	55.0	0.000E+00
225.0	65.0	0.000E+00
225.0	75.0	0.000E+00
247.5	1.5	5.677E-07
247.5	2.5	2.942E-08
247.5	3.5	2.311E-09
247.5	4.5	2.352E-10
247.5	7.5	4.623E-13
247.5	15.0	2.007E-19
247.5	25.0	1.159E-27
247.5	35.0	8.582E-36
247.5	45.0	0.000E+00
247.5	55.0	0.000E+00
247.5	65.0	0.000E+00
247.5	75.0	0.000E+00

Table 9.2b The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Thoron
270.0	1.5	3.954E-07
270.0	2.5	1.640E-08
270.0	3.5	9.901E-10
270.0	4.5	8.078E-11
270.0	7.5	1.129E-13
270.0	15.0	2.758E-20
270.0	25.0	4.792E-38
270.0	35.0	0.000E+00
270.0	45.0	0.000E+00
270.0	55.0	0.000E+00
270.0	65.0	0.000E+00
270.0	75.0	0.000E+00
292.5	1.5	5.027E-07
292.5	2.5	2.999E-08
292.5	3.5	2.530E-09
292.5	4.5	2.616E-10
292.5	7.5	4.773E-13
292.5	15.0	1.720E-19
292.5	25.0	8.451E-28
292.5	35.0	7.148E-36
292.5	45.0	0.000E+00
292.5	55.0	0.000E+00
292.5	65.0	0.000E+00
292.5	75.0	0.000E+00
315.0	1.5	1.266E-06
315.0	2.5	8.245E-08
315.0	3.5	7.064E-09
315.0	4.5	7.246E-10
315.0	7.5	1.289E-12
315.0	15.0	4.842E-19
315.0	25.0	2.767E-27
315.0	35.0	2.396E-35
315.0	45.0	0.000E+00
315.0	55.0	0.000E+00
315.0	65.0	0.000E+00
315.0	75.0	0.000E+00

Table 9.2b The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Thoron
337.5	1.5	3.136E-06
337.5	2.5	1.599E-07
337.5	3.5	1.338E-08
337.5	4.5	1.359E-09
337.5	7.5	2.369E-12
337.5	15.0	8.928E-19
337.5	25.0	5.471E-27
337.5	35.0	5.547E-35
337.5	45.0	0.000E+00
337.5	55.0	0.000E+00
337.5	65.0	0.000E+00
337.5	75.0	0.000E+00

Table 9.3b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area B

Site	Location	Particulate	Radon
1	Guard Residence	0.000E+00	2.276E-03
2	Admin Bldg	0.000E+00	2.685E-03
3	A1	0.000E+00	2.558E-03
4	A2	0.000E+00	3.312E-03
5	A3	0.000E+00	3.004E-02
6	A5	0.000E+00	1.030E-02
7	A6	0.000E+00	4.188E-03
8	A7	0.000E+00	7.567E-03
9	A11	0.000E+00	1.483E-02
10	A12	0.000E+00	1.426E-02
11	A13	0.000E+00	4.154E-03
12	SW	0.000E+00	3.892E-03
13	W1	0.000E+00	2.626E-03
14	W2	0.000E+00	1.649E-03
15	W3	0.000E+00	6.415E-04
16	NW	0.000E+00	5.863E-04
17	N1	0.000E+00	1.203E-03
18	N3	0.000E+00	3.468E-03
19	NE	0.000E+00	2.735E-03
20	E1	0.000E+00	5.868E-03
21	E2	0.000E+00	3.665E-03
22	E3	0.000E+00	4.290E-03
23	SE	0.000E+00	2.466E-03
24	S1	0.000E+00	1.644E-02
25	S2	0.000E+00	9.231E-03
26	S3	0.000E+00	4.220E-03
27	USPCI	0.000E+00	2.727E-04
28	APTUS	0.000E+00	1.245E-04

Table 9.4b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Thoron from the Direct Waste Disposal Operations at Sub-area B

Site	Location	Thoron
1	Guard Residence	8.166E-06
2	Admin Bldg	1.546E-05
3	A1	1.244E-05
4	A2	1.205E-05
5	A3	3.496E-03
6	A5	2.324E-03
7	A6	5.438E-05
8	A7	1.473E-04
9	A11	2.376E-03
10	A12	1.272E-03
11	A13	3.260E-04
12	SW	2.090E-04
13	W1	1.620E-04
14	W2	6.902E-05
15	W3	1.398E-05
16	NW	4.934E-06
17	N1	8.258E-06
18	N3	1.319E-05
19	NE	7.015E-06
20	E1	1.011E-04
21	E2	5.227E-05
22	E3	2.786E-05
23	SE	2.588E-05
24	S1	2.661E-03
25	S2	2.063E-03
26	S3	1.844E-04
27	USPCI	2.452E-07
28	APTUS	1.685E-15

Table 9.1c Airborne Concentrations of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	0.000E+00	1.211E-03
0.0	2.5	0.000E+00	6.006E-04
0.0	3.5	0.000E+00	3.712E-04
0.0	4.5	0.000E+00	2.561E-04
0.0	7.5	0.000E+00	1.183E-04
0.0	15.0	0.000E+00	4.060E-05
0.0	25.0	0.000E+00	1.832E-05
0.0	35.0	0.000E+00	1.101E-05
0.0	45.0	0.000E+00	7.564E-06
0.0	55.0	0.000E+00	5.601E-06
0.0	65.0	0.000E+00	4.358E-06
0.0	75.0	0.000E+00	3.514E-06
22.5	1.5	0.000E+00	4.181E-03
22.5	2.5	0.000E+00	1.657E-03
22.5	3.5	0.000E+00	9.266E-04
22.5	4.5	0.000E+00	6.064E-04
22.5	7.5	0.000E+00	2.612E-04
22.5	15.0	0.000E+00	8.559E-05
22.5	25.0	0.000E+00	3.813E-05
22.5	35.0	0.000E+00	2.267E-05
22.5	45.0	0.000E+00	1.538E-05
22.5	55.0	0.000E+00	1.127E-05
22.5	65.0	0.000E+00	8.686E-06
22.5	75.0	0.000E+00	6.946E-06
45.0	1.5	0.000E+00	7.123E-03
45.0	2.5	0.000E+00	2.214E-03
45.0	3.5	0.000E+00	1.107E-03
45.0	4.5	0.000E+00	6.781E-04
45.0	7.5	0.000E+00	2.648E-04
45.0	15.0	0.000E+00	8.312E-05
45.0	25.0	0.000E+00	3.701E-05
45.0	35.0	0.000E+00	2.190E-05
45.0	45.0	0.000E+00	1.484E-05
45.0	55.0	0.000E+00	1.087E-05
45.0	65.0	0.000E+00	8.384E-06
45.0	75.0	0.000E+00	6.709E-06



Table 9.1c Airborne Concentrations of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	0.000E+00	5.724E-03
67.5	2.5	0.000E+00	1.941E-03
67.5	3.5	0.000E+00	1.013E-03
67.5	4.5	0.000E+00	6.447E-04
67.5	7.5	0.000E+00	2.665E-04
67.5	15.0	0.000E+00	8.438E-05
67.5	25.0	0.000E+00	3.745E-05
67.5	35.0	0.000E+00	2.226E-05
67.5	45.0	0.000E+00	1.513E-05
67.5	55.0	0.000E+00	1.112E-05
67.5	65.0	0.000E+00	8.600E-06
67.5	75.0	0.000E+00	6.898E-06
90.0	1.5	0.000E+00	1.601E-03
90.0	2.5	0.000E+00	8.412E-04
90.0	3.5	0.000E+00	5.258E-04
90.0	4.5	0.000E+00	3.654E-04
90.0	7.5	0.000E+00	1.709E-04
90.0	15.0	0.000E+00	5.940E-05
90.0	25.0	0.000E+00	2.698E-05
90.0	35.0	0.000E+00	1.609E-05
90.0	45.0	0.000E+00	1.093E-05
90.0	55.0	0.000E+00	8.022E-06
90.0	65.0	0.000E+00	6.192E-06
90.0	75.0	0.000E+00	4.956E-06
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 9.1c Airborne Concentrations of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	0.000E+00	3.949E-05
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	0.000E+00	4.472E-04
157.5	2.5	0.000E+00	1.608E-04
157.5	3.5	0.000E+00	7.651E-05
157.5	4.5	0.000E+00	4.251E-05
157.5	7.5	0.000E+00	1.179E-05
157.5	15.0	0.000E+00	1.601E-06
157.5	25.0	0.000E+00	2.171E-07
157.5	35.0	0.000E+00	0.000E+00
157.5	45.0	0.000E+00	0.000E+00
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	0.000E+00	1.168E-03
180.0	2.5	0.000E+00	5.192E-04
180.0	3.5	0.000E+00	2.934E-04
180.0	4.5	0.000E+00	1.896E-04
180.0	7.5	0.000E+00	7.723E-05
180.0	15.0	0.000E+00	2.317E-05
180.0	25.0	0.000E+00	9.769E-06
180.0	35.0	0.000E+00	5.726E-06
180.0	45.0	0.000E+00	3.905E-06
180.0	55.0	0.000E+00	2.869E-06
180.0	65.0	0.000E+00	2.215E-06
180.0	75.0	0.000E+00	1.772E-06

Table 9.1c Airborne Concentrations of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	0.000E+00	1.237E-03
202.5	2.5	0.000E+00	6.679E-04
202.5	3.5	0.000E+00	4.295E-04
202.5	4.5	0.000E+00	3.046E-04
202.5	7.5	0.000E+00	1.473E-04
202.5	15.0	0.000E+00	5.288E-05
202.5	25.0	0.000E+00	2.451E-05
202.5	35.0	0.000E+00	1.479E-05
202.5	45.0	0.000E+00	1.010E-05
202.5	55.0	0.000E+00	7.438E-06
202.5	65.0	0.000E+00	5.755E-06
202.5	75.0	0.000E+00	4.615E-06
225.0	1.5	0.000E+00	8.767E-04
225.0	2.5	0.000E+00	4.123E-04
225.0	3.5	0.000E+00	2.428E-04
225.0	4.5	0.000E+00	1.618E-04
225.0	7.5	0.000E+00	7.119E-05
225.0	15.0	0.000E+00	2.442E-05
225.0	25.0	0.000E+00	1.119E-05
225.0	35.0	0.000E+00	6.776E-06
225.0	45.0	0.000E+00	4.662E-06
225.0	55.0	0.000E+00	3.455E-06
225.0	65.0	0.000E+00	2.690E-06
225.0	75.0	0.000E+00	2.169E-06
247.5	1.5	0.000E+00	7.862E-04
247.5	2.5	0.000E+00	4.003E-04
247.5	3.5	0.000E+00	2.495E-04
247.5	4.5	0.000E+00	1.733E-04
247.5	7.5	0.000E+00	8.089E-05
247.5	15.0	0.000E+00	2.806E-05
247.5	25.0	0.000E+00	1.298E-05
247.5	35.0	0.000E+00	7.832E-06
247.5	45.0	0.000E+00	5.363E-06
247.5	55.0	0.000E+00	3.957E-06
247.5	65.0	0.000E+00	3.068E-06
247.5	75.0	0.000E+00	2.465E-06

Table 9.1c Airborne Concentrations of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	0.000E+00	5.057E-04
270.0	2.5	0.000E+00	2.179E-04
270.0	3.5	0.000E+00	1.194E-04
270.0	4.5	0.000E+00	7.491E-05
270.0	7.5	0.000E+00	2.841E-05
270.0	15.0	0.000E+00	7.606E-06
270.0	25.0	0.000E+00	2.949E-06
270.0	35.0	0.000E+00	1.824E-06
270.0	45.0	0.000E+00	1.287E-06
270.0	55.0	0.000E+00	9.736E-07
270.0	65.0	0.000E+00	7.721E-07
270.0	75.0	0.000E+00	6.331E-07
292.5	1.5	0.000E+00	4.074E-04
292.5	2.5	0.000E+00	2.187E-04
292.5	3.5	0.000E+00	1.392E-04
292.5	4.5	0.000E+00	9.776E-05
292.5	7.5	0.000E+00	4.630E-05
292.5	15.0	0.000E+00	1.616E-05
292.5	25.0	0.000E+00	7.324E-06
292.5	35.0	0.000E+00	4.444E-06
292.5	45.0	0.000E+00	3.081E-06
292.5	55.0	0.000E+00	2.297E-06
292.5	65.0	0.000E+00	1.797E-06
292.5	75.0	0.000E+00	1.455E-06
315.0	1.5	0.000E+00	6.058E-04
315.0	2.5	0.000E+00	2.644E-04
315.0	3.5	0.000E+00	1.486E-04
315.0	4.5	0.000E+00	9.581E-05
315.0	7.5	0.000E+00	3.907E-05
315.0	15.0	0.000E+00	1.174E-05
315.0	25.0	0.000E+00	4.934E-06
315.0	35.0	0.000E+00	2.930E-06
315.0	45.0	0.000E+00	2.059E-06
315.0	55.0	0.000E+00	1.553E-06
315.0	65.0	0.000E+00	1.228E-06
315.0	75.0	0.000E+00	1.005E-06

Table 9.1c Airborne Concentrations of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	0.000E+00	5.700E-04
337.5	2.5	0.000E+00	2.027E-04
337.5	3.5	0.000E+00	1.079E-04
337.5	4.5	0.000E+00	6.729E-05
337.5	7.5	0.000E+00	2.599E-05
337.5	15.0	0.000E+00	7.417E-06
337.5	25.0	0.000E+00	3.032E-06
337.5	35.0	0.000E+00	1.800E-06
337.5	45.0	0.000E+00	1.272E-06
337.5	55.0	0.000E+00	9.649E-07
337.5	65.0	0.000E+00	7.666E-07
337.5	75.0	0.000E+00	6.297E-07

Table 9.2c The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operation at Sub-area C

Angle (degrees)	Distance (km)	Thoron
0.0	1.5	1.561E-05
0.0	2.5	5.420E-07
0.0	3.5	2.885E-08
0.0	4.5	2.072E-09
0.0	7.5	2.355E-12
0.0	15.0	7.238E-19
0.0	25.0	3.020E-27
0.0	35.0	1.085E-35
0.0	45.0	0.000E+00
0.0	55.0	0.000E+00
0.0	65.0	0.000E+00
0.0	75.0	0.000E+00
22.5	1.5	4.903E-05
22.5	2.5	1.301E-06
22.5	3.5	6.486E-08
22.5	4.5	4.843E-09
22.5	7.5	6.652E-12
22.5	15.0	2.377E-18
22.5	25.0	1.216E-26
22.5	35.0	9.130E-35
22.5	45.0	0.000E+00
22.5	55.0	0.000E+00
22.5	65.0	0.000E+00
22.5	75.0	0.000E+00
45.0	1.5	1.198E-04
45.0	2.5	3.090E-06
45.0	3.5	1.728E-07
45.0	4.5	1.422E-08
45.0	7.5	2.004E-11
45.0	15.0	6.557E-18
45.0	25.0	3.336E-26
45.0	35.0	2.518E-34
45.0	45.0	1.958E-42
45.0	55.0	0.000E+00
45.0	65.0	0.000E+00
45.0	75.0	0.000E+00

Table 9.2c The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operation at Sub-area C

Angle (degrees)	Distance (km)	Thoron
67.5	1.5	8.579E-05
67.5	2.5	2.212E-06
67.5	3.5	1.085E-07
67.5	4.5	8.036E-09
67.5	7.5	9.925E-12
67.5	15.0	2.894E-18
67.5	25.0	1.306E-26
67.5	35.0	1.046E-34
67.5	45.0	1.958E-42
67.5	55.0	0.000E+00
67.5	65.0	0.000E+00
67.5	75.0	0.000E+00
90.0	1.5	9.745E-06
90.0	2.5	3.249E-07
90.0	3.5	1.888E-08
90.0	4.5	1.528E-09
90.0	7.5	2.122E-12
90.0	15.0	6.716E-19
90.0	25.0	3.134E-27
90.0	35.0	2.532E-35
90.0	45.0	0.000E+00
90.0	55.0	0.000E+00
90.0	65.0	0.000E+00
90.0	75.0	0.000E+00
112.5	1.5	0.000E+00
112.5	2.5	0.000E+00
112.5	3.5	0.000E+00
112.5	4.5	0.000E+00
112.5	7.5	0.000E+00
112.5	15.0	0.000E+00
112.5	25.0	0.000E+00
112.5	35.0	0.000E+00
112.5	45.0	0.000E+00
112.5	55.0	0.000E+00
112.5	65.0	0.000E+00
112.5	75.0	0.000E+00

Table 9.2c The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operation at Sub-area C

Angle (degrees)	Distance (km)	Thoron
135.0	1.5	1.770E-07
135.0	2.5	0.000E+00
135.0	3.5	0.000E+00
135.0	4.5	0.000E+00
135.0	7.5	0.000E+00
135.0	15.0	0.000E+00
135.0	25.0	0.000E+00
135.0	35.0	0.000E+00
135.0	45.0	0.000E+00
135.0	55.0	0.000E+00
135.0	65.0	0.000E+00
135.0	75.0	0.000E+00
157.5	1.5	7.747E-07
157.5	2.5	1.998E-08
157.5	3.5	6.979E-10
157.5	4.5	2.855E-11
157.5	7.5	3.162E-15
157.5	15.0	1.367E-24
157.5	25.0	8.697E-37
157.5	35.0	0.000E+00
157.5	45.0	0.000E+00
157.5	55.0	0.000E+00
157.5	65.0	0.000E+00
157.5	75.0	0.000E+00
180.0	1.5	3.085E-06
180.0	2.5	1.324E-07
180.0	3.5	8.731E-09
180.0	4.5	7.689E-10
180.0	7.5	1.201E-12
180.0	15.0	4.906E-19
180.0	25.0	2.137E-27
180.0	35.0	0.000E+00
180.0	45.0	0.000E+00
180.0	55.0	0.000E+00
180.0	65.0	0.000E+00
180.0	75.0	0.000E+00



Table 9.2c The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operation at Sub-area C

Angle (degrees)	Distance (km)	Thoron
202.5	1.5	2.655E-06
202.5	2.5	1.498E-07
202.5	3.5	1.238E-08
202.5	4.5	1.288E-09
202.5	7.5	2.518E-12
202.5	15.0	1.063E-18
202.5	25.0	5.984E-27
202.5	35.0	4.464E-35
202.5	45.0	0.000E+00
202.5	55.0	0.000E+00
202.5	65.0	0.000E+00
202.5	75.0	0.000E+00
225.0	1.5	1.358E-06
225.0	2.5	5.371E-08
225.0	3.5	3.226E-09
225.0	4.5	2.538E-10
225.0	7.5	2.788E-13
225.0	15.0	6.860E-20
225.0	25.0	3.281E-28
225.0	35.0	2.738E-36
225.0	45.0	0.000E+00
225.0	55.0	0.000E+00
225.0	65.0	0.000E+00
225.0	75.0	0.000E+00
247.5	1.5	1.169E-06
247.5	2.5	5.536E-08
247.5	3.5	4.098E-09
247.5	4.5	4.014E-10
247.5	7.5	7.463E-13
247.5	15.0	3.065E-19
247.5	25.0	1.746E-27
247.5	35.0	1.290E-35
247.5	45.0	0.000E+00
247.5	55.0	0.000E+00
247.5	65.0	0.000E+00
247.5	75.0	0.000E+00

Table 9.2c The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operation at Sub-area C

Angle (degrees)	Distance (km)	Thoron
270.0	1.5	1.079E-06
270.0	2.5	4.157E-08
270.0	3.5	2.396E-09
270.0	4.5	1.901E-10
270.0	7.5	2.676E-13
270.0	15.0	9.704E-20
270.0	25.0	2.340E-29
270.0	35.0	0.000E+00
270.0	45.0	0.000E+00
270.0	55.0	0.000E+00
270.0	65.0	0.000E+00
270.0	75.0	0.000E+00
292.5	1.5	1.299E-06
292.5	2.5	6.718E-08
292.5	3.5	5.186E-09
292.5	4.5	5.100E-10
292.5	7.5	8.803E-13
292.5	15.0	3.068E-19
292.5	25.0	1.486E-27
292.5	35.0	1.239E-35
292.5	45.0	0.000E+00
292.5	55.0	0.000E+00
292.5	65.0	0.000E+00
292.5	75.0	0.000E+00
315.0	1.5	3.369E-06
315.0	2.5	1.824E-07
315.0	3.5	1.410E-08
315.0	4.5	1.361E-09
315.0	7.5	2.238E-12
315.0	15.0	7.797E-19
315.0	25.0	3.966E-27
315.0	35.0	2.277E-35
315.0	45.0	0.000E+00
315.0	55.0	0.000E+00
315.0	65.0	0.000E+00
315.0	75.0	0.000E+00

Table 9.2c The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operation at Sub-area C

Angle (degrees)	Distance (km)	Thoron
337.5	1.5	6.914E-06
337.5	2.5	3.075E-07
337.5	3.5	2.315E-08
337.5	4.5	2.214E-09
337.5	7.5	3.542E-12
337.5	15.0	1.203E-18
337.5	25.0	6.048E-27
337.5	35.0	3.188E-35
337.5	45.0	0.000E+00
337.5	55.0	0.000E+00
337.5	65.0	0.000E+00
337.5	75.0	0.000E+00

Table 9.3c The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area C

Site	Location	Particulate	Radon
1	Guard Residence	0.000E+00	2.923E-03
2	Admin Bldg	0.000E+00	3.623E-03
3	A1	0.000E+00	3.451E-03
4	A2	0.000E+00	2.998E-03
5	A3	0.000E+00	2.323E-02
6	A5	0.000E+00	3.020E-03
7	A6	0.000E+00	6.462E-03
8	A7	0.000E+00	5.457E-03
9	A11	0.000E+00	1.564E-02
10	A12	0.000E+00	2.538E-02
11	A13	0.000E+00	1.407E-02
12	SW	0.000E+00	1.017E-02
13	W1	0.000E+00	6.688E-03
14	W2	0.000E+00	2.824E-03
15	W3	0.000E+00	1.744E-03
16	NW	0.000E+00	1.073E-03
17	N1	0.000E+00	2.776E-03
18	N3	0.000E+00	3.168E-03
19	NE	0.000E+00	2.709E-03
20	E1	0.000E+00	3.800E-03
21	E2	0.000E+00	1.776E-03
22	E3	0.000E+00	3.218E-03
23	SE	0.000E+00	1.476E-03
24	S1	0.000E+00	1.182E-02
25	S2	0.000E+00	1.999E-03
26	S3	0.000E+00	2.002E-03
27	USPCI	0.000E+00	3.314E-04
28	APTUS	0.000E+00	1.217E-04

Table 9.4c The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Thoron from the Direct Waste Disposal Operations at Sub-area C

Site	Location	Thoron
1	Guard Residence	1.075E-05
2	Admin Bldg	2.148E-05
3	A1	1.755E-05
4	A2	1.009E-05
5	A3	1.910E-03
6	A5	2.282E-04
7	A6	8.712E-05
8	A7	8.041E-05
9	A11	2.936E-03
10	A12	2.292E-03
11	A13	2.245E-03
12	SW	1.011E-03
13	W1	9.606E-04
14	W2	2.414E-04
15	W3	5.212E-05
16	NW	9.886E-06
17	N1	2.138E-05
18	N3	1.157E-05
19	NE	6.380E-06
20	E1	2.876E-05
21	E2	7.725E-06
22	E3	1.556E-05
23	SE	6.419E-06
24	S1	2.071E-03
25	S2	1.396E-04
26	S3	3.147E-05
27	USPCI	6.063E-07
28	APTUS	1.189E-15

Table 9.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	0.000E+00	1.675E-03
0.0	2.5	0.000E+00	7.276E-04
0.0	3.5	0.000E+00	4.232E-04
0.0	4.5	0.000E+00	2.830E-04
0.0	7.5	0.000E+00	1.253E-04
0.0	15.0	0.000E+00	4.177E-05
0.0	25.0	0.000E+00	1.866E-05
0.0	35.0	0.000E+00	1.117E-05
0.0	45.0	0.000E+00	7.651E-06
0.0	55.0	0.000E+00	5.653E-06
0.0	65.0	0.000E+00	4.393E-06
0.0	75.0	0.000E+00	3.538E-06
22.5	1.5	0.000E+00	5.604E-03
22.5	2.5	0.000E+00	1.943E-03
22.5	3.5	0.000E+00	1.024E-03
22.5	4.5	0.000E+00	6.477E-04
22.5	7.5	0.000E+00	2.659E-04
22.5	15.0	0.000E+00	8.667E-05
22.5	25.0	0.000E+00	3.878E-05
22.5	35.0	0.000E+00	2.295E-05
22.5	45.0	0.000E+00	1.552E-05
22.5	55.0	0.000E+00	1.135E-05
22.5	65.0	0.000E+00	8.743E-06
22.5	75.0	0.000E+00	6.985E-06
45.0	1.5	0.000E+00	5.883E-03
45.0	2.5	0.000E+00	1.985E-03
45.0	3.5	0.000E+00	1.025E-03
45.0	4.5	0.000E+00	6.385E-04
45.0	7.5	0.000E+00	2.606E-04
45.0	15.0	0.000E+00	8.199E-05
45.0	25.0	0.000E+00	3.665E-05
45.0	35.0	0.000E+00	2.175E-05
45.0	45.0	0.000E+00	1.476E-05
45.0	55.0	0.000E+00	1.082E-05
45.0	65.0	0.000E+00	8.353E-06
45.0	75.0	0.000E+00	6.687E-06

Table 9.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	0.000E+00	4.190E-03
67.5	2.5	0.000E+00	1.673E-03
67.5	3.5	0.000E+00	9.310E-04
67.5	4.5	0.000E+00	6.058E-04
67.5	7.5	0.000E+00	2.575E-04
67.5	15.0	0.000E+00	8.305E-05
67.5	25.0	0.000E+00	3.671E-05
67.5	35.0	0.000E+00	2.194E-05
67.5	45.0	0.000E+00	1.497E-05
67.5	55.0	0.000E+00	1.102E-05
67.5	65.0	0.000E+00	8.534E-06
67.5	75.0	0.000E+00	6.852E-06
90.0	1.5	0.000E+00	1.244E-03
90.0	2.5	0.000E+00	7.214E-04
90.0	3.5	0.000E+00	4.708E-04
90.0	4.5	0.000E+00	3.352E-04
90.0	7.5	0.000E+00	1.622E-04
90.0	15.0	0.000E+00	5.787E-05
90.0	25.0	0.000E+00	2.656E-05
90.0	35.0	0.000E+00	1.591E-05
90.0	45.0	0.000E+00	1.084E-05
90.0	55.0	0.000E+00	7.965E-06
90.0	65.0	0.000E+00	6.155E-06
90.0	75.0	0.000E+00	4.930E-06
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 9.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	0.000E+00	0.000E+00
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	0.000E+00	3.222E-04
157.5	2.5	0.000E+00	1.171E-04
157.5	3.5	0.000E+00	5.578E-05
157.5	4.5	0.000E+00	3.085E-05
157.5	7.5	0.000E+00	8.312E-06
157.5	15.0	0.000E+00	9.618E-07
157.5	25.0	0.000E+00	3.862E-08
157.5	35.0	0.000E+00	0.000E+00
157.5	45.0	0.000E+00	0.000E+00
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	0.000E+00	9.878E-04
180.0	2.5	0.000E+00	4.449E-04
180.0	3.5	0.000E+00	2.550E-04
180.0	4.5	0.000E+00	1.668E-04
180.0	7.5	0.000E+00	6.986E-05
180.0	15.0	0.000E+00	2.173E-05
180.0	25.0	0.000E+00	9.633E-06
180.0	35.0	0.000E+00	5.785E-06
180.0	45.0	0.000E+00	3.936E-06
180.0	55.0	0.000E+00	2.887E-06
180.0	65.0	0.000E+00	2.227E-06
180.0	75.0	0.000E+00	1.780E-06



Table 9.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	0.000E+00	1.438E-03
202.5	2.5	0.000E+00	7.353E-04
202.5	3.5	0.000E+00	4.597E-04
202.5	4.5	0.000E+00	3.203E-04
202.5	7.5	0.000E+00	1.512E-04
202.5	15.0	0.000E+00	5.385E-05
202.5	25.0	0.000E+00	2.497E-05
202.5	35.0	0.000E+00	1.499E-05
202.5	45.0	0.000E+00	1.021E-05
202.5	55.0	0.000E+00	7.503E-06
202.5	65.0	0.000E+00	5.798E-06
202.5	75.0	0.000E+00	4.644E-06
225.0	1.5	0.000E+00	1.030E-03
225.0	2.5	0.000E+00	4.678E-04
225.0	3.5	0.000E+00	2.697E-04
225.0	4.5	0.000E+00	1.778E-04
225.0	7.5	0.000E+00	7.662E-05
225.0	15.0	0.000E+00	2.446E-05
225.0	25.0	0.000E+00	1.120E-05
225.0	35.0	0.000E+00	6.779E-06
225.0	45.0	0.000E+00	4.664E-06
225.0	55.0	0.000E+00	3.456E-06
225.0	65.0	0.000E+00	2.691E-06
225.0	75.0	0.000E+00	2.170E-06
247.5	1.5	0.000E+00	8.685E-04
247.5	2.5	0.000E+00	4.316E-04
247.5	3.5	0.000E+00	2.646E-04
247.5	4.5	0.000E+00	1.818E-04
247.5	7.5	0.000E+00	8.343E-05
247.5	15.0	0.000E+00	2.853E-05
247.5	25.0	0.000E+00	1.294E-05
247.5	35.0	0.000E+00	7.816E-06
247.5	45.0	0.000E+00	5.355E-06
247.5	55.0	0.000E+00	3.951E-06
247.5	65.0	0.000E+00	3.064E-06
247.5	75.0	0.000E+00	2.462E-06

Table 9.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	0.000E+00	6.327E-04
270.0	2.5	0.000E+00	2.577E-04
270.0	3.5	0.000E+00	1.369E-04
270.0	4.5	0.000E+00	8.424E-05
270.0	7.5	0.000E+00	3.091E-05
270.0	15.0	0.000E+00	8.015E-06
270.0	25.0	0.000E+00	3.056E-06
270.0	35.0	0.000E+00	1.830E-06
270.0	45.0	0.000E+00	1.290E-06
270.0	55.0	0.000E+00	9.756E-07
270.0	65.0	0.000E+00	7.734E-07
270.0	75.0	0.000E+00	6.340E-07
292.5	1.5	0.000E+00	4.764E-04
292.5	2.5	0.000E+00	2.429E-04
292.5	3.5	0.000E+00	1.505E-04
292.5	4.5	0.000E+00	1.041E-04
292.5	7.5	0.000E+00	4.812E-05
292.5	15.0	0.000E+00	1.648E-05
292.5	25.0	0.000E+00	7.412E-06
292.5	35.0	0.000E+00	4.482E-06
292.5	45.0	0.000E+00	3.102E-06
292.5	55.0	0.000E+00	2.310E-06
292.5	65.0	0.000E+00	1.805E-06
292.5	75.0	0.000E+00	1.461E-06
315.0	1.5	0.000E+00	7.203E-04
315.0	2.5	0.000E+00	2.909E-04
315.0	3.5	0.000E+00	1.579E-04
315.0	4.5	0.000E+00	1.000E-04
315.0	7.5	0.000E+00	3.984E-05
315.0	15.0	0.000E+00	1.181E-05
315.0	25.0	0.000E+00	4.944E-06
315.0	35.0	0.000E+00	2.967E-06
315.0	45.0	0.000E+00	2.079E-06
315.0	55.0	0.000E+00	1.565E-06
315.0	65.0	0.000E+00	1.237E-06
315.0	75.0	0.000E+00	1.011E-06

Table 9.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	0.000E+00	5.901E-04
337.5	2.5	0.000E+00	2.141E-04
337.5	3.5	0.000E+00	1.105E-04
337.5	4.5	0.000E+00	6.788E-05
337.5	7.5	0.000E+00	2.583E-05
337.5	15.0	0.000E+00	7.345E-06
337.5	25.0	0.000E+00	3.007E-06
337.5	35.0	0.000E+00	1.827E-06
337.5	45.0	0.000E+00	1.287E-06
337.5	55.0	0.000E+00	9.738E-07
337.5	65.0	0.000E+00	7.726E-07
337.5	75.0	0.000E+00	6.339E-07

Table 9.2d The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Thoron
0.0	1.5	2.311E-05
0.0	2.5	6.943E-07
0.0	3.5	3.296E-08
0.0	4.5	2.177E-09
0.0	7.5	2.182E-12
0.0	15.0	5.410E-19
0.0	25.0	1.494E-27
0.0	35.0	1.206E-35
0.0	45.0	0.000E+00
0.0	55.0	0.000E+00
0.0	65.0	0.000E+00
0.0	75.0	0.000E+00
22.5	1.5	6.742E-05
22.5	2.5	1.610E-06
22.5	3.5	7.753E-08
22.5	4.5	5.593E-09
22.5	7.5	6.578E-12
22.5	15.0	2.285E-18
22.5	25.0	1.195E-26
22.5	35.0	8.930E-35
22.5	45.0	0.000E+00
22.5	55.0	0.000E+00
22.5	65.0	0.000E+00
22.5	75.0	0.000E+00
45.0	1.5	8.308E-05
45.0	2.5	2.403E-06
45.0	3.5	1.398E-07
45.0	4.5	1.172E-08
45.0	7.5	1.720E-11
45.0	15.0	5.568E-18
45.0	25.0	2.829E-26
45.0	35.0	2.144E-34
45.0	45.0	1.958E-42
45.0	55.0	0.000E+00
45.0	65.0	0.000E+00
45.0	75.0	0.000E+00

Table 9.2d The Normalized Airborne Concentration ( $\mu\text{Ci}/\text{m}^3$ ) of Thoron from Direct Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Thoron
67.5	1.5	3.778E-05
67.5	2.5	1.258E-06
67.5	3.5	7.050E-08
67.5	4.5	5.533E-09
67.5	7.5	7.357E-12
67.5	15.0	2.267E-18
67.5	25.0	9.935E-27
67.5	35.0	8.035E-35
67.5	45.0	0.000E+00
67.5	55.0	0.000E+00
67.5	65.0	0.000E+00
67.5	75.0	0.000E+00
90.0	1.5	4.524E-06
90.0	2.5	1.825E-07
90.0	3.5	1.157E-08
90.0	4.5	9.892E-10
90.0	7.5	1.464E-12
90.0	15.0	4.782E-19
90.0	25.0	2.258E-27
90.0	35.0	1.842E-35
90.0	45.0	0.000E+00
90.0	55.0	0.000E+00
90.0	65.0	0.000E+00
90.0	75.0	0.000E+00
112.5	1.5	0.000E+00
112.5	2.5	0.000E+00
112.5	3.5	0.000E+00
112.5	4.5	0.000E+00
112.5	7.5	0.000E+00
112.5	15.0	0.000E+00
112.5	25.0	0.000E+00
112.5	35.0	0.000E+00
112.5	45.0	0.000E+00
112.5	55.0	0.000E+00
112.5	65.0	0.000E+00
112.5	75.0	0.000E+00

Table 9.2d The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Thoron
135.0	1.5	0.000E+00
135.0	2.5	0.000E+00
135.0	3.5	0.000E+00
135.0	4.5	0.000E+00
135.0	7.5	0.000E+00
135.0	15.0	0.000E+00
135.0	25.0	0.000E+00
135.0	35.0	0.000E+00
135.0	45.0	0.000E+00
135.0	55.0	0.000E+00
135.0	65.0	0.000E+00
135.0	75.0	0.000E+00
157.5	1.5	4.830E-07
157.5	2.5	1.264E-08
157.5	3.5	4.418E-10
157.5	4.5	1.799E-11
157.5	7.5	1.935E-15
157.5	15.0	7.135E-25
157.5	25.0	1.343E-37
157.5	35.0	0.000E+00
157.5	45.0	0.000E+00
157.5	55.0	0.000E+00
157.5	65.0	0.000E+00
157.5	75.0	0.000E+00
180.0	1.5	2.371E-06
180.0	2.5	9.685E-08
180.0	3.5	6.099E-09
180.0	4.5	5.159E-10
180.0	7.5	7.285E-13
180.0	15.0	1.866E-19
180.0	25.0	1.554E-37
180.0	35.0	0.000E+00
180.0	45.0	0.000E+00
180.0	55.0	0.000E+00
180.0	65.0	0.000E+00
180.0	75.0	0.000E+00

Table 9.2d The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Thoron
202.5	1.5	3.392E-06
202.5	2.5	1.777E-07
202.5	3.5	1.414E-08
202.5	4.5	1.439E-09
202.5	7.5	2.722E-12
202.5	15.0	1.119E-18
202.5	25.0	6.310E-27
202.5	35.0	4.683E-35
202.5	45.0	0.000E+00
202.5	55.0	0.000E+00
202.5	65.0	0.000E+00
202.5	75.0	0.000E+00
225.0	1.5	2.205E-06
225.0	2.5	8.959E-08
225.0	3.5	5.659E-09
225.0	4.5	4.797E-10
225.0	7.5	6.549E-13
225.0	15.0	8.034E-20
225.0	25.0	3.837E-28
225.0	35.0	3.194E-36
225.0	45.0	0.000E+00
225.0	55.0	0.000E+00
225.0	65.0	0.000E+00
225.0	75.0	0.000E+00
247.5	1.5	1.718E-06
247.5	2.5	7.871E-08
247.5	3.5	5.605E-09
247.5	4.5	5.360E-10
247.5	7.5	9.803E-13
247.5	15.0	4.079E-19
247.5	25.0	2.238E-27
247.5	35.0	1.655E-35
247.5	45.0	0.000E+00
247.5	55.0	0.000E+00
247.5	65.0	0.000E+00
247.5	75.0	0.000E+00

Table 9.2d The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Thoron
270.0	1.5	1.969E-06
270.0	2.5	7.168E-08
270.0	3.5	3.968E-09
270.0	4.5	3.058E-10
270.0	7.5	4.195E-13
270.0	15.0	1.639E-19
270.0	25.0	5.338E-28
270.0	35.0	0.000E+00
270.0	45.0	0.000E+00
270.0	55.0	0.000E+00
270.0	65.0	0.000E+00
270.0	75.0	0.000E+00
292.5	1.5	2.377E-06
292.5	2.5	1.113E-07
292.5	3.5	8.077E-09
292.5	4.5	7.665E-10
292.5	7.5	1.272E-12
292.5	15.0	4.334E-19
292.5	25.0	2.079E-27
292.5	35.0	1.719E-35
292.5	45.0	0.000E+00
292.5	55.0	0.000E+00
292.5	65.0	0.000E+00
292.5	75.0	0.000E+00
315.0	1.5	6.208E-06
315.0	2.5	2.947E-07
315.0	3.5	2.123E-08
315.0	4.5	1.969E-09
315.0	7.5	3.071E-12
315.0	15.0	1.016E-18
315.0	25.0	4.677E-27
315.0	35.0	3.046E-35
315.0	45.0	0.000E+00
315.0	55.0	0.000E+00
315.0	65.0	0.000E+00
315.0	75.0	0.000E+00



Table 9.2d The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Thoron
337.5	1.5	1.035E-05
337.5	2.5	4.372E-07
337.5	3.5	3.098E-08
337.5	4.5	2.862E-09
337.5	7.5	4.350E-12
337.5	15.0	1.367E-18
337.5	25.0	5.521E-27
337.5	35.0	3.957E-35
337.5	45.0	0.000E+00
337.5	55.0	0.000E+00
337.5	65.0	0.000E+00
337.5	75.0	0.000E+00

Table 9.3d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area D

Site	Location	Particulate	Radon
1	Guard Residence	0.000E+00	3.486E-03
2	Admin Bldg	0.000E+00	4.187E-03
3	A1	0.000E+00	3.888E-03
4	A2	0.000E+00	3.032E-03
5	A3	0.000E+00	1.536E-02
6	A5	0.000E+00	2.167E-03
7	A6	0.000E+00	5.493E-03
8	A7	0.000E+00	4.756E-03
9	A11	0.000E+00	2.321E-03
10	A12	0.000E+00	2.046E-02
11	A13	0.000E+00	2.570E-02
12	SW	0.000E+00	1.457E-02
13	W1	0.000E+00	1.620E-02
14	W2	0.000E+00	5.648E-03
15	W3	0.000E+00	2.449E-03
16	NW	0.000E+00	1.490E-03
17	N1	0.000E+00	3.249E-03
18	N3	0.000E+00	2.961E-03
19	NE	0.000E+00	2.401E-03
20	E1	0.000E+00	3.007E-03
21	E2	0.000E+00	1.393E-03
22	E3	0.000E+00	2.888E-03
23	SE	0.000E+00	1.166E-03
24	S1	0.000E+00	1.565E-03
25	S2	0.000E+00	1.506E-03
26	S3	0.000E+00	1.463E-03
27	USPCI	0.000E+00	3.800E-04
28	APTUS	0.000E+00	1.198E-04

Table 9.4d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area D

Site	Location	Thoron
1	Guard Residence	1.316E-05
2	Admin Bldg	2.471E-05
3	A1	1.965E-05
4	A2	9.589E-06
5	A3	8.271E-04
6	A5	8.768E-05
7	A6	6.628E-05
8	A7	5.160E-05
9	A11	3.278E-04
10	A12	1.461E-03
11	A13	5.383E-03
12	SW	1.806E-03
13	W1	3.896E-03
14	W2	6.020E-04
15	W3	7.758E-05
16	NW	1.520E-05
17	N1	2.397E-05
18	N3	9.905E-06
19	NE	4.890E-06
20	E1	1.365E-05
21	E2	3.680E-06
22	E3	1.054E-05
23	SE	3.079E-06
24	S1	1.806E-04
25	S2	5.645E-05
26	S3	1.304E-05
27	USPCI	1.077E-06
28	APTUS	9.481E-16

Table 9.1e The Normalized Airborne Concentrations ( $\mu\text{Ci}/\text{m}^3$ ) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	0.000E+00	1.476E-03
0.0	2.5	0.000E+00	6.756E-04
0.0	3.5	0.000E+00	4.015E-04
0.0	4.5	0.000E+00	2.716E-04
0.0	7.5	0.000E+00	1.223E-04
0.0	15.0	0.000E+00	4.127E-05
0.0	25.0	0.000E+00	1.852E-05
0.0	35.0	0.000E+00	1.111E-05
0.0	45.0	0.000E+00	7.620E-06
0.0	55.0	0.000E+00	5.634E-06
0.0	65.0	0.000E+00	4.380E-06
0.0	75.0	0.000E+00	3.530E-06
22.5	1.5	0.000E+00	4.516E-03
22.5	2.5	0.000E+00	1.703E-03
22.5	3.5	0.000E+00	9.305E-04
22.5	4.5	0.000E+00	6.017E-04
22.5	7.5	0.000E+00	2.599E-04
22.5	15.0	0.000E+00	8.539E-05
22.5	25.0	0.000E+00	3.839E-05
22.5	35.0	0.000E+00	2.278E-05
22.5	45.0	0.000E+00	1.544E-05
22.5	55.0	0.000E+00	1.130E-05
22.5	65.0	0.000E+00	8.709E-06
22.5	75.0	0.000E+00	6.962E-06
45.0	1.5	0.000E+00	6.007E-03
45.0	2.5	0.000E+00	2.036E-03
45.0	3.5	0.000E+00	1.049E-03
45.0	4.5	0.000E+00	6.522E-04
45.0	7.5	0.000E+00	2.590E-04
45.0	15.0	0.000E+00	8.244E-05
45.0	25.0	0.000E+00	3.683E-05
45.0	35.0	0.000E+00	2.183E-05
45.0	45.0	0.000E+00	1.480E-05
45.0	55.0	0.000E+00	1.085E-05
45.0	65.0	0.000E+00	8.368E-06
45.0	75.0	0.000E+00	6.698E-06

Table 9.1e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	0.000E+00	4.410E-03
67.5	2.5	0.000E+00	1.688E-03
67.5	3.5	0.000E+00	9.343E-04
67.5	4.5	0.000E+00	6.066E-04
67.5	7.5	0.000E+00	2.574E-04
67.5	15.0	0.000E+00	8.298E-05
67.5	25.0	0.000E+00	3.702E-05
67.5	35.0	0.000E+00	2.207E-05
67.5	45.0	0.000E+00	1.504E-05
67.5	55.0	0.000E+00	1.106E-05
67.5	65.0	0.000E+00	8.562E-06
67.5	75.0	0.000E+00	6.871E-06
90.0	1.5	0.000E+00	1.574E-03
90.0	2.5	0.000E+00	8.157E-04
90.0	3.5	0.000E+00	5.117E-04
90.0	4.5	0.000E+00	3.571E-04
90.0	7.5	0.000E+00	1.682E-04
90.0	15.0	0.000E+00	5.891E-05
90.0	25.0	0.000E+00	2.684E-05
90.0	35.0	0.000E+00	1.603E-05
90.0	45.0	0.000E+00	1.090E-05
90.0	55.0	0.000E+00	8.003E-06
90.0	65.0	0.000E+00	6.180E-06
90.0	75.0	0.000E+00	4.947E-06
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 9.1e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	0.000E+00	0.000E+00
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	0.000E+00	3.515E-04
157.5	2.5	0.000E+00	1.228E-04
157.5	3.5	0.000E+00	5.727E-05
157.5	4.5	0.000E+00	3.126E-05
157.5	7.5	0.000E+00	8.225E-06
157.5	15.0	0.000E+00	9.125E-07
157.5	25.0	0.000E+00	2.072E-08
157.5	35.0	0.000E+00	0.000E+00
157.5	45.0	0.000E+00	0.000E+00
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	0.000E+00	1.100E-03
180.0	2.5	0.000E+00	4.800E-04
180.0	3.5	0.000E+00	2.705E-04
180.0	4.5	0.000E+00	1.750E-04
180.0	7.5	0.000E+00	7.211E-05
180.0	15.0	0.000E+00	2.211E-05
180.0	25.0	0.000E+00	9.666E-06
180.0	35.0	0.000E+00	5.799E-06
180.0	45.0	0.000E+00	3.944E-06
180.0	55.0	0.000E+00	2.892E-06
180.0	65.0	0.000E+00	2.230E-06
180.0	75.0	0.000E+00	1.782E-06

Table 9.1e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	0.000E+00	1.457E-03
202.5	2.5	0.000E+00	7.395E-04
202.5	3.5	0.000E+00	4.610E-04
202.5	4.5	0.000E+00	3.219E-04
202.5	7.5	0.000E+00	1.525E-04
202.5	15.0	0.000E+00	5.383E-05
202.5	25.0	0.000E+00	2.495E-05
202.5	35.0	0.000E+00	1.498E-05
202.5	45.0	0.000E+00	1.021E-05
202.5	55.0	0.000E+00	7.500E-06
202.5	65.0	0.000E+00	5.796E-06
202.5	75.0	0.000E+00	4.643E-06
225.0	1.5	0.000E+00	1.089E-03
225.0	2.5	0.000E+00	4.829E-04
225.0	3.5	0.000E+00	2.753E-04
225.0	4.5	0.000E+00	1.796E-04
225.0	7.5	0.000E+00	7.505E-05
225.0	15.0	0.000E+00	2.489E-05
225.0	25.0	0.000E+00	1.133E-05
225.0	35.0	0.000E+00	6.832E-06
225.0	45.0	0.000E+00	4.692E-06
225.0	55.0	0.000E+00	3.473E-06
225.0	65.0	0.000E+00	2.702E-06
225.0	75.0	0.000E+00	2.178E-06
247.5	1.5	0.000E+00	8.908E-04
247.5	2.5	0.000E+00	4.365E-04
247.5	3.5	0.000E+00	2.662E-04
247.5	4.5	0.000E+00	1.824E-04
247.5	7.5	0.000E+00	8.351E-05
247.5	15.0	0.000E+00	2.853E-05
247.5	25.0	0.000E+00	1.307E-05
247.5	35.0	0.000E+00	7.873E-06
247.5	45.0	0.000E+00	5.385E-06
247.5	55.0	0.000E+00	3.970E-06
247.5	65.0	0.000E+00	3.076E-06
247.5	75.0	0.000E+00	2.471E-06

Table 9.1e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	0.000E+00	5.715E-04
270.0	2.5	0.000E+00	2.330E-04
270.0	3.5	0.000E+00	1.242E-04
270.0	4.5	0.000E+00	7.679E-05
270.0	7.5	0.000E+00	2.853E-05
270.0	15.0	0.000E+00	7.555E-06
270.0	25.0	0.000E+00	2.983E-06
270.0	35.0	0.000E+00	1.840E-06
270.0	45.0	0.000E+00	1.295E-06
270.0	55.0	0.000E+00	9.791E-07
270.0	65.0	0.000E+00	7.758E-07
270.0	75.0	0.000E+00	6.357E-07
292.5	1.5	0.000E+00	4.889E-04
292.5	2.5	0.000E+00	2.455E-04
292.5	3.5	0.000E+00	1.514E-04
292.5	4.5	0.000E+00	1.045E-04
292.5	7.5	0.000E+00	4.820E-05
292.5	15.0	0.000E+00	1.649E-05
292.5	25.0	0.000E+00	7.415E-06
292.5	35.0	0.000E+00	4.497E-06
292.5	45.0	0.000E+00	3.110E-06
292.5	55.0	0.000E+00	2.315E-06
292.5	65.0	0.000E+00	1.809E-06
292.5	75.0	0.000E+00	1.464E-06
315.0	1.5	0.000E+00	6.587E-04
315.0	2.5	0.000E+00	2.725E-04
315.0	3.5	0.000E+00	1.500E-04
315.0	4.5	0.000E+00	9.578E-05
315.0	7.5	0.000E+00	3.870E-05
315.0	15.0	0.000E+00	1.162E-05
315.0	25.0	0.000E+00	4.894E-06
315.0	35.0	0.000E+00	2.968E-06
315.0	45.0	0.000E+00	2.080E-06
315.0	55.0	0.000E+00	1.566E-06
315.0	65.0	0.000E+00	1.237E-06
315.0	75.0	0.000E+00	1.011E-06



Table 9.1e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	0.000E+00	5.241E-04
337.5	2.5	0.000E+00	1.986E-04
337.5	3.5	0.000E+00	1.046E-04
337.5	4.5	0.000E+00	6.500E-05
337.5	7.5	0.000E+00	2.515E-05
337.5	15.0	0.000E+00	7.247E-06
337.5	25.0	0.000E+00	2.983E-06
337.5	35.0	0.000E+00	1.922E-06
337.5	45.0	0.000E+00	1.284E-06
337.5	55.0	0.000E+00	9.723E-07
337.5	65.0	0.000E+00	7.716E-07
337.5	75.0	0.000E+00	6.332E-07

Table 9.2e The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Thoron
0.0	1.5	1.597E-05
0.0	2.5	5.159E-07
0.0	3.5	2.559E-08
0.0	4.5	1.752E-09
0.0	7.5	1.852E-12
0.0	15.0	4.815E-19
0.0	25.0	1.257E-27
0.0	35.0	1.019E-35
0.0	45.0	0.000E+00
0.0	55.0	0.000E+00
0.0	65.0	0.000E+00
0.0	75.0	0.000E+00
22.5	1.5	4.283E-05
22.5	2.5	1.106E-06
22.5	3.5	5.433E-08
22.5	4.5	3.972E-09
22.5	7.5	5.589E-12
22.5	15.0	1.966E-18
22.5	25.0	1.030E-26
22.5	35.0	7.729E-35
22.5	45.0	0.000E+00
22.5	55.0	0.000E+00
22.5	65.0	0.000E+00
22.5	75.0	0.000E+00
45.0	1.5	7.326E-05
45.0	2.5	2.164E-06
45.0	3.5	1.275E-07
45.0	4.5	1.076E-08
45.0	7.5	1.549E-11
45.0	15.0	5.085E-18
45.0	25.0	2.597E-26
45.0	35.0	1.967E-34
45.0	45.0	1.958E-42
45.0	55.0	0.000E+00
45.0	65.0	0.000E+00
45.0	75.0	0.000E+00

Table 9.2e The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Thoron
67.5	1.5	4.214E-05
67.5	2.5	1.285E-06
67.5	3.5	7.058E-08
67.5	4.5	5.485E-09
67.5	7.5	7.179E-12
67.5	15.0	2.153E-18
67.5	25.0	9.729E-27
67.5	35.0	7.853E-35
67.5	45.0	0.000E+00
67.5	55.0	0.000E+00
67.5	65.0	0.000E+00
67.5	75.0	0.000E+00
90.0	1.5	6.074E-06
90.0	2.5	2.167E-07
90.0	3.5	1.315E-08
90.0	4.5	1.097E-09
90.0	7.5	1.577E-12
90.0	15.0	5.051E-19
90.0	25.0	2.368E-27
90.0	35.0	1.924E-35
90.0	45.0	0.000E+00
90.0	55.0	0.000E+00
90.0	65.0	0.000E+00
90.0	75.0	0.000E+00
112.5	1.5	0.000E+00
112.5	2.5	0.000E+00
112.5	3.5	0.000E+00
112.5	4.5	0.000E+00
112.5	7.5	0.000E+00
112.5	15.0	0.000E+00
112.5	25.0	0.000E+00
112.5	35.0	0.000E+00
112.5	45.0	0.000E+00
112.5	55.0	0.000E+00
112.5	65.0	0.000E+00
112.5	75.0	0.000E+00

Table 9.2e The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Thoron
135.0	1.5	0.000E+00
135.0	2.5	0.000E+00
135.0	3.5	0.000E+00
135.0	4.5	0.000E+00
135.0	7.5	0.000E+00
135.0	15.0	0.000E+00
135.0	25.0	0.000E+00
135.0	35.0	0.000E+00
135.0	45.0	0.000E+00
135.0	55.0	0.000E+00
135.0	65.0	0.000E+00
135.0	75.0	0.000E+00
157.5	1.5	6.836E-07
157.5	2.5	1.709E-08
157.5	3.5	5.848E-10
157.5	4.5	2.350E-11
157.5	7.5	2.469E-15
157.5	15.0	8.727E-25
157.5	25.0	9.294E-38
157.5	35.0	0.000E+00
157.5	45.0	0.000E+00
157.5	55.0	0.000E+00
157.5	65.0	0.000E+00
157.5	75.0	0.000E+00
180.0	1.5	3.308E-06
180.0	2.5	1.300E-07
180.0	3.5	7.996E-09
180.0	4.5	6.672E-10
180.0	7.5	9.365E-13
180.0	15.0	2.646E-19
180.0	25.0	2.011E-37
180.0	35.0	0.000E+00
180.0	45.0	0.000E+00
180.0	55.0	0.000E+00
180.0	65.0	0.000E+00
180.0	75.0	0.000E+00

Table 9.2e The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Thoron
202.5	1.5	4.093E-06
202.5	2.5	2.099E-07
202.5	3.5	1.647E-08
202.5	4.5	1.665E-09
202.5	7.5	3.135E-12
202.5	15.0	1.283E-18
202.5	25.0	7.235E-27
202.5	35.0	5.370E-35
202.5	45.0	0.000E+00
202.5	55.0	0.000E+00
202.5	65.0	0.000E+00
202.5	75.0	0.000E+00
225.0	1.5	2.545E-06
225.0	2.5	9.664E-08
225.0	3.5	5.776E-09
225.0	4.5	4.637E-10
225.0	7.5	5.030E-13
225.0	15.0	8.958E-20
225.0	25.0	4.248E-28
225.0	35.0	3.519E-36
225.0	45.0	0.000E+00
225.0	55.0	0.000E+00
225.0	65.0	0.000E+00
225.0	75.0	0.000E+00
247.5	1.5	1.918E-06
247.5	2.5	8.500E-08
247.5	3.5	5.961E-09
247.5	4.5	5.650E-10
247.5	7.5	1.018E-12
247.5	15.0	4.140E-19
247.5	25.0	2.328E-27
247.5	35.0	1.716E-35
247.5	45.0	0.000E+00
247.5	55.0	0.000E+00
247.5	65.0	0.000E+00
247.5	75.0	0.000E+00

Table 9.2e The Normalized Airborne Concentration (pC/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Thoron
270.0	1.5	1.828E-06
270.0	2.5	6.429E-08
270.0	3.5	3.442E-09
270.0	4.5	2.573E-10
270.0	7.5	3.316E-13
270.0	15.0	1.059E-19
270.0	25.0	1.648E-37
270.0	35.0	0.000E+00
270.0	45.0	0.000E+00
270.0	55.0	0.000E+00
270.0	65.0	0.000E+00
270.0	75.0	0.000E+00
292.5	1.5	2.181E-06
292.5	2.5	1.021E-07
292.5	3.5	7.453E-09
292.5	4.5	7.089E-10
292.5	7.5	1.172E-12
292.5	15.0	3.962E-19
292.5	25.0	1.895E-27
292.5	35.0	1.567E-35
292.5	45.0	0.000E+00
292.5	55.0	0.000E+00
292.5	65.0	0.000E+00
292.5	75.0	0.000E+00
315.0	1.5	5.057E-06
315.0	2.5	2.431E-07
315.0	3.5	1.774E-08
315.0	4.5	1.657E-09
315.0	7.5	2.601E-12
315.0	15.0	8.507E-19
315.0	25.0	3.662E-27
315.0	35.0	2.647E-35
315.0	45.0	0.000E+00
315.0	55.0	0.000E+00
315.0	65.0	0.000E+00
315.0	75.0	0.000E+00

Table 9.2e The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Thoron
337.5	1.5	7.563E-06
337.5	2.5	3.391E-07
337.5	3.5	2.475E-08
337.5	4.5	2.322E-09
337.5	7.5	3.587E-12
337.5	15.0	1.131E-18
337.5	25.0	4.412E-27
337.5	35.0	3.349E-35
337.5	45.0	0.000E+00
337.5	55.0	0.000E+00
337.5	65.0	0.000E+00
337.5	75.0	0.000E+00

Table 9.3e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area E

Site	Location	Particulate	Radon
1	Guard Residence	0.000E+00	3.259E-03
2	Admin Bldg	0.000E+00	3.942E-03
3	A1	0.000E+00	3.674E-03
4	A2	0.000E+00	2.643E-03
5	A3	0.000E+00	1.516E-02
6	A5	0.000E+00	3.846E-03
7	A6	0.000E+00	5.081E-03
8	A7	0.000E+00	4.493E-03
9	A11	0.000E+00	6.851E-03
10	A12	0.000E+00	1.912E-02
11	A13	0.000E+00	2.816E-02
12	SW	0.000E+00	1.711E-02
13	W1	0.000E+00	1.140E-02
14	W2	0.000E+00	4.609E-03
15	W3	0.000E+00	2.047E-03
16	NW	0.000E+00	1.326E-03
17	N1	0.000E+00	2.858E-03
18	N3	0.000E+00	2.810E-03
19	NE	0.000E+00	2.464E-03
20	E1	0.000E+00	3.180E-03
21	E2	0.000E+00	1.679E-03
22	E3	0.000E+00	2.794E-03
23	SE	0.000E+00	1.444E-03
24	S1	0.000E+00	2.928E-03
25	S2	0.000E+00	3.041E-03
26	S3	0.000E+00	2.021E-03
27	USPCI	0.000E+00	3.907E-04
28	APTUS	0.000E+00	1.194E-04



Table 9.4e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area E

Site	Location	Thoron
1	Guard Residence	9.941E-06
2	Admin Bldg	1.882E-05
3	A1	1.507E-05
4	A2	6.799E-06
5	A3	7.952E-04
6	A5	1.681E-04
7	A6	5.073E-05
8	A7	4.516E-05
9	A11	1.461E-03
10	A12	1.181E-03
11	A13	6.932E-03
12	SW	2.569E-03
13	W1	2.455E-03
14	W2	3.875E-04
15	W3	4.940E-05
16	NW	1.063E-05
17	N1	1.690E-05
18	N3	7.943E-06
19	NE	4.387E-06
20	E1	1.606E-05
21	E2	4.695E-06
22	E3	9.433E-06
23	SE	4.039E-06
24	S1	4.964E-04
25	S2	1.231E-04
26	S3	1.922E-05
27	USPCI	9.994E-07
28	APTUS	8.933E-16

Table 9.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	0.000E+00	1.476E-03
0.0	2.5	0.000E+00	6.756E-04
0.0	3.5	0.000E+00	4.015E-04
0.0	4.5	0.000E+00	2.716E-04
0.0	7.5	0.000E+00	1.223E-04
0.0	15.0	0.000E+00	4.127E-05
0.0	25.0	0.000E+00	1.852E-05
0.0	35.0	0.000E+00	1.111E-05
0.0	45.0	0.000E+00	7.620E-06
0.0	55.0	0.000E+00	5.634E-06
0.0	65.0	0.000E+00	4.380E-06
0.0	75.0	0.000E+00	3.530E-06
22.5	1.5	0.000E+00	4.516E-03
22.5	2.5	0.000E+00	1.703E-03
22.5	3.5	0.000E+00	9.305E-04
22.5	4.5	0.000E+00	6.017E-04
22.5	7.5	0.000E+00	2.599E-04
22.5	15.0	0.000E+00	8.539E-05
22.5	25.0	0.000E+00	3.839E-05
22.5	35.0	0.000E+00	2.278E-05
22.5	45.0	0.000E+00	1.544E-05
22.5	55.0	0.000E+00	1.130E-05
22.5	65.0	0.000E+00	8.709E-06
22.5	75.0	0.000E+00	6.962E-06
45.0	1.5	0.000E+00	6.007E-03
45.0	2.5	0.000E+00	2.036E-03
45.0	3.5	0.000E+00	1.049E-03
45.0	4.5	0.000E+00	6.522E-04
45.0	7.5	0.000E+00	2.590E-04
45.0	15.0	0.000E+00	8.244E-05
45.0	25.0	0.000E+00	3.683E-05
45.0	35.0	0.000E+00	2.183E-05
45.0	45.0	0.000E+00	1.480E-05
45.0	55.0	0.000E+00	1.085E-05
45.0	65.0	0.000E+00	8.368E-06
45.0	75.0	0.000E+00	6.698E-06

Table 9.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	0.000E+00	4.410E-03
67.5	2.5	0.000E+00	1.688E-03
67.5	3.5	0.000E+00	9.343E-04
67.5	4.5	0.000E+00	6.066E-04
67.5	7.5	0.000E+00	2.574E-04
67.5	15.0	0.000E+00	8.298E-05
67.5	25.0	0.000E+00	3.702E-05
67.5	35.0	0.000E+00	2.207E-05
67.5	45.0	0.000E+00	1.504E-05
67.5	55.0	0.000E+00	1.106E-05
67.5	65.0	0.000E+00	8.562E-06
67.5	75.0	0.000E+00	6.871E-06
90.0	1.5	0.000E+00	1.574E-03
90.0	2.5	0.000E+00	8.157E-04
90.0	3.5	0.000E+00	5.117E-04
90.0	4.5	0.000E+00	3.571E-04
90.0	7.5	0.000E+00	1.682E-04
90.0	15.0	0.000E+00	5.891E-05
90.0	25.0	0.000E+00	2.684E-05
90.0	35.0	0.000E+00	1.603E-05
90.0	45.0	0.000E+00	1.090E-05
90.0	55.0	0.000E+00	8.003E-06
90.0	65.0	0.000E+00	6.180E-06
90.0	75.0	0.000E+00	4.947E-06
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 9.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	0.000E+00	0.000E+00
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	0.000E+00	3.515E-04
157.5	2.5	0.000E+00	1.228E-04
157.5	3.5	0.000E+00	5.727E-05
157.5	4.5	0.000E+00	3.126E-05
157.5	7.5	0.000E+00	8.225E-06
157.5	15.0	0.000E+00	9.125E-07
157.5	25.0	0.000E+00	2.072E-08
157.5	35.0	0.000E+00	0.000E+00
157.5	45.0	0.000E+00	0.000E+00
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	0.000E+00	1.100E-03
180.0	2.5	0.000E+00	4.800E-04
180.0	3.5	0.000E+00	2.705E-04
180.0	4.5	0.000E+00	1.750E-04
180.0	7.5	0.000E+00	7.211E-05
180.0	15.0	0.000E+00	2.211E-05
180.0	25.0	0.000E+00	9.666E-06
180.0	35.0	0.000E+00	5.799E-06
180.0	45.0	0.000E+00	3.944E-06
180.0	55.0	0.000E+00	2.892E-06
180.0	65.0	0.000E+00	2.230E-06
180.0	75.0	0.000E+00	1.782E-06

Table 9.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	0.000E+00	1.457E-03
202.5	2.5	0.000E+00	7.395E-04
202.5	3.5	0.000E+00	4.610E-04
202.5	4.5	0.000E+00	3.219E-04
202.5	7.5	0.000E+00	1.525E-04
202.5	15.0	0.000E+00	5.383E-05
202.5	25.0	0.000E+00	2.495E-05
202.5	35.0	0.000E+00	1.498E-05
202.5	45.0	0.000E+00	1.021E-05
202.5	55.0	0.000E+00	7.500E-06
202.5	65.0	0.000E+00	5.796E-06
202.5	75.0	0.000E+00	4.643E-06
225.0	1.5	0.000E+00	1.089E-03
225.0	2.5	0.000E+00	4.829E-04
225.0	3.5	0.000E+00	2.753E-04
225.0	4.5	0.000E+00	1.796E-04
225.0	7.5	0.000E+00	7.505E-05
225.0	15.0	0.000E+00	2.489E-05
225.0	25.0	0.000E+00	1.133E-05
225.0	35.0	0.000E+00	6.832E-06
225.0	45.0	0.000E+00	4.692E-06
225.0	55.0	0.000E+00	3.473E-06
225.0	65.0	0.000E+00	2.702E-06
225.0	75.0	0.000E+00	2.178E-06
247.5	1.5	0.000E+00	8.908E-04
247.5	2.5	0.000E+00	4.365E-04
247.5	3.5	0.000E+00	2.662E-04
247.5	4.5	0.000E+00	1.824E-04
247.5	7.5	0.000E+00	8.351E-05
247.5	15.0	0.000E+00	2.853E-05
247.5	25.0	0.000E+00	1.307E-05
247.5	35.0	0.000E+00	7.873E-06
247.5	45.0	0.000E+00	5.385E-06
247.5	55.0	0.000E+00	3.970E-06
247.5	65.0	0.000E+00	3.076E-06
247.5	75.0	0.000E+00	2.471E-06

Table 9.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	0.000E+00	5.715E-04
270.0	2.5	0.000E+00	2.330E-04
270.0	3.5	0.000E+00	1.242E-04
270.0	4.5	0.000E+00	7.679E-05
270.0	7.5	0.000E+00	2.853E-05
270.0	15.0	0.000E+00	7.555E-06
270.0	25.0	0.000E+00	2.983E-06
270.0	35.0	0.000E+00	1.840E-06
270.0	45.0	0.000E+00	1.295E-06
270.0	55.0	0.000E+00	9.791E-07
270.0	65.0	0.000E+00	7.758E-07
270.0	75.0	0.000E+00	6.357E-07
292.5	1.5	0.000E+00	4.889E-04
292.5	2.5	0.000E+00	2.455E-04
292.5	3.5	0.000E+00	1.514E-04
292.5	4.5	0.000E+00	1.045E-04
292.5	7.5	0.000E+00	4.820E-05
292.5	15.0	0.000E+00	1.649E-05
292.5	25.0	0.000E+00	7.415E-06
292.5	35.0	0.000E+00	4.497E-06
292.5	45.0	0.000E+00	3.110E-06
292.5	55.0	0.000E+00	2.315E-06
292.5	65.0	0.000E+00	1.809E-06
292.5	75.0	0.000E+00	1.464E-06
315.0	1.5	0.000E+00	6.587E-04
315.0	2.5	0.000E+00	2.725E-04
315.0	3.5	0.000E+00	1.500E-04
315.0	4.5	0.000E+00	9.578E-05
315.0	7.5	0.000E+00	3.870E-05
315.0	15.0	0.000E+00	1.162E-05
315.0	25.0	0.000E+00	4.894E-06
315.0	35.0	0.000E+00	2.968E-06
315.0	45.0	0.000E+00	2.080E-06
315.0	55.0	0.000E+00	1.566E-06
315.0	65.0	0.000E+00	1.237E-06
315.0	75.0	0.000E+00	1.011E-06

Table 9.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	0.000E+00	5.241E-04
337.5	2.5	0.000E+00	1.986E-04
337.5	3.5	0.000E+00	1.046E-04
337.5	4.5	0.000E+00	6.500E-05
337.5	7.5	0.000E+00	2.515E-05
337.5	15.0	0.000E+00	7.247E-06
337.5	25.0	0.000E+00	2.983E-06
337.5	35.0	0.000E+00	1.822E-06
337.5	45.0	0.000E+00	1.284E-06
337.5	55.0	0.000E+00	9.723E-07
337.5	65.0	0.000E+00	7.716E-07
337.5	75.0	0.000E+00	6.332E-07

Table 9.2f The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Thoron
0.0	1.5	2.127E-05
0.0	2.5	8.612E-07
0.0	3.5	4.827E-08
0.0	4.5	3.496E-09
0.0	7.5	3.970E-12
0.0	15.0	1.315E-18
0.0	25.0	7.917E-27
0.0	35.0	5.582E-35
0.0	45.0	0.000E+00
0.0	55.0	0.000E+00
0.0	65.0	0.000E+00
0.0	75.0	0.000E+00
22.5	1.5	1.368E-04
22.5	2.5	2.833E-06
22.5	3.5	1.269E-07
22.5	4.5	8.735E-09
22.5	7.5	1.096E-11
22.5	15.0	3.859E-18
22.5	25.0	1.971E-26
22.5	35.0	1.445E-34
22.5	45.0	1.958E-42
22.5	55.0	0.000E+00
22.5	65.0	0.000E+00
22.5	75.0	0.000E+00
45.0	1.5	4.296E-04
45.0	2.5	7.498E-06
45.0	3.5	3.595E-07
45.0	4.5	2.715E-08
45.0	7.5	3.495E-11
45.0	15.0	1.093E-17
45.0	25.0	5.482E-26
45.0	35.0	4.103E-34
45.0	45.0	3.914E-42
45.0	55.0	0.000E+00
45.0	65.0	0.000E+00
45.0	75.0	0.000E+00



Table 9.2f The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Thoron
67.5	1.5	1.708E-04
67.5	2.5	4.078E-06
67.5	3.5	1.954E-07
67.5	4.5	1.375E-08
67.5	7.5	1.600E-11
67.5	15.0	4.687E-18
67.5	25.0	2.009E-26
67.5	35.0	1.597E-34
67.5	45.0	1.958E-42
67.5	55.0	0.000E+00
67.5	65.0	0.000E+00
67.5	75.0	0.000E+00
90.0	1.5	5.615E-06
90.0	2.5	3.878E-07
90.0	3.5	2.424E-08
90.0	4.5	1.987E-09
90.0	7.5	2.795E-12
90.0	15.0	9.017E-19
90.0	25.0	4.236E-27
90.0	35.0	3.416E-35
90.0	45.0	0.000E+00
90.0	55.0	0.000E+00
90.0	65.0	0.000E+00
90.0	75.0	0.000E+00
112.5	1.5	0.000E+00
112.5	2.5	0.000E+00
112.5	3.5	0.000E+00
112.5	4.5	0.000E+00
112.5	7.5	0.000E+00
112.5	15.0	0.000E+00
112.5	25.0	0.000E+00
112.5	35.0	0.000E+00
112.5	45.0	0.000E+00
112.5	55.0	0.000E+00
112.5	65.0	0.000E+00
112.5	75.0	0.000E+00

Table 9.2f The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Thoron
135.0	1.5	5.779E-07
135.0	2.5	0.000E+00
135.0	3.5	0.000E+00
135.0	4.5	0.000E+00
135.0	7.5	0.000E+00
135.0	15.0	0.000E+00
135.0	25.0	0.000E+00
135.0	35.0	0.000E+00
135.0	45.0	0.000E+00
135.0	55.0	0.000E+00
135.0	65.0	0.000E+00
135.0	75.0	0.000E+00
157.5	1.5	1.250E-06
157.5	2.5	1.332E-08
157.5	3.5	4.898E-10
157.5	4.5	2.075E-11
157.5	7.5	2.468E-15
157.5	15.0	1.239E-24
157.5	25.0	1.141E-36
157.5	35.0	0.000E+00
157.5	45.0	0.000E+00
157.5	55.0	0.000E+00
157.5	65.0	0.000E+00
157.5	75.0	0.000E+00
180.0	1.5	1.597E-06
180.0	2.5	8.054E-08
180.0	3.5	5.940E-09
180.0	4.5	5.640E-10
180.0	7.5	9.845E-13
180.0	15.0	4.816E-19
180.0	25.0	3.911E-27
180.0	35.0	2.212E-35
180.0	45.0	0.000E+00
180.0	55.0	0.000E+00
180.0	65.0	0.000E+00
180.0	75.0	0.000E+00

Table 9.2f The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Thoron
202.5	1.5	1.143E-06
202.5	2.5	7.391E-08
202.5	3.5	6.637E-09
202.5	4.5	7.238E-10
202.5	7.5	1.494E-12
202.5	15.0	6.545E-19
202.5	25.0	3.725E-27
202.5	35.0	2.786E-35
202.5	45.0	0.000E+00
202.5	55.0	0.000E+00
202.5	65.0	0.000E+00
202.5	75.0	0.000E+00
225.0	1.5	5.873E-07
225.0	2.5	2.664E-08
225.0	3.5	1.764E-09
225.0	4.5	1.484E-10
225.0	7.5	1.522E-13
225.0	15.0	4.141E-20
225.0	25.0	2.002E-28
225.0	35.0	1.690E-36
225.0	45.0	0.000E+00
225.0	55.0	0.000E+00
225.0	65.0	0.000E+00
225.0	75.0	0.000E+00
247.5	1.5	5.111E-07
247.5	2.5	2.815E-08
247.5	3.5	2.276E-09
247.5	4.5	2.348E-10
247.5	7.5	4.634E-13
247.5	15.0	2.000E-19
247.5	25.0	1.112E-27
247.5	35.0	8.271E-36
247.5	45.0	0.000E+00
247.5	55.0	0.000E+00
247.5	65.0	0.000E+00
247.5	75.0	0.000E+00

Table 9.2f The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Thoron
270.0	1.5	5.940E-07
270.0	2.5	2.699E-08
270.0	3.5	1.779E-09
270.0	4.5	1.567E-10
270.0	7.5	2.582E-13
270.0	15.0	1.246E-19
270.0	25.0	9.255E-28
270.0	35.0	1.495E-36
270.0	45.0	0.000E+00
270.0	55.0	0.000E+00
270.0	65.0	0.000E+00
270.0	75.0	0.000E+00
292.5	1.5	8.253E-07
292.5	2.5	4.179E-08
292.5	3.5	3.526E-09
292.5	4.5	3.657E-10
292.5	7.5	6.815E-13
292.5	15.0	2.511E-19
292.5	25.0	1.243E-27
292.5	35.0	1.048E-35
292.5	45.0	0.000E+00
292.5	55.0	0.000E+00
292.5	65.0	0.000E+00
292.5	75.0	0.000E+00
315.0	1.5	2.268E-06
315.0	2.5	1.558E-07
315.0	3.5	1.310E-08
315.0	4.5	1.320E-09
315.0	7.5	2.304E-12
315.0	15.0	8.714E-19
315.0	25.0	5.304E-27
315.0	35.0	5.618E-35
315.0	45.0	0.000E+00
315.0	55.0	0.000E+00
315.0	65.0	0.000E+00
315.0	75.0	0.000E+00

Table 9.2f The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Thoron
337.5	1.5	7.105E-06
337.5	2.5	3.722E-07
337.5	3.5	2.859E-08
337.5	4.5	2.768E-09
337.5	7.5	4.559E-12
337.5	15.0	1.656E-18
337.5	25.0	1.005E-26
337.5	35.0	1.028E-34
337.5	45.0	0.000E+00
337.5	55.0	0.000E+00
337.5	65.0	0.000E+00
337.5	75.0	0.000E+00

Table 9.3f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Direct Waste Disposal Operations at Sub-area F

Site	Location	Particulate	Radon
1	Guard Residence	0.000E+00	3.460E-03
2	Admin Bldg	0.000E+00	4.277E-03
3	A1	0.000E+00	4.009E-03
4	A2	0.000E+00	3.983E-03
5	A3	0.000E+00	3.967E-02
6	A5	0.000E+00	1.166E-03
7	A6	0.000E+00	9.125E-03
8	A7	0.000E+00	8.634E-03
9	A11	0.000E+00	1.136E-02
10	A12	0.000E+00	6.395E-02
11	A13	0.000E+00	7.232E-03
12	SW	0.000E+00	5.496E-03
13	W1	0.000E+00	5.137E-03
14	W2	0.000E+00	3.109E-03
15	W3	0.000E+00	1.213E-03
16	NW	0.000E+00	8.932E-04
17	N1	0.000E+00	2.120E-03
18	N3	0.000E+00	4.232E-03
19	NE	0.000E+00	3.625E-03
20	E1	0.000E+00	3.407E-03
21	E2	0.000E+00	1.059E-03
22	E3	0.000E+00	4.307E-03
23	SE	0.000E+00	6.483E-04
24	S1	0.000E+00	1.028E-02
25	S2	0.000E+00	1.019E-03
26	S3	0.000E+00	0.000E+00
27	USPCI	0.000E+00	2.714E-04
28	APTUS	0.000E+00	1.259E-04

Table 9.4f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area F

Site	Location	Thoron
1	Guard Residence	2.462E-05
2	Admin Bldg	4.906E-05
3	A1	3.894E-05
4	A2	2.572E-05
5	A3	6.835E-03
6	A5	9.106E-05
7	A6	2.589E-04
8	A7	2.526E-04
9	A11	1.040E-03
10	A12	1.366E-02
11	A13	5.296E-04
12	SW	2.545E-04
13	W1	4.303E-04
14	W2	2.360E-04
15	W3	5.410E-05
16	NW	1.597E-05
17	N1	3.204E-05
18	N3	2.964E-05
19	NE	1.631E-05
20	E1	3.573E-05
21	E2	7.784E-06
22	E3	3.970E-05
23	SE	4.766E-06
24	S1	9.107E-04
25	S2	6.915E-05
26	S3	0.000E+00
27	USPCI	3.556E-07
28	APTUS	1.932E-15

### 2.3b Active Waste Disposal Area

Wastes deposited at the engineered waste disposal area are subject to wind erosion and mechanical agitation during waste placement. Wind transports the dust beyond the site boundary; the larger particles are deposited at close distances to their sources, while finer particles are carried far beyond the site. Based on the NRC direction (FSER), the airborne concentrations of the particulates were estimated assuming a 1  $\mu\text{m}$  particle size. This assumption reduces ground deposition of the particles and increases the airborne concentration at distant locations from the site. We estimated the annual rates of release of radon and thoron from the surfaces of each of the waste disposal sub-sections using 1.40  $^{222}\text{Rn}$  pCi  $\text{m}^{-2}\text{s}^{-1}$  per pCi  $\text{g}^{-1}$   $^{228}\text{Ra}$  and 29.88  $^{220}\text{Rn}$  pCi  $\text{m}^{-2}\text{s}^{-1}$  per pCi  $\text{g}^{-1}$   $^{224}\text{Ra}$ . The rate of release of particulates was estimated based on the site-specific meteorological data and the procedure previously detailed in the UDAD code user manual.

We calculated the contribution to the normalized airborne concentrations from each of the six sub-sections (Fig. 1). Table 1 lists the coordinates and the surface areas for each of the active disposal areas. Tables 10.1a through 10.4a list the airborne concentrations of a particulate, radon and thoron from the other sub-sections B, C, D, E and F.



Table 10.1a The Normalized Airborne Concentrations ( $\mu\text{Ci}/\text{m}^3$ ) of Particulates and Radon from Active Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	4.462E-08	9.749E-03
0.0	2.5	1.443E-08	7.425E-03
0.0	3.5	7.134E-09	5.379E-03
0.0	4.5	4.221E-09	3.963E-03
0.0	7.5	1.485E-09	1.969E-03
0.0	15.0	3.812E-10	7.065E-04
0.0	25.0	1.445E-10	3.238E-04
0.0	35.0	8.365E-11	1.956E-04
0.0	45.0	5.730E-11	1.346E-04
0.0	55.0	4.298E-11	9.989E-05
0.0	65.0	3.396E-11	7.789E-05
0.0	75.0	2.778E-11	6.290E-05
22.5	1.5	6.113E-08	5.229E-02
22.5	2.5	2.022E-08	2.889E-02
22.5	3.5	1.107E-08	1.656E-02
22.5	4.5	7.043E-09	1.092E-02
22.5	7.5	2.820E-09	4.728E-03
22.5	15.0	8.247E-10	1.550E-03
22.5	25.0	3.342E-10	6.879E-04
22.5	35.0	1.940E-10	4.056E-04
22.5	45.0	1.324E-10	2.754E-04
22.5	55.0	9.782E-11	2.021E-04
22.5	65.0	7.608E-11	1.560E-04
22.5	75.0	6.138E-11	1.248E-04
45.0	1.5	2.152E-07	1.819E-01
45.0	2.5	6.015E-08	4.624E-02
45.0	3.5	2.925E-08	2.237E-02
45.0	4.5	1.751E-08	1.350E-02
45.0	7.5	6.450E-09	5.183E-03
45.0	15.0	1.761E-09	1.552E-03
45.0	25.0	6.919E-10	6.681E-04
45.0	35.0	4.105E-10	3.954E-04
45.0	45.0	2.872E-10	2.679E-04
45.0	55.0	2.166E-10	1.963E-04
45.0	65.0	1.716E-10	1.514E-04
45.0	75.0	1.407E-10	1.212E-04

Table 10.1a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Particulates and Radon from Active Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	2.610E-07	2.061E-01
67.5	2.5	5.714E-08	4.958E-02
67.5	3.5	2.474E-08	2.308E-02
67.5	4.5	1.386E-08	1.369E-02
67.5	7.5	4.655E-09	5.183E-03
67.5	15.0	1.203E-09	1.581E-03
67.5	25.0	4.566E-10	6.940E-04
67.5	35.0	2.755E-10	4.093E-04
67.5	45.0	1.990E-10	2.772E-04
67.5	55.0	1.540E-10	2.031E-04
67.5	65.0	1.247E-10	1.568E-04
67.5	75.0	1.042E-10	1.256E-04
90.0	1.5	1.398E-08	2.545E-02
90.0	2.5	7.695E-09	1.609E-02
90.0	3.5	4.368E-09	1.009E-02
90.0	4.5	2.798E-09	6.962E-03
90.0	7.5	1.105E-09	3.200E-03
90.0	15.0	3.069E-10	1.094E-03
90.0	25.0	1.185E-10	4.932E-04
90.0	35.0	7.322E-11	2.930E-04
90.0	45.0	5.390E-11	1.988E-04
90.0	55.0	4.229E-11	1.457E-04
90.0	65.0	3.459E-11	1.124E-04
90.0	75.0	2.914E-11	8.989E-05
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 10.1a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Particulates and Radon from Active Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	1.894E-09	6.656E-03
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	1.873E-08	1.793E-02
157.5	2.5	1.143E-09	4.194E-03
157.5	3.5	5.450E-10	2.049E-03
157.5	4.5	3.030E-10	1.163E-03
157.5	7.5	8.450E-11	3.403E-04
157.5	15.0	1.226E-11	5.380E-05
157.5	25.0	2.327E-12	1.107E-05
157.5	35.0	5.828E-13	2.953E-06
157.5	45.0	1.123E-13	5.999E-07
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	3.605E-08	2.310E-02
180.0	2.5	1.435E-08	1.038E-02
180.0	3.5	7.325E-09	5.963E-03
180.0	4.5	4.285E-09	3.870E-03
180.0	7.5	1.339E-09	1.566E-03
180.0	15.0	2.447E-10	4.564E-04
180.0	25.0	6.513E-11	1.879E-04
180.0	35.0	2.641E-11	1.060E-04
180.0	45.0	1.311E-11	6.946E-05
180.0	55.0	8.936E-12	5.098E-05
180.0	65.0	6.628E-12	3.946E-05
180.0	75.0	5.111E-12	3.162E-05

Table 10.1a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Particulates and Radon from Active Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	2.216E-08	1.665E-02
202.5	2.5	1.402E-08	9.941E-03
202.5	3.5	9.698E-09	6.719E-03
202.5	4.5	7.154E-09	4.907E-03
202.5	7.5	3.621E-09	2.479E-03
202.5	15.0	1.302E-09	9.212E-04
202.5	25.0	5.811E-10	4.316E-04
202.5	35.0	3.403E-10	2.603E-04
202.5	45.0	2.274E-10	1.788E-04
202.5	55.0	1.641E-10	1.321E-04
202.5	65.0	1.248E-10	1.025E-04
202.5	75.0	9.847E-11	8.232E-05
225.0	1.5	8.657E-09	1.091E-02
225.0	2.5	4.242E-09	5.898E-03
225.0	3.5	2.497E-09	3.760E-03
225.0	4.5	1.639E-09	2.639E-03
225.0	7.5	6.637E-10	1.243E-03
225.0	15.0	1.822E-10	4.298E-04
225.0	25.0	7.034E-11	1.956E-04
225.0	35.0	4.505E-11	1.196E-04
225.0	45.0	3.303E-11	8.269E-05
225.0	55.0	2.580E-11	6.148E-05
225.0	65.0	2.101E-11	4.797E-05
225.0	75.0	1.763E-11	3.875E-05
247.5	1.5	1.110E-08	1.132E-02
247.5	2.5	6.098E-09	6.195E-03
247.5	3.5	3.933E-09	3.997E-03
247.5	4.5	2.783E-09	2.834E-03
247.5	7.5	1.328E-09	1.371E-03
247.5	15.0	4.582E-10	4.938E-04
247.5	25.0	2.025E-10	2.312E-04
247.5	35.0	1.172E-10	1.401E-04
247.5	45.0	7.732E-11	9.616E-05
247.5	55.0	5.524E-11	7.103E-05
247.5	65.0	4.162E-11	5.513E-05
247.5	75.0	3.259E-11	4.432E-05

Table 10.1a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Particulates and Radon from Active Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	7.058E-09	7.212E-03
270.0	2.5	3.175E-09	3.416E-03
270.0	3.5	1.748E-09	1.965E-03
270.0	4.5	1.086E-09	1.270E-03
270.0	7.5	3.896E-10	5.019E-04
270.0	15.0	9.012E-11	1.379E-04
270.0	25.0	3.005E-11	5.378E-05
270.0	35.0	1.697E-11	3.239E-05
270.0	45.0	1.167E-11	2.293E-05
270.0	55.0	8.648E-12	1.740E-05
270.0	65.0	6.735E-12	1.382E-05
270.0	75.0	5.437E-12	1.134E-05
292.5	1.5	7.083E-09	5.216E-03
292.5	2.5	4.489E-09	3.155E-03
292.5	3.5	3.005E-09	2.129E-03
292.5	4.5	2.138E-09	1.548E-03
292.5	7.5	9.879E-10	7.710E-04
292.5	15.0	3.084E-10	2.801E-04
292.5	25.0	1.241E-10	1.290E-04
292.5	35.0	8.248E-11	7.871E-05
292.5	45.0	6.293E-11	5.462E-05
292.5	55.0	5.072E-11	4.085E-05
292.5	65.0	4.233E-11	3.204E-05
292.5	75.0	3.622E-11	2.599E-05
315.0	1.5	1.911E-08	9.479E-03
315.0	2.5	9.932E-09	4.373E-03
315.0	3.5	5.946E-09	2.572E-03
315.0	4.5	3.939E-09	1.698E-03
315.0	7.5	1.623E-09	7.110E-04
315.0	15.0	4.593E-10	2.154E-04
315.0	25.0	1.773E-10	9.036E-05
315.0	35.0	1.141E-10	5.353E-05
315.0	45.0	8.567E-11	3.675E-05
315.0	55.0	6.850E-11	2.758E-05
315.0	65.0	5.701E-11	2.187E-05
315.0	75.0	4.867E-11	1.793E-05

Table 10.1a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Particulates and Radon from Active Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	2.993E-08	9.958E-03
337.5	2.5	1.377E-08	3.619E-03
337.5	3.5	7.469E-09	1.998E-03
337.5	4.5	4.628E-09	1.265E-03
337.5	7.5	1.698E-09	4.933E-04
337.5	15.0	4.267E-10	1.396E-04
337.5	25.0	1.547E-10	5.645E-05
337.5	35.0	9.895E-11	3.322E-05
337.5	45.0	7.523E-11	2.286E-05
337.5	55.0	6.078E-11	1.715E-05
337.5	65.0	5.120E-11	1.366E-05
337.5	75.0	4.413E-11	1.124E-05

Table 10.2a The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Thoron
0.0	1.5	7.379E-03
0.0	2.5	4.108E-04
0.0	3.5	2.635E-05
0.0	4.5	2.068E-06
0.0	7.5	2.604E-09
0.0	15.0	9.380E-16
0.0	25.0	6.537E-24
0.0	35.0	7.298E-32
0.0	45.0	0.000E+00
0.0	55.0	0.000E+00
0.0	65.0	0.000E+00
0.0	75.0	0.000E+00
22.5	1.5	4.578E-02
22.5	2.5	1.584E-03
22.5	3.5	7.775E-05
22.5	4.5	5.612E-06
22.5	7.5	7.512E-09
22.5	15.0	2.783E-15
22.5	25.0	1.503E-23
22.5	35.0	1.081E-31
22.5	45.0	1.611E-39
22.5	55.0	0.000E+00
22.5	65.0	0.000E+00
22.5	75.0	0.000E+00
45.0	1.5	2.504E-01
45.0	2.5	4.792E-03
45.0	3.5	2.553E-04
45.0	4.5	2.046E-05
45.0	7.5	2.880E-08
45.0	15.0	9.558E-15
45.0	25.0	4.483E-23
45.0	35.0	3.374E-31
45.0	45.0	3.222E-39
45.0	55.0	0.000E+00
45.0	65.0	0.000E+00
45.0	75.0	0.000E+00

Table 10.2a The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Thoron
67.5	1.5	3.641E-01
67.5	2.5	5.989E-03
67.5	3.5	2.495E-04
67.5	4.5	1.603E-05
67.5	7.5	1.587E-08
67.5	15.0	4.352E-15
67.5	25.0	1.959E-23
67.5	35.0	1.543E-31
67.5	45.0	1.611E-39
67.5	55.0	0.000E+00
67.5	65.0	0.000E+00
67.5	75.0	0.000E+00
90.0	1.5	1.954E-02
90.0	2.5	6.291E-04
90.0	3.5	3.353E-05
90.0	4.5	2.534E-06
90.0	7.5	3.245E-09
90.0	15.0	9.985E-16
90.0	25.0	4.612E-24
90.0	35.0	3.679E-32
90.0	45.0	0.000E+00
90.0	55.0	0.000E+00
90.0	65.0	0.000E+00
90.0	75.0	0.000E+00
112.5	1.5	0.000E+00
112.5	2.5	0.000E+00
112.5	3.5	0.000E+00
112.5	4.5	0.000E+00
112.5	7.5	0.000E+00
112.5	15.0	0.000E+00
112.5	25.0	0.000E+00
112.5	35.0	0.000E+00
112.5	45.0	0.000E+00
112.5	55.0	0.000E+00
112.5	65.0	0.000E+00
112.5	75.0	0.000E+00



Table 10.2a The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Thoron
135.0	1.5	1.105E-03
135.0	2.5	0.000E+00
135.0	3.5	0.000E+00
135.0	4.5	0.000E+00
135.0	7.5	0.000E+00
135.0	15.0	0.000E+00
135.0	25.0	0.000E+00
135.0	35.0	0.000E+00
135.0	45.0	0.000E+00
135.0	55.0	0.000E+00
135.0	65.0	0.000E+00
135.0	75.0	0.000E+00
157.5	1.5	2.429E-03
157.5	2.5	1.948E-05
157.5	3.5	6.988E-07
157.5	4.5	2.919E-08
157.5	7.5	3.412E-12
157.5	15.0	1.719E-21
157.5	25.0	1.658E-33
157.5	35.0	0.000E+00
157.5	45.0	0.000E+00
157.5	55.0	0.000E+00
157.5	65.0	0.000E+00
157.5	75.0	0.000E+00
180.0	1.5	2.001E-03
180.0	2.5	9.666E-05
180.0	3.5	7.062E-06
180.0	4.5	6.669E-07
180.0	7.5	1.167E-09
180.0	15.0	6.005E-16
180.0	25.0	5.736E-24
180.0	35.0	6.522E-32
180.0	45.0	0.000E+00
180.0	55.0	0.000E+00
180.0	65.0	0.000E+00
180.0	75.0	0.000E+00

Table 10.2a The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Thoron
202.5	1.5	9.131E-04
202.5	2.5	6.238E-05
202.5	3.5	5.722E-06
202.5	4.5	6.324E-07
202.5	7.5	1.339E-09
202.5	15.0	6.027E-16
202.5	25.0	3.534E-24
202.5	35.0	2.585E-32
202.5	45.0	0.000E+00
202.5	55.0	0.000E+00
202.5	65.0	0.000E+00
202.5	75.0	0.000E+00
225.0	1.5	3.202E-04
225.0	2.5	1.590E-05
225.0	3.5	1.153E-06
225.0	4.5	1.082E-07
225.0	7.5	1.792E-10
225.0	15.0	5.935E-17
225.0	25.0	1.596E-25
225.0	35.0	1.355E-33
225.0	45.0	0.000E+00
225.0	55.0	0.000E+00
225.0	65.0	0.000E+00
225.0	75.0	0.000E+00
247.5	1.5	3.650E-04
247.5	2.5	1.987E-05
247.5	3.5	1.610E-06
247.5	4.5	1.666E-07
247.5	7.5	3.268E-10
247.5	15.0	1.383E-16
247.5	25.0	8.016E-25
247.5	35.0	5.942E-33
247.5	45.0	0.000E+00
247.5	55.0	0.000E+00
247.5	65.0	0.000E+00
247.5	75.0	0.000E+00

Table 10.2a The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Thoron
270.0	1.5	3.116E-04
270.0	2.5	1.420E-05
270.0	3.5	9.380E-07
270.0	4.5	8.258E-08
270.0	7.5	1.338E-10
270.0	15.0	5.738E-17
270.0	25.0	7.204E-25
270.0	35.0	0.000E+00
270.0	45.0	0.000E+00
270.0	55.0	0.000E+00
270.0	65.0	0.000E+00
270.0	75.0	0.000E+00
292.5	1.5	3.684E-04
292.5	2.5	2.328E-05
292.5	3.5	2.016E-06
292.5	4.5	2.122E-07
292.5	7.5	3.996E-10
292.5	15.0	1.479E-16
292.5	25.0	7.338E-25
292.5	35.0	6.227E-33
292.5	45.0	0.000E+00
292.5	55.0	0.000E+00
292.5	65.0	0.000E+00
292.5	75.0	0.000E+00
315.0	1.5	1.182E-03
315.0	2.5	7.809E-05
315.0	3.5	6.850E-06
315.0	4.5	7.097E-07
315.0	7.5	1.283E-09
315.0	15.0	4.974E-16
315.0	25.0	3.071E-24
315.0	35.0	3.305E-32
315.0	45.0	0.000E+00
315.0	55.0	0.000E+00
315.0	65.0	0.000E+00
315.0	75.0	0.000E+00

Table 10.2a The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area A

Angle (degrees)	Distance (km)	Thoron
337.5	1.5	3.022E-03
337.5	2.5	1.801E-04
337.5	3.5	1.490E-05
337.5	4.5	1.504E-06
337.5	7.5	2.611E-09
337.5	15.0	9.938E-16
337.5	25.0	6.356E-24
337.5	35.0	7.217E-32
337.5	45.0	0.000E+00
337.5	55.0	0.000E+00
337.5	65.0	0.000E+00
337.5	75.0	0.000E+00

Table 10.3a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area A

Site	Location	Particulate	Radon
1	Guard Residence	3.639E-08	4.953E-02
2	Admin Bldg	4.825E-08	6.008E-02
3	A1	4.350E-08	5.679E-02
4	A2	7.758E-08	7.012E-02
5	A3	1.526E-06	1.092E+00
6	A5	1.3663-07	1.137E-01
7	A6	8.271E-08	1.005E-01
8	A7	3.025E-07	2.002E-01
9	A11	2.810E-07	2.121E-01
10	A12	6.328E-07	4.281E-01
11	A13	8.109E-08	8.178E-02
12	SW	6.403E-08	6.643E-02
13	W1	7.520E-08	5.297E-02
14	W2	9.842E-08	3.358E-02
15	W3	6.824E-08	1.622E-02
16	NW	3.913E-08	8.778E-03
17	N1	3.798E-08	2.421E-02
18	N3	7.488E-08	7.880E-02
19	NE	7.399E-08	5.733E-02
20	E1	9.475E-08	1.079E-01
21	E2	1.885E-08	3.496E-02
22	E3	1.391E-07	9.175E-02
23	SE	1.349E-08	2.502E-02
24	S1	2.944E-07	2.169E-01
25	S2	9.265E-08	8.538E-02
26	S3	9.551E-09	1.652E-02
27	USPCI	5.810E-09	4.378E-03
28	APTUS	2.283E-09	2.288E-03

Table 10.4a The Normalized Airborne Concentrations ( $\text{pCi}/\text{m}^3$ ) of Thoron from Active Waste Disposal Operations at Sub-area A

Site	Location	Thoron
1	Guard Residence	1.302E-02
2	Admin Bldg	2.581E-02
3	A1	2.056E-02
4	A2	1.786E-02
5	A3	1.018E+01
6	A5	8.333E-01
7	A6	9.946E-02
8	A7	2.814E-01
9	A11	9.964E-01
10	A12	3.242E+00
11	A13	2.188E-01
12	SW	1.139E-01
13	W1	1.450E-01
14	W2	6.978E-02
15	W3	2.090E-02
16	NW	5.299E-03
17	N1	1.207E-02
18	N3	2.163E-02
19	NE	1.007E-02
20	E1	8.958E-02
21	E2	1.846E-02
22	E3	4.062E-02
23	SE	1.321E-02
24	S1	1.018E+00
25	S2	5.449E-01
26	S3	3.696E-02
27	USPCI	1.784E-04
28	APTUS	1.746E-12

Table 10.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	3.855E-08	1.047E-02
0.0	2.5	1.259E-08	7.373E-03
0.0	3.5	6.447E-09	5.226E-03
0.0	4.5	3.898E-09	3.847E-03
0.0	7.5	1.415E-09	1.925E-03
0.0	15.0	3.724E-10	6.976E-04
0.0	25.0	1.425E-10	3.212E-04
0.0	35.0	8.295E-11	1.945E-04
0.0	45.0	5.691E-11	1.340E-04
0.0	55.0	4.285E-11	9.958E-05
0.0	65.0	3.387E-11	7.768E-05
0.0	75.0	2.772E-11	6.275E-05
22.5	1.5	4.791E-08	4.599E-02
22.5	2.5	1.749E-08	2.526E-02
22.5	3.5	9.997E-09	1.507E-02
22.5	4.5	6.510E-09	1.016E-02
22.5	7.5	2.693E-09	4.533E-03
22.5	15.0	8.062E-10	1.518E-03
22.5	25.0	3.296E-10	6.796E-04
22.5	35.0	1.923E-10	4.022E-04
22.5	45.0	1.314E-10	2.732E-04
22.5	55.0	9.720E-11	2.008E-04
22.5	65.0	7.567E-11	1.551E-04
22.5	75.0	6.110E-11	1.242E-04
45.0	1.5	1.483E-07	1.372E-01
45.0	2.5	4.984E-08	4.067E-02
45.0	3.5	2.586E-08	2.072E-02
45.0	4.5	1.599E-08	1.281E-02
45.0	7.5	6.131E-09	5.052E-03
45.0	15.0	1.719E-09	1.537E-03
45.0	25.0	6.805E-10	6.606E-04
45.0	35.0	4.051E-10	3.901E-04
45.0	45.0	2.843E-10	2.651E-04
45.0	55.0	2.148E-10	1.946E-04
45.0	65.0	1.704E-10	1.503E-04
45.0	75.0	1.399E-10	1.204E-04

Table 10.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	2.592E-07	1.777E-01
67.5	2.5	6.074E-08	4.705E-02
67.5	3.5	2.641E-08	2.244E-02
67.5	4.5	1.474E-08	1.345E-02
67.5	7.5	4.848E-09	5.141E-03
67.5	15.0	1.189E-09	1.565E-03
67.5	25.0	4.533E-10	6.899E-04
67.5	35.0	2.745E-10	4.076E-04
67.5	45.0	1.985E-10	2.763E-04
67.5	55.0	1.537E-10	2.026E-04
67.5	65.0	1.245E-10	1.565E-04
67.5	75.0	1.040E-10	1.254E-04
90.0	1.5	2.781E-08	5.084E-02
90.0	2.5	9.831E-09	2.063E-02
90.0	3.5	5.069E-09	1.174E-02
90.0	4.5	3.113E-09	7.762E-03
90.0	7.5	1.171E-09	3.394E-03
90.0	15.0	3.153E-10	1.124E-03
90.0	25.0	1.204E-10	5.012E-04
90.0	35.0	7.408E-11	2.964E-04
90.0	45.0	5.439E-11	2.006E-04
90.0	55.0	4.260E-11	1.467E-04
90.0	65.0	3.481E-11	1.131E-04
90.0	75.0	2.930E-11	9.036E-05
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00



Table 10.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	1.858E-09	6.481E-03
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	2.153E-08	2.086E-02
157.5	2.5	1.203E-09	4.393E-03
157.5	3.5	5.510E-10	2.063E-03
157.5	4.5	2.986E-10	1.142E-03
157.5	7.5	7.977E-11	3.204E-04
157.5	15.0	1.096E-11	4.798E-05
157.5	25.0	1.932E-12	9.177E-06
157.5	35.0	4.135E-13	2.093E-06
157.5	45.0	2.427E-14	1.296E-07
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	4.326E-08	2.771E-02
180.0	2.5	1.601E-08	1.147E-02
180.0	3.5	7.905E-09	6.408E-03
180.0	4.5	4.530E-09	4.088E-03
180.0	7.5	1.370E-09	1.613E-03
180.0	15.0	2.437E-10	4.617E-04
180.0	25.0	6.407E-11	1.889E-04
180.0	35.0	2.582E-11	1.063E-04
180.0	45.0	1.282E-11	6.966E-05
180.0	55.0	8.998E-12	5.129E-05
180.0	65.0	6.667E-12	3.966E-05
180.0	75.0	5.137E-12	3.177E-05

Table 10.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	2.282E-08	1.792E-02
202.5	2.5	1.455E-08	1.054E-02
202.5	3.5	1.003E-08	7.042E-03
202.5	4.5	7.369E-09	5.103E-03
202.5	7.5	3.698E-09	2.544E-03
202.5	15.0	1.317E-09	9.341E-04
202.5	25.0	5.856E-10	4.353E-04
202.5	35.0	3.422E-10	2.619E-04
202.5	45.0	2.283E-10	1.794E-04
202.5	55.0	1.647E-10	1.325E-04
202.5	65.0	1.251E-10	1.027E-04
202.5	75.0	9.872E-11	8.250E-05
225.0	1.5	1.024E-08	1.218E-02
225.0	2.5	4.866E-09	6.418E-03
225.0	3.5	2.811E-09	4.027E-03
225.0	4.5	1.821E-09	2.796E-03
225.0	7.5	7.191E-10	1.293E-03
225.0	15.0	1.922E-10	4.394E-04
225.0	25.0	7.125E-11	1.963E-04
225.0	35.0	4.496E-11	1.194E-04
225.0	45.0	3.297E-11	8.262E-05
225.0	55.0	2.576E-11	6.143E-05
225.0	65.0	2.099E-11	4.794E-05
225.0	75.0	1.762E-11	3.873E-05
247.5	1.5	1.122E-08	1.104E-02
247.5	2.5	6.131E-09	6.034E-03
247.5	3.5	3.949E-09	3.899E-03
247.5	4.5	2.793E-09	2.771E-03
247.5	7.5	1.338E-09	1.362E-03
247.5	15.0	4.626E-10	4.982E-04
247.5	25.0	2.039E-10	2.325E-04
247.5	35.0	1.177E-10	1.407E-04
247.5	45.0	7.758E-11	9.645E-05
247.5	55.0	5.540E-11	7.121E-05
247.5	65.0	4.172E-11	5.524E-05
247.5	75.0	3.266E-11	4.440E-05

Table 10.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	5.882E-09	6.271E-03
270.0	2.5	2.602E-09	2.936E-03
270.0	3.5	1.425E-09	1.687E-03
270.0	4.5	8.856E-10	1.094E-03
270.0	7.5	3.205E-10	4.386E-04
270.0	15.0	7.627E-11	1.244E-04
270.0	25.0	2.883E-11	5.278E-05
270.0	35.0	1.720E-11	3.282E-05
270.0	45.0	1.179E-11	2.317E-05
270.0	55.0	8.722E-12	1.754E-05
270.0	65.0	6.785E-12	1.392E-05
270.0	75.0	5.471E-12	1.142E-05
292.5	1.5	8.937E-09	5.902E-03
292.5	2.5	5.094E-09	3.385E-03
292.5	3.5	3.272E-09	2.234E-03
292.5	4.5	2.279E-09	1.605E-03
292.5	7.5	1.024E-09	7.874E-04
292.5	15.0	3.136E-10	2.829E-04
292.5	25.0	1.253E-10	1.298E-04
292.5	35.0	8.322E-11	7.921E-05
292.5	45.0	6.348E-11	5.508E-05
292.5	55.0	5.108E-11	4.114E-05
292.5	65.0	4.258E-11	3.223E-05
292.5	75.0	3.641E-11	2.612E-05
315.0	1.5	1.977E-08	8.418E-03
315.0	2.5	9.873E-09	4.083E-03
315.0	3.5	5.862E-09	2.413E-03
315.0	4.5	3.876E-09	1.602E-03
315.0	7.5	1.600E-09	6.792E-04
315.0	15.0	4.549E-10	2.093E-04
315.0	25.0	1.762E-10	8.860E-05
315.0	35.0	1.139E-10	5.279E-05
315.0	45.0	8.580E-11	3.661E-05
315.0	55.0	6.882E-11	2.770E-05
315.0	65.0	5.723E-11	2.195E-05
315.0	75.0	4.884E-11	1.798E-05

Table 10.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	3.199E-08	9.264E-03
337.5	2.5	1.265E-08	3.266E-03
337.5	3.5	6.941E-09	1.833E-03
337.5	4.5	4.343E-09	1.175E-03
337.5	7.5	1.623E-09	4.682E-04
337.5	15.0	4.158E-10	1.354E-04
337.5	25.0	1.521E-10	5.534E-05
337.5	35.0	9.819E-11	3.277E-05
337.5	45.0	7.478E-11	2.262E-05
337.5	55.0	6.088E-11	1.716E-05
337.5	65.0	5.127E-11	1.367E-05
337.5	75.0	4.418E-11	1.125E-05

Table 10.2b The Normalized Airborne Concentration ( $\mu\text{Ci}/\text{m}^3$ ) of Thoron from Active Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Thoron
0.0	1.5	5.347E-03
0.0	2.5	2.633E-04
0.0	3.5	1.702E-05
0.0	4.5	1.373E-06
0.0	7.5	1.813E-09
0.0	15.0	6.643E-16
0.0	25.0	4.565E-24
0.0	35.0	4.804E-32
0.0	45.0	0.000E+00
0.0	55.0	0.000E+00
0.0	65.0	0.000E+00
0.0	75.0	0.000E+00
22.5	1.5	2.458E-02
22.5	2.5	8.887E-04
22.5	3.5	4.748E-05
22.5	4.5	3.645E-06
22.5	7.5	5.257E-09
22.5	15.0	2.007E-15
22.5	25.0	1.102E-23
22.5	35.0	8.182E-32
22.5	45.0	0.000E+00
22.5	55.0	0.000E+00
22.5	65.0	0.000E+00
22.5	75.0	0.000E+00
45.0	1.5	1.154E-01
45.0	2.5	2.848E-03
45.0	3.5	1.677E-04
45.0	4.5	1.420E-05
45.0	7.5	2.132E-08
45.0	15.0	7.465E-15
45.0	25.0	3.651E-23
45.0	35.0	2.575E-31
45.0	45.0	1.611E-39
45.0	55.0	0.000E+00
45.0	65.0	0.000E+00
45.0	75.0	0.000E+00

Table 10.2b The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Thoron
67.5	1.5	2.520E-01
67.5	2.5	4.925E-03
67.5	3.5	2.211E-04
67.5	4.5	1.506E-05
67.5	7.5	1.605E-08
67.5	15.0	3.631E-15
67.5	25.0	1.643E-23
67.5	35.0	1.299E-31
67.5	45.0	1.611E-39
67.5	55.0	0.000E+00
67.5	65.0	0.000E+00
67.5	75.0	0.000E+00
90.0	1.5	3.519E-02
90.0	2.5	7.454E-04
90.0	3.5	3.639E-05
90.0	4.5	2.652E-06
90.0	7.5	3.253E-09
90.0	15.0	9.711E-16
90.0	25.0	4.436E-24
90.0	35.0	3.525E-32
90.0	45.0	0.000E+00
90.0	55.0	0.000E+00
90.0	65.0	0.000E+00
90.0	75.0	0.000E+00
112.5	1.5	0.000E+00
112.5	2.5	0.000E+00
112.5	3.5	0.000E+00
112.5	4.5	0.000E+00
112.5	7.5	0.000E+00
112.5	15.0	0.000E+00
112.5	25.0	0.000E+00
112.5	35.0	0.000E+00
112.5	45.0	0.000E+00
112.5	55.0	0.000E+00
112.5	65.0	0.000E+00
112.5	75.0	0.000E+00

Table 10.2b The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Thoron
135.0	1.5	1.783E-03
135.0	2.5	0.000E+00
135.0	3.5	0.000E+00
135.0	4.5	0.000E+00
135.0	7.5	0.000E+00
135.0	15.0	0.000E+00
135.0	25.0	0.000E+00
135.0	35.0	0.000E+00
135.0	45.0	0.000E+00
135.0	55.0	0.000E+00
135.0	65.0	0.000E+00
135.0	75.0	0.000E+00
157.5	1.5	4.327E-03
157.5	2.5	3.302E-05
157.5	3.5	1.137E-06
157.5	4.5	4.632E-08
157.5	7.5	5.192E-12
157.5	15.0	2.477E-21
157.5	25.0	2.221E-33
157.5	35.0	0.000E+00
157.5	45.0	0.000E+00
157.5	55.0	0.000E+00
157.5	65.0	0.000E+00
157.5	75.0	0.000E+00
180.0	1.5	3.618E-03
180.0	2.5	1.562E-04
180.0	3.5	1.072E-05
180.0	4.5	9.724E-07
180.0	7.5	1.617E-09
180.0	15.0	8.018E-16
180.0	25.0	7.398E-24
180.0	35.0	7.823E-32
180.0	45.0	0.000E+00
180.0	55.0	0.000E+00
180.0	65.0	0.000E+00
180.0	75.0	0.000E+00

Table 10.2b The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Thoron
202.5	1.5	1.393E-03
202.5	2.5	9.233E-05
202.5	3.5	8.208E-06
202.5	4.5	8.908E-07
202.5	7.5	1.855E-09
202.5	15.0	8.293E-16
202.5	25.0	4.862E-24
202.5	35.0	3.610E-32
202.5	45.0	0.000E+00
202.5	55.0	0.000E+00
202.5	65.0	0.000E+00
202.5	75.0	0.000E+00
225.0	1.5	5.071E-04
225.0	2.5	2.442E-05
225.0	3.5	1.730E-06
225.0	4.5	1.605E-07
225.0	7.5	2.577E-10
225.0	15.0	1.022E-16
225.0	25.0	3.401E-25
225.0	35.0	1.747E-33
225.0	45.0	0.000E+00
225.0	55.0	0.000E+00
225.0	65.0	0.000E+00
225.0	75.0	0.000E+00
247.5	1.5	4.673E-04
247.5	2.5	2.422E-05
247.5	3.5	1.902E-06
247.5	4.5	1.936E-07
247.5	7.5	3.806E-10
247.5	15.0	1.652E-16
247.5	25.0	9.543E-25
247.5	35.0	7.064E-33
247.5	45.0	0.000E+00
247.5	55.0	0.000E+00
247.5	65.0	0.000E+00
247.5	75.0	0.000E+00



Table 10.2b The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Thoron
270.0	1.5	3.255E-04
270.0	2.5	1.350E-05
270.0	3.5	8.150E-07
270.0	4.5	6.649E-08
270.0	7.5	9.291E-11
270.0	15.0	2.271E-17
270.0	25.0	3.944E-35
270.0	35.0	0.000E+00
270.0	45.0	0.000E+00
270.0	55.0	0.000E+00
270.0	65.0	0.000E+00
270.0	75.0	0.000E+00
292.5	1.5	4.138E-04
292.5	2.5	2.469E-05
292.5	3.5	2.083E-06
292.5	4.5	2.154E-07
292.5	7.5	3.929E-10
292.5	15.0	1.416E-16
292.5	25.0	6.957E-25
292.5	35.0	5.884E-33
292.5	45.0	0.000E+00
292.5	55.0	0.000E+00
292.5	65.0	0.000E+00
292.5	75.0	0.000E+00
315.0	1.5	1.042E-03
315.0	2.5	6.787E-05
315.0	3.5	5.814E-06
315.0	4.5	5.965E-07
315.0	7.5	1.061E-09
315.0	15.0	3.985E-16
315.0	25.0	2.278E-24
315.0	35.0	1.972E-32
315.0	45.0	0.000E+00
315.0	55.0	0.000E+00
315.0	65.0	0.000E+00
315.0	75.0	0.000E+00

Table 10.2b The Normalized Airborne Concentration ( $\mu\text{Ci}/\text{m}^3$ ) of Thoron from Active Waste Disposal Operations at Sub-area B

Angle (degrees)	Distance (km)	Thoron
337.5	1.5	2.582E-03
337.5	2.5	1.316E-04
337.5	3.5	1.102E-05
337.5	4.5	1.119E-06
337.5	7.5	1.950E-09
337.5	15.0	7.349E-16
337.5	25.0	4.504E-24
337.5	35.0	4.566E-32
337.5	45.0	0.000E+00
337.5	55.0	0.000E+00
337.5	65.0	0.000E+00
337.5	75.0	0.000E+00

Table 10.3b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area B

Site	Location	Particulate	Radon
1	Guard Residence	2.950E-08	4.111E-02
2	Admin Bldg	3.654E-08	4.850E-02
3	A1	3.344E-08	4.620E-02
4	A2	6.130E-08	5.982E-02
5	A3	6.755E-07	5.427E-01
6	A5	1.007E-07	1.860E-01
7	A6	5.787E-08	7.565E-02
8	A7	1.930E-07	1.367E-01
9	A11	3.438E-07	2.678E-01
10	A12	2.758E-07	2.575E-01
11	A13	9.956E-08	7.504E-02
12	SW	6.993E-08	7.031E-02
13	W1	1.094E-07	4.744E-02
14	W2	1.079E-07	2.979E-02
15	W3	5.289E-08	1.159E-02
16	NW	3.470E-08	1.059E-02
17	N1	3.000E-08	2.173E-02
18	N3	5.563E-08	6.264E-02
19	NE	5.982E-08	4.941E-02
20	E1	1.101E-07	1.060E-01
21	E2	4.614E-08	6.621E-02
22	E3	1.125E-07	7.750E-02
23	SE	2.393E-08	4.455E-02
24	S1	3.814E-07	2.970E-01
25	S2	1.444E-07	1.667E-01
26	S3	4.379E-08	7.623E-02
27	USPCI	7.245E-09	4.927E-03
28	APTUS	2.262E-09	2.250E-03

Table 10.4b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area B

Site	Location	Thoron
1	Guard Residence	6.722E-03
2	Admin Bldg	1.272E-02
3	A1	1.024E-02
4	A2	9.917E-03
5	A3	2.878E+00
6	A5	1.913E+00
7	A6	4.476E-02
8	A7	1.212E-01
9	A11	1.955E+00
10	A12	1.047E+00
11	A13	2.684E-01
12	SW	1.720E-01
13	W1	1.333E-01
14	W2	5.681E-02
15	W3	1.150E-02
16	NW	4.062E-03
17	N1	6.798E-03
18	N3	1.086E-02
19	NE	5.774E-03
20	E1	8.318E-02
21	E2	4.303E-02
22	E3	2.293E-02
23	SE	2.130E-02
24	S1	2.191E+00
25	S2	1.698E+00
26	S3	1.518E-01
27	USPCI	2.019E-04
28	APTUS	1.387E-12

Table 10.1c The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	4.343E-08	2.188E-02
0.0	2.5	1.345E-08	1.085E-02
0.0	3.5	6.599E-09	6.706E-03
0.0	4.5	3.919E-09	4.627E-03
0.0	7.5	1.403E-09	2.136E-03
0.0	15.0	3.696E-10	7.334E-04
0.0	25.0	1.419E-10	3.309E-04
0.0	35.0	8.330E-11	1.989E-04
0.0	45.0	5.800E-11	1.366E-04
0.0	55.0	4.353E-11	1.012E-04
0.0	65.0	3.433E-11	7.873E-05
0.0	75.0	2.804E-11	6.348E-05
22.5	1.5	5.681E-08	7.553E-02
22.5	2.5	2.106E-08	2.994E-02
22.5	3.5	1.122E-08	1.674E-02
22.5	4.5	7.077E-09	1.095E-02
22.5	7.5	2.817E-09	4.718E-03
22.5	15.0	8.235E-10	1.546E-03
22.5	25.0	3.346E-10	6.888E-04
22.5	35.0	1.959E-10	4.096E-04
22.5	45.0	1.336E-10	2.778E-04
22.5	55.0	9.852E-11	2.035E-04
22.5	65.0	7.654E-11	1.569E-04
22.5	75.0	6.170E-11	1.255E-04
45.0	1.5	1.869E-07	1.287E-01
45.0	2.5	5.703E-08	4.000E-02
45.0	3.5	2.789E-08	2.000E-02
45.0	4.5	1.672E-08	1.225E-02
45.0	7.5	6.174E-09	4.784E-03
45.0	15.0	1.728E-09	1.501E-03
45.0	25.0	6.907E-10	6.685E-04
45.0	35.0	4.111E-10	3.957E-04
45.0	45.0	2.876E-10	2.680E-04
45.0	55.0	2.169E-10	1.963E-04
45.0	65.0	1.718E-10	1.514E-04
45.0	75.0	1.409E-10	1.212E-04

Table 10.1c The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	1.172E-07	1.034E-01
67.5	2.5	3.725E-08	3.506E-02
67.5	3.5	1.841E-08	1.829E-02
67.5	4.5	1.128E-08	1.165E-02
67.5	7.5	4.239E-09	4.814E-03
67.5	15.0	1.148E-09	1.524E-03
67.5	25.0	4.435E-10	6.766E-04
67.5	35.0	2.713E-10	4.021E-04
67.5	45.0	1.966E-10	2.734E-04
67.5	55.0	1.525E-10	2.009E-04
67.5	65.0	1.237E-10	1.554E-04
67.5	75.0	1.035E-10	1.246E-04
90.0	1.5	1.517E-08	2.892E-02
90.0	2.5	7.020E-09	1.520E-02
90.0	3.5	4.010E-09	9.499E-03
90.0	4.5	2.601E-09	6.601E-03
90.0	7.5	1.053E-09	3.087E-03
90.0	15.0	2.992E-10	1.073E-03
90.0	25.0	1.167E-10	4.873E-04
90.0	35.0	7.281E-11	2.906E-04
90.0	45.0	5.367E-11	1.975E-04
90.0	55.0	4.214E-11	1.449E-04
90.0	65.0	3.449E-11	1.119E-04
90.0	75.0	2.907E-11	8.953E-05
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 10.1c The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	2.036E-10	7.133E-04
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	2.275E-09	8.079E-03
157.5	2.5	7.929E-10	2.904E-03
157.5	3.5	3.683E-10	1.382E-03
157.5	4.5	2.005E-10	7.680E-04
157.5	7.5	5.296E-11	2.131E-04
157.5	15.0	6.595E-12	2.891E-05
157.5	25.0	8.251E-13	3.922E-06
157.5	35.0	0.000E+00	0.000E+00
157.5	45.0	0.000E+00	0.000E+00
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	2.889E-08	2.109E-02
180.0	2.5	1.090E-08	9.379E-03
180.0	3.5	5.361E-09	5.301E-03
180.0	4.5	3.064E-09	3.424E-03
180.0	7.5	9.223E-10	1.395E-03
180.0	15.0	1.628E-10	4.186E-04
180.0	25.0	4.236E-11	1.765E-04
180.0	35.0	2.010E-11	1.034E-04
180.0	45.0	1.298E-11	7.055E-05
180.0	55.0	9.087E-12	5.182E-05
180.0	65.0	6.723E-12	4.001E-05
180.0	75.0	5.174E-12	3.201E-05

Table 10.1c The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	3.375E-08	2.235E-02
202.5	2.5	1.853E-08	1.207E-02
202.5	3.5	1.196E-08	7.759E-03
202.5	4.5	8.463E-09	5.502E-03
202.5	7.5	4.026E-09	2.661E-03
202.5	15.0	1.376E-09	9.553E-04
202.5	25.0	6.019E-10	4.427E-04
202.5	35.0	3.497E-10	2.671E-04
202.5	45.0	2.323E-10	1.825E-04
202.5	55.0	1.670E-10	1.344E-04
202.5	65.0	1.266E-10	1.040E-04
202.5	75.0	9.975E-11	8.337E-05
225.0	1.5	1.463E-08	1.584E-02
225.0	2.5	5.909E-09	7.448E-03
225.0	3.5	3.066E-09	4.385E-03
225.0	4.5	1.833E-09	2.922E-03
225.0	7.5	6.491E-10	1.286E-03
225.0	15.0	1.814E-10	4.411E-04
225.0	25.0	7.292E-11	2.022E-04
225.0	35.0	4.604E-11	1.224E-04
225.0	45.0	3.359E-11	8.422E-05
225.0	55.0	2.616E-11	6.241E-05
225.0	65.0	2.126E-11	4.859E-05
225.0	75.0	1.781E-11	3.918E-05
247.5	1.5	1.369E-08	1.420E-02
247.5	2.5	7.021E-09	7.232E-03
247.5	3.5	4.382E-09	4.507E-03
247.5	4.5	3.040E-09	3.130E-03
247.5	7.5	1.405E-09	1.461E-03
247.5	15.0	4.704E-10	5.070E-04
247.5	25.0	2.056E-10	2.344E-04
247.5	35.0	1.184E-10	1.415E-04
247.5	45.0	7.799E-11	9.688E-05
247.5	55.0	5.564E-11	7.147E-05
247.5	65.0	4.188E-11	5.542E-05
247.5	75.0	3.277E-11	4.452E-05



Table 10.1c The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	8.966E-09	9.135E-03
270.0	2.5	3.652E-09	3.936E-03
270.0	3.5	1.907E-09	2.156E-03
270.0	4.5	1.148E-09	1.353E-03
270.0	7.5	3.931E-10	5.132E-04
270.0	15.0	8.816E-11	1.374E-04
270.0	25.0	2.919E-11	5.327E-05
270.0	35.0	1.729E-11	3.295E-05
270.0	45.0	1.184E-11	2.324E-05
270.0	55.0	8.749E-12	1.759E-05
270.0	65.0	6.802E-12	1.395E-05
270.0	75.0	5.483E-12	1.144E-05
292.5	1.5	1.113E-08	7.359E-03
292.5	2.5	6.010E-09	3.951E-03
292.5	3.5	3.729E-09	2.515E-03
292.5	4.5	2.538E-09	1.766E-03
292.5	7.5	1.098E-09	8.364E-04
292.5	15.0	3.254E-10	2.919E-04
292.5	25.0	1.281E-10	1.323E-04
292.5	35.0	8.408E-11	8.027E-05
292.5	45.0	6.399E-11	5.566E-05
292.5	55.0	5.141E-11	4.149E-05
292.5	65.0	4.282E-11	3.246E-05
292.5	75.0	3.658E-11	2.629E-05
315.0	1.5	2.736E-08	1.094E-02
315.0	2.5	1.218E-08	4.777E-03
315.0	3.5	6.832E-09	2.684E-03
315.0	4.5	4.369E-09	1.731E-03
315.0	7.5	1.718E-09	7.058E-04
315.0	15.0	4.712E-10	2.121E-04
315.0	25.0	1.799E-10	8.912E-05
315.0	35.0	1.150E-10	5.293E-05
315.0	45.0	8.700E-11	3.719E-05
315.0	55.0	6.961E-11	2.805E-05
315.0	65.0	5.779E-11	2.219E-05
315.0	75.0	4.925E-11	1.815E-05

Table 10.1c The Normalized Airborne Concentrations ( $\text{pCi}/\text{m}^3$ ) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	4.110E-08	1.030E-02
337.5	2.5	1.496E-08	3.661E-03
337.5	3.5	7.723E-09	1.949E-03
337.5	4.5	4.678E-09	1.216E-03
337.5	7.5	1.678E-09	4.695E-04
337.5	15.0	4.198E-10	1.340E-04
337.5	25.0	1.526E-10	5.477E-05
337.5	35.0	9.814E-11	3.252E-05
337.5	45.0	7.595E-11	2.299E-05
337.5	55.0	6.175E-11	1.743E-05
337.5	65.0	5.188E-11	1.385E-05
337.5	75.0	4.464E-11	1.137E-05

Table 10.2c The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Thoron
0.0	1.5	1.285E-02
0.0	2.5	4.461E-04
0.0	3.5	2.375E-05
0.0	4.5	1.705E-06
0.0	7.5	1.939E-09
0.0	15.0	5.958E-16
0.0	25.0	2.486E-24
0.0	35.0	8.934E-33
0.0	45.0	0.000E+00
0.0	55.0	0.000E+00
0.0	65.0	0.000E+00
0.0	75.0	0.000E+00
22.5	1.5	4.036E-02
22.5	2.5	1.071E-03
22.5	3.5	5.339E-05
22.5	4.5	3.987E-06
22.5	7.5	5.476E-09
22.5	15.0	1.956E-15
22.5	25.0	1.001E-23
22.5	35.0	7.515E-32
22.5	45.0	0.000E+00
22.5	55.0	0.000E+00
22.5	65.0	0.000E+00
22.5	75.0	0.000E+00
45.0	1.5	9.864E-02
45.0	2.5	2.544E-03
45.0	3.5	1.423E-04
45.0	4.5	1.170E-05
45.0	7.5	1.650E-08
45.0	15.0	5.397E-15
45.0	25.0	2.746E-23
45.0	35.0	2.073E-31
45.0	45.0	1.611E-39
45.0	55.0	0.000E+00
45.0	65.0	0.000E+00
45.0	75.0	0.000E+00

Table 10.2c The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Thoron
67.5	1.5	7.061E-02
67.5	2.5	1.821E-03
67.5	3.5	8.933E-05
67.5	4.5	6.614E-06
67.5	7.5	8.170E-09
67.5	15.0	2.382E-15
67.5	25.0	1.075E-23
67.5	35.0	8.606E-32
67.5	45.0	1.611E-39
67.5	55.0	0.000E+00
67.5	65.0	0.000E+00
67.5	75.0	0.000E+00
90.0	1.5	8.021E-03
90.0	2.5	2.674E-04
90.0	3.5	1.554E-05
90.0	4.5	1.258E-06
90.0	7.5	1.747E-09
90.0	15.0	5.528E-16
90.0	25.0	2.580E-24
90.0	35.0	2.084E-32
90.0	45.0	0.000E+00
90.0	55.0	0.000E+00
90.0	65.0	0.000E+00
90.0	75.0	0.000E+00
112.5	1.5	0.000E+00
112.5	2.5	0.000E+00
112.5	3.5	0.000E+00
112.5	4.5	0.000E+00
112.5	7.5	0.000E+00
112.5	15.0	0.000E+00
112.5	25.0	0.000E+00
112.5	35.0	0.000E+00
112.5	45.0	0.000E+00
112.5	55.0	0.000E+00
112.5	65.0	0.000E+00
112.5	75.0	0.000E+00

Table 10.2c The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Thoron
135.0	1.5	1.457E-04
135.0	2.5	0.000E+00
135.0	3.5	0.000E+00
135.0	4.5	0.000E+00
135.0	7.5	0.000E+00
135.0	15.0	0.000E+00
135.0	25.0	0.000E+00
135.0	35.0	0.000E+00
135.0	45.0	0.000E+00
135.0	55.0	0.000E+00
135.0	65.0	0.000E+00
135.0	75.0	0.000E+00
157.5	1.5	6.377E-04
157.5	2.5	1.644E-05
157.5	3.5	5.745E-07
157.5	4.5	2.350E-08
157.5	7.5	2.603E-12
157.5	15.0	1.125E-21
157.5	25.0	7.159E-34
157.5	35.0	0.000E+00
157.5	45.0	0.000E+00
157.5	55.0	0.000E+00
157.5	65.0	0.000E+00
157.5	75.0	0.000E+00
180.0	1.5	2.539E-03
180.0	2.5	1.090E-04
180.0	3.5	7.187E-06
180.0	4.5	6.329E-07
180.0	7.5	9.887E-10
180.0	15.0	4.038E-16
180.0	25.0	1.759E-24
180.0	35.0	0.000E+00
180.0	45.0	0.000E+00
180.0	55.0	0.000E+00
180.0	65.0	0.000E+00
180.0	75.0	0.000E+00

Table 10.2c The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Thoron
202.5	1.5	2.185E-03
202.5	2.5	1.233E-04
202.5	3.5	1.019E-05
202.5	4.5	1.060E-06
202.5	7.5	2.072E-09
202.5	15.0	8.752E-16
202.5	25.0	4.925E-24
202.5	35.0	3.675E-32
202.5	45.0	0.000E+00
202.5	55.0	0.000E+00
202.5	65.0	0.000E+00
202.5	75.0	0.000E+00
225.0	1.5	1.118E-03
225.0	2.5	4.421E-05
225.0	3.5	2.656E-06
225.0	4.5	2.089E-07
225.0	7.5	2.295E-10
225.0	15.0	5.647E-17
225.0	25.0	2.701E-25
225.0	35.0	2.254E-33
225.0	45.0	0.000E+00
225.0	55.0	0.000E+00
225.0	65.0	0.000E+00
225.0	75.0	0.000E+00
247.5	1.5	9.620E-04
247.5	2.5	4.557E-05
247.5	3.5	3.373E-06
247.5	4.5	3.304E-07
247.5	7.5	6.143E-10
247.5	15.0	2.523E-16
247.5	25.0	1.437E-24
247.5	35.0	1.062E-32
247.5	45.0	0.000E+00
247.5	55.0	0.000E+00
247.5	65.0	0.000E+00
247.5	75.0	0.000E+00

Table 10.2c The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area C

Angle (degrees)	Distance (km)	Thoron
270.0	1.5	8.878E-04
270.0	2.5	3.422E-05
270.0	3.5	1.972E-06
270.0	4.5	1.565E-07
270.0	7.5	2.202E-10
270.0	15.0	7.988E-17
270.0	25.0	1.926E-26
270.0	35.0	0.000E+00
270.0	45.0	0.000E+00
270.0	55.0	0.000E+00
270.0	65.0	0.000E+00
270.0	75.0	0.000E+00
292.5	1.5	1.069E-03
292.5	2.5	5.530E-05
292.5	3.5	4.269E-06
292.5	4.5	4.198E-07
292.5	7.5	7.246E-10
292.5	15.0	2.526E-16
292.5	25.0	1.223E-24
292.5	35.0	1.020E-32
292.5	45.0	0.000E+00
292.5	55.0	0.000E+00
292.5	65.0	0.000E+00
292.5	75.0	0.000E+00
315.0	1.5	2.773E-03
315.0	2.5	1.502E-04
315.0	3.5	1.160E-05
315.0	4.5	1.121E-06
315.0	7.5	1.842E-09
315.0	15.0	6.418E-16
315.0	25.0	3.265E-24
315.0	35.0	1.874E-32
315.0	45.0	0.000E+00
315.0	55.0	0.000E+00
315.0	65.0	0.000E+00
315.0	75.0	0.000E+00

Table 10.2c The Normalized Airborne Concentration ( $\mu\text{Ci}/\text{m}^3$ ) of Thoron from Active Waste Disposal Operations at Sub-area C

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Angle (degrees)	Distance (km)	Thoron
337.5	1.5	5.691E-03
337.5	2.5	2.531E-04
337.5	3.5	1.906E-05
337.5	4.5	1.822E-06
337.5	7.5	2.915E-09
337.5	15.0	9.900E-16
337.5	25.0	4.978E-24
337.5	35.0	2.624E-32
337.5	45.0	0.000E+00
337.5	55.0	0.000E+00
337.5	65.0	0.000E+00
337.5	75.0	0.000E+00

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Table 10.3c The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area C

Site	Location	Particulate	Radon
1	Guard Residence	4.064E-08	5.281E-02
2	Admin Bldg	5.308E-08	6.545E-02
3	A1	5.086E-08	6.234E-02
4	A2	7.000E-08	5.415E-02
5	A3	6.137E-07	4.196E-01
6	A5	3.233E-08	5.455E-02
7	A6	1.191E-07	1.167E-01
8	A7	1.565E-07	9.859E-02
9	A11	3.620E-07	2.826E-01
10	A12	6.438E-07	4.585E-01
11	A13	3.222E-07	2.541E-01
12	SW	2.291E-07	1.838E-01
13	W1	2.674E-07	1.208E-01
14	W2	1.906E-07	5.101E-02
15	W3	8.352E-08	3.150E-02
16	NW	3.455E-08	1.939E-02
17	N1	4.306E-08	5.014E-02
18	N3	6.794E-08	5.724E-02
19	NE	6.994E-08	4.894E-02
20	E1	5.959E-08	6.864E-02
21	E2	1.651E-08	3.209E-02
22	E3	8.863E-08	5.813E-02
23	SE	1.372E-08	2.666E-02
24	S1	2.731E-07	2.135E-01
25	S2	2.130E-08	3.611E-02
26	S3	1.976E-08	3.616E-02
27	USPCI	8.782E-09	5.987E-03
28	APTUS	2.163E-09	2.198E-03

Table 10.4c The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Thoron from Direct Waste Disposal Operations at Sub-area C

Site	Location	Thoron
1	Guard Residence	8.848E-03
2	Admin Bldg	1.768E-02
3	A1	1.445E-02
4	A2	8.308E-03
5	A3	1.572E+00
6	A5	1.879E-01
7	A6	7.171E-02
8	A7	6.619E-02
9	A11	2.417E+00
10	A12	1.886E+00
11	A13	1.848E+00
12	SW	8.323E-01
13	W1	7.907E-01
14	W2	1.987E-01
15	W3	4.290E-02
16	NW	8.137E-03
17	N1	1.760E-02
18	N3	9.522E-03
19	NE	5.252E-03
20	E1	2.367E-02
21	E2	6.359E-03
22	E3	1.281E-02
23	SE	5.283E-03
24	S1	1.705E+00
25	S2	1.149E-01
26	S3	2.590E-02
27	USPCI	4.991E-04
28	APTUS	9.791E-13

Table 10.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	0.000E+00	8.946E-04
0.0	2.5	0.000E+00	5.394E-04
0.0	3.5	0.000E+00	3.535E-04
0.0	4.5	0.000E+00	2.489E-04
0.0	7.5	0.000E+00	1.170E-04
0.0	15.0	0.000E+00	4.045E-05
0.0	25.0	0.000E+00	1.829E-05
0.0	35.0	0.000E+00	1.098E-05
0.0	45.0	0.000E+00	7.540E-06
0.0	55.0	0.000E+00	5.586E-06
0.0	65.0	0.000E+00	4.349E-06
0.0	75.0	0.000E+00	3.508E-06
22.5	1.5	0.000E+00	5.494E-03
22.5	2.5	0.000E+00	1.902E-03
22.5	3.5	0.000E+00	1.021E-03
22.5	4.5	0.000E+00	6.533E-04
22.5	7.5	0.000E+00	2.729E-04
22.5	15.0	0.000E+00	8.745E-05
22.5	25.0	0.000E+00	3.851E-05
22.5	35.0	0.000E+00	2.279E-05
22.5	45.0	0.000E+00	1.544E-05
22.5	55.0	0.000E+00	1.130E-05
22.5	65.0	0.000E+00	8.710E-06
22.5	75.0	0.000E+00	6.963E-06
45.0	1.5	0.000E+00	1.206E-02
45.0	2.5	0.000E+00	2.867E-03
45.0	3.5	0.000E+00	1.313E-03
45.0	4.5	0.000E+00	7.695E-04
45.0	7.5	0.000E+00	2.837E-04
45.0	15.0	0.000E+00	8.579E-05
45.0	25.0	0.000E+00	3.771E-05
45.0	35.0	0.000E+00	2.219E-05
45.0	45.0	0.000E+00	1.499E-05
45.0	55.0	0.000E+00	1.096E-05
45.0	65.0	0.000E+00	8.443E-06
45.0	75.0	0.000E+00	6.750E-06

Table 10.1d The Normalized Airborne Concentrations ( $\mu\text{Ci}/\text{m}^3$ ) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	0.000E+00	7.094E-03
67.5	2.5	0.000E+00	2.219E-03
67.5	3.5	0.000E+00	1.129E-03
67.5	4.5	0.000E+00	7.008E-04
67.5	7.5	0.000E+00	2.800E-04
67.5	15.0	0.000E+00	8.647E-05
67.5	25.0	0.000E+00	3.754E-05
67.5	35.0	0.000E+00	2.229E-05
67.5	45.0	0.000E+00	1.515E-05
67.5	55.0	0.000E+00	1.113E-05
67.5	65.0	0.000E+00	8.607E-06
67.5	75.0	0.000E+00	6.903E-06
90.0	1.5	0.000E+00	5.352E-04
90.0	2.5	0.000E+00	6.512E-04
90.0	3.5	0.000E+00	4.588E-04
90.0	4.5	0.000E+00	3.337E-04
90.0	7.5	0.000E+00	1.635E-04
90.0	15.0	0.000E+00	5.828E-05
90.0	25.0	0.000E+00	2.669E-05
90.0	35.0	0.000E+00	1.507E-05
90.0	45.0	0.000E+00	1.087E-05
90.0	55.0	0.000E+00	7.984E-06
90.0	65.0	0.000E+00	6.168E-06
90.0	75.0	0.000E+00	4.939E-06
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 10.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	0.000E+00	2.320E-04
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	0.000E+00	6.869E-04
157.5	2.5	0.000E+00	1.888E-04
157.5	3.5	0.000E+00	9.447E-05
157.5	4.5	0.000E+00	5.435E-05
157.5	7.5	0.000E+00	1.619E-05
157.5	15.0	0.000E+00	2.551E-06
157.5	25.0	0.000E+00	5.010E-07
157.5	35.0	0.000E+00	1.171E-07
157.5	45.0	0.000E+00	9.134E-09
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	0.000E+00	1.046E-03
180.0	2.5	0.000E+00	4.998E-04
180.0	3.5	0.000E+00	2.919E-04
180.0	4.5	0.000E+00	1.918E-04
180.0	7.5	0.000E+00	7.955E-05
180.0	15.0	0.000E+00	2.389E-05
180.0	25.0	0.000E+00	1.001E-05
180.0	35.0	0.000E+00	5.697E-06
180.0	45.0	0.000E+00	3.842E-06
180.0	55.0	0.000E+00	2.830E-06
180.0	65.0	0.000E+00	2.190E-06
180.0	75.0	0.000E+00	1.754E-06

Table 10.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	0.000E+00	9.919E-04
202.5	2.5	0.000E+00	5.743E-04
202.5	3.5	0.000E+00	3.831E-04
202.5	4.5	0.000E+00	2.777E-04
202.5	7.5	0.000E+00	1.390E-04
202.5	15.0	0.000E+00	5.131E-05
202.5	25.0	0.000E+00	2.398E-05
202.5	35.0	0.000E+00	1.454E-05
202.5	45.0	0.000E+00	9.974E-06
202.5	55.0	0.000E+00	7.360E-06
202.5	65.0	0.000E+00	5.704E-06
202.5	75.0	0.000E+00	4.579E-06
225.0	1.5	0.000E+00	7.193E-04
225.0	2.5	0.000E+00	3.626E-04
225.0	3.5	0.000E+00	2.211E-04
225.0	4.5	0.000E+00	1.505E-04
225.0	7.5	0.000E+00	6.732E-05
225.0	15.0	0.000E+00	2.387E-05
225.0	25.0	0.000E+00	1.104E-05
225.0	35.0	0.000E+00	6.711E-06
225.0	45.0	0.000E+00	4.627E-06
225.0	55.0	0.000E+00	3.434E-06
225.0	65.0	0.000E+00	2.676E-06
225.0	75.0	0.000E+00	2.159E-06
247.5	1.5	0.000E+00	6.460E-04
247.5	2.5	0.000E+00	3.535E-04
247.5	3.5	0.000E+00	2.278E-04
247.5	4.5	0.000E+00	1.613E-04
247.5	7.5	0.000E+00	7.746E-05
247.5	15.0	0.000E+00	2.747E-05
247.5	25.0	0.000E+00	1.264E-05
247.5	35.0	0.000E+00	7.688E-06
247.5	45.0	0.000E+00	5.286E-06
247.5	55.0	0.000E+00	3.910E-06
247.5	65.0	0.000E+00	3.037E-06
247.5	75.0	0.000E+00	2.443E-06

Table 10.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	0.000E+00	4.970E-04
270.0	2.5	0.000E+00	2.287E-04
270.0	3.5	0.000E+00	1.290E-04
270.0	4.5	0.000E+00	8.219E-05
270.0	7.5	0.000E+00	3.156E-05
270.0	15.0	0.000E+00	8.360E-06
270.0	25.0	0.000E+00	3.183E-06
270.0	35.0	0.000E+00	1.797E-06
270.0	45.0	0.000E+00	1.265E-06
270.0	55.0	0.000E+00	9.605E-07
270.0	65.0	0.000E+00	7.633E-07
270.0	75.0	0.000E+00	6.268E-07
292.5	1.5	0.000E+00	3.557E-04
292.5	2.5	0.000E+00	1.815E-04
292.5	3.5	0.000E+00	1.221E-04
292.5	4.5	0.000E+00	8.842E-05
292.5	7.5	0.000E+00	4.364E-05
292.5	15.0	0.000E+00	1.570E-05
292.5	25.0	0.000E+00	7.197E-06
292.5	35.0	0.000E+00	4.380E-06
292.5	45.0	0.000E+00	3.030E-06
292.5	55.0	0.000E+00	2.265E-06
292.5	65.0	0.000E+00	1.776E-06
292.5	75.0	0.000E+00	1.441E-06
315.0	1.5	0.000E+00	5.676E-04
315.0	2.5	0.000E+00	2.729E-04
315.0	3.5	0.000E+00	1.558E-04
315.0	4.5	0.000E+00	1.010E-04
315.0	7.5	0.000E+00	4.110E-05
315.0	15.0	0.000E+00	1.218E-05
315.0	25.0	0.000E+00	5.064E-06
315.0	35.0	0.000E+00	2.986E-06
315.0	45.0	0.000E+00	2.047E-06
315.0	55.0	0.000E+00	1.535E-06
315.0	65.0	0.000E+00	1.216E-06
315.0	75.0	0.000E+00	9.961E-07

Table 10.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	0.000E+00	6.847E-04
337.5	2.5	0.000E+00	2.266E-04
337.5	3.5	0.000E+00	1.201E-04
337.5	4.5	0.000E+00	7.432E-05
337.5	7.5	0.000E+00	2.811E-05
337.5	15.0	0.000E+00	7.799E-06
337.5	25.0	0.000E+00	3.137E-06
337.5	35.0	0.000E+00	1.841E-06
337.5	45.0	0.000E+00	1.266E-06
337.5	55.0	0.000E+00	9.571E-07
337.5	65.0	0.000E+00	7.614E-07
337.5	75.0	0.000E+00	6.260E-07



Table 10.2d The Normalized Airborne Concentration ( $\mu\text{Ci}/\text{m}^3$ ) of Thoron from Active Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Thoron
0.0	1.5	1.902E-02
0.0	2.5	5.715E-04
0.0	3.5	2.713E-05
0.0	4.5	1.792E-06
0.0	7.5	1.796E-09
0.0	15.0	4.453E-16
0.0	25.0	1.230E-24
0.0	35.0	9.923E-33
0.0	45.0	0.000E+00
0.0	55.0	0.000E+00
0.0	65.0	0.000E+00
0.0	75.0	0.000E+00
22.5	1.5	5.549E-02
22.5	2.5	1.325E-03
22.5	3.5	6.381E-05
22.5	4.5	4.604E-06
22.5	7.5	5.415E-09
22.5	15.0	1.880E-15
22.5	25.0	9.834E-24
22.5	35.0	7.350E-32
22.5	45.0	0.000E+00
22.5	55.0	0.000E+00
22.5	65.0	0.000E+00
22.5	75.0	0.000E+00
45.0	1.5	6.838E-02
45.0	2.5	1.978E-03
45.0	3.5	1.151E-04
45.0	4.5	9.649E-06
45.0	7.5	1.416E-08
45.0	15.0	4.583E-15
45.0	25.0	2.329E-23
45.0	35.0	1.765E-31
45.0	45.0	1.611E-39
45.0	55.0	0.000E+00
45.0	65.0	0.000E+00
45.0	75.0	0.000E+00

Table 10.2d The Normalized Airborne Concentration ( $\mu\text{Ci}/\text{m}^3$ ) of Thoron from Active Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Thoron
67.5	1.5	3.110E-02
67.5	2.5	1.036E-03
67.5	3.5	5.803E-05
67.5	4.5	4.555E-06
67.5	7.5	6.056E-09
67.5	15.0	1.866E-15
67.5	25.0	8.178E-24
67.5	35.0	6.614E-32
67.5	45.0	0.000E+00
67.5	55.0	0.000E+00
67.5	65.0	0.000E+00
67.5	75.0	0.000E+00
90.0	1.5	3.724E-03
90.0	2.5	1.502E-04
90.0	3.5	9.525E-06
90.0	4.5	8.142E-07
90.0	7.5	1.205E-09
90.0	15.0	3.936E-16
90.0	25.0	1.859E-24
90.0	35.0	1.516E-32
90.0	45.0	0.000E+00
90.0	55.0	0.000E+00
90.0	65.0	0.000E+00
90.0	75.0	0.000E+00
112.5	1.5	0.000E+00
112.5	2.5	0.000E+00
112.5	3.5	0.000E+00
112.5	4.5	0.000E+00
112.5	7.5	0.000E+00
112.5	15.0	0.000E+00
112.5	25.0	0.000E+00
112.5	35.0	0.000E+00
112.5	45.0	0.000E+00
112.5	55.0	0.000E+00
112.5	65.0	0.000E+00
112.5	75.0	0.000E+00

Table 10.2d The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Thoron
135.0	1.5	0.000E+00
135.0	2.5	0.000E+00
135.0	3.5	0.000E+00
135.0	4.5	0.000E+00
135.0	7.5	0.000E+00
135.0	15.0	0.000E+00
135.0	25.0	0.000E+00
135.0	35.0	0.000E+00
135.0	45.0	0.000E+00
135.0	55.0	0.000E+00
135.0	65.0	0.000E+00
135.0	75.0	0.000E+00
157.5	1.5	3.976E-04
157.5	2.5	1.040E-05
157.5	3.5	3.636E-07
157.5	4.5	1.481E-08
157.5	7.5	1.593E-12
157.5	15.0	5.873E-22
157.5	25.0	1.106E-34
157.5	35.0	0.000E+00
157.5	45.0	0.000E+00
157.5	55.0	0.000E+00
157.5	65.0	0.000E+00
157.5	75.0	0.000E+00
180.0	1.5	1.952E-03
180.0	2.5	7.972E-05
180.0	3.5	5.020E-06
180.0	4.5	4.247E-07
180.0	7.5	5.997E-10
180.0	15.0	1.536E-16
180.0	25.0	1.279E-34
180.0	35.0	0.000E+00
180.0	45.0	0.000E+00
180.0	55.0	0.000E+00
180.0	65.0	0.000E+00
180.0	75.0	0.000E+00

Table 10.2d The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Thoron
202.5	1.5	2.792E-03
202.5	2.5	1.462E-04
202.5	3.5	1.164E-05
202.5	4.5	1.184E-06
202.5	7.5	2.241E-09
202.5	15.0	9.208E-16
202.5	25.0	5.194E-24
202.5	35.0	3.854E-32
202.5	45.0	0.000E+00
202.5	55.0	0.000E+00
202.5	65.0	0.000E+00
202.5	75.0	0.000E+00
225.0	1.5	1.815E-03
225.0	2.5	7.375E-05
225.0	3.5	4.659E-06
225.0	4.5	3.948E-07
225.0	7.5	5.391E-10
225.0	15.0	6.613E-17
225.0	25.0	3.159E-25
225.0	35.0	2.629E-33
225.0	45.0	0.000E+00
225.0	55.0	0.000E+00
225.0	65.0	0.000E+00
225.0	75.0	0.000E+00
247.5	1.5	1.414E-03
247.5	2.5	6.479E-05
247.5	3.5	4.613E-06
247.5	4.5	4.412E-07
247.5	7.5	8.069E-10
247.5	15.0	3.357E-16
247.5	25.0	1.842E-24
247.5	35.0	1.362E-32
247.5	45.0	0.000E+00
247.5	55.0	0.000E+00
247.5	65.0	0.000E+00
247.5	75.0	0.000E+00

Table 10.2d The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area D

Angle (degrees)	Distance (km)	Thoron
270.0	1.5	1.621E-03
270.0	2.5	5.900E-05
270.0	3.5	3.266E-06
270.0	4.5	2.517E-07
270.0	7.5	3.453E-10
270.0	15.0	1.349E-16
270.0	25.0	4.394E-25
270.0	35.0	0.000E+00
270.0	45.0	0.000E+00
270.0	55.0	0.000E+00
270.0	65.0	0.000E+00
270.0	75.0	0.000E+00
292.5	1.5	1.956E-03
292.5	2.5	9.159E-05
292.5	3.5	6.648E-06
292.5	4.5	6.309E-07
292.5	7.5	1.047E-09
292.5	15.0	3.567E-16
292.5	25.0	1.711E-24
292.5	35.0	1.415E-32
292.5	45.0	0.000E+00
292.5	55.0	0.000E+00
292.5	65.0	0.000E+00
292.5	75.0	0.000E+00
315.0	1.5	5.110E-03
315.0	2.5	2.426E-04
315.0	3.5	1.747E-05
315.0	4.5	1.620E-06
315.0	7.5	2.528E-09
315.0	15.0	8.360E-16
315.0	25.0	3.850E-24
315.0	35.0	2.507E-32
315.0	45.0	0.000E+00
315.0	55.0	0.000E+00
315.0	65.0	0.000E+00
315.0	75.0	0.000E+00

Table 10.2d The Normalized Airborne Concentration ( $\mu\text{Ci}/\text{m}^3$ ) of Thoron from Active Waste Disposal Operations at Sub-area D

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Angle (degrees)	Distance (km)	Thoron
337.5	1.5	8.517E-03
337.5	2.5	3.599E-04
337.5	3.5	2.550E-05
337.5	4.5	2.356E-06
337.5	7.5	3.580E-09
337.5	15.0	1.125E-15
337.5	25.0	4.544E-24
337.5	35.0	3.257E-32
337.5	45.0	0.000E+00
337.5	55.0	0.000E+00
337.5	65.0	0.000E+00
337.5	75.0	0.000E+00

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Table 10.3d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area D

Site	Location	Particulate	Radon
1	Guard Residence	6.047E-08	6.297E-02
2	Admin Bldg	7.625E-08	7.564E-02
3	A1	7.073E-08	7.024E-02
4	A2	7.793E-08	5.477E-02
5	A3	3.684E-07	2.776E-01
6	A5	2.239E-08	3.914E-02
7	A6	1.244E-07	9.923E-02
8	A7	1.275E-07	8.592E-02
9	A11	2.334E-08	4.193E-02
10	A12	5.558E-07	3.695E-01
11	A13	6.124E-07	4.642E-01
12	SW	3.662E-07	2.632E-01
13	W1	6.696E-07	2.926E-01
14	W2	2.726E-07	1.020E-01
15	W3	7.494E-08	4.425E-02
16	NW	3.644E-08	2.692E-02
17	N1	4.326E-08	5.869E-02
18	N3	7.122E-08	5.349E-02
19	NE	6.512E-08	4.338E-02
20	E1	4.245E-08	5.432E-02
21	E2	1.265E-08	2.517E-02
22	E3	7.576E-08	5.218E-02
23	SE	1.058E-08	2.106E-02
24	S1	8.630E-09	2.828E-02
25	S2	1.550E-08	2.720E-02
26	S3	1.409E-08	2.644E-02
27	USPCI	1.009E-08	6.865E-03
28	APTUS	2.103E-09	2.165E-03

Table 10.4d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area D

Site	Location	Thoron
1	Guard Residence	1.083E-02
2	Admin Bldg	2.034E-02
3	A1	1.617E-02
4	A2	7.893E-03
5	A3	6.808E-01
6	A5	7.217E-02
7	A6	5.456E-02
8	A7	4.248E-02
9	A11	2.698E-01
10	A12	1.202E+00
11	A13	4.431E+00
12	SW	1.487E+00
13	W1	3.207E+00
14	W2	4.955E-01
15	W3	6.386E-02
16	NW	1.251E-02
17	N1	1.973E-02
18	N3	8.154E-03
19	NE	4.025E-03
20	E1	1.123E-02
21	E2	3.029E-03
22	E3	8.678E-03
23	SE	2.535E-03
24	S1	1.487E-01
25	S2	4.647E-02
26	S3	1.073E-02
27	USPCI	8.864E-04
28	APTUS	7.804E-13



Table 10.1e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	3.776E-08	2.667E-02
0.0	2.5	1.257E-08	1.221E-02
0.0	3.5	6.220E-09	7.254E-03
0.0	4.5	3.724E-09	4.907E-03
0.0	7.5	1.356E-09	2.210E-03
0.0	15.0	3.633E-10	7.455E-04
0.0	25.0	1.416E-10	3.346E-04
0.0	35.0	8.409E-11	2.008E-04
0.0	45.0	5.843E-11	1.376E-04
0.0	55.0	4.379E-11	1.018E-04
0.0	65.0	3.450E-11	7.913E-05
0.0	75.0	2.816E-11	6.376E-05
22.5	1.5	6.910E-08	8.158E-02
22.5	2.5	2.279E-08	3.077E-02
22.5	3.5	1.148E-08	1.681E-02
22.5	4.5	7.023E-09	1.087E-02
22.5	7.5	2.804E-09	4.696E-03
22.5	15.0	8.218E-10	1.542E-03
22.5	25.0	3.367E-10	6.935E-04
22.5	35.0	1.969E-10	4.116E-04
22.5	45.0	1.341E-10	2.788E-04
22.5	55.0	9.883E-11	2.041E-04
22.5	65.0	7.675E-11	1.573E-04
22.5	75.0	6.185E-11	1.258E-04
45.0	1.5	1.637E-07	1.085E-01
45.0	2.5	5.171E-08	3.679E-02
45.0	3.5	2.688E-08	1.895E-02
45.0	4.5	1.629E-08	1.178E-02
45.0	7.5	6.079E-09	4.678E-03
45.0	15.0	1.710E-09	1.489E-03
45.0	25.0	6.866E-10	6.653E-04
45.0	35.0	4.099E-10	3.943E-04
45.0	45.0	2.869E-10	2.673E-04
45.0	55.0	2.165E-10	1.959E-04
45.0	65.0	1.715E-10	1.512E-04
45.0	75.0	1.407E-10	1.210E-04

Table 10.1e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	8.624E-08	7.967E-02
67.5	2.5	3.147E-08	3.050E-02
67.5	3.5	1.675E-08	1.688E-02
67.5	4.5	1.049E-08	1.096E-02
67.5	7.5	4.061E-09	4.649E-03
67.5	15.0	1.124E-09	1.499E-03
67.5	25.0	4.375E-10	6.687E-04
67.5	35.0	2.693E-10	3.988E-04
67.5	45.0	1.955E-10	2.716E-04
67.5	55.0	1.519E-10	1.998E-04
67.5	65.0	1.232E-10	1.547E-04
67.5	75.0	1.031E-10	1.241E-04
90.0	1.5	1.458E-08	2.843E-02
90.0	2.5	6.703E-09	1.473E-02
90.0	3.5	3.858E-09	9.241E-03
90.0	4.5	2.518E-09	6.450E-03
90.0	7.5	1.031E-09	3.039E-03
90.0	15.0	2.959E-10	1.064E-03
90.0	25.0	1.159E-10	4.848E-04
90.0	35.0	7.264E-11	2.895E-04
90.0	45.0	5.358E-11	1.969E-04
90.0	55.0	4.208E-11	1.446E-04
90.0	65.0	3.445E-11	1.116E-04
90.0	75.0	2.904E-11	8.937E-05
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 10.1e The Normalized Airborne Concentrations ( $\mu\text{Ci}/\text{m}^3$ ) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	0.000E+00	0.000E+00
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	1.790E-09	6.349E-03
157.5	2.5	6.064E-10	2.219E-03
157.5	3.5	2.759E-10	1.034E-03
157.5	4.5	1.475E-10	5.646E-04
157.5	7.5	3.695E-11	1.486E-04
157.5	15.0	3.762E-12	1.648E-05
157.5	25.0	7.878E-14	3.744E-07
157.5	35.0	0.000E+00	0.000E+00
157.5	45.0	0.000E+00	0.000E+00
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	2.412E-08	1.987E-02
180.0	2.5	8.744E-09	8.671E-03
180.0	3.5	4.211E-09	4.886E-03
180.0	4.5	2.375E-09	3.162E-03
180.0	7.5	7.007E-10	1.303E-03
180.0	15.0	1.212E-10	3.994E-04
180.0	25.0	3.622E-11	1.746E-04
180.0	35.0	2.036E-11	1.048E-04
180.0	45.0	1.311E-11	7.125E-05
180.0	55.0	9.162E-12	5.224E-05
180.0	65.0	6.770E-12	4.028E-05
180.0	75.0	5.206E-12	3.220E-05

Table 10.1e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	4.116E-08	2.632E-02
202.5	2.5	2.117E-08	1.336E-02
202.5	3.5	1.322E-08	8.327E-03
202.5	4.5	9.172E-09	5.814E-03
202.5	7.5	4.237E-09	2.754E-03
202.5	15.0	1.414E-09	9.724E-04
202.5	25.0	6.132E-10	4.508E-04
202.5	35.0	3.543E-10	2.706E-04
202.5	45.0	2.347E-10	1.844E-04
202.5	55.0	1.685E-10	1.355E-04
202.5	65.0	1.276E-10	1.047E-04
202.5	75.0	1.004E-10	8.388E-05
225.0	1.5	2.035E-08	1.967E-02
225.0	2.5	7.759E-09	8.723E-03
225.0	3.5	3.898E-09	4.973E-03
225.0	4.5	2.281E-09	3.245E-03
225.0	7.5	7.351E-10	1.356E-03
225.0	15.0	1.853E-10	4.497E-04
225.0	25.0	7.389E-11	2.046E-04
225.0	35.0	4.638E-11	1.234E-04
225.0	45.0	3.378E-11	8.476E-05
225.0	55.0	2.628E-11	6.274E-05
225.0	65.0	2.134E-11	4.881E-05
225.0	75.0	1.787E-11	3.934E-05
247.5	1.5	1.540E-08	1.609E-02
247.5	2.5	7.602E-09	7.884E-03
247.5	3.5	4.650E-09	4.809E-03
247.5	4.5	3.187E-09	3.296E-03
247.5	7.5	1.447E-09	1.509E-03
247.5	15.0	4.774E-10	5.153E-04
247.5	25.0	2.073E-10	2.361E-04
247.5	35.0	1.191E-10	1.422E-04
247.5	45.0	7.835E-11	9.727E-05
247.5	55.0	5.585E-11	7.171E-05
247.5	65.0	4.202E-11	5.557E-05
247.5	75.0	3.286E-11	4.463E-05

Table 10.1e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	1.013E-08	1.032E-02
270.0	2.5	3.891E-09	4.209E-03
270.0	3.5	1.975E-09	2.244E-03
270.0	4.5	1.169E-09	1.387E-03
270.0	7.5	3.910E-10	5.155E-04
270.0	15.0	8.650E-11	1.365E-04
270.0	25.0	2.953E-11	5.389E-05
270.0	35.0	1.745E-11	3.324E-05
270.0	45.0	1.193E-11	2.340E-05
270.0	55.0	8.802E-12	1.769E-05
270.0	65.0	6.837E-12	1.401E-05
270.0	75.0	5.507E-12	1.148E-05
292.5	1.5	1.411E-08	8.832E-03
292.5	2.5	6.985E-09	4.434E-03
292.5	3.5	4.162E-09	2.735E-03
292.5	4.5	2.767E-09	1.887E-03
292.5	7.5	1.158E-09	8.708E-04
292.5	15.0	3.342E-10	2.980E-04
292.5	25.0	1.302E-10	1.339E-04
292.5	35.0	8.498E-11	8.124E-05
292.5	45.0	6.453E-11	5.618E-05
292.5	55.0	5.177E-11	4.181E-05
292.5	65.0	4.307E-11	3.267E-05
292.5	75.0	3.677E-11	2.644E-05
315.0	1.5	3.224E-08	1.190E-02
315.0	2.5	1.335E-08	4.922E-03
315.0	3.5	7.269E-09	2.709E-03
315.0	4.5	4.575E-09	1.730E-03
315.0	7.5	1.762E-09	6.991E-04
315.0	15.0	4.766E-10	2.099E-04
315.0	25.0	1.810E-10	8.840E-05
315.0	35.0	1.164E-10	5.362E-05
315.0	45.0	8.784E-11	3.757E-05
315.0	55.0	7.016E-11	2.829E-05
315.0	65.0	5.817E-11	2.234E-05
315.0	75.0	4.953E-11	1.826E-05

Table 10.1e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	4.178E-08	9.468E-03
337.5	2.5	1.522E-08	3.587E-03
337.5	3.5	7.725E-09	1.889E-03
337.5	4.5	4.647E-09	1.174E-03
337.5	7.5	1.658E-09	4.544E-04
337.5	15.0	4.155E-10	1.309E-04
337.5	25.0	1.514E-10	5.388E-05
337.5	35.0	9.933E-11	3.292E-05
337.5	45.0	7.666E-11	2.320E-05
337.5	55.0	6.222E-11	1.756E-05
337.5	65.0	5.222E-11	1.394E-05
337.5	75.0	4.489E-11	1.144E-05

Table 10.2e The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Thoron
0.0	1.5	1.315E-02
0.0	2.5	4.246E-04
0.0	3.5	2.107E-05
0.0	4.5	1.442E-06
0.0	7.5	1.524E-09
0.0	15.0	3.963E-16
0.0	25.0	1.035E-24
0.0	35.0	8.389E-33
0.0	45.0	0.000E+00
0.0	55.0	0.000E+00
0.0	65.0	0.000E+00
0.0	75.0	0.000E+00
22.5	1.5	3.526E-02
22.5	2.5	9.104E-04
22.5	3.5	4.472E-05
22.5	4.5	3.270E-06
22.5	7.5	4.600E-09
22.5	15.0	1.618E-15
22.5	25.0	8.482E-24
22.5	35.0	6.362E-32
22.5	45.0	0.000E+00
22.5	55.0	0.000E+00
22.5	65.0	0.000E+00
22.5	75.0	0.000E+00
45.0	1.5	6.030E-02
45.0	2.5	1.781E-03
45.0	3.5	1.049E-04
45.0	4.5	8.861E-06
45.0	7.5	1.275E-08
45.0	15.0	4.186E-15
45.0	25.0	2.138E-23
45.0	35.0	1.619E-31
45.0	45.0	1.611E-39
45.0	55.0	0.000E+00
45.0	65.0	0.000E+00
45.0	75.0	0.000E+00

Table 10.2e The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Thoron
67.5	1.5	3.469E-02
67.5	2.5	1.057E-03
67.5	3.5	5.810E-05
67.5	4.5	4.515E-06
67.5	7.5	5.910E-09
67.5	15.0	1.772E-15
67.5	25.0	8.009E-24
67.5	35.0	6.464E-32
67.5	45.0	0.000E+00
67.5	55.0	0.000E+00
67.5	65.0	0.000E+00
67.5	75.0	0.000E+00
90.0	1.5	5.000E-03
90.0	2.5	1.784E-04
90.0	3.5	1.082E-05
90.0	4.5	9.034E-07
90.0	7.5	1.298E-09
90.0	15.0	4.157E-16
90.0	25.0	1.949E-24
90.0	35.0	1.584E-32
90.0	45.0	0.000E+00
90.0	55.0	0.000E+00
90.0	65.0	0.000E+00
90.0	75.0	0.000E+00
112.5	1.5	0.000E+00
112.5	2.5	0.000E+00
112.5	3.5	0.000E+00
112.5	4.5	0.000E+00
112.5	7.5	0.000E+00
112.5	15.0	0.000E+00
112.5	25.0	0.000E+00
112.5	35.0	0.000E+00
112.5	45.0	0.000E+00
112.5	55.0	0.000E+00
112.5	65.0	0.000E+00
112.5	75.0	0.000E+00



Table 10.2e The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Thoron
135.0	1.5	0.000E+00
135.0	2.5	0.000E+00
135.0	3.5	0.000E+00
135.0	4.5	0.000E+00
135.0	7.5	0.000E+00
135.0	15.0	0.000E+00
135.0	25.0	0.000E+00
135.0	35.0	0.000E+00
135.0	45.0	0.000E+00
135.0	55.0	0.000E+00
135.0	65.0	0.000E+00
135.0	75.0	0.000E+00
157.5	1.5	5.627E-04
157.5	2.5	1.407E-05
157.5	3.5	4.814E-07
157.5	4.5	1.934E-08
157.5	7.5	2.032E-12
157.5	15.0	7.183E-22
157.5	25.0	7.650E-35
157.5	35.0	0.000E+00
157.5	45.0	0.000E+00
157.5	55.0	0.000E+00
157.5	65.0	0.000E+00
157.5	75.0	0.000E+00
180.0	1.5	2.723E-03
180.0	2.5	1.070E-04
180.0	3.5	6.582E-06
180.0	4.5	5.492E-07
180.0	7.5	7.708E-10
180.0	15.0	2.178E-16
180.0	25.0	1.655E-34
180.0	35.0	0.000E+00
180.0	45.0	0.000E+00
180.0	55.0	0.000E+00
180.0	65.0	0.000E+00
180.0	75.0	0.000E+00

Table 10.2e The Normalized Airborne Concentration ( $\mu\text{Ci}/\text{m}^3$ ) of Thoron from Active Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Thoron
202.5	1.5	3.369E-03
202.5	2.5	1.728E-04
202.5	3.5	1.356E-05
202.5	4.5	1.370E-06
202.5	7.5	2.581E-09
202.5	15.0	1.056E-15
202.5	25.0	5.956E-24
202.5	35.0	4.420E-32
202.5	45.0	0.000E+00
202.5	55.0	0.000E+00
202.5	65.0	0.000E+00
202.5	75.0	0.000E+00
225.0	1.5	2.095E-03
225.0	2.5	7.955E-05
225.0	3.5	4.755E-06
225.0	4.5	3.817E-07
225.0	7.5	4.140E-10
225.0	15.0	7.374E-17
225.0	25.0	3.496E-25
225.0	35.0	2.897E-33
225.0	45.0	0.000E+00
225.0	55.0	0.000E+00
225.0	65.0	0.000E+00
225.0	75.0	0.000E+00
247.5	1.5	1.579E-03
247.5	2.5	6.996E-05
247.5	3.5	4.907E-06
247.5	4.5	4.651E-07
247.5	7.5	8.380E-10
247.5	15.0	3.408E-16
247.5	25.0	1.916E-24
247.5	35.0	1.412E-32
247.5	45.0	0.000E+00
247.5	55.0	0.000E+00
247.5	65.0	0.000E+00
247.5	75.0	0.000E+00

Table 10.2e The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Thoron
270.0	1.5	1.505E-03
270.0	2.5	5.292E-05
270.0	3.5	2.834E-06
270.0	4.5	2.118E-07
270.0	7.5	2.730E-10
270.0	15.0	8.714E-17
270.0	25.0	1.356E-34
270.0	35.0	0.000E+00
270.0	45.0	0.000E+00
270.0	55.0	0.000E+00
270.0	65.0	0.000E+00
270.0	75.0	0.000E+00
292.5	1.5	1.795E-03
292.5	2.5	8.400E-05
292.5	3.5	6.135E-06
292.5	4.5	5.835E-07
292.5	7.5	9.644E-10
292.5	15.0	3.261E-16
292.5	25.0	1.560E-24
292.5	35.0	1.290E-32
292.5	45.0	0.000E+00
292.5	55.0	0.000E+00
292.5	65.0	0.000E+00
292.5	75.0	0.000E+00
315.0	1.5	4.163E-03
315.0	2.5	2.001E-04
315.0	3.5	1.460E-05
315.0	4.5	1.364E-06
315.0	7.5	2.141E-09
315.0	15.0	7.002E-16
315.0	25.0	3.014E-24
315.0	35.0	2.179E-32
315.0	45.0	0.000E+00
315.0	55.0	0.000E+00
315.0	65.0	0.000E+00
315.0	75.0	0.000E+00

Table 10.2e The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area E

Angle (degrees)	Distance (km)	Thoron
337.5	1.5	6.226E-03
337.5	2.5	2.791E-04
337.5	3.5	2.037E-05
337.5	4.5	1.911E-06
337.5	7.5	2.953E-09
337.5	15.0	9.308E-16
337.5	25.0	3.631E-24
337.5	35.0	2.757E-32
337.5	45.0	0.000E+00
337.5	55.0	0.000E+00
337.5	65.0	0.000E+00
337.5	75.0	0.000E+00

Table 10.3e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area E

Site	Location	Particulate	Radon
1	Guard Residence	5.255E-08	5.888E-02
2	Admin Bldg	6.640E-08	7.121E-02
3	A1	6.193E-08	6.638E-02
4	A2	6.516E-08	4.775E-02
5	A3	3.977E-07	2.739E-01
6	A5	3.991E-08	6.948E-02
7	A6	1.071E-07	9.179E-02
8	A7	1.247E-07	8.116E-02
9	A11	1.117E-07	1.238E-01
10	A12	5.256E-07	3.454E-01
11	A13	7.423E-07	5.086E-01
12	SW	4.056E-07	3.091E-01
13	W1	5.669E-07	2.059E-01
14	W2	2.120E-07	8.325E-02
15	W3	6.038E-08	3.698E-02
16	NW	3.229E-08	2.395E-02
17	N1	3.769E-08	5.162E-02
18	N3	6.417E-08	5.077E-02
19	NE	6.529E-08	4.451E-02
20	E1	4.977E-08	5.744E-02
21	E2	1.528E-08	3.032E-02
22	E3	7.477E-08	5.047E-02
23	SE	1.314E-08	2.608E-02
24	S1	2.240E-08	5.290E-02
25	S2	3.143E-08	5.493E-02
26	S3	1.953E-08	3.651E-02
27	USPCI	1.090E-08	7.058E-03
28	APTUS	2.108E-09	2.156E-03

Table 10.4e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area E

Site	Location	Thoron
1	Guard Residence	8.183E-03
2	Admin Bldg	1.549E-02
3	A1	1.241E-02
4	A2	5.596E-03
5	A3	6.546E-01
6	A5	1.383E-01
7	A6	4.175E-02
8	A7	3.717E-02
9	A11	1.203E+00
10	A12	9.721E-01
11	A13	5.706E+00
12	SW	2.115E+00
13	W1	2.021E+00
14	W2	3.189E-01
15	W3	4.067E-02
16	NW	8.748E-03
17	N1	1.391E-02
18	N3	6.538E-03
19	NE	3.611E-03
20	E1	1.322E-02
21	E2	3.865E-03
22	E3	7.765E-03
23	SE	3.324E-03
24	S1	4.086E-01
25	S2	1.013E-01
26	S3	1.582E-02
27	USPCI	8.227E-04
28	APTUS	7.353E-13

Table 10.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	6.057E-08	1.616E-02
0.0	2.5	1.625E-08	9.745E-03
0.0	3.5	7.650E-09	6.386E-03
0.0	4.5	4.421E-09	4.496E-03
0.0	7.5	1.514E-09	2.113E-03
0.0	15.0	3.840E-10	7.308E-04
0.0	25.0	1.451E-10	3.303E-04
0.0	35.0	8.371E-11	1.983E-04
0.0	45.0	5.780E-11	1.362E-04
0.0	55.0	4.341E-11	1.009E-04
0.0	65.0	3.425E-11	7.856E-05
0.0	75.0	2.798E-11	6.337E-05
22.5	1.5	9.228E-08	9.924E-02
22.5	2.5	2.442E-08	3.436E-02
22.5	3.5	1.246E-08	1.844E-02
22.5	4.5	7.671E-09	1.180E-02
22.5	7.5	2.955E-09	4.929E-03
22.5	15.0	8.431E-10	1.580E-03
22.5	25.0	3.386E-10	6.957E-04
22.5	35.0	1.969E-10	4.116E-04
22.5	45.0	1.341E-10	2.789E-04
22.5	55.0	9.883E-11	2.042E-04
22.5	65.0	7.674E-11	1.574E-04
22.5	75.0	6.184E-11	1.258E-04
45.0	1.5	3.214E-07	2.179E-01
45.0	2.5	7.498E-08	5.178E-02
45.0	3.5	3.348E-08	2.371E-02
45.0	4.5	1.918E-08	1.390E-02
45.0	7.5	6.664E-09	5.126E-03
45.0	15.0	1.790E-09	1.550E-03
45.0	25.0	7.055E-10	6.812E-04
45.0	35.0	4.162E-10	4.009E-04
45.0	45.0	2.903E-10	2.708E-04
45.0	55.0	2.185E-10	1.980E-04
45.0	65.0	1.729E-10	1.525E-04
45.0	75.0	1.416E-10	1.219E-04

Table 10.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	1.224E-07	1.282E-01
67.5	2.5	3.958E-08	4.008E-02
67.5	3.5	1.971E-08	2.039E-02
67.5	4.5	1.189E-08	1.266E-0
67.5	7.5	4.375E-09	5.058E-03
67.5	15.0	1.167E-09	1.562E-03
67.5	25.0	4.457E-10	6.781E-04
67.5	35.0	2.712E-10	4.026E-04
67.5	45.0	1.966E-10	2.737E-04
67.5	55.0	1.525E-10	2.011E-04
67.5	65.0	1.237E-10	1.555E-04
67.5	75.0	1.034E-10	1.247E-04
90.0	1.5	5.205E-09	9.667E-03
90.0	2.5	5.535E-09	1.176E-02
90.0	3.5	3.547E-09	8.289E-03
90.0	4.5	2.400E-09	6.028E-03
90.0	7.5	1.014E-09	2.953E-03
90.0	15.0	2.946E-10	1.053E-03
90.0	25.0	1.157E-10	4.822E-04
90.0	35.0	7.215E-11	2.884E-04
90.0	45.0	5.329E-11	1.964E-04
90.0	55.0	4.190E-11	1.442E-04
90.0	65.0	3.433E-11	1.114E-04
90.0	75.0	2.895E-11	8.923E-05
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00



Table 10.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	1.186E-09	4.191E-03
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	9.031E-09	1.241E-02
157.5	2.5	9.259E-10	3.411E-03
157.5	3.5	4.526E-10	1.707E-03
157.5	4.5	2.553E-10	9.818E-04
157.5	7.5	7.248E-11	2.925E-04
157.5	15.0	1.049E-11	4.608E-05
157.5	25.0	1.901E-12	9.049E-06
157.5	35.0	4.172E-13	2.115E-06
157.5	45.0	3.086E-14	1.650E-07
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	2.769E-08	1.889E-02
180.0	2.5	1.144E-08	9.030E-03
180.0	3.5	5.909E-09	5.273E-03
180.0	4.5	3.482E-09	3.465E-03
180.0	7.5	1.100E-09	1.437E-03
180.0	15.0	2.028E-10	4.316E-04
180.0	25.0	5.403E-11	1.808E-04
180.0	35.0	2.181E-11	1.029E-04
180.0	45.0	1.275E-11	6.940E-05
180.0	55.0	8.957E-12	5.113E-05
180.0	65.0	6.641E-12	3.955E-05
180.0	75.0	5.119E-12	3.169E-05

Table 10.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	2.629E-08	1.792E-02
202.5	2.5	1.557E-08	1.037E-02
202.5	3.5	1.046E-08	6.920E-03
202.5	4.5	7.590E-09	5.017E-03
202.5	7.5	3.753E-09	2.511E-03
202.5	15.0	1.326E-09	9.268E-04
202.5	25.0	5.876E-10	4.331E-04
202.5	35.0	3.437E-10	2.627E-04
202.5	45.0	2.292E-10	1.802E-04
202.5	55.0	1.652E-10	1.330E-04
202.5	65.0	1.254E-10	1.030E-04
202.5	75.0	9.893E-11	8.271E-05
225.0	1.5	1.181E-08	1.299E-02
225.0	2.5	5.160E-09	6.551E-03
225.0	3.5	2.790E-09	3.995E-03
225.0	4.5	1.711E-09	2.718E-03
225.0	7.5	6.020E-10	1.216E-03
225.0	15.0	1.765E-10	4.312E-04
225.0	25.0	7.171E-11	1.994E-04
225.0	35.0	4.568E-11	1.212E-04
225.0	45.0	3.338E-11	8.359E-05
225.0	55.0	2.603E-11	6.203E-05
225.0	65.0	2.117E-11	4.834E-05
225.0	75.0	1.775E-11	3.901E-05
247.5	1.5	1.082E-08	1.167E-02
247.5	2.5	5.989E-09	6.387E-03
247.5	3.5	3.881E-09	4.115E-03
247.5	4.5	2.754E-09	2.914E-03
247.5	7.5	1.318E-09	1.399E-03
247.5	15.0	4.544E-10	4.961E-04
247.5	25.0	2.001E-10	2.284E-04
247.5	35.0	1.161E-10	1.389E-04
247.5	45.0	7.680E-11	9.549E-05
247.5	55.0	5.494E-11	7.063E-05
247.5	65.0	4.143E-11	5.486E-05
247.5	75.0	3.246E-11	4.413E-05

Table 10.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	9.062E-09	8.979E-03
270.0	2.5	3.966E-09	4.132E-03
270.0	3.5	2.145E-09	2.331E-03
270.0	4.5	1.315E-09	1.485E-03
270.0	7.5	4.598E-10	5.701E-04
270.0	15.0	1.028E-10	1.510E-04
270.0	25.0	3.345E-11	5.750E-05
270.0	35.0	1.708E-11	3.245E-05
270.0	45.0	1.164E-11	2.286E-05
270.0	55.0	8.628E-12	1.735E-05
270.0	65.0	6.723E-12	1.379E-05
270.0	75.0	5.428E-12	1.132E-05
292.5	1.5	7.760E-09	6.425E-03
292.5	2.5	4.527E-09	3.279E-03
292.5	3.5	3.069E-09	2.206E-03
292.5	4.5	2.188E-09	1.597E-03
292.5	7.5	1.008E-09	7.883E-04
292.5	15.0	3.123E-10	2.835E-04
292.5	25.0	1.251E-10	1.300E-04
292.5	35.0	8.264E-11	7.912E-05
292.5	45.0	6.296E-11	5.473E-05
292.5	55.0	5.074E-11	4.092E-05
292.5	65.0	4.234E-11	3.208E-05
292.5	75.0	3.623E-11	2.603E-05
315.0	1.5	1.966E-08	1.025E-02
315.0	2.5	1.116E-08	4.929E-03
315.0	3.5	6.512E-09	2.815E-03
315.0	4.5	4.241E-09	1.824E-03
315.0	7.5	1.700E-09	7.424E-04
315.0	15.0	4.704E-10	2.200E-04
315.0	25.0	1.799E-10	9.148E-05
315.0	35.0	1.149E-10	5.395E-05
315.0	45.0	8.609E-11	3.697E-05
315.0	55.0	6.878E-11	2.773E-05
315.0	65.0	5.721E-11	2.197E-05
315.0	75.0	4.882E-11	1.799E-05

Table 10.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	3.752E-08	1.237E-02
337.5	2.5	1.590E-08	4.094E-03
337.5	3.5	8.257E-09	2.170E-03
337.5	4.5	4.991E-09	1.342E-03
337.5	7.5	1.769E-09	5.077E-04
337.5	15.0	4.343E-10	1.409E-04
337.5	25.0	1.561E-10	5.666E-05
337.5	35.0	9.922E-11	3.326E-05
337.5	45.0	7.539E-11	2.287E-05
337.5	55.0	6.120E-11	1.729E-05
337.5	65.0	5.150E-11	1.375E-05
337.5	75.0	4.436E-11	1.131E-05

Table 10.2f The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Thoron
0.0	1.5	1.751E-02
0.0	2.5	7.089E-04
0.0	3.5	3.973E-05
0.0	4.5	2.878E-06
0.0	7.5	3.268E-09
0.0	15.0	1.082E-15
0.0	25.0	6.517E-24
0.0	35.0	4.595E-32
0.0	45.0	0.000E+00
0.0	55.0	0.000E+00
0.0	65.0	0.000E+00
0.0	75.0	0.000E+00
22.5	1.5	1.126E-01
22.5	2.5	2.332E-03
22.5	3.5	1.045E-04
22.5	4.5	7.190E-06
22.5	7.5	9.025E-09
22.5	15.0	3.176E-15
22.5	25.0	1.622E-23
22.5	35.0	1.189E-31
22.5	45.0	1.611E-39
22.5	55.0	0.000E+00
22.5	65.0	0.000E+00
22.5	75.0	0.000E+00
45.0	1.5	3.536E-01
45.0	2.5	6.172E-03
45.0	3.5	2.959E-04
45.0	4.5	2.235E-05
45.0	7.5	2.877E-08
45.0	15.0	8.995E-15
45.0	25.0	4.512E-23
45.0	35.0	3.377E-31
45.0	45.0	3.222E-39
45.0	55.0	0.000E+00
45.0	65.0	0.000E+00
45.0	75.0	0.000E+00

Table 10.2f The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Thoron
67.5	1.5	1.406E-01
67.5	2.5	3.357E-03
67.5	3.5	1.609E-04
67.5	4.5	1.132E-05
67.5	7.5	1.317E-08
67.5	15.0	3.858E-15
67.5	25.0	1.654E-23
67.5	35.0	1.314E-31
67.5	45.0	1.611E-39
67.5	55.0	0.000E+00
67.5	65.0	0.000E+00
67.5	75.0	0.000E+00
90.0	1.5	4.622E-03
90.0	2.5	3.192E-04
90.0	3.5	1.995E-05
90.0	4.5	1.635E-06
90.0	7.5	2.300E-09
90.0	15.0	7.422E-16
90.0	25.0	3.487E-24
90.0	35.0	2.812E-32
90.0	45.0	0.000E+00
90.0	55.0	0.000E+00
90.0	65.0	0.000E+00
90.0	75.0	0.000E+00
112.5	1.5	0.000E+00
112.5	2.5	0.000E+00
112.5	3.5	0.000E+00
112.5	4.5	0.000E+00
112.5	7.5	0.000E+00
112.5	15.0	0.000E+00
112.5	25.0	0.000E+00
112.5	35.0	0.000E+00
112.5	45.0	0.000E+00
112.5	55.0	0.000E+00
112.5	65.0	0.000E+00
112.5	75.0	0.000E+00

Table 10.2f The Normalized Airborne Concentration (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Thoron
135.0	1.5	4.757E-04
135.0	2.5	0.000E+00
135.0	3.5	0.000E+00
135.0	4.5	0.000E+00
135.0	7.5	0.000E+00
135.0	15.0	0.000E+00
135.0	25.0	0.000E+00
135.0	35.0	0.000E+00
135.0	45.0	0.000E+00
135.0	55.0	0.000E+00
135.0	65.0	0.000E+00
135.0	75.0	0.000E+00
157.5	1.5	1.029E-03
157.5	2.5	1.097E-05
157.5	3.5	4.032E-07
157.5	4.5	1.708E-08
157.5	7.5	2.032E-12
157.5	15.0	1.020E-21
157.5	25.0	9.390E-34
157.5	35.0	0.000E+00
157.5	45.0	0.000E+00
157.5	55.0	0.000E+00
157.5	65.0	0.000E+00
157.5	75.0	0.000E+00
180.0	1.5	1.315E-03
180.0	2.5	6.630E-05
180.0	3.5	4.889E-06
180.0	4.5	4.642E-07
180.0	7.5	8.104E-10
180.0	15.0	3.964E-16
180.0	25.0	3.219E-24
180.0	35.0	1.821E-32
180.0	45.0	0.000E+00
180.0	55.0	0.000E+00
180.0	65.0	0.000E+00
180.0	75.0	0.000E+00

Table 10.2f The Normalized Airborne Concentration ( $\mu\text{Ci}/\text{m}^3$ ) of Thoron from Active Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Thoron
202.5	1.5	9.405E-04
202.5	2.5	6.084E-05
202.5	3.5	5.464E-06
202.5	4.5	5.958E-07
202.5	7.5	1.230E-09
202.5	15.0	5.388E-16
202.5	25.0	3.066E-24
202.5	35.0	2.293E-32
202.5	45.0	0.000E+00
202.5	55.0	0.000E+00
202.5	65.0	0.000E+00
202.5	75.0	0.000E+00
225.0	1.5	4.834E-04
225.0	2.5	2.193E-05
225.0	3.5	1.452E-06
225.0	4.5	1.222E-07
225.0	7.5	1.253E-10
225.0	15.0	3.409E-17
225.0	25.0	1.648E-25
225.0	35.0	1.391E-33
225.0	45.0	0.000E+00
225.0	55.0	0.000E+00
225.0	65.0	0.000E+00
225.0	75.0	0.000E+00
247.5	1.5	4.207E-04
247.5	2.5	2.317E-05
247.5	3.5	1.874E-06
247.5	4.5	1.933E-07
247.5	7.5	3.814E-10
247.5	15.0	1.646E-16
247.5	25.0	9.152E-25
247.5	35.0	6.809E-33
247.5	45.0	0.000E+00
247.5	55.0	0.000E+00
247.5	65.0	0.000E+00
247.5	75.0	0.000E+00



Table 10.2f The Normalized Airborne Concentration ( $\mu\text{Ci}/\text{m}^3$ ) of Thoron from Active Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Thoron
270.0	1.5	4.889E-04
270.0	2.5	2.222E-05
270.0	3.5	1.465E-06
270.0	4.5	1.290E-07
270.0	7.5	2.126E-10
270.0	15.0	1.025E-16
270.0	25.0	7.618E-25
270.0	35.0	1.230E-33
270.0	45.0	0.000E+00
270.0	55.0	0.000E+00
270.0	65.0	0.000E+00
270.0	75.0	0.000E+00
292.5	1.5	6.794E-04
292.5	2.5	3.440E-05
292.5	3.5	2.902E-06
292.5	4.5	3.010E-07
292.5	7.5	5.610E-10
292.5	15.0	2.067E-16
292.5	25.0	1.023E-24
292.5	35.0	8.628E-33
292.5	45.0	0.000E+00
292.5	55.0	0.000E+00
292.5	65.0	0.000E+00
292.5	75.0	0.000E+00
315.0	1.5	1.883E-03
315.0	2.5	1.283E-04
315.0	3.5	1.078E-05
315.0	4.5	1.087E-06
315.0	7.5	1.896E-09
315.0	15.0	7.173E-16
315.0	25.0	4.366E-24
315.0	35.0	4.624E-32
315.0	45.0	0.000E+00
315.0	55.0	0.000E+00
315.0	65.0	0.000E+00
315.0	75.0	0.000E+00

Table 10.2f The Normalized Airborne Concentration ( $\mu\text{Ci}/\text{m}^3$ ) of Thoron from Active Waste Disposal Operations at Sub-area F

Angle (degrees)	Distance (km)	Thoron
337.5	1.5	5.848E-03
337.5	2.5	3.064E-04
337.5	3.5	2.353E-05
337.5	4.5	2.278E-06
337.5	7.5	3.753E-09
337.5	15.0	1.363E-15
337.5	25.0	8.270E-24
337.5	35.0	8.460E-32
337.5	45.0	0.000E+00
337.5	55.0	0.000E+00
337.5	65.0	0.000E+00
337.5	75.0	0.000E+00

Table 10.3f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Active Waste Disposal Operations at Sub-area F

Site	Location	Particulate	Radon
1	Guard Residence	4.634E-08	6.251E-02
2	Admin Bldg	5.810E-08	7.727E-02
3	A1	5.424E-08	7.243E-02
4	A2	9.368E-08	7.195E-02
5	A3	9.662E-07	7.165E-01
6	A5	6.353E-09	2.107E-02
7	A6	1.623E-07	1.648E-01
8	A7	2.424E-07	1.560E-01
9	A11	2.988E-07	2.051E-01
10	A12	1.618E-06	1.155E+00
11	A13	1.515E-07	1.306E-01
12	SW	1.200E-07	9.928E-02
13	W1	1.094E-07	9.279E-02
14	W2	1.577E-07	5.616E-02
15	W3	9.510E-08	2.192E-02
16	NW	5.330E-08	1.614E-02
17	N1	4.788E-08	3.830E-02
18	N3	9.034E-08	7.645E-02
19	NE	9.513E-08	6.549E-02
20	E1	4.328E-08	6.155E-02
21	E2	1.010E-08	1.913E-02
22	E3	1.196E-07	7.780E-02
23	SE	6.185E-09	1.171E-02
24	S1	2.661E-07	1.858E-01
25	S2	5.527E-09	1.840E-02
26	S3	0.000E+00	0.000E+00
27	USPCI	5.894E-09	4.902E-03
28	APTUS	2.234E-09	2.274E-03

Table 10.4f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of Thoron from Active Waste Disposal Operations at Sub-area F

Site	Location	Thoron
1	Guard Residence	2.027E-02
2	Admin Bldg	4.038E-02
3	A1	3.205E-02
4	A2	2.117E-02
5	A3	5.626E+00
6	A5	7.495E-02
7	A6	2.131E-01
8	A7	2.079E-01
9	A11	8.562E-01
10	A12	1.125E+01
11	A13	4.359E-01
12	SW	2.095E-01
13	W1	3.542E-01
14	W2	1.943E-01
15	W3	4.453E-02
16	NW	1.314E-02
17	N1	2.637E-02
18	N3	2.439E-02
19	NE	1.343E-02
20	E1	2.941E-02
21	E2	6.407E-03
22	E3	3.268E-02
23	SE	3.923E-03
24	S1	7.497E-01
25	S2	5.692E-02
26	S3	0.000E+00
27	USPCI	2.927E-04
28	APTUS	1.590E-12

### 2.3c Covered Disposed Wastes

The wastes covered with a 240 cm soil clay cap will eliminate release of particulates and thoron into the atmosphere. Only 1.37% of the radon is transported through the cover (Table 5) into the atmosphere. The estimated effective radon flux through the cover is  $0.019 \text{ (pCi m}^{-2}\text{s}^{-1}) / (\text{pCi}^{226}\text{Ra g}^{-1})$ . Airborne concentrations of radon at 220 locations from a surface area of  $38,472 \text{ m}^2$  within each of the 6 sub-sections are listed in Tables 11.1a through 11.2f. As the actual covered area within each sub-section becomes greater than the modelled area, the calculated concentration of Rn-222 at the receptor sites will be increased proportionately.

Table 11.1a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area A

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	0.000E+00	2.008E-04
0.0	2.5	0.000E+00	1.483E-04
0.0	3.5	0.000E+00	1.052E-04
0.0	4.5	0.000E+00	7.718E-05
0.0	7.5	0.000E+00	3.836E-05
0.0	15.0	0.000E+00	1.381E-05
0.0	25.0	0.000E+00	6.342E-06
0.0	35.0	0.000E+00	3.835E-06
0.0	45.0	0.000E+00	2.640E-06
0.0	55.0	0.000E+00	1.960E-06
0.0	65.0	0.000E+00	1.528E-06
0.0	75.0	0.000E+00	1.235E-06
22.5	1.5	0.000E+00	1.098E-03
22.5	2.5	0.000E+00	5.609E-04
22.5	3.5	0.000E+00	3.217E-04
22.5	4.5	0.000E+00	2.126E-04
22.5	7.5	0.000E+00	9.237E-05
22.5	15.0	0.000E+00	3.037E-05
22.5	25.0	0.000E+00	1.350E-05
22.5	35.0	0.000E+00	7.965E-06
22.5	45.0	0.000E+00	5.399E-06
22.5	55.0	0.000E+00	3.964E-06
22.5	65.0	0.000E+00	3.061E-06
22.5	75.0	0.000E+00	2.450E-06
45.0	1.5	0.000E+00	3.478E-03
45.0	2.5	0.000E+00	8.912E-04
45.0	3.5	0.000E+00	4.363E-04
45.0	4.5	0.000E+00	2.647E-04
45.0	7.5	0.000E+00	1.020E-04
45.0	15.0	0.000E+00	3.059E-05
45.0	25.0	0.000E+00	1.308E-05
45.0	35.0	0.000E+00	7.746E-06
45.0	45.0	0.000E+00	5.253E-06
45.0	55.0	0.000E+00	3.850E-06
45.0	65.0	0.000E+00	2.971E-06
45.0	75.0	0.000E+00	2.378E-06

Table 11.1a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area A

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	0.000E+00	3.985E-03
67.5	2.5	0.000E+00	9.902E-04
67.5	3.5	0.000E+00	4.634E-04
67.5	4.5	0.000E+00	2.749E-04
67.5	7.5	0.000E+00	1.030E-04
67.5	15.0	0.000E+00	3.101E-05
67.5	25.0	0.000E+00	1.358E-05
67.5	35.0	0.000E+00	8.017E-06
67.5	45.0	0.000E+00	5.434E-06
67.5	55.0	0.000E+00	3.985E-06
67.5	65.0	0.000E+00	3.078E-06
67.5	75.0	0.000E+00	2.466E-06
90.0	1.5	0.000E+00	5.480E-04
90.0	2.5	0.000E+00	3.101E-04
90.0	3.5	0.000E+00	1.937E-04
90.0	4.5	0.000E+00	1.340E-04
90.0	7.5	0.000E+00	6.198E-05
90.0	15.0	0.000E+00	2.134E-05
90.0	25.0	0.000E+00	9.648E-06
90.0	35.0	0.000E+00	5.741E-06
90.0	45.0	0.000E+00	3.898E-06
90.0	55.0	0.000E+00	2.858E-06
90.0	65.0	0.000E+00	2.205E-06
90.0	75.0	0.000E+00	1.764E-06
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 11.1a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area A

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	0.000E+00	1.305E-04
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	0.000E+00	3.540E-04
157.5	2.5	0.000E+00	8.012E-05
157.5	3.5	0.000E+00	3.988E-05
157.5	4.5	0.000E+00	2.291E-05
157.5	7.5	0.000E+00	6.853E-06
157.5	15.0	0.000E+00	1.113E-06
157.5	25.0	0.000E+00	2.362E-07
157.5	35.0	0.000E+00	6.666E-08
157.5	45.0	0.000E+00	1.654E-08
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	0.000E+00	4.510E-04
180.0	2.5	0.000E+00	2.013E-04
180.0	3.5	0.000E+00	1.168E-04
180.0	4.5	0.000E+00	7.622E-05
180.0	7.5	0.000E+00	3.105E-05
180.0	15.0	0.000E+00	9.068E-06
180.0	25.0	0.000E+00	3.726E-06
180.0	35.0	0.000E+00	2.099E-06
180.0	45.0	0.000E+00	1.374E-06
180.0	55.0	0.000E+00	1.000E-06
180.0	65.0	0.000E+00	7.743E-07
180.0	75.0	0.000E+00	6.207E-07



Table 11.1a The Normalized Airborne Concentrations ( $\mu\text{Ci}/\text{m}^3$ ) of a Particulate and Radon from Covered Wastes at Sub-area A

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	0.000E+00	3.233E-04
202.5	2.5	0.000E+00	1.932E-04
202.5	3.5	0.000E+00	1.308E-04
202.5	4.5	0.000E+00	9.566E-05
202.5	7.5	0.000E+00	4.846E-05
202.5	15.0	0.000E+00	1.805E-05
202.5	25.0	0.000E+00	8.469E-06
202.5	35.0	0.000E+00	5.109E-06
202.5	45.0	0.000E+00	3.505E-06
202.5	55.0	0.000E+00	2.591E-06
202.5	65.0	0.000E+00	2.011E-06
202.5	75.0	0.000E+00	1.616E-06
225.0	1.5	0.000E+00	2.119E-04
225.0	2.5	0.000E+00	1.155E-04
225.0	3.5	0.000E+00	7.390E-05
225.0	4.5	0.000E+00	5.197E-05
225.0	7.5	0.000E+00	2.453E-05
225.0	15.0	0.000E+00	8.477E-06
225.0	25.0	0.000E+00	3.827E-06
225.0	35.0	0.000E+00	2.343E-06
225.0	45.0	0.000E+00	1.621E-06
225.0	55.0	0.000E+00	1.206E-06
225.0	65.0	0.000E+00	9.414E-07
225.0	75.0	0.000E+00	7.606E-07
247.5	1.5	0.000E+00	2.220E-04
247.5	2.5	0.000E+00	1.222E-04
247.5	3.5	0.000E+00	7.893E-05
247.5	4.5	0.000E+00	5.600E-05
247.5	7.5	0.000E+00	2.697E-05
247.5	15.0	0.000E+00	9.651E-06
247.5	25.0	0.000E+00	4.524E-06
247.5	35.0	0.000E+00	2.746E-06
247.5	45.0	0.000E+00	1.885E-06
247.5	55.0	0.000E+00	1.393E-06
247.5	65.0	0.000E+00	1.082E-06
247.5	75.0	0.000E+00	8.699E-07

Table 11.1a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area A

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	0.000E+00	1.404E-04
270.0	2.5	0.000E+00	6.763E-05
270.0	3.5	0.000E+00	3.924E-05
270.0	4.5	0.000E+00	2.548E-05
270.0	7.5	0.000E+00	1.012E-05
270.0	15.0	0.000E+00	2.779E-06
270.0	25.0	0.000E+00	1.079E-06
270.0	35.0	0.000E+00	6.346E-07
270.0	45.0	0.000E+00	4.496E-07
270.0	55.0	0.000E+00	3.412E-07
270.0	65.0	0.000E+00	2.712E-07
270.0	75.0	0.000E+00	2.227E-07
292.5	1.5	0.000E+00	1.021E-04
292.5	2.5	0.000E+00	6.146E-05
292.5	3.5	0.000E+00	4.147E-05
292.5	4.5	0.000E+00	3.017E-05
292.5	7.5	0.000E+00	1.507E-05
292.5	15.0	0.000E+00	5.487E-06
292.5	25.0	0.000E+00	2.531E-06
292.5	35.0	0.000E+00	1.545E-06
292.5	45.0	0.000E+00	1.071E-06
292.5	55.0	0.000E+00	8.015E-07
292.5	65.0	0.000E+00	6.287E-07
292.5	75.0	0.000E+00	5.102E-07
315.0	1.5	0.000E+00	1.854E-04
315.0	2.5	0.000E+00	8.488E-05
315.0	3.5	0.000E+00	5.025E-05
315.0	4.5	0.000E+00	3.330E-05
315.0	7.5	0.000E+00	1.401E-05
315.0	15.0	0.000E+00	4.254E-06
315.0	25.0	0.000E+00	1.783E-06
315.0	35.0	0.000E+00	1.056E-06
315.0	45.0	0.000E+00	7.244E-07
315.0	55.0	0.000E+00	5.411E-07
315.0	65.0	0.000E+00	4.292E-07
315.0	75.0	0.000E+00	3.519E-07

Table 11.1a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area A

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	0.000E+00	1.976E-04
337.5	2.5	0.000E+00	6.999E-05
337.5	3.5	0.000E+00	3.896E-05
337.5	4.5	0.000E+00	2.478E-05
337.5	7.5	0.000E+00	9.725E-06
337.5	15.0	0.000E+00	2.757E-06
337.5	25.0	0.000E+00	1.115E-06
337.5	35.0	0.000E+00	6.554E-07
337.5	45.0	0.000E+00	4.507E-07
337.5	55.0	0.000E+00	3.364E-07
337.5	65.0	0.000E+00	2.681E-07
337.5	75.0	0.000E+00	2.206E-07

Table 1".2a The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area A

Site	Location	Particulate	Radon
1	Guard Residence	0.000E+00	9.640E-04
2	Admin Bldg	0.000E+00	1.167E-03
3	A1	0.000E+00	1.102E-03
4	A2	0.000E+00	1.382E-03
5	A3	0.000E+00	1.488E-03
6	A5	0.000E+00	2.074E-03
7	A6	0.000E+00	1.914E-03
8	A7	0.000E+00	3.851E-03
9	A11	0.000E+00	3.650E-03
10	A12	0.000E+00	7.670E-03
11	A13	0.000E+00	1.541E-03
12	SW	0.000E+00	1.252E-03
13	W1	0.000E+00	1.028E-03
14	W2	0.000E+00	6.787E-04
15	W3	0.000E+00	3.326E-04
16	NW	0.000E+00	2.101E-04
17	N1	0.000E+00	4.631E-04
18	N3	0.000E+00	1.536E-03
19	NE	0.000E+00	1.100E-03
20	E1	0.000E+00	2.047E-03
21	E2	0.000E+00	6.824E-04
22	E3	0.000E+00	1.821E-03
23	SE	0.000E+00	5.179E-04
24	S1	0.000E+00	3.647E-03
25	S2	0.000E+00	1.677E-03
26	S3	0.000E+00	4.833E-04
27	USPCI	0.000E+00	8.592E-05
28	APT	0.000E+00	4.494E-05

Table 11.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	0.000E+00	3.331E-04
0.0	2.5	0.000E+00	1.938E-04
0.0	3.5	0.000E+00	1.345E-04
0.0	4.5	0.000E+00	9.867E-05
0.0	7.5	0.000E+00	4.949E-05
0.0	15.0	0.000E+00	1.805E-05
0.0	25.0	0.000E+00	8.341E-06
0.0	35.0	0.000E+00	5.060E-06
0.0	45.0	0.000E+00	3.489E-06
0.0	55.0	0.000E+00	2.592E-06
0.0	65.0	0.000E+00	2.023E-06
0.0	75.0	0.000E+00	1.635E-06
22.5	1.5	0.000E+00	1.273E-03
22.5	2.5	0.000E+00	6.469E-04
22.5	3.5	0.000E+00	3.862E-04
22.5	4.5	0.000E+00	2.612E-04
22.5	7.5	0.000E+00	1.172E-04
22.5	15.0	0.000E+00	3.947E-05
22.5	25.0	0.000E+00	1.771E-05
22.5	35.0	0.000E+00	1.049E-05
22.5	45.0	0.000E+00	7.106E-06
22.5	55.0	0.000E+00	5.226E-06
22.5	65.0	0.000E+00	4.041E-06
22.5	75.0	0.000E+00	3.238E-06
45.0	1.5	0.000E+00	3.435E-03
45.0	2.5	0.000E+00	1.028E-03
45.0	3.5	0.000E+00	5.330E-04
45.0	4.5	0.000E+00	3.323E-04
45.0	7.5	0.000E+00	1.322E-04
45.0	15.0	0.000E+00	4.029E-05
45.0	25.0	0.000E+00	1.731E-05
45.0	35.0	0.000E+00	1.013E-05
45.0	45.0	0.000E+00	6.895E-06
45.0	55.0	0.000E+00	5.063E-06
45.0	65.0	0.000E+00	3.915E-06
45.0	75.0	0.000E+00	3.137E-06

Table 11.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	0.000E+00	4.472E-03
67.5	2.5	0.000E+00	1.249E-03
67.5	3.5	0.000E+00	6.029E-04
67.5	4.5	0.000E+00	3.623E-04
67.5	7.5	0.000E+00	1.373E-04
67.5	15.0	0.000E+00	4.093E-05
67.5	25.0	0.000E+00	1.787E-05
67.5	35.0	0.000E+00	1.058E-05
67.5	45.0	0.000E+00	7.185E-06
67.5	55.0	0.000E+00	5.274E-06
67.5	65.0	0.000E+00	4.076E-06
67.5	75.0	0.000E+00	3.268E-06
90.0	1.5	0.000E+00	1.563E-03
90.0	2.5	0.000E+00	5.509E-04
90.0	3.5	0.000E+00	3.004E-04
90.0	4.5	0.000E+00	1.949E-04
90.0	7.5	0.000E+00	8.626E-05
90.0	15.0	0.000E+00	2.896E-05
90.0	25.0	0.000E+00	1.298E-05
90.0	35.0	0.000E+00	7.697E-06
90.0	45.0	0.000E+00	5.216E-06
90.0	55.0	0.000E+00	3.820E-06
90.0	65.0	0.000E+00	2.945E-06
90.0	75.0	0.000E+00	2.355E-06
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 11.1b The Normalized Airborne Concentrations ( $\mu\text{Ci}/\text{m}^3$ ) of a Particulate and Radon from Covered Wastes at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	0.000E+00	1.755E-04
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	0.000E+00	5.467E-04
157.5	2.5	0.000E+00	1.094E-04
157.5	3.5	0.000E+00	5.323E-05
157.5	4.5	0.000E+00	3.014E-05
157.5	7.5	0.000E+00	8.805E-06
157.5	15.0	0.000E+00	1.389E-06
157.5	25.0	0.000E+00	2.844E-07
157.5	35.0	0.000E+00	7.512E-08
157.5	45.0	0.000E+00	1.459E-08
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	0.000E+00	7.064E-04
180.0	2.5	0.000E+00	2.920E-04
180.0	3.5	0.000E+00	1.661E-04
180.0	4.5	0.000E+00	1.071E-04
180.0	7.5	0.000E+00	4.279E-05
180.0	15.0	0.000E+00	1.229E-05
180.0	25.0	0.000E+00	5.014E-06
180.0	35.0	0.000E+00	2.815E-06
180.0	45.0	0.000E+00	1.839E-06
180.0	55.0	0.000E+00	1.335E-06
180.0	65.0	0.000E+00	1.033E-06
180.0	75.0	0.000E+00	8.278E-07

Table 11.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	0.000E+00	4.596E-04
202.5	2.5	0.000E+00	2.699E-04
202.5	3.5	0.000E+00	1.808E-04
202.5	4.5	0.000E+00	1.314E-04
202.5	7.5	0.000E+00	6.581E-05
202.5	15.0	0.000E+00	2.428E-05
202.5	25.0	0.000E+00	1.134E-05
202.5	35.0	0.000E+00	6.826E-06
202.5	45.0	0.000E+00	4.666E-06
202.5	55.0	0.000E+00	3.449E-06
202.5	65.0	0.000E+00	2.676E-06
202.5	75.0	0.000E+00	2.150E-06
225.0	1.5	0.000E+00	3.096E-04
225.0	2.5	0.000E+00	1.657E-04
225.0	3.5	0.000E+00	1.048E-04
225.0	4.5	0.000E+00	7.305E-05
225.0	7.5	0.000E+00	3.394E-05
225.0	15.0	0.000E+00	1.154E-05
225.0	25.0	0.000E+00	5.151E-06
225.0	35.0	0.000E+00	3.102E-06
225.0	45.0	0.000E+00	2.149E-06
225.0	55.0	0.000E+00	1.599E-06
225.0	65.0	0.000E+00	1.249E-06
225.0	75.0	0.000E+00	1.009E-06
247.5	1.5	0.000E+00	2.914E-04
247.5	2.5	0.000E+00	1.598E-04
247.5	3.5	0.000E+00	1.033E-04
247.5	4.5	0.000E+00	7.334E-05
247.5	7.5	0.000E+00	3.543E-05
247.5	15.0	0.000E+00	1.288E-05
247.5	25.0	0.000E+00	6.025E-06
247.5	35.0	0.000E+00	3.654E-06
247.5	45.0	0.000E+00	2.509E-06
247.5	55.0	0.000E+00	1.854E-06
247.5	65.0	0.000E+00	1.439E-06
247.5	75.0	0.000E+00	1.157E-06



Table 11.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	0.000E+00	1.722E-04
270.0	2.5	0.000E+00	8.092E-05
270.0	3.5	0.000E+00	4.633E-05
270.0	4.5	0.000E+00	3.021E-05
270.0	7.5	0.000E+00	1.216E-05
270.0	15.0	0.000E+00	3.419E-06
270.0	25.0	0.000E+00	1.368E-06
270.0	35.0	0.000E+00	8.526E-07
270.0	45.0	0.000E+00	6.027E-07
270.0	55.0	0.000E+00	4.567E-07
270.0	65.0	0.000E+00	3.626E-07
270.0	75.0	0.000E+00	2.975E-07
292.5	1.5	0.000E+00	1.498E-04
292.5	2.5	0.000E+00	7.632E-05
292.5	3.5	0.000E+00	5.721E-05
292.5	4.5	0.000E+00	4.124E-05
292.5	7.5	0.000E+00	2.034E-05
292.5	15.0	0.000E+00	7.347E-06
292.5	25.0	0.000E+00	3.379E-06
292.5	35.0	0.000E+00	2.060E-06
292.5	45.0	0.000E+00	1.433E-06
292.5	55.0	0.000E+00	1.071E-06
292.5	65.0	0.000E+00	8.394E-07
292.5	75.0	0.000E+00	6.808E-07
315.0	1.5	0.000E+00	2.200E-04
315.0	2.5	0.000E+00	1.047E-04
315.0	3.5	0.000E+00	6.255E-05
315.0	4.5	0.000E+00	4.179E-05
315.0	7.5	0.000E+00	1.786E-05
315.0	15.0	0.000E+00	5.514E-06
315.0	25.0	0.000E+00	2.332E-06
315.0	35.0	0.000E+00	1.387E-06
315.0	45.0	0.000E+00	9.544E-07
315.0	55.0	0.000E+00	7.211E-07
315.0	65.0	0.000E+00	5.717E-07
315.0	75.0	0.000E+00	4.686E-07

Table 11.1b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area B

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	0.000E+00	2.465E-04
337.5	2.5	0.000E+00	8.321E-05
337.5	3.5	0.000E+00	4.735E-05
337.5	4.5	0.000E+00	3.058E-05
337.5	7.5	0.000E+00	1.231E-05
337.5	15.0	0.000E+00	3.569E-06
337.5	25.0	0.000E+00	1.458E-06
337.5	35.0	0.000E+00	8.618E-07
337.5	45.0	0.000E+00	5.941E-07
337.5	55.0	0.000E+00	4.468E-07
337.5	65.0	0.000E+00	3.561E-07
337.5	75.0	0.000E+00	2.931E-07

Table 11.2b The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area B

Site	Location	Particulate	Radon
1	Guard Residence	0.000E+00	1.052E-03
2	Admin Bldg	0.000E+00	1.244E-03
3	A1	0.000E+00	1.184E-03
4	A2	0.000E+00	1.561E-03
5	A3	0.000E+00	1.097E-02
6	A5	0.000E+00	9.534E-04
7	A6	0.000E+00	1.892E-03
8	A7	0.000E+00	3.576E-03
9	A11	0.000E+00	5.752E-03
10	A12	0.000E+00	5.973E-03
11	A13	0.000E+00	1.755E-03
12	SW	0.000E+00	1.715E-03
13	W1	0.000E+00	1.185E-03
14	W2	0.000E+00	7.501E-04
15	W3	0.000E+00	3.372E-04
16	NW	0.000E+00	3.216E-04
17	N1	0.000E+00	5.366E-04
18	N3	0.000E+00	1.630E-03
19	NE	0.000E+00	1.241E-03
20	E1	0.000E+00	2.876E-03
21	E2	0.000E+00	1.850E-03
22	E3	0.000E+00	2.052E-03
23	SE	0.000E+00	1.340E-03
24	S1	0.000E+00	6.149E-03
25	S2	0.000E+00	2.858E-03
26	S3	0.000E+00	2.199E-03
27	USPCI	0.000E+00	1.258E-04
28	APTUS	0.000E+00	5.871E-05

Table 11.1c The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	0.000E+00	5.918E-04
0.0	2.5	0.000E+00	2.736E-04
0.0	3.5	0.000E+00	1.696E-04
0.0	4.5	0.000E+00	1.175E-04
0.0	7.5	0.000E+00	5.475E-05
0.0	15.0	0.000E+00	1.896E-05
0.0	25.0	0.000E+00	8.590E-06
0.0	35.0	0.000E+00	5.167E-06
0.0	45.0	0.000E+00	3.554E-06
0.0	55.0	0.000E+00	2.634E-06
0.0	65.0	0.000E+00	2.051E-06
0.0	75.0	0.000E+00	1.654E-06
22.5	1.5	0.000E+00	1.912E-03
22.5	2.5	0.000E+00	7.518E-04
22.5	3.5	0.000E+00	4.256E-04
22.5	4.5	0.000E+00	2.804E-04
22.5	7.5	0.000E+00	1.219E-04
22.5	15.0	0.000E+00	4.018E-05
22.5	25.0	0.000E+00	1.789E-05
22.5	35.0	0.000E+00	1.064E-05
22.5	45.0	0.000E+00	7.224E-06
22.5	55.0	0.000E+00	5.297E-06
22.5	65.0	0.000E+00	4.087E-06
22.5	75.0	0.000E+00	3.270E-06
45.0	1.5	0.000E+00	3.340E-03
45.0	2.5	0.000E+00	1.083E-03
45.0	3.5	0.000E+00	5.463E-04
45.0	4.5	0.000E+00	3.348E-04
45.0	7.5	0.000E+00	1.296E-04
45.0	15.0	0.000E+00	3.914E-05
45.0	25.0	0.000E+00	1.732E-05
45.0	35.0	0.000E+00	1.028E-05
45.0	45.0	0.000E+00	6.970E-06
45.0	55.0	0.000E+00	5.110E-06
45.0	65.0	0.000E+00	3.944E-06
45.0	75.0	0.000E+00	3.158E-06

Table 4.4. The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	0.000E+00	2.762E-03
67.5	2.5	0.000E+00	9.540E-04
67.5	3.5	0.000E+00	4.982E-04
67.5	4.5	0.000E+00	3.124E-04
67.5	7.5	0.000E+00	1.256E-04
67.5	15.0	0.000E+00	3.978E-05
67.5	25.0	0.000E+00	1.753E-05
67.5	35.0	0.000E+00	1.044E-05
67.5	45.0	0.000E+00	7.110E-06
67.5	55.0	0.000E+00	5.228E-06
67.5	65.0	0.000E+00	4.046E-06
67.5	75.0	0.000E+00	3.247E-06
90.0	1.5	0.000E+00	7.309E-04
90.0	2.5	0.000E+00	3.771E-04
90.0	3.5	0.000E+00	2.373E-04
90.0	4.5	0.000E+00	1.660E-04
90.0	7.5	0.000E+00	7.860E-05
90.0	15.0	0.000E+00	2.765E-05
90.0	25.0	0.000E+00	1.263E-05
90.0	35.0	0.000E+00	7.547E-06
90.0	45.0	0.000E+00	5.137E-06
90.0	55.0	0.000E+00	3.772E-06
90.0	65.0	0.000E+00	2.913E-06
90.0	75.0	0.000E+00	2.333E-06
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 11.1c The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	0.000E+00	5.129E-05
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	0.000E+00	2.259E-04
157.5	2.5	0.000E+00	7.522E-05
157.5	3.5	0.000E+00	3.709E-05
157.5	4.5	0.000E+00	2.111E-05
157.5	7.5	0.000E+00	6.132E-06
157.5	15.0	0.000E+00	9.024E-07
157.5	25.0	0.000E+00	1.491E-07
157.5	35.0	0.000E+00	1.728E-08
157.5	45.0	0.000E+00	0.000E+00
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	0.000E+00	5.306E-04
180.0	2.5	0.000E+00	2.439E-04
180.0	3.5	0.000E+00	1.400E-04
180.0	4.5	0.000E+00	9.117E-05
180.0	7.5	0.000E+00	3.742E-05
180.0	15.0	0.000E+00	1.120E-05
180.0	25.0	0.000E+00	4.695E-06
180.0	35.0	0.000E+00	2.687E-06
180.0	45.0	0.000E+00	1.835E-06
180.0	55.0	0.000E+00	1.349E-06
180.0	65.0	0.000E+00	1.042E-06
180.0	75.0	0.000E+00	8.340E-07

Table 11.1c The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	0.000E+00	5.590E-04
202.5	2.5	0.000E+00	3.059E-04
202.5	3.5	0.000E+00	1.982E-04
202.5	4.5	0.000E+00	1.412E-04
202.5	7.5	0.000E+00	6.875E-05
202.5	15.0	0.000E+00	2.482E-05
202.5	25.0	0.000E+00	1.149E-05
202.5	35.0	0.000E+00	6.939E-06
202.5	45.0	0.000E+00	4.747E-06
202.5	55.0	0.000E+00	3.498E-06
202.5	65.0	0.000E+00	2.708E-06
202.5	75.0	0.000E+00	2.172E-06
225.0	1.5	0.000E+00	4.479E-04
225.0	2.5	0.000E+00	2.128E-04
225.0	3.5	0.000E+00	1.252E-04
225.0	4.5	0.000E+00	8.313E-05
225.0	7.5	0.000E+00	3.545E-05
225.0	15.0	0.000E+00	1.147E-05
225.0	25.0	0.000E+00	5.239E-06
225.0	35.0	0.000E+00	3.179E-06
225.0	45.0	0.000E+00	2.190E-06
225.0	55.0	0.000E+00	1.625E-06
225.0	65.0	0.000E+00	1.266E-06
225.0	75.0	0.000E+00	1.021E-06
247.5	1.5	0.000E+00	3.676E-04
247.5	2.5	0.000E+00	1.894E-04
247.5	3.5	0.000E+00	1.181E-04
247.5	4.5	0.000E+00	8.197E-05
247.5	7.5	0.000E+00	3.817E-05
247.5	15.0	0.000E+00	1.326E-05
247.5	25.0	0.000E+00	6.074E-06
247.5	35.0	0.000E+00	3.675E-06
247.5	45.0	0.000E+00	2.520E-06
247.5	55.0	0.000E+00	1.861E-06
247.5	65.0	0.000E+00	1.443E-06
247.5	75.0	0.000E+00	1.160E-06

Table 11.1c The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	0.000E+00	2.335E-04
270.0	2.5	0.000E+00	1.042E-04
270.0	3.5	0.000E+00	5.810E-05
270.0	4.5	0.000E+00	3.679E-05
270.0	7.5	0.000E+00	1.408E-05
270.0	15.0	0.000E+00	3.758E-06
270.0	25.0	0.000E+00	1.445E-06
270.0	35.0	0.000E+00	8.559E-07
270.0	45.0	0.000E+00	6.045E-07
270.0	55.0	0.000E+00	4.579E-07
270.0	65.0	0.000E+00	3.633E-07
270.0	75.0	0.000E+00	2.980E-07
292.5	1.5	0.000E+00	1.865E-04
292.5	2.5	0.000E+00	1.005E-04
292.5	3.5	0.000E+00	6.430E-05
292.5	4.5	0.000E+00	4.532E-05
292.5	7.5	0.000E+00	2.160E-05
292.5	15.0	0.000E+00	7.580E-06
292.5	25.0	0.000E+00	3.444E-06
292.5	35.0	0.000E+00	2.087E-06
292.5	45.0	0.000E+00	1.440E-06
292.5	55.0	0.000E+00	1.080E-06
292.5	65.0	0.000E+00	8.455E-07
292.5	75.0	0.000E+00	6.851E-07
315.0	1.5	0.000E+00	2.837E-04
315.0	2.5	0.000E+00	1.223E-04
315.0	3.5	0.000E+00	6.964E-05
315.0	4.5	0.000E+00	4.523E-05
315.0	7.5	0.000E+00	1.859E-05
315.0	15.0	0.000E+00	5.594E-06
315.0	25.0	0.000E+00	2.347E-06
315.0	35.0	0.000E+00	1.391E-06
315.0	45.0	0.000E+00	9.673E-07
315.0	55.0	0.000E+00	7.303E-07
315.0	65.0	0.000E+00	5.779E-07
315.0	75.0	0.000E+00	4.730E-07



Table 11.1c The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area C

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	0.000E+00	2.852E-04
337.5	2.5	0.000E+00	9.345E-05
337.5	3.5	0.000E+00	5.057E-05
337.5	4.5	0.000E+00	3.179E-05
337.5	7.5	0.000E+00	1.239E-05
337.5	15.0	0.000E+00	3.540E-06
337.5	25.0	0.000E+00	1.444E-06
337.5	35.0	0.000E+00	8.542E-07
337.5	45.0	0.000E+00	5.978E-07
337.5	55.0	0.000E+00	4.537E-07
337.5	65.0	0.000E+00	3.607E-07
337.5	75.0	0.000E+00	2.964E-07

Table 11.2c The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area C

Site	Location	Particulate	Radon
1	Guard Residence	0.000E+00	1.431E-03
2	Admin Bldg	0.000E+00	1.756E-03
3	A1	0.000E+00	1.667E-03
4	A2	0.000E+00	1.372E-03
5	A3	0.000E+00	8.768E-03
6	A5	0.000E+00	1.468E-03
7	A6	0.000E+00	2.940E-03
8	A7	0.000E+00	2.644E-03
9	A11	0.000E+00	5.068E-03
10	A12	0.000E+00	9.485E-03
11	A13	0.000E+00	5.293E-03
12	SW	0.000E+00	3.835E-03
13	W1	0.000E+00	2.632E-03
14	W2	0.000E+00	1.448E-03
15	W3	0.000E+00	8.538E-04
16	NW	0.000E+00	5.226E-04
17	N1	0.000E+00	1.303E-03
18	N3	0.000E+00	1.430E-03
19	NE	0.000E+00	1.319E-03
20	E1	0.000E+00	1.710E-03
21	E2	0.000E+00	8.688E-04
22	E3	0.000E+00	1.471E-03
23	SE	0.000E+00	6.691E-04
24	S1	0.000E+00	4.247E-03
25	S2	0.000E+00	1.087E-03
26	S3	0.000E+00	9.521E-04
27	USPCI	0.000E+00	1.527E-04
28	APTUS	0.000E+00	5.738E-05

Table 11.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	0.000E+00	7.124E-04
0.0	2.5	0.000E+00	3.059E-04
0.0	3.5	0.000E+00	1.822E-04
0.0	4.5	0.000E+00	1.242E-04
0.0	7.5	0.000E+00	5.655E-05
0.0	15.0	0.000E+00	1.927E-05
0.0	25.0	0.000E+00	8.674E-06
0.0	35.0	0.000E+00	5.215E-06
0.0	45.0	0.000E+00	3.580E-06
0.0	55.0	0.000E+00	2.649E-06
0.0	65.0	0.000E+00	2.061E-06
0.0	75.0	0.000E+00	1.661E-06
22.5	1.5	0.000E+00	2.170E-03
22.5	2.5	0.000E+00	8.296E-04
22.5	3.5	0.000E+00	4.534E-04
22.5	4.5	0.000E+00	2.921E-04
22.5	7.5	0.000E+00	1.224E-04
22.5	15.0	0.000E+00	4.009E-05
22.5	25.0	0.000E+00	1.797E-05
22.5	35.0	0.000E+00	1.069E-05
22.5	45.0	0.000E+00	7.251E-06
22.5	55.0	0.000E+00	5.313E-06
22.5	65.0	0.000E+00	4.097E-06
22.5	75.0	0.000E+00	3.277E-06
45.0	1.5	0.000E+00	2.820E-03
45.0	2.5	0.000E+00	9.932E-04
45.0	3.5	0.000E+00	5.162E-04
45.0	4.5	0.000E+00	3.212E-04
45.0	7.5	0.000E+00	1.268E-04
45.0	15.0	0.000E+00	3.848E-05
45.0	25.0	0.000E+00	1.723E-05
45.0	35.0	0.000E+00	1.024E-05
45.0	45.0	0.000E+00	6.952E-06
45.0	55.0	0.000E+00	5.099E-06
45.0	65.0	0.000E+00	3.937E-06
45.0	75.0	0.000E+00	3.153E-06

Table 11.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	0.000E+00	2.165E-03
67.5	2.5	0.000E+00	8.302E-04
67.5	3.5	0.000E+00	4.520E-04
67.5	4.5	0.000E+00	2.898E-04
67.5	7.5	0.000E+00	1.209E-04
67.5	15.0	0.000E+00	3.912E-05
67.5	25.0	0.000E+00	1.732E-05
67.5	35.0	0.000E+00	1.036E-05
67.5	45.0	0.000E+00	7.065E-06
67.5	55.0	0.000E+00	5.201E-06
67.5	65.0	0.000E+00	4.028E-06
67.5	75.0	0.000E+00	3.235E-06
90.0	1.5	0.000E+00	7.010E-04
90.0	2.5	0.000E+00	3.642E-04
90.0	3.5	0.000E+00	2.306E-04
90.0	4.5	0.000E+00	1.621E-04
90.0	7.5	0.000E+00	7.739E-05
90.0	15.0	0.000E+00	2.742E-05
90.0	25.0	0.000E+00	1.256E-05
90.0	35.0	0.000E+00	7.520E-06
90.0	45.0	0.000E+00	5.122E-06
90.0	55.0	0.000E+00	3.763E-06
90.0	65.0	0.000E+00	2.908E-06
90.0	75.0	0.000E+00	2.329E-06
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 11.1d The Normalized Airborne Concentrations ( $\mu\text{Ci}/\text{m}^3$ ) of a Particulate and Radon from Covered Wastes at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	0.000E+00	0.000E+00
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	0.000E+00	1.606E-04
157.5	2.5	0.000E+00	5.988E-05
157.5	3.5	0.000E+00	2.903E-05
157.5	4.5	0.000E+00	1.630E-05
157.5	7.5	0.000E+00	4.551E-06
157.5	15.0	0.000E+00	5.885E-07
157.5	25.0	0.000E+00	5.832E-08
157.5	35.0	0.000E+00	0.000E+00
157.5	45.0	0.000E+00	0.000E+00
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	0.000E+00	5.089E-04
180.0	2.5	0.000E+00	2.293E-04
180.0	3.5	0.000E+00	1.309E-04
180.0	4.5	0.000E+00	8.520E-05
180.0	7.5	0.000E+00	3.520E-05
180.0	15.0	0.000E+00	1.072E-05
180.0	25.0	0.000E+00	4.551E-06
180.0	35.0	0.000E+00	2.721E-06
180.0	45.0	0.000E+00	1.853E-06
180.0	55.0	0.000E+00	1.360E-06
180.0	65.0	0.000E+00	1.049E-06
180.0	75.0	0.000E+00	8.390E-07

Table 11.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	0.000E+00	6.756E-04
202.5	2.5	0.000E+00	3.467E-04
202.5	3.5	0.000E+00	2.170E-04
202.5	4.5	0.000E+00	1.513E-04
202.5	7.5	0.000E+00	7.126E-05
202.5	15.0	0.000E+00	2.526E-05
202.5	25.0	0.000E+00	1.168E-05
202.5	35.0	0.000E+00	7.028E-06
202.5	45.0	0.000E+00	4.796E-06
202.5	55.0	0.000E+00	3.527E-06
202.5	65.0	0.000E+00	2.727E-06
202.5	75.0	0.000E+00	2.186E-06
225.0	1.5	0.000E+00	5.426E-04
225.0	2.5	0.000E+00	2.453E-04
225.0	3.5	0.000E+00	1.404E-04
225.0	4.5	0.000E+00	9.153E-05
225.0	7.5	0.000E+00	3.787E-05
225.0	15.0	0.000E+00	1.160E-05
225.0	25.0	0.000E+00	5.301E-06
225.0	35.0	0.000E+00	3.205E-06
225.0	45.0	0.000E+00	2.204E-06
225.0	55.0	0.000E+00	1.633E-06
225.0	65.0	0.000E+00	1.271E-06
225.0	75.0	0.000E+00	1.025E-06
247.5	1.5	0.000E+00	4.156E-04
247.5	2.5	0.000E+00	2.055E-04
247.5	3.5	0.000E+00	1.256E-04
247.5	4.5	0.000E+00	8.605E-05
247.5	7.5	0.000E+00	3.940E-05
247.5	15.0	0.000E+00	1.348E-05
247.5	25.0	0.000E+00	6.118E-06
247.5	35.0	0.000E+00	3.694E-06
247.5	45.0	0.000E+00	2.530E-06
247.5	55.0	0.000E+00	1.867E-06
247.5	65.0	0.000E+00	1.447E-06
247.5	75.0	0.000E+00	1.163E-06

Table 11.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	0.000E+00	2.636E-04
270.0	2.5	0.000E+00	1.118E-04
270.0	3.5	0.000E+00	6.072E-05
270.0	4.5	0.000E+00	3.788E-05
270.0	7.5	0.000E+00	1.420E-05
270.0	15.0	0.000E+00	3.741E-06
270.0	25.0	0.000E+00	1.435E-06
270.0	35.0	0.000E+00	8.635E-07
270.0	45.0	0.000E+00	6.087E-07
270.0	55.0	0.000E+00	4.604E-07
270.0	65.0	0.000E+00	3.650E-07
270.0	75.0	0.000E+00	2.992E-07
292.5	1.5	0.000E+00	2.211E-04
292.5	2.5	0.000E+00	1.123E-04
292.5	3.5	0.000E+00	6.975E-05
292.5	4.5	0.000E+00	4.834E-05
292.5	7.5	0.000E+00	2.247E-05
292.5	15.0	0.000E+00	7.735E-06
292.5	25.0	0.000E+00	3.486E-06
292.5	35.0	0.000E+00	2.110E-06
292.5	45.0	0.000E+00	1.461E-06
292.5	55.0	0.000E+00	1.088E-06
292.5	65.0	0.000E+00	8.510E-07
292.5	75.0	0.000E+00	6.890E-07
315.0	1.5	0.000E+00	2.961E-04
315.0	2.5	0.000E+00	1.265E-04
315.0	3.5	0.000E+00	7.058E-05
315.0	4.5	0.000E+00	4.539E-05
315.0	7.5	0.000E+00	1.846E-05
315.0	15.0	0.000E+00	5.542E-06
315.0	25.0	0.000E+00	2.329E-06
315.0	35.0	0.000E+00	1.393E-06
315.0	45.0	0.000E+00	9.771E-07
315.0	55.0	0.000E+00	7.364E-07
315.0	65.0	0.000E+00	5.820E-07
315.0	75.0	0.000E+00	4.758E-07

Table 11.1d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area D

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	0.000E+00	2.343E-04
337.5	2.5	0.000E+00	9.220E-05
337.5	3.5	0.000E+00	4.932E-05
337.5	4.5	0.000E+00	3.089E-05
337.5	7.5	0.000E+00	1.203E-05
337.5	15.0	0.000E+00	3.463E-06
337.5	25.0	0.000E+00	1.421E-06
337.5	35.0	0.000E+00	8.550E-07
337.5	45.0	0.000E+00	6.035E-07
337.5	55.0	0.000E+00	4.572E-07
337.5	65.0	0.000E+00	3.631E-07
337.5	75.0	0.000E+00	2.981E-07



Table 11.2d The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area D

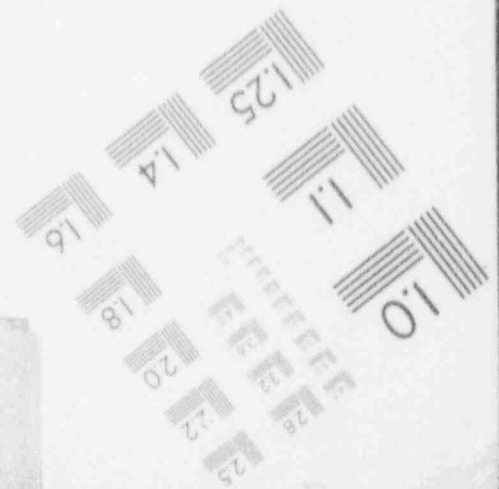
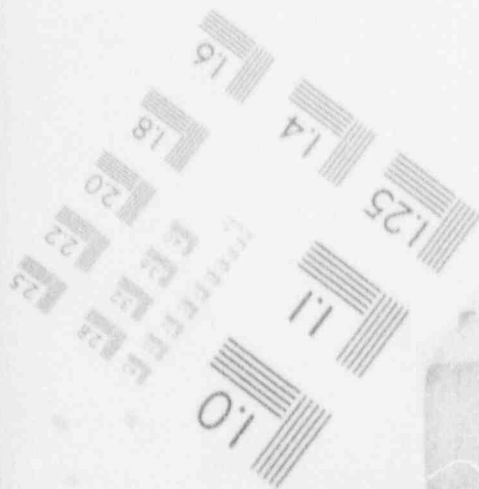
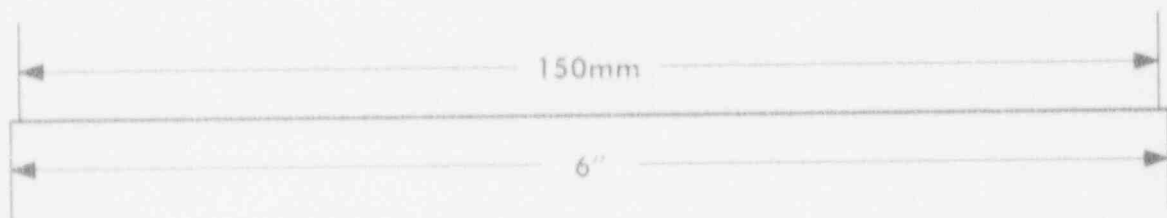
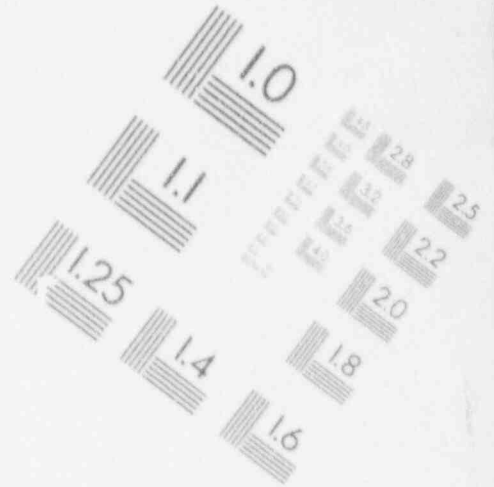
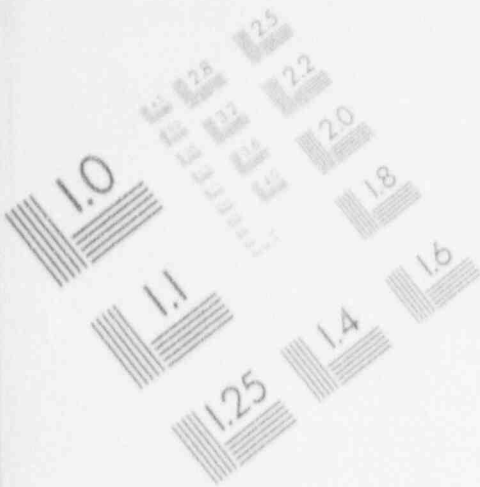
Site	Location	Particulate	Radon
1	Guard Residence	0.000E+00	1.632E-03
2	Admin Bldg	0.000E+00	1.950E-03
3	A1	0.000E+00	1.817E-03
4	A2	0.000E+00	1.475E-03
5	A3	0.000E+00	5.932E-03
6	A5	0.000E+00	1.025E-03
7	A6	0.000E+00	2.552E-03
8	A7	0.000E+00	2.271E-03
9	A11	0.000E+00	2.226E-03
10	A12	0.000E+00	7.892E-03
11	A13	0.000E+00	7.477E-03
12	SW	0.000E+00	5.079E-03
13	W1	0.000E+00	3.968E-03
14	W2	0.000E+00	2.900E-03
15	W3	0.000E+00	1.413E-03
16	NW	0.000E+00	7.645E-04
17	N1	0.000E+00	1.469E-03
18	N3	0.000E+00	1.423E-03
19	NE	0.000E+00	1.181E-03
20	E1	0.000E+00	1.376E-03
21	E2	0.000E+00	6.215E-04
22	E3	0.000E+00	1.308E-03
23	SE	0.000E+00	5.355E-04
24	S1	0.000E+00	1.242E-03
25	S2	0.000E+00	8.368E-04
26	S3	0.000E+00	7.062E-04
27	USPCI	0.000E+00	1.749E-04
28	APTUS	0.000E+00	5.651E-05

Table 11.1e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	0.000E+00	7.124E-04
0.0	2.5	0.000E+00	3.059E-04
0.0	3.5	0.000E+00	1.822E-04
0.0	4.5	0.000E+00	1.242E-04
0.0	7.5	0.000E+00	5.655E-05
0.0	15.0	0.000E+00	1.927E-05
0.0	25.0	0.000E+00	8.674E-06
0.0	35.0	0.000E+00	5.215E-06
0.0	45.0	0.000E+00	3.580E-06
0.0	55.0	0.000E+00	2.649E-06
0.0	65.0	0.000E+00	2.061E-06
0.0	75.0	0.000E+00	1.661E-06
22.5	1.5	0.000E+00	2.170E-03
22.5	2.5	0.000E+00	8.296E-04
22.5	3.5	0.000E+00	4.534E-04
22.5	4.5	0.000E+00	2.921E-04
22.5	7.5	0.000E+00	1.224E-04
22.5	15.0	0.000E+00	4.009E-05
22.5	25.0	0.000E+00	1.797E-05
22.5	35.0	0.000E+00	1.069E-05
22.5	45.0	0.000E+00	7.251E-06
22.5	55.0	0.000E+00	5.313E-06
22.5	65.0	0.000E+00	4.097E-06
22.5	75.0	0.000E+00	3.277E-06
45.0	1.5	0.000E+00	2.820E-03
45.0	2.5	0.000E+00	9.932E-04
45.0	3.5	0.000E+00	5.162E-04
45.0	4.5	0.000E+00	3.212E-04
45.0	7.5	0.000E+00	1.268E-04
45.0	15.0	0.000E+00	3.848E-05
45.0	25.0	0.000E+00	1.723E-05
45.0	35.0	0.000E+00	1.024E-05
45.0	45.0	0.000E+00	6.952E-06
45.0	55.0	0.000E+00	5.099E-06
45.0	65.0	0.000E+00	3.937E-06
45.0	75.0	0.000E+00	3.153E-06

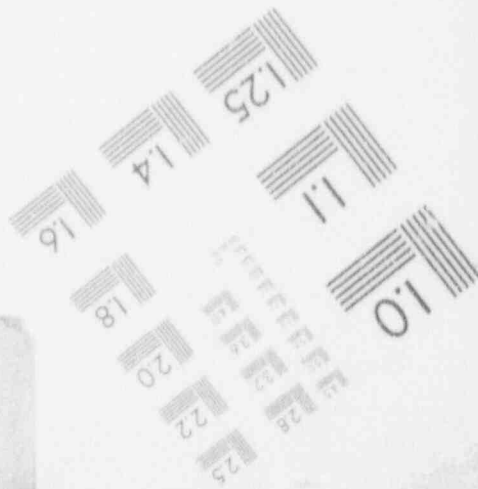
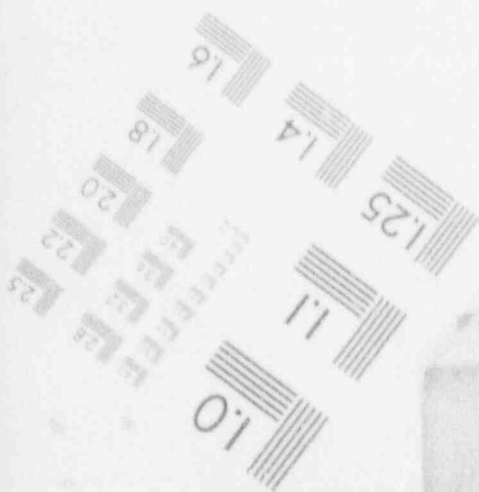
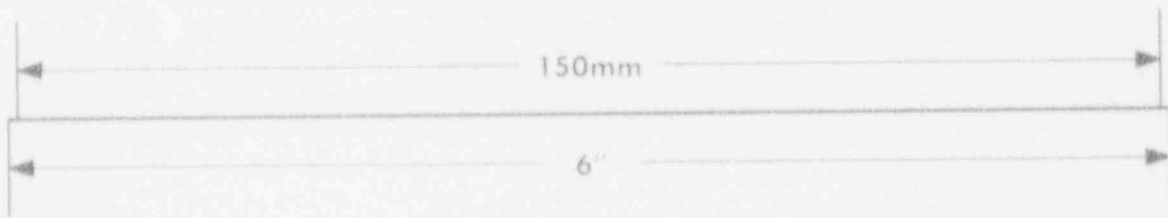
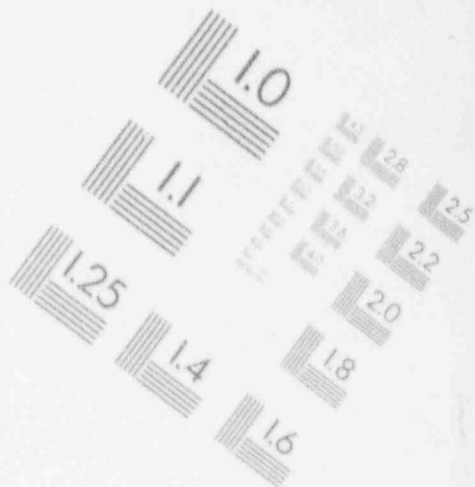
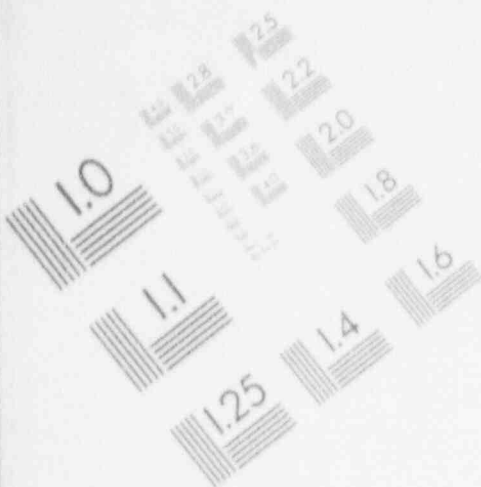
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## IMAGE EVALUATION TEST TARGET (MT-3)



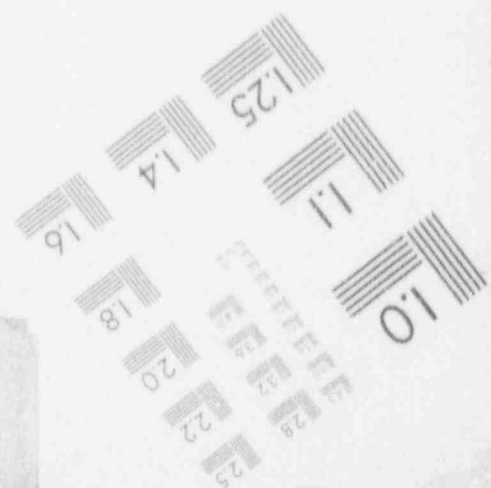
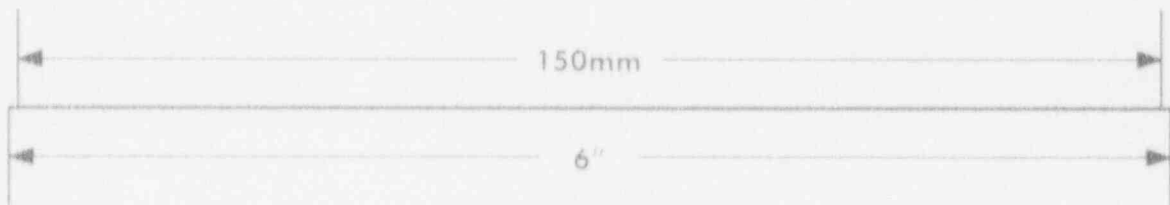
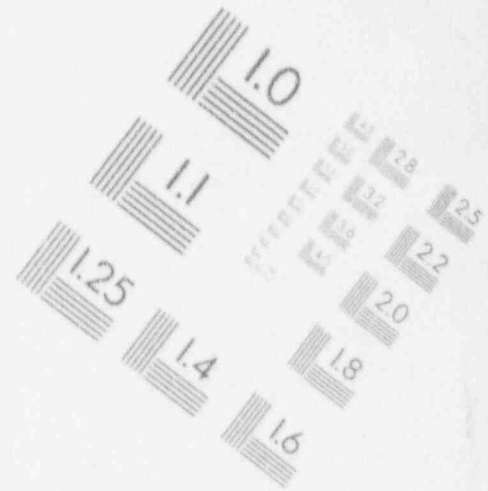
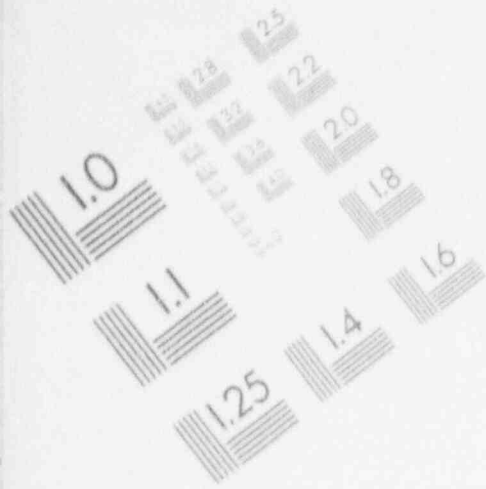
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## IMAGE EVALUATION TEST TARGET (MT-3)



# 1

## IMAGE EVALUATION TEST TARGET (MT-3)



# 1

## IMAGE EVALUATION TEST TARGET (MT-3)

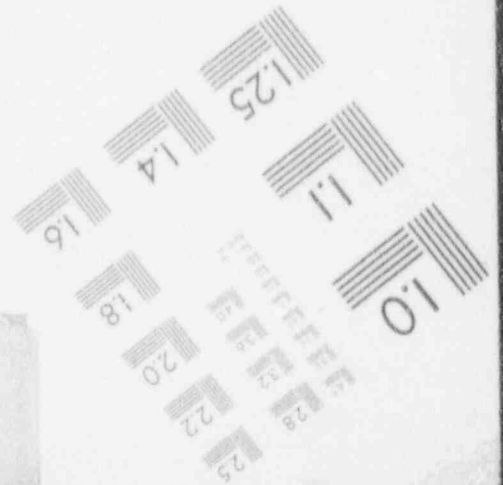
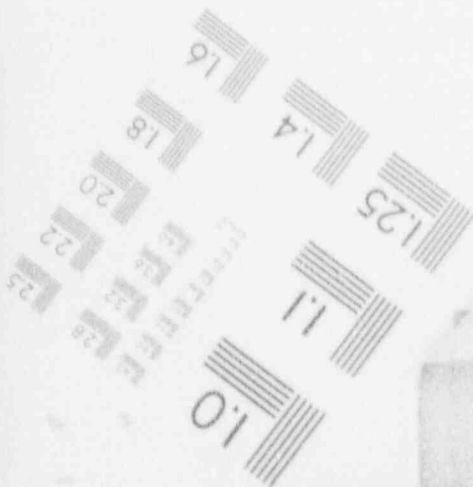
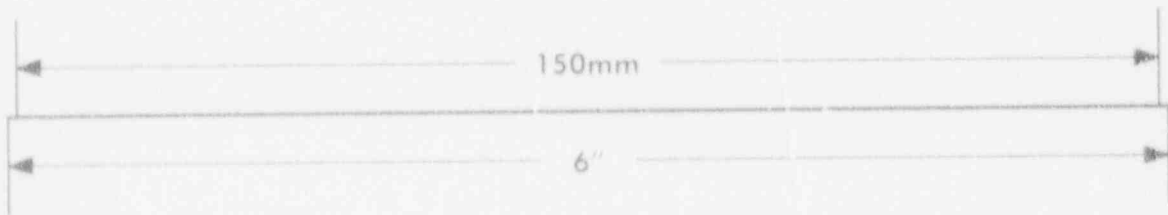
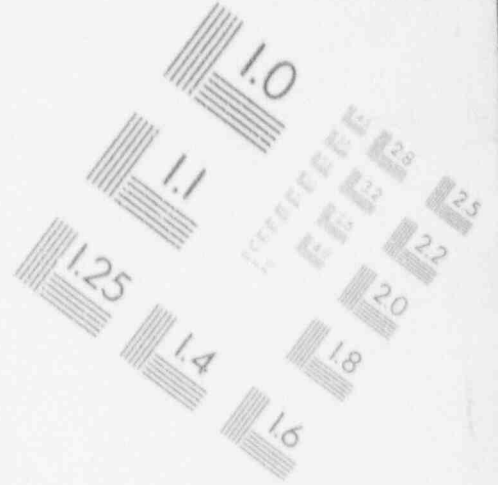
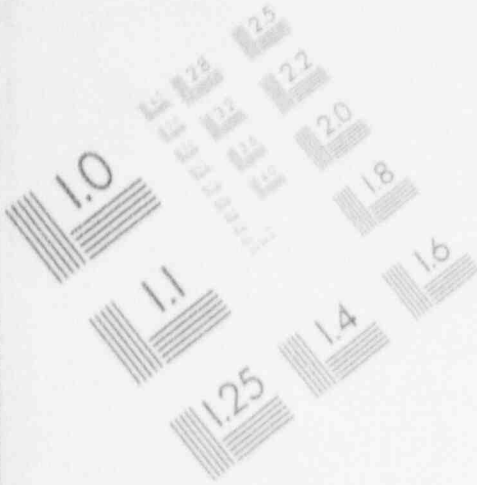


Table 11.1e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	0.000E+00	2.165E-03
67.5	2.5	0.000E+00	8.302E-04
67.5	3.5	0.000E+00	4.520E-04
67.5	4.5	0.000E+00	2.898E-04
67.5	7.5	0.000E+00	1.209E-04
67.5	15.0	0.000E+00	3.912E-05
67.5	25.0	0.000E+00	1.732E-05
67.5	35.0	0.000E+00	1.036E-05
67.5	45.0	0.000E+00	7.065E-06
67.5	55.0	0.000E+00	5.201E-06
67.5	65.0	0.000E+00	4.028E-06
67.5	75.0	0.000E+00	3.235E-06
90.0	1.5	0.000E+00	7.010E-04
90.0	2.5	0.000E+00	3.642E-04
90.0	3.5	0.000E+00	2.306E-04
90.0	4.5	0.000E+00	1.621E-04
90.0	7.5	0.000E+00	7.739E-05
90.0	15.0	0.000E+00	2.742E-05
90.0	25.0	0.000E+00	1.256E-05
90.0	35.0	0.000E+00	7.520E-06
90.0	45.0	0.000E+00	5.122E-06
90.0	55.0	0.000E+00	3.763E-06
90.0	65.0	0.000E+00	2.908E-06
90.0	75.0	0.000E+00	2.329E-06
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 11.1e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	0.000E+00	0.000E+00
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	0.000E+00	1.606E-04
157.5	2.5	0.000E+00	5.988E-05
157.5	3.5	0.000E+00	2.903E-05
157.5	4.5	0.000E+00	1.630E-05
157.5	7.5	0.000E+00	4.551E-06
157.5	15.0	0.000E+00	5.885E-07
157.5	25.0	0.000E+00	5.832E-08
157.5	35.0	0.000E+00	0.000E+00
157.5	45.0	0.000E+00	0.000E+00
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	0.000E+00	5.089E-04
180.0	2.5	0.000E+00	2.293E-04
180.0	3.5	0.000E+00	1.309E-04
180.0	4.5	0.000E+00	8.520E-05
180.0	7.5	0.000E+00	3.520E-05
180.0	15.0	0.000E+00	1.072E-05
180.0	25.0	0.000E+00	4.551E-06
180.0	35.0	0.000E+00	2.721E-06
180.0	45.0	0.000E+00	1.853E-06
180.0	55.0	0.000E+00	1.360E-06
180.0	65.0	0.000E+00	1.049E-06
180.0	75.0	0.000E+00	8.390E-07



Table 11.1e The Normalized Airborne Concentrations ( $\mu\text{Ci}/\text{m}^3$ ) of a Particulate and Radon from Covered Wastes at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	0.000E+00	6.756E-04
202.5	2.5	0.000E+00	3.467E-04
202.5	3.5	0.000E+00	2.170E-04
202.5	4.5	0.000E+00	1.513E-04
202.5	7.5	0.000E+00	7.126E-05
202.5	15.0	0.000E+00	2.526E-05
202.5	25.0	0.000E+00	1.168E-05
202.5	35.0	0.000E+00	7.028E-06
202.5	45.0	0.000E+00	4.796E-06
202.5	55.0	0.000E+00	3.527E-06
202.5	65.0	0.000E+00	2.727E-06
202.5	75.0	0.000E+00	2.186E-06
225.0	1.5	0.000E+00	5.426E-04
225.0	2.5	0.000E+00	2.453E-04
225.0	3.5	0.000E+00	1.404E-04
225.0	4.5	0.000E+00	9.153E-05
225.0	7.5	0.000E+00	3.787E-05
225.0	15.0	0.000E+00	1.160E-05
225.0	25.0	0.000E+00	5.301E-06
225.0	35.0	0.000E+00	3.205E-06
225.0	45.0	0.000E+00	2.204E-06
225.0	55.0	0.000E+00	1.633E-06
225.0	65.0	0.000E+00	1.271E-06
225.0	75.0	0.000E+00	1.025E-06
247.5	1.5	0.000E+00	4.156E-04
247.5	2.5	0.000E+00	2.055E-04
247.5	3.5	0.000E+00	1.256E-04
247.5	4.5	0.000E+00	8.605E-05
247.5	7.5	0.000E+00	3.940E-05
247.5	15.0	0.000E+00	1.348E-05
247.5	25.0	0.000E+00	6.118E-06
247.5	35.0	0.000E+00	3.694E-06
247.5	45.0	0.000E+00	2.530E-06
247.5	55.0	0.000E+00	1.867E-06
247.5	65.0	0.000E+00	1.447E-06
247.5	75.0	0.000E+00	1.163E-06

Table 11.1e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	0.000E+00	2.636E-04
270.0	2.5	0.000E+00	1.118E-04
270.0	3.5	0.000E+00	6.072E-05
270.0	4.5	0.000E+00	3.788E-05
270.0	7.5	0.000E+00	1.420E-05
270.0	15.0	0.000E+00	3.741E-06
270.0	25.0	0.000E+00	1.435E-06
270.0	35.0	0.000E+00	8.635E-07
270.0	45.0	0.000E+00	6.087E-07
270.0	55.0	0.000E+00	4.604E-07
270.0	65.0	0.000E+00	3.650E-07
270.0	75.0	0.000E+00	2.992E-07
292.5	1.5	0.000E+00	2.211E-04
292.5	2.5	0.000E+00	1.123E-04
292.5	3.5	0.000E+00	6.975E-05
292.5	4.5	0.000E+00	4.834E-05
292.5	7.5	0.000E+00	2.247E-05
292.5	15.0	0.000E+00	7.735E-06
292.5	25.0	0.000E+00	3.486E-06
292.5	35.0	0.000E+00	2.110E-06
292.5	45.0	0.000E+00	1.461E-06
292.5	55.0	0.000E+00	1.088E-06
292.5	65.0	0.000E+00	8.510E-07
292.5	75.0	0.000E+00	6.890E-07
315.0	1.5	0.000E+00	2.961E-04
315.0	2.5	0.000E+00	1.265E-04
315.0	3.5	0.000E+00	7.058E-05
315.0	4.5	0.000E+00	4.539E-05
315.0	7.5	0.000E+00	1.846E-05
315.0	15.0	0.000E+00	5.542E-06
315.0	25.0	0.000E+00	2.329E-06
315.0	35.0	0.000E+00	1.393E-06
315.0	45.0	0.000E+00	9.771E-07
315.0	55.0	0.000E+00	7.364E-07
315.0	65.0	0.000E+00	5.820E-07
315.0	75.0	0.000E+00	4.758E-07

Table 11.1e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area E

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	0.000E+00	2.343E-04
337.5	2.5	0.000E+00	9.220E-05
337.5	3.5	0.000E+00	4.932E-05
337.5	4.5	0.000E+00	3.089E-05
337.5	7.5	0.000E+00	1.203E-05
337.5	15.0	0.000E+00	3.463E-06
337.5	25.0	0.000E+00	1.421E-06
337.5	35.0	0.000E+00	8.550E-07
337.5	45.0	0.000E+00	6.035E-07
337.5	55.0	0.000E+00	4.572E-07
337.5	65.0	0.000E+00	3.631E-07
337.5	75.0	0.000E+00	2.981E-07

Table 11.2e The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area E

Site	Location	Particulate	Radon
1	Guard Residence	0.000E+00	1.614E-03
2	Admin Bldg	0.000E+00	2.050E-03
3	A1	0.000E+00	1.938E-03
4	A2	0.000E+00	1.865E-03
5	A3	0.000E+00	1.369E-02
6	A5	0.000E+00	6.275E-04
7	A6	0.000E+00	4.159E-03
8	A7	0.000E+00	4.321E-03
9	A11	0.000E+00	4.041E-03
10	A12	0.000E+00	1.679E-02
11	A13	0.000E+00	2.902E-03
12	SW	0.000E+00	2.428E-03
13	W1	0.000E+00	2.065E-03
14	W2	0.000E+00	1.251E-03
15	W3	0.000E+00	6.812E-04
16	NW	0.000E+00	4.854E-04
17	N1	0.000E+00	1.169E-03
18	N3	0.000E+00	1.955E-03
19	NE	0.000E+00	1.743E-03
20	E1	0.000E+00	1.671E-03
21	E2	0.000E+00	5.462E-04
22	E3	0.000E+00	1.920E-03
23	SE	0.000E+00	3.979E-04
24	S1	0.000E+00	3.519E-03
25	S2	0.000E+00	4.392E-04
26	S3	0.000E+00	2.350E-04
27	USPCI	0.000E+00	1.517E-04
28	APTUS	0.000E+00	5.935E-05

Table 11.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
0.0	1.5	0.000E+00	5.139E-04
0.0	2.5	0.000E+00	2.533E-04
0.0	3.5	0.000E+00	1.633E-04
0.0	4.5	0.000E+00	1.148E-04
0.0	7.5	0.000E+00	5.424E-05
0.0	15.0	0.000E+00	1.890E-05
0.0	25.0	0.000E+00	8.576E-06
0.0	35.0	0.000E+00	5.159E-06
0.0	45.0	0.000E+00	3.543E-06
0.0	55.0	0.000E+00	2.627E-06
0.0	65.0	0.000E+00	2.046E-06
0.0	75.0	0.000E+00	1.651E-06
22.5	1.5	0.000E+00	2.479E-03
22.5	2.5	0.000E+00	8.633E-04
22.5	3.5	0.000E+00	4.687E-04
22.5	4.5	0.000E+00	3.020E-04
22.5	7.5	0.000E+00	1.273E-04
22.5	15.0	0.000E+00	4.106E-05
22.5	25.0	0.000E+00	1.812E-05
22.5	35.0	0.000E+00	1.069E-05
22.5	45.0	0.000E+00	7.253E-06
22.5	55.0	0.000E+00	5.315E-06
22.5	65.0	0.000E+00	4.098E-06
22.5	75.0	0.000E+00	3.278E-06
45.0	1.5	0.000E+00	5.385E-03
45.0	2.5	0.000E+00	1.389E-03
45.0	3.5	0.000E+00	6.455E-04
45.0	4.5	0.000E+00	3.794E-04
45.0	7.5	0.000E+00	1.391E-04
45.0	15.0	0.000E+00	4.024E-05
45.0	25.0	0.000E+00	1.764E-05
45.0	35.0	0.000E+00	1.041E-05
45.0	45.0	0.000E+00	7.042E-06
45.0	55.0	0.000E+00	5.153E-06
45.0	65.0	0.000E+00	3.973E-06
45.0	75.0	0.000E+00	3.177E-06

Table 11.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
67.5	1.5	0.000E+00	3.109E-03
67.5	2.5	0.000E+00	1.006E-03
67.5	3.5	0.000E+00	5.206E-04
67.5	4.5	0.000E+00	3.259E-04
67.5	7.5	0.000E+00	1.314E-04
67.5	15.0	0.000E+00	4.076E-05
67.5	25.0	0.000E+00	1.767E-05
67.5	35.0	0.000E+00	1.046E-05
67.5	45.0	0.000E+00	7.118E-06
67.5	55.0	0.000E+00	5.233E-06
67.5	65.0	0.000E+00	4.049E-06
67.5	75.0	0.000E+00	3.249E-06
90.0	1.5	0.000E+00	3.912E-04
90.0	2.5	0.000E+00	3.060E-04
90.0	3.5	0.000E+00	2.104E-04
90.0	4.5	0.000E+00	1.528E-04
90.0	7.5	0.000E+00	7.536E-05
90.0	15.0	0.000E+00	2.715E-05
90.0	25.0	0.000E+00	1.249E-05
90.0	35.0	0.000E+00	7.491E-06
90.0	45.0	0.000E+00	5.107E-06
90.0	55.0	0.000E+00	3.755E-06
90.0	65.0	0.000E+00	2.902E-06
90.0	75.0	0.000E+00	2.325E-06
112.5	1.5	0.000E+00	0.000E+00
112.5	2.5	0.000E+00	0.000E+00
112.5	3.5	0.000E+00	0.000E+00
112.5	4.5	0.000E+00	0.000E+00
112.5	7.5	0.000E+00	0.000E+00
112.5	15.0	0.000E+00	0.000E+00
112.5	25.0	0.000E+00	0.000E+00
112.5	35.0	0.000E+00	0.000E+00
112.5	45.0	0.000E+00	0.000E+00
112.5	55.0	0.000E+00	0.000E+00
112.5	65.0	0.000E+00	0.000E+00
112.5	75.0	0.000E+00	0.000E+00

Table 11.1f The Normalized Airborne Concentrations ( $\mu\text{Ci}/\text{m}^3$ ) of a Particulate and Radon from Covered Wastes at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
135.0	1.5	0.000E+00	1.166E-04
135.0	2.5	0.000E+00	0.000E+00
135.0	3.5	0.000E+00	0.000E+00
135.0	4.5	0.000E+00	0.000E+00
135.0	7.5	0.000E+00	0.000E+00
135.0	15.0	0.000E+00	0.000E+00
135.0	25.0	0.000E+00	0.000E+00
135.0	35.0	0.000E+00	0.000E+00
135.0	45.0	0.000E+00	0.000E+00
135.0	55.0	0.000E+00	0.000E+00
135.0	65.0	0.000E+00	0.000E+00
135.0	75.0	0.000E+00	0.000E+00
157.5	1.5	0.000E+00	3.461E-04
157.5	2.5	0.000E+00	8.598E-05
157.5	3.5	0.000E+00	4.434E-05
157.5	4.5	0.000E+00	2.604E-05
157.5	7.5	0.000E+00	8.047E-06
157.5	15.0	0.000E+00	1.332E-06
157.5	25.0	0.000E+00	2.796E-07
157.5	35.0	0.000E+00	7.523E-08
157.5	45.0	0.000E+00	1.531E-08
157.5	55.0	0.000E+00	0.000E+00
157.5	65.0	0.000E+00	0.000E+00
157.5	75.0	0.000E+00	0.000E+00
180.0	1.5	0.000E+00	4.731E-04
180.0	2.5	0.000E+00	2.327E-04
180.0	3.5	0.000E+00	1.380E-04
180.0	4.5	0.000E+00	9.142E-05
180.0	7.5	0.000E+00	3.829E-05
180.0	15.0	0.000E+00	1.151E-05
180.0	25.0	0.000E+00	4.803E-06
180.0	35.0	0.000E+00	2.726E-06
180.0	45.0	0.000E+00	1.805E-06
180.0	55.0	0.000E+00	1.331E-06
180.0	65.0	0.000E+00	1.030E-06
180.0	75.0	0.000E+00	8.258E-07

Table 11.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
202.5	1.5	0.000E+00	4.519E-04
202.5	2.5	0.000E+00	2.641E-04
202.5	3.5	0.000E+00	1.772E-04
202.5	4.5	0.000E+00	1.289E-04
202.5	7.5	0.000E+00	6.491E-05
202.5	15.0	0.000E+00	2.408E-05
202.5	25.0	0.000E+00	1.128E-05
202.5	35.0	0.000E+00	6.825E-06
202.5	45.0	0.000E+00	4.687E-06
202.5	55.0	0.000E+00	3.461E-06
202.5	65.0	0.000E+00	2.684E-06
202.5	75.0	0.000E+00	2.155E-06
225.0	1.5	0.000E+00	3.665E-04
225.0	2.5	0.000E+00	1.863E-04
225.0	3.5	0.000E+00	1.135E-04
225.0	4.5	0.000E+00	7.699E-05
225.0	7.5	0.000E+00	3.389E-05
225.0	15.0	0.000E+00	1.114E-05
225.0	25.0	0.000E+00	5.167E-06
225.0	35.0	0.000E+00	3.149E-06
225.0	45.0	0.000E+00	2.174E-06
225.0	55.0	0.000E+00	1.615E-06
225.0	65.0	0.000E+00	1.259E-06
225.0	75.0	0.000E+00	1.016E-06
247.5	1.5	0.000E+00	2.965E-04
247.5	2.5	0.000E+00	1.644E-04
247.5	3.5	0.000E+00	1.066E-04
247.5	4.5	0.000E+00	7.576E-05
247.5	7.5	0.000E+00	3.653E-05
247.5	15.0	0.000E+00	1.298E-05
247.5	25.0	0.000E+00	5.942E-06
247.5	35.0	0.000E+00	3.608E-06
247.5	45.0	0.000E+00	2.484E-06
247.5	55.0	0.000E+00	1.839E-06
247.5	65.0	0.000E+00	1.429E-06
247.5	75.0	0.000E+00	1.150E-06



Table 11.1f The Normalized Airborne Concentrations ( $\mu\text{Ci}/\text{m}^3$ ) of a Particulate and Radon from Covered Wastes at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
270.0	1.5	0.000E+00	2.256E-04
270.0	2.5	0.000E+00	1.072E-04
270.0	3.5	0.000E+00	6.155E-05
270.0	4.5	0.000E+00	3.961E-05
270.0	7.5	0.000E+00	1.541E-05
270.0	15.0	0.000E+00	4.094E-06
270.0	25.0	0.000E+00	1.552E-06
270.0	35.0	0.000E+00	8.706E-07
270.0	45.0	0.000E+00	5.946E-07
270.0	55.0	0.000E+00	4.517E-07
270.0	65.0	0.000E+00	3.592E-07
270.0	75.0	0.000E+00	2.951E-07
292.5	1.5	0.000E+00	1.947E-04
292.5	2.5	0.000E+00	8.464E-05
292.5	3.5	0.000E+00	5.682E-05
292.5	4.5	0.000E+00	4.116E-05
292.5	7.5	0.000E+00	2.038E-05
292.5	15.0	0.000E+00	7.365E-06
292.5	25.0	0.000E+00	3.384E-06
292.5	35.0	0.000E+00	2.062E-06
292.5	45.0	0.000E+00	1.427E-06
292.5	55.0	0.000E+00	1.065E-06
292.5	65.0	0.000E+00	8.357E-07
292.5	75.0	0.000E+00	6.782E-07
315.0	1.5	0.000E+00	2.679E-04
315.0	2.5	0.000E+00	1.255E-04
315.0	3.5	0.000E+00	7.258E-05
315.0	4.5	0.000E+00	4.739E-05
315.0	7.5	0.000E+00	1.948E-05
315.0	15.0	0.000E+00	5.793E-06
315.0	25.0	0.000E+00	2.407E-06
315.0	35.0	0.000E+00	1.417E-06
315.0	45.0	0.000E+00	9.705E-07
315.0	55.0	0.000E+00	7.218E-07
315.0	65.0	0.000E+00	5.722E-07
315.0	75.0	0.000E+00	4.689E-07

Table 11.1f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area F

Angle (degrees)	Distance (km)	Particulate	Radon
337.5	1.5	0.000E+00	3.277E-04
337.5	2.5	0.000E+00	1.036E-04
337.5	3.5	0.000E+00	5.583E-05
337.5	4.5	0.000E+00	3.486E-05
337.5	7.5	0.000E+00	1.334E-05
337.5	15.0	0.000E+00	3.715E-06
337.5	25.0	0.000E+00	1.492E-06
337.5	35.0	0.000E+00	8.746E-07
337.5	45.0	0.000E+00	6.008E-07
337.5	55.0	0.000E+00	4.501E-07
337.5	65.0	0.000E+00	3.583E-07
337.5	75.0	0.000E+00	2.947E-07

Table 11.2f The Normalized Airborne Concentrations (pCi/m<sup>3</sup>) of a Particulate and Radon from Covered Wastes at Sub-area F

Site	Location	Particulate	Radon
1	Guard Residence	0.000E+00	1.614E-03
2	Admin Bldg	0.000E+00	2.050E-03
3	A1	0.000E+00	1.938E-03
4	A2	0.000E+00	1.865E-03
5	A3	0.000E+00	1.369E-02
6	A5	0.000E+00	6.275E-04
7	A6	0.000E+00	4.159E-03
8	A7	0.000E+00	4.321E-03
9	A11	0.000E+00	4.041E-03
10	A12	0.000E+00	1.679E-02
11	A13	0.000E+00	2.902E-03
12	SW	0.000E+00	2.428E-03
13	W1	0.000E+00	2.065E-03
14	W2	0.000E+00	1.251E-03
15	W3	0.000E+00	6.812E-04
16	NW	0.000E+00	4.854E-04
17	N1	0.000E+00	1.169E-03
18	N3	0.000E+00	1.955E-03
19	NE	0.000E+00	1.743E-03
20	E1	0.000E+00	1.671E-03
21	E2	0.000E+00	5.462E-04
22	E	0.000E+00	1.920E-03
23	SE	0.000E+00	3.979E-04
24	S1	0.000E+00	3.519E-03
25	S2	0.000E+00	4.392E-04
26	S3	0.000E+00	2.350E-04
27	USPCI	0.000E+00	1.517E-04
28	APTUS	0.000E+00	5.935E-05

## SUMMARY

The characteristics of potential wastes for disposal at the Envirocare's facility, Clive, Utah, were previously analyzed and the results of the analyses were incorporated into the application to the U.S. Nuclear Regulatory Commission for license to dispose 11.e(2) wastes. The analyses were based on the average values of the characteristics; whereas the characteristics of the wastes expected at the site may annually deviate from the average values incorporated in the application, the values will correspond to the averages over the life cycle of the facility.

In this report we calculated normalized airborne concentrations of a particulate, radon and thoron at 220 individual locations within an 80 km distance from the site. The analyses were based on a concentration of 1 pCi/g of each radionuclide in the wastes and 23 potential sources for release of radioactivity into the atmosphere. These normalized concentrations will permit the Envirocare staff to estimate the potential airborne concentrations from 11.e(2) waste characteristics.

Thus, the staff of the Envirocare of Utah, Inc. would be able to regulate the airborne concentrations by selecting those operations (potential sources) which may produce a lower environmental impact. This ability to manage the waste would also improve the flexibility of waste management operations.

APPENDIX A-3

EFFLUENT CONCENTRATION ANALYSIS

## EFFLUENT CONCENTRATION ANALYSIS

### I. INTRODUCTION

A calculational spreadsheet has been developed for use with the sensitivity analysis of Appendix A-2. This spreadsheet uses the airborne concentration factors for particulate, radon and thoron to calculate the predicted annual average concentration at each of the 220 receptor sites resulting from each of the operations at the Clive facility and the total annual average concentration at each receptor resulting from all operations. The annual average concentration of each radionuclide at each receptor is compared to the effluent concentration limit of Table 2, Appendix B of 10 CFR 20.1001 to 20.2401. These fractions are finally summed to arrive at a sum of fractions at each receptor. Operating conditions such as type and location of unloading, exposed surface area in the disposal cell and storage conditions can be modified to control predicted concentrations in order to achieve compliance with the established limits. Together, the model and spreadsheet provide a tool to assist planners in maintaining compliance with effluent concentration limits. Actual compliance will be demonstrated through monitoring.

The spreadsheet consists of 11 functional sections identified as Sheet 1 through Sheet 11. The first two sheets consist of operational data input - Sheet 1 - and a receptor impact summary, or data output - Sheet 2. The other 9 sheets are model input sheets - Sheets 3, 4 and 5 - and intermediate calculational sheets - Sheets 6 through 11. In normal application, it is necessary only to be concerned with the input and output of Sheets 1 and 2. However, it will occasionally be useful to check the results of individual impacts in the calculational sheets. This Appendix describes the functions performed by the spreadsheet and provides instructions for its use.

An index to the spreadsheet and description of the sources is provided at the top of the spreadsheet (Figure 1). Sheet 1 is illustrated here as Figures 2, 3 and 4.

As described in Appendix A-2, waste unloading can be performed at the railcar rollover, at the 11e.(2) waste storage area (which is in the sub-area identified as "F" in Figure 1), at the LARW Bulk Storage Pad or directly into the disposal cells. The operation of unloading waste directly into a cell is identified as a separate source for each of the six sub-areas with source numbers 16 through 19 corresponding to direct unloading in sub-areas A through F.

The operation of active waste disposal in each sub-area A through F is identified as a source numbered 4 through 9. Flexibility in describing disposal operations is provided by identifying three open disposal areas with different exposed surface areas and average radionuclide concentrations, plus an area

with clean cover to eliminate particulate and thoron emissions.

## II. SPREADSHEET PROGRAM

The model provides airborne concentration factors (pCi/m<sup>3</sup>/pCi/g) for particulate, <sup>220</sup>Rn and <sup>222</sup>Rn at 220 receptors from each of 21 sources. These data are loaded into Sheets 3 through 5, respectively, from the model output. Columns B through V of the sheets correspond to sources 1 through 21. Radionuclide concentrations, waste quantities and surface areas, as appropriate, are manually entered under the various waste handling operations of Sheet 1. These will be discussed under Application.

### A. PARTICULATE RADIOACTIVITY CONCENTRATIONS

Sheets 6 through 9 calculate the airborne concentrations (pCi/m<sup>3</sup>) at each receptor from each source for <sup>226</sup>Ra, uranium, <sup>230</sup>Th and <sup>232</sup>Th using the particulate concentration factors and concentration of each radionuclide in waste. Calculations are grouped by operations. For waste unloading operations, columns B, C and D calculate the concentrations resulting from unloading operations at sources 1, 2 and 3. Particulate releases from unloading during direct disposal in the cells is included in the disposal source term; therefore, the spreadsheet does not calculate airborne radioactivity concentrations from this operation at sources 16 - 21. Waste storage operations at sources 2 and 3 are calculated in columns K and L. Concentrations resulting from active waste disposal operations at sources 4 - 9 are calculated in columns M - R.

#### 1. Unloading Operations

Particulate radioactivity concentrations from unloading operations at the Rollover (Source 1) are calculated as:

$$C_A = RAC \times C_w \times W/500,000$$

Where:  $C_A$  = Airborne radionuclide concentration at receptor,

RAC = Relative Airborne Concentration  
(pCi/m<sup>3</sup>/pCi/g) from model

$C_w$  = Radionuclide concentration in waste  
(pCi/g)

W = Weight of waste to be managed during this period (tons)

500,000 = Modelled weight of waste managed (tons)



Relative airborne concentrations from operations at the Storage Pad and Bulk Storage Pad were modelled for release during storage. The same source terms used for the Rollover were used for unloading at those two locations, also. The RAC's modelled for storage were multiplied by the ratio of the unloading source term to the storage source term.

Particulate radioactivity concentrations from unloading operations at the Storage Pad (Source 2) are calculated as:

$$C_A = 1,300 \times \text{RAC} \times C_w \times W/500,000$$

Where:  $1,300 = \frac{\text{Particulate Source Term from Unloading}}{\text{Particulate Source Term from Storage}}$

Particulate radioactivity concentrations from unloading operations at the Bulk Storage Pad (Source 3) are calculated as:

$$C_A = 10,000 \times \text{RAC} \times C_w \times W/500,000$$

Where:  $10,000 = \frac{\text{Particulate Source Term from Unloading}}{\text{Particulate Source Term from Storage}}$

## 2. Storage

Particulate radioactivity concentrations from storage operations at the Storage Pad (Source 2) are calculated as:

$$C_A = \text{RAC} \times C_w \times \text{Storage Surface Area (m}^2\text{)}/1,700$$

Where:  $1,700 = \text{Modelled surface area (m}^2\text{)}$

Particulate radioactivity concentrations from storage operations at the Bulk Storage Pad (Source 3) are calculated as:

$$C_A = \text{RAC} \times C_w \times \text{Storage Surface Area (m}^2\text{)}/200$$

Where:  $200 = \text{Modelled surface area (m}^2\text{)}$

## 3. Disposal

Particulate radioactivity concentrations from disposal operations at the disposal cells (Sources 4 - 9) are calculated as:

$$C_A = \text{RAC} \times C_w \times \text{Effective Area-weighted Source Term}$$

B. RADON AND THORON CONCENTRATION CALCULATIONS

1. Thoron (Radon-220)

Sheet 10 calculates the airborne concentrations (pCi/m<sup>3</sup>) at each receptor from each source for <sup>220</sup>Rn (Thoron) using the relative airborne concentration factors and concentration of <sup>232</sup>Th. Calculations are grouped by activity. For waste unloading operations, columns B through J calculate the concentrations resulting from unloading operations at sources 1, 2, 3 and 16 - 21. Waste storage operations at sources 2 and 3 are calculated in columns K and L. Concentrations resulting from active waste disposal operations at sources 4 - 9 are calculated in columns M - R.

a. Unloading Operations

Thoron concentrations from unloading operations at the Rollover (Source 1) are calculated as:

$$C_A = RAC \times C_w \times W/500,000$$

Thoron concentrations from unloading operations at the Storage Pad (Source 2) are calculated as:

$$C_A = 0.0576 \times RAC \times C_w \times W/500,000$$

Where:  $0.0576 = \frac{^{220}\text{Rn Release From Rollover Operation}}{^{220}\text{Rn Release from Storage at Source}}$

Thoron concentrations from unloading operations at the Bulk Storage Pad (Source 3) are calculated as:

$$C_A = 0.22 \times RAC \times C_w \times W/500,000$$

Where:  $0.22 = \frac{^{220}\text{Rn Release From Rollover Operation}}{^{220}\text{Rn Release from Storage at Source}}$

b. Storage

Thoron concentrations from storage operations at the Storage Pad (Source 2) are calculated as:

$$C_A = RAC \times C_w \times [(0.0345 \times W/500,000) + (0.966 \times \text{Storage Surface Area}/1,700)]$$

Where:  $0.0345 = \text{Fraction of modelled release due to disturbance}$

0.966 = Fraction of modelled release due to emission from surface of pile

Thoron concentrations from storage operations at the Bulk Storage Pad (Source 3) are calculated as:

$$C_A = RAC \times C_w \times [(0.231 \times W/500,000) + (0.769 \times \text{Storage Surface Area}/200)]$$

Where: 0.231 = Fraction of modelled release due to disturbance

0.769 = Fraction of modelled release due to emission from surface of pile

c. Disposal

Thoron concentrations from disposal at the cell disposal areas (Sources 4 - 9) are calculated as:

$$C_A = RAC \times C_w \times (\text{Effective Area-weighted Particulate and Thoron Source Term})$$

2. Radon (Radon-222)

Sheet 11 calculates the airborne concentrations (pCi/m<sup>3</sup>) at each receptor from each source for <sup>222</sup>Rn (Radon) using the relative airborne concentration factors and concentration of each radionuclide in waste. Calculations are grouped by activity. For waste unloading operations, columns B through J calculate the concentrations resulting from unloading operations at sources 1, 2, 3 and 16 - 21. Waste storage operations at sources 2 and 3 are calculated in columns K and L. Concentrations resulting from active waste disposal operations at sources 4 - 9 are calculated in columns M - R. Concentrations resulting from radon emanation through the completed cell cover at sources 10 - 15 are calculated in columns S through X.

a. Unloading Operations

Radon concentrations from unloading operations at the Rollover (Source 1) are calculated as:

$$C_A = RAC \times C_w \times W/500,000$$

Radon concentrations from unloading operations at the Storage Pad (Source 2) are calculated as:

$$C_A = 0.627 \times RAC \times C_w \times W/500,000$$

Where:  $0.627 = \frac{^{222}\text{Rn Release From Rollover Operation}}{^{222}\text{Rn Release from Storage at Source}}$

Radon concentrations from unloading operations at the Bulk Storage Pad (Source 3) are calculated as:

$$C_A = 0.783 \times RAC \times C_w \times W/500,000$$

Where:  $0.783 = \frac{^{222}\text{Rn Release From Rollover Operation}}{^{222}\text{Rn Release from Storage at Source}}$

b. Storage

Radon concentrations from storage operations at the Storage Pad (Source 2) are calculated as:

$$C_A = RAC \times C_w \times [(0.769 \times W/500,000) + (0.231 \times \text{Storage Surface Area}/1,700)]$$

Where:  $0.769 =$  Fraction of modelled release due to disturbance

$0.231 =$  Fraction of modelled release due to emission from surface of pile

Radon concentrations from storage operations at the Bulk Storage Pad (Source 3) are calculated as:

$$C_A = RAC \times C_w \times [(0.966 \times W/500,000) + (0.034 \times \text{Storage Surface Area}/200)]$$

Where:  $0.966 =$  Fraction of modelled release due to disturbance

$0.034 =$  Fraction of modelled release due to emission from surface of pile

c. Disposal

Radon concentrations from disposal at the cell disposal areas (Sources 4 - 9) are calculated as:

$$C_A = RAC \times C_w \times (\text{Effective Area-weighted Radon Source Term})$$

d. Closed Cell

Radon concentrations from completed cell disposal areas (Sources 10 - 15) are calculated as:

$$C_A = RAC \times C_w \times \frac{(\text{Closed Cell Cover Area (m}^2\text{)})}{38,472}$$

Where:  $C_w = {}^{226}\text{Ra}$  concentration in top 10 feet of cell

C. Data Summary Calculations

Results of the calculations are summarized in Sheet 2 (Figure 5). The calculated annual average airborne concentrations for each radionuclide are summed across the columns to arrive at a total concentration for that radionuclide at a specific receptor location. These totals are shown in columns B through G.

The total annual average concentration of each radionuclide at each receptor site is divided by its effluent concentration limit from Table 2 of Appendix B to 10 CFR 20.1001 - 20.2401 to calculate its contribution to the sum of fractions for all airborne nuclides at that location. The effluent concentration limit used is an effective concentration limit calculated by assuming that any decay products associated with the nuclide are present in secular equilibrium with the nuclide. For example, the effluent concentration limit for  ${}^{226}\text{Ra}$  is 0.9 pCi/l<sup>3</sup> (9E-13  $\mu\text{Ci/ml}$ ). The effective effluent concentration limit used in the sum-of-fractions calculations is 0.256 pCi/m<sup>3</sup>. The fractional contribution from each nuclide is summed to determine the sum of fractions for the combined radionuclides at each receptor. A flag column identifies those receptors which are calculated to have a sum-of-fractions value of greater than 1.

III. APPLICATION

A. SUMMARY

Use of the model and spreadsheet consists of loading the model output into the corresponding sections of the spreadsheet, manually entering the operational parameters into Sheet 1 and reviewing the results in Sheet 2. The goal is to arrive at an operational plan which will provide planners with a reasonable assurance that effluent concentration limits will not be exceeded at the site boundaries. In addition, the sum-of-fractions value multiplied by 50 will give an estimate of the inhalation dose, in mrem per year, at any receptor site.

The spreadsheet can be used to perform calculations for

any desired period of time. The sum-of-fractions for that period of time will represent the fractional contribution of waste handling operations during that period of time to the annual total sum-of-fractions. For example, projected waste disposal and closed cell operations may be evaluated for the full year and waste receiving operations may be evaluated for short periods of time. The total sum-of-fractions derived from totalling the individual sums-of-fractions will give an estimate of the overall annual impact at individual receptors. In order to reduce computation time a shorter spreadsheet using only the first 28 receptors will normally be used.

#### B. DATA INPUT

Sheet 1 is organized into three sections - Waste Unloading Operations, Waste Storage and Waste Disposal. The source term from waste unloading is dependent on the weight (tons) of waste unloaded. "Waste Unloading" provides for input from nine potential sources. This section allows the planner to investigate the effects of conducting waste unloading operations at various locations within the site. Each source has been modelled on the basis of receiving the full permitted waste quantity of 500,000 tons per year. Data input includes the quantity of waste to be unloaded at each source during the period of interest and the average concentration in that waste of the four radionuclides to be considered. As shown above, the calculational sheets determine the ratio of the weight of waste unloaded to that modelled.

"Waste Storage" permits the input of variables affecting emissions from storage in the two identified storage sites. Radon and thoron emissions are a function of releases during waste disturbance after a period of storage and emissions from the surface of the stored waste. Therefore, data input for these sources requires both quantity of waste (tons) to be stored and the surface area of the stored waste ( $m^2$ ). Particulate emissions from the surface during storage are a function of the surface area of the stored waste. The average concentrations of the four radionuclides of interest are also part of the data input.

"Waste Disposal" provides input for calculating emissions during active disposal operations as well as from closed cell areas. In order to provide flexibility in describing planned or actual disposal operations, this section includes three "open disposal areas" and a "clean cover area." Areas can be identified where radioactivity concentrations are significantly different from other areas. The surface area ( $m^2$ ) and concentration of each radionuclide in that area are input into the appropriate open disposal cell area section. Portions of the active disposal cell may be covered with four to six inches of clean material to eliminate thoron and

particulate emissions. Radon will still be emitted from those areas. Therefore, <sup>226</sup>Ra concentrations in the top 10 feet of waste beneath any clean covered areas and the area covered are input under "Clean Cover Areas." Only radon is emitted from the closed portions of disposal cells. The average <sup>226</sup>Ra concentration in the top 10 feet of closed cells and the total closed area in each of the six source areas is input under "Final Cell Cover Area."

In order to reduce calculational time for disposal operations, effective area-weighted sources have been provided at the end of Sheet 1. The Effective Area-Weighted Particulate and Thoron Source (pCi/g) for each radionuclide is the sum of the products of radionuclide concentration in waste times the surface area of that plot divided by 38,742 m<sup>2</sup> for the three open disposal areas. The Effective Area-Weighted Radon source (pCi/g) is the weighted concentration for the three open disposal areas plus the clean cover area.

#### C. DATA OUTPUT

As described under Data Summary Calculations, the goal is to attain a sum-of-fractions at site boundaries of 1 or less. Modelling is based on average annual winds at the Clive site. Under actual operating conditions for a given period, it is unlikely that "average" conditions will occur. Planners must take into account meteorological conditions, especially during unloading operations, so that unusual winds will not cause an inadvertent release of unacceptable airborne concentrations of radioactivity. Likewise, advantage can be taken of favorable winds to reduce effluent concentrations below those predicted. The output data, then, serve to guide operations planners; however, actual compliance with effluent concentration limits will be demonstrated through monitoring.

Results of environmental monitoring can be used to "reset" predicted sum-of-fraction values for the period monitored to measured values when estimating impacts for the remainder of the year. Since it is believed that conservative parameters have been used throughout the modelling process, it is likely that this resetting will be downward. However, if environmental monitoring shows that concentrations have been higher than predicted, the to-date sum of fractions may be reset upward to restrict permissible predicted concentrations for the remainder of the year.

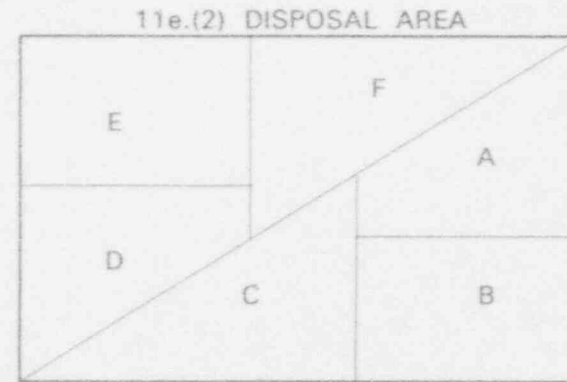
Envirocare intends to make measurements of radioactive particle size distributions in effluents. It is believed that this will make it possible to increase the effluent concentration limits to more realistic levels. If this happens, the spreadsheet calculations for sums of fractions will be revised to incorporate the revised limits.

SPREADSH.XLS INDEX

SHEET	ROWS	DESCRIPTION
1	33 - 134	Operational Factors
2	135 - 360	Summary of Impacts
3	366 - 585	Particulate Conc. (pCi/Cu M/pCi/g) from model
4	591 - 810	Rn-220 Conc. (pCi/Cu m/pCi/g) from model
5	816 - 1035	Rn-222 Conc. (pCi/Cu Mml/pCi/g) from model
6	1041 - 1260	Particulate Ra-226 Conc. (pCi/Cubic Meter)
7	1266 - 1485	Particulate U-Nat Conc. (pCi/Cubic Meter)
8	1491 - 1710	Particulate Th-230 Conc. (pCi/Cubic Meter)
9	1716 - 1935	Particulate Th-232 Conc. (pCi/Cubic Meter)
10	1941 - 2160	Rn-220 Conc. (pCi/Cubic Meter)
11	2166 - 2385	Rn-222 Conc. (pCi/Cubic Meter)

SOURCE DESCRIPTIONS

SOURCE	DESCRIPTION*	SOURCE	DESCRIPTION*
1	ROLLOVER	12	COVER - C
2	STORAGE**	13	COVER - D
3	BULK PAD	14	COVER - E
4	DISP - A	15	COVER - F
5	DISP - B	16	CONT. - A
6	DISP - C	17	CONT. - B
7	DISP - D	18	CONT. - C
8	DISP - E	19	CONT. - D
9	DISP - F	20	CONT. - E
10	COVER - A	21	CONT. - F
11	COVER - B		



\* AREAS A - F ARE SHOWN IN FIGURE AT RIGHT

\*\* STORAGE IS IN AREA F

CONT = SHIPMENT OR CONTAINER PLACED DIRECTLY IN CELL

DISP = ACTIVE DISPOSAL AREA

COVER = FINAL COVER IN PLACE

FIGURE 1



COLUMN	A	B	C	D	E	F	G	H	I	J
ROW	SHEET 1									
34	WASTE UNLOADING OPERATIONS									
35										
36	SOURCE NUMBER									
37		1	2	3	16	17	18	19	20	21
38	LOCATION	ROLLOVER	STORAGE	BULK PAD	CONT. - 1*	CONT. - 2*	CONT. - 3*	CONT. - 4*	CONT. - 5*	CONT. - 6*
39	MODEL WT	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
40	ACT. WT.**									
41	RA-226***									
42	U-NAT***									
43	TH-230***									
44	TH-232***									
45										
46	* CONTAINER OR SHIPMENT UNLOADED DIRECTLY IN CELL									
47	** ACTUAL WEIGHT OF WASTE UNLOADED DURING PERIOD MODELLED (TONS)									
48	*** CONCENTRATION IN WASTE (pCi/g)									
49										
50	WASTE STORAGE									
51										
52	SOURCE NUMBER									
53		2	3							
54	LOCATION	STORAGE	BULK PAD							
55	MODEL									
56	AREA	1700	200							
57	ACTUAL									
58	AREA*									
59	MODEL WT	500,000	500,000							
60	ACT. WT.**									
61	RA-226***									
62	U-NAT***									
63	TH-230***									
64	TH-232***									
	* ACTUAL AREA OF STORED WASTE (SQUARE METERS)									
	** ACTUAL WEIGHT OF WASTE IN STORAGE DURING PERIOD MODELLED (TONS)									
	*** AVERAGE CONCENTRATION IN STORED WASTE (pCi/g)									

SHEET 1 - DATA INPUT  
FIGURE 2

COLUMN	A	B	C	D	E	F	G
ROW	WASTE DISPOSAL						
	SOURCE NUMBER						
		4	5	6	7	8	9
74	LOCATION	DISP - 1	DISP - 2	DISP - 3	DISP - 4	DISP - 5	DISP - 6
75	MODEL						
76	AREA	38,472	38,472	38,472	38,472	38,472	38,472
77							
78	OPEN DISPOSAL AREA #1						
79	SOURCE	4	5	6	7	8	9
80	AREA*						
81	RA-226						
82	U-NAT						
83	TH-230						
84	TH-232***						
85							
86	OPEN DISPOSAL AREA #2						
87	SOURCE	4	5	6	7	8	9
88	AREA*						
89	RA-226						
90	U-NAT						
91	TH-230						
92	TH-232***						
93							
94	OPEN DISPOSAL AREA #3						
95	SOURCE	4	5	6	7	8	9
96	AREA*						
97	RA-226						
98	U-NAT						
99	TH-230						
100	TH-232***						
101							
102	CLEAN COVER AREA						
103	SOURCE	4	5	6	7	8	9
104	AREA*						
105	RA-226**						
106							
107	FINAL CELL COVER AREA						
108							
109		10	11	12	13	14	15
110	LOCATION	COVER - 1	COVER - 2	COVER - 3	COVER - 4	COVER - 5	COVER - 6
111	MODEL						
112	AREA	38,472	38,472	38,472	38,472	38,472	38,472
113	AREA*						
114	RA-226**						
	* ACTUAL AREA INVOLVED IN EACH ACTIVITY (SQURE METERS)						
	** AVERAGE CONCENTRATION IN TOP 10 FEET OF WASTE (pCi/g)						
	*** AVERAGE CONCENTRATION IN TOP 6 INCHES OF WASTE (pCi/g)						

COL (IMN)	A	B	C	D	E	F	G
ROV.							
	EFFECTIVE AREA-WEIGHTED PARTICULATE AND THORON SOURCE (pCi/g)						
124	SOURCE	4	5	6	7	8	9
125	RA-226	0	0	0	0	0	0
126	U-NAT	0	0	0	0	0	0
127	TH-230	0	0	0	0	0	0
128	TH-232	0	0	0	0	0	0
129							
130							
131	EFFECTIVE AREA-WEIGHTED RADON SOURCE (pCi/g)						
132							
133	SOURCE	4	5	6	7	8	9
134	RA-226**	0	0	0	0	0	0
135	** AVERAGE CONCENTRATION IN TOP 10 FEET OF WASTE (pCi/g)						

DATA SUMMARY

COLUMN ROW	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
SHEET 2																			
TOTAL CONCENTRATION																			
ALL SOURCES																			
BY RADIONUCLIDE																			
SIGMA F																			
RECEPT	RA-226	U-NAT	TH-230	TH-232	RN-220	RN-222	RA-226*	U-NAT	TH-230	TH-232**	RN-220	RN-222	SIGMA F	SIGMA F	RECEPT	FLAG			
SITE	(pCi/Cubic Meter)	(pCi/Cubic Meter)	(pCi/Cubic Meter)	(pCi/Cubic Meter)	(pCi/Cubic Meter)	(pCi/Cubic Meter)	(pCi/Cubic Meter)	(pCi/Cubic Meter)	(pCi/Cubic Meter)	(pCi/Cubic Meter)	(pCi/Cubic Meter)	(pCi/Cubic Meter)	TOTAL	TOTAL	SITE				
140	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1	0	Guard Res		
141	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2	0	Admin		
142	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3	0	A-1 (N-2)		
143	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4	0	A-2		
144	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5	0	A-3		
145	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6	0	A-5		
146	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7	0	A-6		
147	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8	0	A-7		
148	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9	0	A-11		
149	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	10	0	A-12		
150	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	11	0	A-13		
151	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	12	0	SW		
152	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	13	0	W-1		
153	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	14	0	W-2		
154	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	15	0	W-3		
155	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	16	0	NW		
156	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	17	0	N-1		
157	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	18	0	N-3		
158	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	19	0	NE		
159	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	20	0	E-1		
160	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	21	0	E-2		
161	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	22	0	E-3		
162	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	23	0	SE		
163	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	24	0	S-1		
164	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	25	0	S-2		
165	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	26	0	S-3		
166	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	27	0	USPCI		
167	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	28	0	APTUS		
168	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	29	0			

FIGURE 6