

EXPOSURE TABLES

DECEMBER 1981



Controls for Environmental Pollution, Inc.
Santa Fe, New Mexico 87502

8210260041 820902
PDR ADOCK 07000820
C PDR

TABLE 1

Sample Identification: B-122-S-0

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.12 ± 0.07	-	-	-	-	1.05	-	-	-	-
Uranium-234	2.3 ± 0.6	0.59	0.16	0.06	0.81	45.80	-	-	-	-
Uranium-235	1.4 ± 0.2	0.04	0.01	-	0.05	2.72	0.01	0.70	8.09	8.80
Uranium-238	0.92 ± 0.14	0.02	0.01	-	0.03	1.78	-	0.04	0.43	0.47
Thorium-228	0.27 ± 0.11	(a)	0.11	0.02	0.13	0.10	-	0.03	0.26	0.29
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	0.04	0.26	0.30
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	(a)	-	-	-
Total					<u>1.02</u>	<u>51.45</u>				<u>9.86</u>

Sample Identification: B-123-S-0

Radium-226	1.4 ± 0.1	0.52	0.04	0.03	0.59	12.46	-	0.05	1.03	1.08
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.10 ± 0.08	-	-	-	-	0.88	-	-	-	-
Uranium-234	6.22 ± 0.61	0.17	0.05	0.02	0.24	13.37	-	0.21	2.56	2.57
Uranium-235	0.58 ± 0.22	0.02	-	-	0.02	1.13	-	0.02	0.20	0.20
Uranium-238	0.40 ± 0.17	0.01	-	-	0.01	0.78	-	0.01	0.12	0.12
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	0.17 ± 0.10	(a)	0.31	0.12	0.43	0.35	(a)	-	0.06	0.06
Cesium-137	21 ± 1	-	-	-	-	4.83	(a)	-	0.03	0.03
Total					<u>1.29</u>	<u>33.80</u>				<u>4.06</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 2

Sample Identification: B-124-S-0

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	1.6 ± 0.2	0.60	0.05	0.04	0.69	14.24	-	0.06	1.17	1.23
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.22 ± 0.13	-	-	-	-	1.93	-	-	-	-
Uranium-234	8.92 ± 0.81	0.25	0.07	0.03	0.35	19.18	-	0.29	3.39	3.68
Uranium-235	1.75 ± 0.36	0.05	0.01	-	0.06	3.40	-	0.05	0.54	0.59
Uranium-238	0.80 ± 0.24	0.02	0.01	-	0.03	1.55	-	0.02	0.23	0.25
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	0.13 ± 0.07	(a)	0.24	0.09	0.33	0.27	(a)	-	0.05	0.05
Cesium-137	4.9 ± 0.2	-	-	-	-	1.13	-	-	0.01	0.01
Total					<u>1.46</u>	<u>41.7</u>				<u>5.81</u>

Sample Identification: B-125-S-0

Radium-226	1.7 ± 0.1	0.64	0.05	0.04	0.73	15.13	-	0.06	1.25	1.31
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	3.01 ± 0.44	0.08	0.02	0.01	0.11	6.47	-	0.10	1.14	1.24
Uranium-235	0.18 ± 0.13	-	-	-	-	0.35	-	0.01	0.06	0.07
Uranium-238	1.75 ± 0.12	0.04	0.01	-	0.05	3.40	-	0.05	0.50	0.55
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	11 ± 1	-	-	-	-	2.53	-	-	0.02	0.02
Total					<u>0.89</u>	<u>27.88</u>				<u>3.19</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 3

Sample Identification: B-126-S-0

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	2.5 ± 0.3	0.93	0.07	0.06	1.06	22.25	-	0.09	1.83	1.92
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.09 ± 0.06	-	-	-	-	0.79	-	-	-	-
Uranium-234	2.85 ± 0.37	0.08	0.02	0.01	0.11	6.13	-	0.09	1.08	1.17
Uranium-235	0.27 ± 0.13	0.01	-	-	0.01	0.52	-	0.01	0.08	0.09
Uranium-238	0.25 ± 0.11	0.01	-	-	0.01	0.49	-	0.01	0.07	0.08
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	0.68 ± 0.11	-	-	-	-	0.16	-	-	-	-
Total					<u>1.19</u>	<u>30.34</u>				<u>3.26</u>

Sample Identification: B-127-S-0

Radium-226	1.4 ± 0.1	0.52	0.04	0.03	0.59	12.46	-	0.05	1.03	1.08
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	1.06 ± 0.21	0.03	0.01	-	0.04	2.28	-	0.03	0.40	0.43
Uranium-235	0.08 ± 0.05	-	-	-	-	0.16	-	-	0.02	0.02
Uranium-238	0.13 ± 0.07	-	-	-	-	0.16	-	-	0.04	0.04
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	2.7 ± 0.3	-	-	-	-	0.62	-	-	-	-
Total					<u>0.63</u>	<u>15.68</u>				<u>1.57</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 4

Sample Identification: B-128-S-0

Type of Analysis	Activity ($\mu\text{Ci/g dry}$)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.14 ± 0.06	-	-	-	-	1.23	-	-	-	-
Uranium-234	4.3 ± 0.7	0.12	0.03	0.01	0.16	9.25	0.14	1.63	1.77	
Uranium-235	0.09 ± 0.04	-	-	-	-	0.17	-	0.03	0.03	
Uranium-238	1.3 ± 0.4	0.03	0.01	-	0.04	2.52	0.04	0.37	0.41	
Thorium-228	<< 0.05	(a)	-	-	-	-	(a)	-	-	
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	
Cesium-137	1.5 ± 0.1	-	-	-	-	0.35	-	-	-	
Total					<u>0.20</u>	<u>13.52</u>			<u>2.21</u>	

Sample Identification: B-129-S-0

Radium-226	< 0.5	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-
Strontium-90	0.16 ± 0.06	-	-	-	-	1.40	-	-	-
Uranium-234	9.4 ± 0.9	0.26	0.07	0.03	0.36	20.21	0.31	3.57	3.88
Uranium-235	1.2 ± 0.6	0.03	0.01	-	0.04	2.33	0.04	0.37	0.41
Uranium-238	8.1 ± 0.6	0.21	0.05	0.02	0.28	15.71	0.24	2.31	2.55
Thorium-228	0.11 ± 0.08	(a)	0.04	0.01	0.05	0.04	(a)	0.02	0.11
Thorium-230	0.28 ± 0.21	(a)	0.45	0.17	0.62	0.56	(a)	0.01	0.09
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-
Total					<u>1.35</u>	<u>40.25</u>			<u>7.07</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 5

Sample Identification: B-130-S-0

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	13 ± 1	4.86	0.37	0.32	5.55	115.70	0.02	0.47	9.52	10.01
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.18 ± 0.06	-	-	-	-	1.58	-	-	-	-
Uranium-234	13 ± 1	0.36	0.09	0.04	0.49	27.95	0.01	0.43	4.94	5.38
Uranium-235	1.1 ± 0.3	0.03	0.08	-	0.11	2.13	-	0.03	0.34	0.37
Uranium-238	0.60 ± 0.22	0.02	0.01	-	0.03	1.16	-	0.02	0.17	0.19
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	0.14 ± 0.06	(a)	0.23	0.09	0.32	0.28	(a)	-	0.05	0.05
Thorium-232	0.16 ± 0.07	(a)	0.29	0.11	0.40	0.33	(a)	-	0.06	0.06
Cesium-137	5.9 ± 0.1	-	-	-	-	1.36	-	-	0.01	0.01
Total					<u>6.90</u>	<u>150.49</u>				<u>16.07</u>

Sample Identification: B-131-S-0

Radium-226	2.0 ± 0.2	0.75	0.06	0.05	0.86	10.90	-	0.07	1.47	1.54
Radium-228	0.7 ± 0.3	0.11	0.06	0.04	0.21	3.13	-	0.01	0.56	0.57
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	0.25 ± 0.12	(a)	0.10	0.02	0.12	0.10	(a)	0.03	0.24	0.27
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	5.4 ± 0.1	-	-	-	-	1.24	-	-	.01	0.01
Total					<u>1.19</u>	<u>15.37</u>				<u>2.39</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 6

Sample Identification: B-132-S-0

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	1.8 ± 0.1	0.67	0.05	0.04	0.76	16.02	-	0.07	1.32	1.39
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	2.6 ± 0.4	0.07	0.02	0.01	0.10	5.59	-	0.09	0.99	1.08
Uranium-235	0.32 ± 0.13	0.01	-	-	0.01	0.62	-	0.01	0.10	0.11
Uranium-238	0.28 ± 0.12	0.01	-	-	0.01	0.54	-	0.01	0.08	0.09
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	0.76 ± 0.08	-	-	-	-	0.17	-	-	-	-
Total					<u>0.88</u>	<u>22.94</u>				<u>2.67</u>

Sample Identification: B-133-S-0

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.21 ± 0.07	-	-	-	-	1.84	-	-	-	-
Uranium-234	33 ± 2	0.92	0.24	0.10	1.26	70.95	0.02	1.09	12.53	13.64
Uranium-235	2.4 ± 0.6	0.06	0.02	0.01	0.09	4.66	-	0.07	0.74	0.81
Uranium-238	0.91 ± 0.58	0.02	0.01	-	0.03	1.77	-	0.03	0.26	0.29
Thorium-228	0.17 ± 0.09	(a)	0.07	0.01	0.08	0.06	(a)	0.02	0.16	0.18
Thorium-230	0.46 ± 0.14	(a)	0.74	0.28	1.02	0.92	(a)	0.01	0.15	0.16
Thorium-232	0.14 ± 0.08	(a)	0.26	0.10	0.36	0.29	(a)	-	0.05	0.05
Cesium-137	0.19 ± 0.09	-	-	-	-	0.04	-	-	-	-
Total					<u>2.84</u>	<u>80.53</u>				<u>15.13</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 7

Sample Identification: B-134-S-0

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate		Total	Ingestion	D	Clearance Rate			Total
D	W	Y	D				W	Y		
Radium-226	19 ± 1	7.10	0.54	0.47	8.11	169.10	0.02	0.69	13.92	14.63
Radium-228	1.2 ± 0.3	0.18	0.10	0.07	0.35	5.36	-	0.02	0.97	0.99
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	5.5 ± 0.6	0.15	0.04	0.02	0.21	11.83	-	0.18	2.09	2.27
Uranium-235	0.90 ± 0.26	0.02	0.01	-	0.03	1.75	-	0.03	0.28	0.31
Uranium-238	0.52 ± 0.22	0.01	-	-	0.01	1.01	-	0.02	0.15	0.17
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	0.38 ± 0.11	(a)	0.61	0.23	0.84	0.76	(a)	0.01	0.12	0.13
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	0.76 ± 0.01	-	-	-	-	0.17	-	-	-	-
Total					<u>9.55</u>	<u>189.98</u>				<u>18.50</u>

Sample Identification: B-135-S-0

Radium-226	1.8 ± 0.1	0.67	0.05	0.04	0.76	16.02	-	0.07	1.32	1.39
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	1.5 ± 0.3	0.04	0.01	-	0.05	3.23	-	0.05	0.57	0.62
Uranium-235	0.17 ± 0.11	-	-	-	-	0.33	-	-	0.05	0.05
Uranium-238	0.21 ± 0.12	0.01	-	-	0.01	0.41	-	0.01	0.06	0.07
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	2.3 ± 0.1	-	-	-	-	0.53	-	-	-	-
Total					<u>0.82</u>	<u>20.52</u>				<u>2.13</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 8

Sample Identification: B-136-S-0

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	18.0 ± 0.2	6.72	0.51	0.45	7.68	160.20	0.02	0.65	13.19	13.86
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.15 ± 0.08	-	-	-	-	1.31	-	-	-	-
Uranium-234	9.8 ± 0.9	0.27	0.07	0.03	0.37	21.07	-	0.32	3.72	4.04
Uranium-235	0.60 ± 0.26	0.02	-	-	0.02	1.16	-	0.02	0.18	0.20
Uranium-238	0.18 ± 0.15	-	-	-	-	0.35	-	0.01	0.05	0.06
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	0.31 ± 0.12	(a)	0.50	0.19	0.69	0.62	(a)	0.01	0.10	0.11
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	1.4 ± 0.1	-	-	-	-	0.32	-	-	-	-
Total					<u>8.76</u>	<u>185.03</u>				<u>18.27</u>

Sample Identification: B-122-S-6

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.30 ± 0.11	-	-	-	-	2.63	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					-	<u>2.63</u>				-

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 9

Sample Identification: B-123-S-6

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	0.21 ± 0.10	0.01	-	-	0.01	0.45	-	0.01	0.08	0.09
Uranium-235	0.27 ± 0.20	0.01	-	-	0.01	0.52	-	0.01	0.08	0.09
Uranium-238	0.34 ± 0.25	0.01	-	-	0.01	0.66	-	0.01	0.10	0.11
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	0.61	-	-	-	-	0.14	-	-	-	-
Total					<u>0.03</u>	<u>1.77</u>				<u>0.29</u>

Sample Identification: B-124-S-6

Radium-226	1.8 ± 0.2	0.67	0.05	0.04	0.76	16.02	-	0.07	1.32	1.39
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	7.72 ± 0.69	0.21	0.06	0.02	0.29	16.60	-	0.25	2.93	3.18
Uranium-235	0.74 ± 0.22	0.02	0.01	-	0.03	1.44	-	0.02	0.23	0.25
Uranium-238	0.95 ± 0.27	0.02	0.01	-	0.03	1.84	-	0.03	0.27	0.30
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	0.14 ± 0.06	(a)	0.23	0.09	0.32	0.28	(a)	-	0.05	0.05
Thorium-232	0.13 ± 0.06	(a)	0.24	0.09	0.33	0.27	(a)	-	0.05	0.05
Cesium-137	0.68 ± 0.09	-	-	-	-	0.16	-	-	-	-
Total					<u>1.76</u>	<u>36.61</u>				<u>5.22</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 10

Sample Identification: B-125-S-6

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total										

Sample Identification: B-126-S-6

Radium-226	2.0 ± 0.1	0.75	0.06	0.05	0.86	17.80	-	0.07	1.47	1.54
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>0.86</u>	<u>17.80</u>				<u>1.54</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 11

Sample Identification: B-127-S-6

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate			Ingestion	Total	Clearance Rate			Total
D	W	Y	D	W			Y			
Radium-226	2.7 ± 0.3	1.01	0.08	0.07	1.16	24.03	-	0.10	1.98	2.08
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.22 ± 0.07	-	-	-	-	1.93	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	1.8 ± 0.1	-	-	-	-	0.41	-	-	-	-
Total					1.16	26.37				2.08

Sample Identification: B-128-S-6

Radium-226	1.4 ± 0.1	0.52	0.04	0.03	0.59	12.46	-	0.05	1.03	1.08
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	0.89 ± 0.22	0.02	0.01	-	0.03	1.91	-	0.03	0.34	0.37
Uranium-235	0.38 ± 0.16	0.01	-	-	0.01	0.74	-	0.01	0.12	0.13
Uranium-238	0.56 ± 0.18	0.01	-	-	0.01	1.09	-	0.02	0.16	0.18
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	0.22 ± 0.11	(a)	0.40	0.15	0.55	0.46	(a)	0.01	0.08	0.09
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					1.19	16.66				1.85

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 12

Sample Identification: B-129-S-6

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Limb (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	2.3 ± 0.2	0.86	0.07	0.06	0.99	20.47	-	0.08	1.68	1.76
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.12 ± 0.06	-	-	-	-	1.05	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	0.15 ± 0.08	(a)	0.06	0.01	0.07	0.06	(a)	0.02	0.14	0.16
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	0.32 ± 0.09	-	-	-	-	0.07	(a)	-	-	-
Total					<u>1.06</u>	<u>21.65</u>				<u>1.92</u>

Sample Identification: B-130-S-6

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	0.30 ± 0.13	0.01	-	-	0.01	0.65	-	0.01	0.11	0.12
Uranium-235	0.09 ± 0.05	-	-	-	-	0.17	-	-	0.03	0.03
Uranium-238	0.20 ± 0.12	0.01	-	-	0.01	0.39	-	0.01	0.06	0.07
Thorium-228	0.17 ± 0.09	(a)	0.07	0.01	0.08	0.06	(a)	0.02	0.16	0.18
Thorium-230	0.13 ± 0.08	(a)	0.21	0.08	0.29	0.26	(a)	-	0.04	0.04
Thorium-232	0.16 ± 0.08	(a)	0.29	0.11	0.40	0.33	(a)	-	0.06	0.06
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>0.79</u>	<u>1.86</u>				<u>0.50</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 13

Sample Identification: B-131-S-6

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	2.2 ± 0.2	0.82	0.06	0.05	0.93	19.58	-	0.08	1.61	1.69
Radium-228	0.9 ± 0.3	0.14	0.07	0.05	0.26	4.02	-	0.01	0.73	0.74
Strontium-90	0.12 ± 0.08	-	-	-	-	1.05	-	-	-	-
Uranium-234	0.23 ± 0.16	0.01	-	-	0.01	0.49	-	0.01	0.09	0.10
Uranium-235	0.08 ± 0.05	-	-	-	-	0.16	-	-	0.02	0.02
Uranium-238	0.17 ± 0.12	-	-	-	-	0.33	-	-	0.05	0.05
Thorium-228	0.11 ± 0.09	(a)	0.04	0.01	0.05	0.04	(a)	0.02	0.11	0.13
Thorium-230	0.12 ± 0.08	(a)	0.19	0.07	0.26	0.24	(a)	-	0.04	0.04
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	4.0 ± 0.1	-	-	-	-	0.92	-	-	0.01	0.01
Total					<u>1.51</u>	<u>26.83</u>				<u>2.78</u>

Sample Identification: B-132-S-6

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.14 ± 0.06	-	-	-	-	1.23	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	0.11 ± 0.08	(a)	0.04	0.01	0.05	0.04	(a)	0.02	0.11	0.13
Thorium-230	0.26 ± 0.14	(a)	0.42	0.16	0.58	0.52	(a)	0.01	0.08	0.09
Thorium-232	0.31 ± 0.18	(a)	0.57	0.21	0.78	0.64	(a)	0.01	0.12	0.13
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>1.41</u>	<u>2.43</u>				<u>0.22</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 14

Sample Identification: B-133-S-6

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.25 ± 0.07	-	-	-	-	2.19	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	0.31 ± 0.12	(a)	0.50	0.19	0.69	0.62	(a)	0.01	0.10	0.11
Thorium-232	0.26 ± 0.11	(a)	0.48	0.18	0.66	0.54	(a)	0.01	0.10	0.11
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>1.35</u>	<u>3.35</u>				<u>0.22</u>

Sample Identification: B-134-S-2

Radium-226	1.6 ± 0.2	0.60	0.05	0.04	0.69	14.24	-	0.06	1.17	1.23
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.58 ± 0.10	0.01	-	-	0.01	5.08	-	-	-	-
Uranium-234	14.5 ± 0.8	0.40	0.11	0.04	0.55	31.18	0.01	0.48	5.51	6.00
Uranium-235	1.3 ± 0.2	0.03	0.01	-	0.04	2.52	-	0.04	0.40	0.44
Uranium-238	0.43 ± 0.15	0.01	-	-	0.01	0.83	-	0.01	0.12	0.13
Thorium-228	0.68 ± 0.15	(a)	0.27	0.04	0.31	0.26	(a)	0.10	0.65	0.75
Thorium-230	0.15 ± 0.07	(a)	0.24	0.09	0.33	0.30	(a)	-	0.05	0.05
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	12.7 ± 0.2	-	-	-	-	2.92	-	-	0.02	0.02
Total					<u>1.94</u>	<u>57.33</u>				<u>8.62</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 15

Sample Identification: B-134-S-6

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)			Exposure to Lung (mrem/yr)		
		D	Clearance Rate W Y	Total	D	Clearance Rate W Y	Total
Radium-226	< 0.5	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-
Strontium-90	0.21 ± 0.08	-	-	-	-	-	-
Uranium-234	0.89 ± 0.22	-	-	0.03	0.03	0.34	0.37
Uranium-235	0.37 ± 0.30	0.02	0.01	0.01	0.01	0.11	0.12
Uranium-238	0.31 ± 0.32	0.01	-	0.01	0.01	0.09	0.10
Thorium-228	0.21 ± 0.08	(a)	0.08	0.09	0.03	0.20	0.23
Thorium-230	< 0.05	(a)	-	-	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-
Total		-	-	<u>0.14</u>	-	-	<u>0.82</u>

Sample Identification: B-135-S-6

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)			Exposure to Lung (mrem/yr)		
		D	Clearance Rate W Y	Total	D	Clearance Rate W Y	Total
Radium-226	< 0.5	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-
Strontium-90	0.12 ± 0.14	-	-	-	-	-	-
Uranium-234	0.56 ± 0.19	0.02	-	0.02	0.02	0.21	0.23
Uranium-235	0.08 ± 0.05	-	-	-	-	0.02	0.02
Uranium-238	0.50 ± 0.19	0.01	-	0.01	0.01	0.14	0.15
Thorium-228	< 0.05	(a)	-	-	(a)	-	-
Thorium-230	< 0.05	(a)	-	-	(a)	-	-
Thorium-232	< 0.05	(a)	-	-	(a)	-	-
Cesium-137	< 0.08	-	-	-	-	-	-
Total		-	-	<u>0.03</u>	-	-	<u>0.40</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 16

Sample Identification: B-136-S-4

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	0.18 ± 0.11	(a)	0.33	0.12	0.45	0.37	(a)	0.01	0.07	0.08
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>0.45</u>	<u>0.37</u>				<u>0.08</u>

Sample Identification: B-136-S-6

Radium-226	1.5 ± 0.2	0.56	0.04	0.04	0.64	13.35	-	0.05	1.10	1.15
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	0.85 ± 0.18	(a)	0.34	0.06	0.40	0.32	(a)	0.12	0.82	0.94
Thorium-230	0.18 ± 0.09	(a)	0.29	0.11	0.40	0.36	(a)	0.01	0.06	0.07
Thorium-232	1.0 ± 0.2	(a)	1.83	0.68	2.51	2.07	(a)	0.03	0.38	0.41
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>3.95</u>	<u>16.10</u>				<u>2.57</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 17

Sample Identification: B-122-S-2

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate		Total	Ingestion	D	Clearance Rate			Total
D	W	Y	D				W	Y		
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.30 ± 0.07	-	-	-	-	-	-	-	-	-
Uranium-234	5.7 ± 0.4	0.16	0.04	0.02	0.22	12.26	-	0.19	2.16	2.35
Uranium-235	1.3 ± 0.2	0.03	0.01	-	0.04	2.52	-	0.04	0.40	0.44
Uranium-238	0.72 ± 0.16	0.02	-	-	0.02	1.40	-	0.02	0.20	0.22
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>0.28</u>	<u>18.81</u>				<u>3.01</u>

Sample Identification: B-123-S-2

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.88 ± 0.11	0.01	-	-	0.01	7.70	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	0.20 ± 0.10	(a)	0.08	0.01	0.09	0.08	(a)	0.03	0.19	0.22
Thorium-230	0.12 ± 0.09	(a)	0.19	0.07	0.16	0.24	(a)	-	0.04	0.04
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>0.26</u>	<u>8.02</u>				<u>0.26</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 18

Sample Identification: B-124-S-2

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	1.28 ± 0.29	0.20	0.10	0.08	0.38	5.72	-	0.02	1.03	1.05
Strontium-90	0.15 ± 0.09	-	-	-	-	1.31	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	0.10 ± 0.06	(a)	0.04	0.01	0.05	0.04	(a)	0.01	0.10	0.11
Thorium-230	0.21 ± 0.10	(a)	0.34	0.13	0.47	0.42	(a)	0.01	0.07	0.08
Thorium-232	0.24 ± 0.10	(a)	0.44	0.16	0.60	0.50	(a)	0.01	0.09	0.10
Cesium-137	0.44 ± 0.07	-	-	-	-	0.10	-	-	-	-
Total					<u>1.50</u>	<u>8.09</u>				<u>1.34</u>

Sample Identification: B-125-S-2

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.13 ± 0.06	-	-	-	-	1.14	-	-	-	-
Uranium-234	0.26 ± 0.08	0.01	-	-	0.01	0.56	-	0.01	0.10	0.11
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	0.10 ± 0.05	-	-	-	-	0.19	-	-	0.03	0.03
Thorium-228	0.25 ± 0.12	(a)	0.10	0.02	0.12	0.10	(a)	0.03	0.24	0.27
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	0.62 ± 0.12	-	-	-	-	0.14	-	-	-	-
Total					<u>0.13</u>	<u>2.13</u>				<u>0.41</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 19

Sample Identification: B-126-S-2

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate		Total	Ingestion	D	Clearance Rate			Total
D	W	Y	D				W	Y		
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	0.18 ± 0.05	-	-	-	-	0.04	-	-	-	-
Total						<u>0.04</u>				

Sample Identification: B-127-S-2

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.32 ± 0.08	-	-	-	-	2.80	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	0.12 ± 0.06	(a)	0.05	0.01	0.06	0.05	(a)	0.02	0.12	0.14
Thorium-230	0.22 ± 0.11	(a)	0.35	0.13	0.48	0.44	(a)	0.01	0.07	0.08
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	2.8 ± 0.1	-	-	-	-	0.64	-	-	-	-
Total					<u>0.54</u>	<u>3.93</u>				<u>0.22</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 20

Sample Identification: B-128-S-2

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate		Total	Ingestion	D	Clearance Rate			Total
D	W	Y	D				W	Y		
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-226	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					-	-				-

Sample Identification: B-129-S-2

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	0.59 ± 0.10	0.02	-	-	0.02	1.27	-	0.02	0.22	0.24
Uranium-235	0.24 ± 0.07	0.01	-	-	0.01	0.47	-	0.01	0.07	0.08
Uranium-238	0.43 ± 0.09	0.01	-	-	0.01	0.83	-	0.01	0.12	0.13
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	0.28 ± 0.13	(a)	0.45	0.17	0.62	0.56	(a)	0.01	0.09	0.10
Thorium-232	0.18 ± 0.10	(a)	0.33	0.12	0.45	0.37	(a)	0.01	0.07	0.08
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>1.11</u>	<u>3.50</u>				<u>0.63</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 21

Sample Identification: B-130-S-2

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	2.5 ± 0.2	0.93	0.07	0.06	1.06	22.25	-	0.09	1.83	1.92
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	0.55 ± 0.14	0.02	-	-	0.02	1.20	-	0.02	0.21	0.23
Uranium-235	0.11 ± 0.06	-	-	-	-	0.21	-	-	0.03	0.03
Uranium-238	0.08 ± 0.05	-	-	-	-	0.16	-	-	0.02	0.02
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	0.33 ± 0.06	-	-	-	-	0.08	-	-	-	-
Total					<u>1.08</u>	<u>23.90</u>				<u>2.20</u>

Sample Identification: B-131-S-2

Radium-226	1.0 ± 0.2	0.37	0.03	0.02	0.42	8.90	-	0.04	0.73	0.77
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	0.12 ± 0.07	(a)	0.22	0.08	0.30	0.25	(a)	-	0.05	0.05
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>0.72</u>	<u>9.15</u>				<u>0.82</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 22

Sample Identification: B-132-S-2

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate		Y	Total	Ingestion	Clearance Rate			Total
D	W	D	W				Y	Total		
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	0.58 ± 0.24	0.09	0.05	0.03	0.17	2.59	-	0.01	0.47	0.48
Strontium-90	0.25 ± 0.07	-	-	-	-	2.19	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>0.17</u>	<u>4.78</u>				<u>0.48</u>

Sample Identification: B-133-S-2

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	1.84 ± 0.14	0.02	0.01	0.01	0.04	16.10	-	-	0.01	0.01
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	0.50 ± 0.08	-	-	-	-	0.12	-	-	-	-
Total					<u>0.04</u>	<u>16.22</u>				<u>0.01</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 23

Sample Identification: B-135-S-2

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.55 ± 0.15	-	-	-	-	4.81	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	0.14 ± 0.08	(a)	0.06	0.01	0.07	0.05	(a)	0.02	0.13	0.15
Thorium-230	0.20 ± 0.11	(a)	0.32	0.12	0.44	0.40	(a)	0.01	0.06	0.07
Thorium-232	0.34 ± 0.13	(a)	0.62	0.23	0.85	0.70	(a)	0.01	0.13	0.14
Cesium-137	0.52 ± 0.10	-	-	-	-	0.12	-	-	-	-
Total					<u>1.36</u>	<u>6.08</u>				<u>0.36</u>

Sample Identification: B-136-S-2

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					-	-				-

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 24

Sample Identification: B-122-S-4

Type of Analysis	Activity ($\mu\text{Ci/g dry}$)	<u>Exposure to Bone (mrem/yr)</u>					<u>Exposure to Lung (mrem/yr)</u>			
		<u>Clearance Rate</u>					<u>Clearance Rate</u>			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.21 \pm 0.06	-	-	-	-	1.84	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					-	<u>1.84</u>				-

Sample Identification: B-123-S-4

Radium-226	2.4 \pm 0.06	0.90	0.07	0.06	1.03	21.36	-	0.09	1.76	1.85
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.29 \pm 0.07	-	-	-	-	2.54	-	-	-	-
Uranium-234	0.36 \pm 0.10	0.01	-	-	0.01	0.77	-	0.01	0.14	0.15
Uranium-235	0.18 \pm 0.08	-	-	-	-	0.35	-	0.01	0.06	0.07
Uranium-238	0.11 \pm 0.06	-	-	-	-	0.21	-	-	0.03	0.03
Thorium-228	0.21 \pm 0.03	(a)	0.08	0.01	0.09	0.08	(a)	0.03	0.20	0.23
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	0.24 \pm 0.03	(a)	0.44	0.16	0.60	0.50	(a)	0.01	0.09	0.10
Cesium-137	0.56 \pm 0.04	-	-	-	-	0.13	-	-	-	-
Total					<u>1.73</u>	<u>25.94</u>				<u>2.43</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 29

Sample Identification: B-124-S-4

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate		Y	Total	Ingestion	Clearance Rate			Total
D	W	D	W				Y	Total		
Radium-226	1.1 ± 0.5	0.41	0.03	0.03	0.47	9.79	-	0.04	0.81	0.85
Radium-228	1.38 ± 0.40	0.21	0.11	0.08	0.40	6.17	-	0.02	1.11	1.13
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>0.87</u>	<u>15.96</u>				<u>1.98</u>

Sample Identification: B-125-S-4

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					-	-				-

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 26

Sample Identification: B-126-S-4

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	< 0.3	-	-	-	-	-	-	-	-	-
Radium-228	< 0.1	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					-	-				-

Sample Identification: B-127-S-4

Radium-226	1.7 ± 0.2	0.64	0.05	0.04	0.73	15.13	-	0.06	1.25	1.31
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.12 ± 0.07	-	-	-	-	1.05	-	-	-	-
Uranium-234	0.47 ± 0.12	0.01	-	-	0.01	1.01	-	0.02	0.18	0.20
Uranium-235	0.42 ± 0.11	0.01	-	-	0.01	0.81	-	0.01	0.13	0.14
Uranium-238	0.23 ± 0.09	0.01	-	-	0.01	0.45	-	0.01	0.07	0.08
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	0.12 ± 0.07	(a)	0.19	0.07	0.26	0.24	(a)	-	0.04	0.04
Thorium-232	0.20 ± 0.09	(a)	0.37	0.14	0.51	0.41	(a)	0.01	0.08	0.09
Cesium-137	0.60 ± 0.05	-	-	-	-	0.14	-	-	-	-
Total					<u>1.53</u>	<u>19.24</u>				<u>1.86</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 27

Sample Identification: B-128-S-4

Type of Analysis	Activity ($\mu\text{Ci/g dry}$)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	2.9 ± 0.2	1.08	0.08	0.07	1.23	25.81	-	0.11	2.12	2.23
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>1.23</u>	<u>25.81</u>				<u>2.23</u>

Sample Identification: B-129-S-4

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.10 ± 0.06	-	-	-	-	0.88	-	-	-	-
Uranium-234	0.53 ± 0.07	0.01	-	-	0.01	1.14	-	0.02	0.20	0.22
Uranium-235	0.08 ± 0.05	-	-	-	-	0.15	-	-	0.02	0.02
Uranium-238	0.51 ± 0.30	0.01	-	-	0.01	0.99	-	0.01	0.15	0.16
Thorium-228	0.49 ± 0.18	(a)	0.20	0.03	0.23	0.19	(a)	0.07	0.47	0.54
Thorium-230	0.26 ± 0.14	(a)	0.42	0.16	0.58	0.52	(a)	0.01	0.08	0.09
Thorium-232	0.62 ± 0.19	(a)	1.14	0.42	1.56	1.28	(a)	0.02	0.23	0.25
Cesium-137	0.29 ± 0.09	-	-	-	-	0.07	-	-	-	-
Total					<u>2.39</u>	<u>5.22</u>				<u>1.28</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 28

Sample Identification: B-130-S-4

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)			Exposure to Lung (mrem/yr)		
		Clearance Rate			Clearance Rate		
		D	W	Y	D	W	Y
Radium-226	1.32 ± 0.15	0.49	0.04	0.03	-	0.05	1.02
Radium-228	<0.10	-	-	-	-	-	-
Strontium-90	<0.03	-	-	-	-	-	-
Uranium-234	<0.05	-	-	-	-	-	-
Uranium-235	<0.05	-	-	-	-	-	-
Uranium-238	<0.05	-	-	-	-	-	-
Thorium-228	0.11 ± 0.09	(a)	0.04	0.01	0.02	0.11	0.13
Thorium-230	<0.05	(a)	-	-	-	-	-
Thorium-232	0.37 ± 0.18	(a)	0.68	0.25	0.01	0.14	0.15
Cesium-137	<0.08	-	-	-	-	-	-
Total		1.54	12.56		1.30		
Sample Identification: B-131-S-4							
Radium-226	2.3 ± 0.3	0.86	0.07	0.06	0.08	1.68	1.76
Radium-228	0.45 ± 0.16	0.07	0.04	0.03	0.01	0.36	0.37
Strontium-90	<0.03	-	-	-	-	-	-
Uranium-234	0.68 ± 0.11	0.02	-	-	0.02	0.26	0.28
Uranium-235	0.09 ± 0.04	-	-	-	-	0.03	0.03
Uranium-238	0.20 ± 0.06	0.01	-	-	0.01	0.06	0.07
Thorium-228	0.26 ± 0.10	(a)	0.10	0.02	0.04	0.25	0.29
Thorium-230	0.15 ± 0.08	(a)	0.24	0.09	-	0.05	0.05
Thorium-232	0.22 ± 0.10	(a)	0.40	0.15	0.01	0.08	0.09
Cesium-137	1.8 ± 0.3	-	-	-	-	-	-
Total		2.16	25.77		2.94		

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 29

Sample Identification: B-132-S-4

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	0.7 ± 0.4	0.26	0.02	0.02	0.30	6.23	-	0.03	0.51	0.54
Radium-228	1.6 ± 0.4	0.25	0.13	0.09	0.47	7.15	-	0.02	1.29	1.31
Strontium-90	0.48 ± 0.09	-	-	-	-	4.20	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	0.12 ± 0.07	(a)	0.05	0.01	0.06	0.05	(a)	0.02	0.12	0.14
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>0.83</u>	<u>17.63</u>				<u>1.99</u>

Sample Identification: B-133-S-4

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.14 ± 0.07	-	-	-	-	1.23	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	0.19 ± 0.10	(a)	0.31	0.12	0.43	0.38	(a)	0.01	0.06	0.07
Thorium-232	0.16 ± 0.09	(a)	0.29	0.11	0.40	0.33	(a)	-	0.06	0.06
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>0.83</u>	<u>1.94</u>				<u>0.13</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 30

Sample Identification: B-134-S-4

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	2.0 ± 0.4	0.75	0.06	0.05	0.86	17.80	-	0.07	1.47	1.54
Radium-228	7.24 ± 0.64	1.11	0.58	0.43	2.12	32.36	-	0.11	5.83	5.94
Strontium-90	0.34 ± 0.10	-	-	-	-	2.98	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	0.77 ± 0.18	(a)	0.31	0.05	0.36	0.29	(a)	0.11	0.74	0.85
Thorium-230	0.19 ± 0.09	(a)	0.31	0.12	0.43	0.38	(a)	0.01	0.06	0.07
Thorium-232	0.15 ± 0.08	(a)	0.27	0.10	0.37	0.31	(a)	-	0.06	0.06
Cesium-137	4.69 ± 0.23	-	-	-	-	1.07	-	-	0.01	0.01
Total					<u>4.14</u>	<u>55.19</u>				<u>8.47</u>

Sample Identification: B-135-S-4

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	0.41 ± 0.18	0.06	0.03	0.02	0.11	1.83	-	0.01	0.33	0.34
Strontium-90	0.17 ± 0.10	-	-	-	-	1.49	-	-	-	-
Uranium-234	0.29 ± 0.08	0.01	-	-	0.01	0.62	-	0.01	0.11	0.12
Uranium-235	0.18 ± 0.07	-	-	-	-	0.35	-	0.01	0.06	0.07
Uranium-238	0.25 ± 0.08	0.01	-	-	0.01	0.49	-	0.01	0.07	0.08
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	0.11 ± 0.08	(a)	0.18	0.07	0.25	0.22	(a)	-	0.04	0.04
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>0.38</u>	<u>5.00</u>				<u>0.65</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 31

Sample Identification: B-123-S-0 Solubility

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	0.7 ± 0.4	0.26	0.02	0.02	0.30	6.23	-	.02	0.51	0.53
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	0.11 ± 0.06	-	-	-	-	0.24	-	-	0.04	0.04
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>0.30</u>	<u>6.47</u>				<u>0.57</u>

Sample Identification: B-124-S-0 Solubility

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	0.14 ± 0.06	-	-	-	-	0.30	-	-	0.05	0.05
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>-</u>	<u>0.30</u>				<u>0.05</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 32

Sample Identification: B-125-S-0 Solubility

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		D	Clearance Rate		Total	Ingestion	D	W	Clearance Rate	
			W	Y				Y	Total	
Radium-226	< 0.5	-	-	-	-	-	-	-	-	
Radium-228	< 0.10	-	-	-	-	-	-	-	-	
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	
Uranium-238	0.10 ± 0.07	-	-	-	-	0.19	-	0.03	0.03	
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	
Total						<u>0.19</u>			<u>0.03</u>	

Sample Identification: B-128-S-0 Solubility

Radium-226	< 0.5	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-
Uranium-234	0.12 ± 0.07	-	-	-	-	0.26	-	0.04	0.04
Uranium-235	< 0.05	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-
Cesium-137	0.4 ± 0.1	-	-	-	-	0.09	-	-	-
Total						<u>0.35</u>			<u>0.04</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 33

Sample Identification: B-129-S-0 Solubility

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate					Clearance Rate			
		D	W	Y	Total	Ingestion	D	W	Y	Total
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.05 ± 0.03	-	-	-	-	0.44	-	-	-	-
Uranium-234	0.22 ± 0.09	0.01	-	-	0.01	0.47	-	0.01	0.08	0.09
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	0.15 ± 0.08	-	-	-	-	0.29	-	-	0.04	0.04
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	0.12 ± 0.06	(a)	0.19	0.07	0.26	0.24	(a)	-	0.04	0.04
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>0.27</u>	<u>1.44</u>				<u>0.17</u>

Sample Identification: B-131-S-0 Solubility

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	1.4 ± 0.3	-	-	-	-	0.32	-	-	-	-
Total					<u>-</u>	<u>0.32</u>				<u>-</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 34

Sample Identification: B-133-S-0 Solubility

Type of Analysis	Activity (pCi/g dry)	<u>Exposure to Bone (mrem/yr)</u>					<u>Exposure to Lung (mrem/yr)</u>			
		<u>Clearance Rate</u>			<u>Total</u>	<u>Ingestion</u>	<u>Clearance Rate</u>			<u>Total</u>
D	W	Y	D	W			Y	Total		
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	0.14 ± 0.08	-	-	-	-	0.30	-	-	0.05	0.05
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total						<u>0.30</u>				<u>0.05</u>

Sample Identification: B-122-S-6 Solubility

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.16 ± 0.03	-	-	-	-	1.40	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total						<u>1.40</u>				<u>-</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 35

Sample Identification: B-123-S-6 Solubility

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate			Total	Ingestion	Clearance Rate			Total
D	W	Y	D	W			Y			
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	0.10 ± 0.07	-	-	-	-	0.19	-	-	0.03	0.03
Uranium-238	0.20 ± 0.09	-	-	-	-	0.39	-	-	0.06	0.06
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	0.32 ± 0.09	-	-	-	-	0.07	-	-	-	-
Total						<u>0.65</u>				<u>0.09</u>

Sample Identification: B-127-S-6 Solubility

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.15 ± 0.04	-	-	-	-	1.31	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	0.11 ± 0.08	(a)	0.18	0.07	0.25	0.22	(a)	-	0.04	0.04
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>0.25</u>	<u>1.53</u>				<u>0.04</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 36

Sample Identification: B-128-S-6 Solubility

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		Clearance Rate			Total	Ingestion	D	W	Clearance Rate	
D	W	Y	D	W					Y	
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	0.11 ± 0.07	-	-	-	-	0.24	-	-	0.04	0.04
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total						<u>0.24</u>				<u>0.04</u>

Sample Identification: B-129-S-6 Solubility

Radium-226	0.7 ± 0.4	0.26	0.02	0.02	0.30	6.23	-	0.02	0.51	0.53
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.10 ± 0.03	-	-	-	-	0.88	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	0.32 ± 0.09	-	-	-	-	0.07	-	-	-	-
Total					<u>0.30</u>	<u>7.18</u>				<u>0.53</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 37

Sample Identification: B-131-S-6 Solubility

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		D	Clearance Rate			Ingestion	D	W	Clearance Rate	
			W	Y	Total			Y	Total	
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.12 ± 0.04	-	-	-	-	1.05	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	0.11 ± 0.07	-	-	-	-	0.21	-	-	0.03	0.03
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>1.26</u>				<u>0.03</u>	

Sample Identification: B-132-S-6 Solubility

Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	0.13 ± 0.03	-	-	-	-	1.14	-	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					<u>1.14</u>				<u>-</u>	

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 3B

Sample Identification: B-133-S-6 Solubility

Type of Analysis	Activity (pCi/g dry)	Exposure to Bone (mrem/yr)					Exposure to Lung (mrem/yr)			
		D	Clearance Rate			Ingestion	D	Clearance Rate		
			W	Y	Total		W	Y	Total	
Radium-226	< 0.5	-	-	-	-	-	-	-	-	
Radium-228	< 0.10	-	-	-	-	-	-	-	-	
Strontium-90	0.28 ± 0.04	-	-	-	-	2.45	-	-	-	
Uranium-234	< 0.05	-	-	-	-	-	-	-	-	
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	
Total					<u>2.45</u>				<u>2.45</u>	

Sample Identification: B-134-S-6 Solubility

Radium-226	< 0.5	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-
Strontium-90	0.15 ± 0.05	-	-	-	-	1.31	-	-	-
Uranium-234	< 0.05	-	-	-	-	-	-	-	-
Uranium-235	< 0.05	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-
Total					<u>1.31</u>				<u>1.31</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.

TABLE 39

Sample Identification: B-135-S-6 Solubility

Type of Analysis	Activity (pCi/g dry)	<u>Exposure to Bone (mrem/yr)</u>					<u>Exposure to Lung (mrem/yr)</u>			
		<u>Clearance Rate</u>			<u>Total</u>	<u>Ingestion</u>	<u>D</u>	<u>W</u>	<u>Clearance Rate</u>	
<u>D</u>	<u>W</u>	<u>Y</u>	<u>Y</u>	<u>Y</u>					<u>Total</u>	
Radium-226	< 0.5	-	-	-	-	-	-	-	-	-
Radium-228	< 0.10	-	-	-	-	-	-	-	-	-
Strontium-90	< 0.03	-	-	-	-	-	-	-	-	-
Uranium-234	0.10 ± 0.07	-	-	-	-	0.21	-	-	0.04	0.04
Uranium-235	< 0.05	-	-	-	-	-	-	-	-	-
Uranium-238	< 0.05	-	-	-	-	-	-	-	-	-
Thorium-228	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-230	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Thorium-232	< 0.05	(a)	-	-	-	-	(a)	-	-	-
Cesium-137	< 0.08	-	-	-	-	-	-	-	-	-
Total					-	<u>0.21</u>				<u>0.04</u>

(a) ICRP-30 classifies thorium compounds as Y and W type.