Supplementary Information

"Accumulation of radium in ferruginous protein bodies formed in lung tissue: association of resulting radiation hotspots with malignant mesothelioma and other malignancies"

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Contents

http://depo.misasa.okayama-u.ac.jp/suppinfo/

Data Information Table 1. Elemental concentrations in assumed masses of asbestos body (AB).

Patient		A	E	H	I	K	M
Concentration of AB*) in dry lung	μg g^{-1}	1.5	85	61	3.2	0.77	0.14
Elemental concentration in AB							
Li	wt %	$1x10^{1}$	$1x10^{-1}$	$3x10^{-1}$	$1x10^{0}$	$6x10^{0}$	$9x10^{1}$
Be	μg g^{-1}	$7x10^{3}$	$1x10^{1}$	$7x10^{1}$	$2x10^{2}$	$9x10^{2}$	$1x10^{4}$
Na	wt %	$6x10^{3}$	$8x10^{0}$	$2x10^{1}$	$4x10^{1}$	$5x10^{2}$	$1x10^{4}$
Mg	wt %	$5x10^{3}$	$7x10^{1}$	$6x10^{1}$	$2x10^{2}$	$3x10^{3}$	$5x10^{4}$
Al	wt %	$3x10^{4}$	$6x10^{1}$	$3x10^{2}$	$4x10^{2}$	$4x10^{3}$	$7x10^{4}$
P	wt %	$4x10^{3}$	$1x10^{2}$	$1x10^{2}$	$2x10^{2}$	$7x10^{2}$	$7x10^{4}$
K	wt %	$1x10^{4}$	$2x10^{1}$	$7x10^{1}$	$1x10^{2}$	$2x10^{3}$	$3x10^{4}$
Ca	wt %	$1x10^{4}$	$2x10^{2}$	$2x10^{2}$	$5x10^{2}$	$2x10^{3}$	$1x10^{5}$
Sc	μg g^{-1}	$4x10^{4}$	$8x10^{1}$	$5x10^{2}$	$6x10^{2}$	$2x10^{3}$	$9x10^{4}$
V	wt %	$2x10^{1}$	$1x10^{-1}$	$3x10^{-1}$	$3x10^{-1}$	$4x10^{0}$	$8x10^{1}$
Mn	wt %	$3x10^{2}$	$8x10^{-1}$	$2x10^{0}$	$6x10^{0}$	$9x10^{1}$	$2x10^{3}$
Fe	wt %	$1x10^{5}$	$2x10^{2}$	$2x10^{3}$	$9x10^{2}$	$6x10^{3}$	$2x10^{5}$
Co	μg g^{-1}	$6x10^{3}$	$5x10^{2}$	$5x10^{2}$	$1x10^{3}$	$2x10^{4}$	$2x10^{5}$
Ni	wt %	$3x10^{1}$	$5x10^{-1}$	$8x10^{-1}$	$5x10^{0}$	$3x10^{1}$	$5x10^{2}$
Cu	wt %	$2x10^{1}$	$5x10^{-1}$	$3x10^{-1}$	$7x10^{-1}$	$7x10^{0}$	$2x10^{2}$
Zn	wt %	$5x10^{2}$	$1x10^{1}$	$8x10^{0}$	$5x10^{0}$	$5x10^{1}$	$3x10^{3}$
Ga	μg g^{-1}	$6x10^{4}$	$1x10^{2}$	$8x10^{2}$	$8x10^{2}$	$6x10^{3}$	$5x10^{5}$
Rb	μg g^{-1}	$4x10^{5}$	$7x10^{2}$	$3x10^{3}$	$8x10^{3}$	$8x10^{4}$	$1x10^{6}$
Sr	wt %	$1x10^{2}$	$4x10^{-1}$	$8x10^{-1}$	$2x10^{0}$	$1x10^{1}$	$5x10^{2}$
Y	μg g^{-1}	$8x10^{4}$	$9x10^{1}$	$6x10^{2}$	$6x10^{2}$	$8x10^{3}$	$1x10^{5}$
Cd	μg g^{-1}	$2x10^{4}$	$7x10^{1}$	$3x10^{2}$	$6x10^{1}$	$3x10^{3}$	$4x10^{4}$
In	μg g^{-1}	$2x10^{2}$	$3x10^{-1}$	$3x10^{0}$	$2x10^{0}$	$4x10^{1}$	$9x10^{3}$
Cs	μg g^{-1}	$2x10^{4}$	$5x10^{1}$	$3x10^{2}$	$5x10^{2}$	$5x10^{3}$	$6x10^{4}$
Ba	wt %	$5x10^{2}$	$6x10^{0}$	$7x10^{0}$	$3x10^{1}$	$3x10^{2}$	$5x10^{3}$
La	μg g^{-1}	$2x10^{5}$	$2x10^{2}$	$2x10^{3}$	$2x10^{3}$	$2x10^{4}$	$3x10^{5}$
Ce	μg g^{-1}	$7x10^{5}$	$4x10^{2}$	$5x10^{3}$	$4x10^{3}$	$4x10^{4}$	$5x10^{5}$
Pr	μg g^{-1}	$5x10^{4}$	$5x10^{1}$	$4x10^{2}$	$4x10^{2}$	$4x10^{3}$	$6x10^{4}$
Nd	μg g^{-1}	$2x10^{5}$	$2x10^{2}$	$1x10^{3}$	$1x10^{2}$	$2x10^{4}$	$2x10^{5}$
Sm	μg g^{-1}	$2x10^{4}$	$2x10^{1}$	$1x10^{2}$	$2x10^{2}$	$2x10^{3}$	$2x10^{4}$
Eu	μg g^{-1}	$4x10^{3}$	$8x10^{0}$	$3x10^{1}$	$4x10^{1}$	$5x10^{2}$	$8x10^{3}$
Gd	μg g^{-1}	$3x10^{4}$	$3x10^{1}$	$2x10^{2}$	$2x10^{2}$	$1x10^{4}$	$3x10^{4}$
Tb	μg g^{-1}	$3x10^{3}$	$4x10^{0}$	$2x10^{1}$	$2x10^{1}$	$3x10^{2}$	$4x10^{3}$
Dy	μg g^{-1}	$2x10^{4}$	$2x10^{1}$	$1x10^{2}$	$1x10^{2}$	$2x10^{3}$	$2x10^{4}$
Ho	μg g^{-1}	$3x10^{3}$	$3x10^{0}$	$3x10^{1}$	$2x10^{1}$	$3x10^{2}$	$4x10^{3}$
Er	μg g^{-1}	$1x10^{4}$	$1x10^{1}$	$8x10^{1}$	$7x10^{1}$	$9x10^{2}$	$1x10^{4}$
Tm	μg g^{-1}	$2x10^{3}$	$1x10^{0}$	$1x10^{1}$	$1x10^{1}$	$1x10^{2}$	$2x10^{3}$
Yb	μg g^{-1}	$1x10^{4}$	$1x10^{1}$	$8x10^{1}$	$8x10^{1}$	$1x10^{3}$	$1x10^{4}$
Lu	μg g^{-1}	$2x10^{3}$	$2x10^{0}$	$1x10^{1}$	$1x10^{1}$	$1x10^{2}$	$2x10^{3}$
Tl	μg g^{-1}	$7x10^{2}$	$1x10^{0}$	$7x10^{0}$	$3x10^{0}$	$1x10^{2}$	$2x10^{3}$
Pb	μg g^{-1}	$9x10^{4}$	$6x10^{2}$	$2x10^{3}$	$5x10^{3}$	$3x10^{4}$	$3x10^{6}$
Bi	μg g^{-1}	$6x10^{2}$	$3x10^{0}$	$2x10^{1}$	$2x10^{1}$	$2x10^{2}$	$5x10^{3}$
^{226}Ra	ng g^{-1}	$2x10^{2}$	$5x10^{-1}$	$3x10^{1}$	$1x10^{1}$	$2x10^{1}$	$6x10^{2}$
Th	μg g^{-1}	$6x10^{4}$	$6x10^{1}$	$4x10^{2}$	$7x10^{2}$	$5x10^{3}$	$8x10^{4}$
U	μg g^{-1}	$1x10^{4}$	$1x10^{1}$	$1x10^{2}$	$1x10^{2}$	$1x10^{3}$	$2x10^{4}$

ND: Not determined.

*) Concentration of AB was calculated with the following parameters based on 217 observations:

Asbestos part: Average volume of 7.3 μm^3; density of 3.2 g cm^{-3} and weight of 2.3×10^{-11} g.

Ferruginous protein part: Average volume of $1.2x10^{2}$ μm^3; density of 1.5 g cm^{-3} and weight of 1.7×10^{-11} g.

Data Information Table 2. Elemental concentration in asbestos standards and the Primitive Mantle composition.

		Chrysotile JWE 131	Amosite JWE 231	Crocidolite JWE 331	PM[#)] composition		DL in asbestos	Analytical Method[*)]
Li	μg g^{-1}	0.37	1.67	15.6	1.6	ng g^{-1}	3	Q
Be	μg g^{-1}	0.01	0.82	0.73	0.068	ng g^{-1}	2	Q
Na	wt%	0.036	0.018	3.9	0.267	μg g^{-1}	34	S
Mg	wt%	26	2.9	2.1	22.8	μg g^{-1}	127	S
Al	wt%	0.25	0.27	0.03	2.35	μg g^{-1}	1	S
P	μg g^{-1}	8.6	45	52	90	μg g^{-1}	2	S
K	wt%	ND	0.26	0.060	0.024	μg g^{-1}	81	S
Ca	wt%	0.25	0.27	0.70	2.53	μg g^{-1}	8	S
Sc	μg g^{-1}	5.5	3.8	0.030	16.2	μg g^{-1}	0.1	S
V	μg g^{-1}	17	7.2	0.87	82	μg g^{-1}	0.1	S
Mn	wt%	0.057	1.6	0.072	0.1045	μg g^{-1}	8	S
Fe	wt%	2.6	24	27	6.26	μg g^{-1}	164	S
Co	μg g^{-1}	69	5.8	0.88	105	μg g^{-1}	0.4	S
Ni	wt%	0.14	0.003	4.6	1960	μg g^{-1}	1	S
Cu	μg g^{-1}	4.7	5.4	1.7	30	μg g^{-1}	1	S
Zn	μg g^{-1}	23	13	11	55	μg g^{-1}	1	S
Ga	μg g^{-1}	ND	ND	ND	4	μg g^{-1}	0.5	S
Rb	μg g^{-1}	0.416	31.9	2.70	0.6	ng g^{-1}	18	Q
Sr	μg g^{-1}	7.12	5.59	9.12	19.9	ng g^{-1}	120	Q
Y	μg g^{-1}	0.121	1.67	3.40	4.3	ng g^{-1}	17	Q
Cd	μg g^{-1}	0.017	0.048	ND	0.04	ng g^{-1}	0.3	Q
In	μg g^{-1}	0.003	0.007	0.001	0.011	ng g^{-1}	0.05	Q
Cs	μg g^{-1}	0.078	5.68	0.357	0.021	ng g^{-1}	0.3	Q
Ba	μg g^{-1}	27.7	17.6	3.07	6.6	ng g^{-1}	24	Q
La	μg g^{-1}	0.071	0.97	0.378	0.648	ng g^{-1}	3	Q
Ce	μg g^{-1}	0.143	2.02	0.663	1.675	ng g^{-1}	6	Q
Pr	μg g^{-1}	0.016	0.234	0.070	0.254	ng g^{-1}	1	Q
Nd	μg g^{-1}	0.067	0.956	0.286	1.25	ng g^{-1}	4	Q
Sm	μg g^{-1}	0.014	0.205	0.052	0.406	ng g^{-1}	2	Q
Eu	μg g^{-1}	0.005	0.056	0.023	0.154	ng g^{-1}	0.7	Q
Gd	μg g^{-1}	0.017	0.240	0.101	0.544	ng g^{-1}	3	Q
Tb	μg g^{-1}	0.003	0.038	0.020	0.099	ng g^{-1}	0.4	Q
Dy	μg g^{-1}	0.022	0.245	0.193	0.674	ng g^{-1}	1	Q
Ho	μg g^{-1}	0.005	0.053	ND	0.149	ng g^{-1}	0.2	Q
Er	μg g^{-1}	0.017	0.162	0.354	0.438	ng g^{-1}	1	Q
Tm	μg g^{-1}	0.003	0.025	0.066	0.068	ng g^{-1}	0.3	Q
Yb	μg g^{-1}	0.023	0.189	0.506	0.441	ng g^{-1}	0.8	Q
Lu	μg g^{-1}	0.004	0.032	0.085	0.0675	ng g^{-1}	0.3	Q
Tl	μg g^{-1}	0.004	0.027	0.012	0.0035	ng g^{-1}	0.03	Q
Pb	μg g^{-1}	0.289	3.9	1.9	0.15	ng g^{-1}	2	Q
Bi	μg g^{-1}	0.001	0.038	0.011	0.0025	ng g^{-1}	0.03	Q
^{226}Ra	fg g^{-1}	ND	ND	ND	7.3**	fg g^{-1}	60	M
Th	μg g^{-1}	0.023	0.312	0.082	0.0795	ng g^{-1}	0.5	Q
U	μg g^{-1}	0.032	0.217	0.017	0.0203	ng g^{-1}	0.1	Q
n		3	3	3				

ND: Not determined.

#) McDonough and Sun (1995).

*) Q: ICP-QMS; S: ICP-SFMS; M: MC-ICP-MS; **) Assuming isotopic equilibrium between ^{238}U and ^{226}Ra.

Data Information Table 3. Analytical results of leaching experiments normalized to Fe=27 wt %[$)].

Patient		A				E				H			
Fraction		L-1	L-2	Residue	Bulk	L-1	L-2	Residue	Bulk	L-1	L-2	Residue	Bulk
Ferritin concentration in dry lung	mg g^{-1}	1.3	6.2	0.44	8.0	0.34	0.34	0.032	0.72	0.44	3.3	0.32	4.1
Li	μg g^{-1}	36	3	188	18	299	42	193	172	177	8	176	39
Be	μg g^{-1}	0.89	0.13	20	1.3	1.3	0.94	5.2	1.3	2.1	0.23	7.1	0.97
Na	wt %	0.34	0.07	20	1.2	0.90	0.64	4.3	0.93	0.56	0.04	2.2	0.26
Mg	wt %	2.7	0.33	4.6	0.95	11	2.2	29	7.8	4.1	0.29	3.3	0.93
Al	wt %	4.2	0.56	76	5.3	6.1	5.9	34	7.2	5.4	0.65	44	4.5
P	wt %	0.72	0.71	0.42	0.70	27	0.79	0.14	13	8.3	1.0	0.4	1.7
K	wt %	1.3	0.20	29	1.94	1.36	1.59	11	1.9	1.76	0.23	7.7	0.97
Ca	wt %	9.2	0.38	8.0	2.2	56	0.51	1.3	27	29	0.46	0.82	3.6
Sc	μg g^{-1}	5.8	1.4	95	7.2	6.4	9.3	49	9.7	12	3.2	57	8.3
V	wt %	0.001	0.001	0.054	0.004	0.005	0.005	0.031	0.006	0.002	0.001	0.038	0.004
Mn	wt %	0.056	0.027	0.58	0.063	0.12	0.067	0.17	0.10	0.034	0.012	0.18	0.027
Fe	wt %	27	27	27	27	27	27	27	27	27	27	27	27
Co	μg g^{-1}	9.0	3.2	33	5.8	69	33	116	54	12	2.5	61	8.0
Ni	wt %	0.008	0.002	0.059	0.006	0.062	0.040	0.14	0.055	0.017	0.005	0.070	0.012
Cu	wt %	0.019	0.001	0.010	0.004	0.038	0.012	0.015	0.024	0.034	0.001	0.008	0.005
Zn	wt %	0.35	0.05	0.08	0.10	0.28	0.05	0.11	0.16	0.57	0.06	0.11	0.12
Ga	μg g^{-1}	10	1.9	149	11	5.4	18	137	17	13	2.1	114	12
Rb	μg g^{-1}	47	8.3	1000	69	66	72	393	83	100	15	358	50
Sr	wt %	0.052	0.002	0.172	0.020	0.082	0.006	0.036	0.044	0.082	0.002	0.025	0.013
Y	μg g^{-1}	5.1	1.0	262	16	9.3	7.0	57	10	19	1.6	69	8.7
Cd	μg g^{-1}	16	1.0	5.2	3.7	16	1.8	1.6	8.6	29	1.9	2.3	4.8
In	μg g^{-1}	0.086	0.019	0.31	0.046	0.042	0.021	0.106	0.035	0.054	0.011	0.44	0.049
Cs	μg g^{-1}	3.5	0.96	50	4.0	6.1	5.0	18	6.1	11	2.6	25	5.1
Ba	wt %	0.28	0.015	0.56	0.088	1.4	0.064	0.20	0.73	0.62	0.025	0.18	0.10
La	μg g^{-1}	62	7.5	458	41	27	17	62	24	60	6.5	171	25
Ce	μg g^{-1}	107	19	1758	128	52	39	148	50	102	18	674	78
Pr	μg g^{-1}	12	1.5	117	9.5	7.0	3.9	14	5.8	13	1.5	38	5.6
Nd	μg g^{-1}	31	4.8	405	31	25	15	50	21	40	4.8	114	17
Sm	μg g^{-1}	2.2	0.61	67	4.5	2.9	2.3	9.0	2.9	4.4	0.61	13	1.9
Eu	μg g^{-1}	0.56	0.10	12	0.81	1.5	0.40	2.2	0.98	1.1	0.10	2.2	0.37
Gd	μg g^{-1}	2.9	0.62	69	4.8	3.1	2.2	9.6	2.9	5.4	0.64	16	2.3
Tb	μg g^{-1}	0.24	0.059	8.9	0.58	0.35	0.35	2.8	0.46	0.68	0.072	2.2	0.31
Dy	μg g^{-1}	1.2	0.28	51	3.2	1.9	1.5	9.6	2.0	3.7	0.36	13	1.7
Ho	μg g^{-1}	0.20	0.046	11	0.65	0.31	0.29	2.3	0.39	0.72	0.069	3.3	0.39
Er	μg g^{-1}	0.59	0.11	31	1.90	0.87	0.86	7.1	1.1	2.1	0.19	11	1.2
Tm	μg g^{-1}	0.079	0.017	4.8	0.29	0.12	0.15	1.1	0.18	0.31	0.026	1.7	0.18
Yb	μg g^{-1}	0.58	0.10	35	2.1	0.91	0.89	7.4	1.2	2.0	0.18	11	1.2
Lu	μg g^{-1}	0.08	0.02	5.0	0.30	0.15	0.13	1.2	0.19	0.32	0.026	1.8	0.20
Tl	μg g^{-1}	0.13	0.02	1.8	0.13	0.15	0.13	0.67	0.16	0.27	0.03	0.65	0.10
Pb	μg g^{-1}	40	3	149	17	96	39	219	74	167	9	72	31
Bi	μg g^{-1}	0.086	0.072	0.72	0.11	0.49	0.22	0.85	0.38	0.13	0.10	2.3	0.28
^{226}Ra	ng g^{-1}	0.028	0.025	0.19	0.034	0.057	0.069	ND	0.060	0.012	0.57	ND	0.47
Th	μg g^{-1}	6	3	160	12	6	6	23	7	6	3	46	7
U	μg g^{-1}	0.96	0.19	38	2.4	1.3	1.4	8.9	1.7	1.4	0.20	18	1.7
Gd* value[#)]		1.7	1.4	1.2	1.2	1.3	1.0	0.7	1.0	1.2	1.3	1.1	1.2

ND: Not determined.

$) 4000 Fe atoms in ferritin molecule.

#) Gd* value = $Gd_{Sample}/[Gd_{PM}x\{(Sm_{Sample}/Sm_{PM})x(Tb_{Sample}/Tb_{PM})^2\}^{(1/3)}]$

Data Information Table 3. (continued)

Patient		I				K				M			
Fraction		L-1	L-2	Residue	Bulk	L-1	L-2	Residue	Bulk	L-1	L-2	Residue	Bulk
Ferritin concentration in dry lung	mg g^{-1}	0.030	0.039	0.040	0.11	0.13	0.036	0.010	0.17	0.64	0.36	0.049	1.1
Li	μg g^{-1}	343	69	193	190	232	217	635	252	144	46	247	115
Be	μg g^{-1}	6.8	4.3	7.5	6.2	3.0	4.5	17	4.1	1.1	1.4	8.7	1.6
Na	wt %	0.86	0.17	2.4	1.2	1.2	3.5	14	2.4	0.70	1.0	10	1.3
Mg	wt %	13	2.3	3.6	5.7	11	5	60	13	9.1	1.4	17	6.8
Al	wt %	11	3.9	23	13	12	27	91	19	5.9	7.0	64	9.0
P	wt %	15	2.4	0.82	5.3	3.9	0.55	0.06	3.0	14	0.72	0.072	8.7
K	wt %	3.0	1.3	5.8	3.4	4.4	10	35	7.3	1.8	3.2	24	3.3
Ca	wt %	38	4.5	2.4	13	11	1.3	3.0	8.2	30	0.53	2.3	19
Sc	μg g^{-1}	19	16	19	18	2.7	11	116	11	6.6	14	59	12
V	wt %	0.007	0.001	0.018	0.009	0.014	0.020	0.072	0.019	0.007	0.007	0.062	0.010
Mn	wt %	0.19	0.12	0.17	0.16	0.45	0.28	0.27	0.40	0.23	0.16	0.21	0.21
Fe	wt %	27	27	27	27	27	27	27	27	27	27	27	27
Co	μg g^{-1}	46	8.8	41	31	83	41	125	77	28	22	106	30
Ni	wt %	0.090	0.15	0.16	0.14	0.11	0.17	0.32	0.13	0.040	0.062	0.32	0.060
Cu	wt %	0.033	0.012	0.020	0.021	0.03	0.024	0.068	0.032	0.042	0.011	0.028	0.030
Zn	wt %	0.29	0.08	0.11	0.15	0.27	0.15	0.15	0.24	0.44	0.14	0.50	0.34
Ga	μg g^{-1}	20	27	23	24	6.04	77	81	25	17	154	32	65
Rb	μg g^{-1}	208	88	405	236	237	468	1337	347	81	131	777	131
Sr	wt %	0.10	0.019	0.027	0.045	0.058	0.030	0.127	0.056	0.085	0.014	0.068	0.059
Y	μg g^{-1}	18	5.5	30	18	18	35	241	34	7.9	13	134	15
Cd	μg g^{-1}	4.1	0.85	0.72	1.7	17	8.1	7.5	14	7.4	2.1	9.0	5.6
In	μg g^{-1}	0.11	0.029	0.069	0.066	0.22	ND	0.360	0.18	0.80	0.86	7.0	1.1
Cs	μg g^{-1}	14	6.0	20	13	17	29	50	21	5.6	8.2	28	7.5
Ba	wt %	2.2	0.40	0.27	0.85	1.8	0.44	0.76	1.5	1.0	0.20	0.40	0.72
La	μg g^{-1}	66	28	52	47	66	91	239	81	28	29	115	32
Ce	μg g^{-1}	141	60	158	118	131	199	582	170	54	63	295	69
Pr	μg g^{-1}	16	5.9	12	11	16	20	54	19	6.5	6.4	25	7.3
Nd	μg g^{-1}	55	22	43	39	59	74	185	70	22	23	90	26
Sm	μg g^{-1}	6.2	3.1	6.7	5.3	6.3	11	34	8.8	2.1	3.5	16	3.2
Eu	μg g^{-1}	1.9	0.58	1.3	1.2	2.2	2.0	6.2	2.4	0.96	0.68	3.6	0.99
Gd	μg g^{-1}	7.6	3.2	6.2	5.5	82	17	36	66	2.4	4.3	18	3.8
Tb	μg g^{-1}	0.70	0.34	0.84	0.62	0.78	1.4	6.1	1.2	0.29	0.46	4.0	0.52
Dy	μg g^{-1}	3.7	1.5	5.4	3.5	4.7	7.5	38	7.1	1.6	2.7	21	2.9
Ho	μg g^{-1}	0.64	0.29	1.1	0.67	0.73	1.5	8.9	1.4	0.29	0.49	4.8	0.57
Er	μg g^{-1}	2.0	0.63	3.47	2.0	2.1	4.1	27	3.9	0.95	1.6	15	1.8
Tm	μg g^{-1}	0.23	0.11	0.55	0.30	0.31	0.66	4.30	0.61	0.14	0.22	2.4	0.28
Yb	μg g^{-1}	1.8	0.62	4.2	2.2	2.5	4.7	28	4.4	0.91	1.6	17	1.9
Lu	μg g^{-1}	0.29	0.10	0.62	0.34	0.36	0.70	4.3	0.65	0.15	0.24	2.7	0.30
Tl	μg g^{-1}	0.08	0.03	0.14	0.09	0.43	0.87	2.3	0.63	0.16	0.24	1.4	0.25
Pb	μg g^{-1}	240	78	127	141	149	137	294	155	216	278	2088	324
Bi	μg g^{-1}	1.0	0.44	0.34	0.56	0.73	0.60	1.3	0.73	0.50	0.67	3.4	0.70
^{226}Ra	ng g^{-1}	0.32	0.31	0.55	0.40	0.11	0.069	0.242	0.11	0.085	0.076	ND	0.078
Th	μg g^{-1}	21	13	25	20	15	32	88	23	6	11	50	10
U	μg g^{-1}	3.1	1.5	6.6	3.8	3.5	6.7	27	5.5	1.3	2.1	17	2.3
Gd* value[#)]		1.5	1.3	1.1	1.3	15.2	1.8	1.0	8.2	1.2	1.4	0.8	1.2

Data Information Table 4. Calculated elemental concentrations relative to masses of dry lung samples and analytical detection limits (DL).

Patient		A	E	H	I	K	M		DL in
Dry lung used in analysis (g)		0.2907	0.2231	0.3291	0.2236	0.2292	0.2600		dry lung
Li	ng g^{-1}	147	124	162	21	44	109	pg g^{-1}	18
Be	ng g^{-1}	11	0.93	4.0	0.67	0.71	1.3	pg g^{-1}	14
Na	μg g^{-1}	97	6.7	11	1.3	4.1	8.3	ng g^{-1}	0.2
Mg	μg g^{-1}	75	56	38	6.2	22	63	μg g^{-1}	0.9
Al	μg g^{-1}	419	52	184	14	34	63	μg g^{-1}	0.007
P	μg g^{-1}	55	97	71	5.8	5.2	91	μg g^{-1}	0.011
K	μg g^{-1}	155	14	40	3.7	13	23	μg g^{-1}	0.6
Ca	μg g^{-1}	177	195	147	14	14	197	μg g^{-1}	0.06
Sc	ng g^{-1}	58	7.0	34	1.9	1.9	9.4	μg g^{-1}	0.0007
V	ng g^{-1}	306	44	171	10	33	72	μg g^{-1}	0.0008
Mn	μg g^{-1}	5.0	0.70	1.1	0.17	0.70	2.1	μg g^{-1}	0.06
Fe	μg g^{-1}	2044	185	1051	28	44	258	μg g^{-1}	1.1
Co	ng g^{-1}	46	39	33	3.4	13	26	μg g^{-1}	0.003
Ni	ng g^{-1}	497	395	480	150	229	482	μg g^{-1}	0.007
Cu	ng g^{-1}	349	176	214	22	56	306	μg g^{-1}	0.008
Zn	ng g^{-1}	8196	1174	5035	161	416	3328	μg g^{-1}	0.008
Ga	ng g^{-1}	90	12	49	2.6	4.3	67	μg g^{-1}	0.003
Rb	ng g^{-1}	549	60	207	26	60	100	pg g^{-1}	127
Sr	ng g^{-1}	1578	313	520	49	97	593	pg g^{-1}	843
Y	ng g^{-1}	128	7.4	35	2.0	6.0	10	pg g^{-1}	119
Cd	ng g^{-1}	30	6.2	20	0.19	2.5	5.5	pg g^{-1}	2.3
In	ng g^{-1}	0.36	0.025	0.20	0.007	0.032	0.82	pg g^{-1}	0.3
Cs	ng g^{-1}	32	4.4	21	1.5	3.7	6.6	pg g^{-1}	1.8
Ba	μg g^{-1}	6.98	5.26	4.11	0.930	2.57	7.34	pg g^{-1}	168
La	ng g^{-1}	326	17	102	5.1	14	29	pg g^{-1}	24
Ce	ng g^{-1}	1023	36	318	13	30	58	pg g^{-1}	40
Pr	ng g^{-1}	76	4.2	23	1.2	3.3	6.5	pg g^{-1}	8
Nd	ng g^{-1}	247	15	70	4.3	12	22	pg g^{-1}	25
Sm	ng g^{-1}	36	2.1	7.9	0.58	1.5	2.6	pg g^{-1}	15
Eu	ng g^{-1}	6.4	0.71	1.5	0.13	0.42	0.86	pg g^{-1}	5
Gd	ng g^{-1}	38	2.1	9.5	0.60	11	3.1	pg g^{-1}	18
Tb	ng g^{-1}	4.6	0.33	1.3	0.068	0.21	0.35	pg g^{-1}	3
Dy	ng g^{-1}	26	1.5	7.1	0.39	1.2	2.0	pg g^{-1}	9
Ho	ng g^{-1}	5.2	0.28	1.6	0.073	0.24	0.36	pg g^{-1}	1.1
Er	ng g^{-1}	15	0.82	4.9	0.22	0.67	1.2	pg g^{-1}	10
Tm	ng g^{-1}	2.3	0.13	0.76	0.033	0.10	0.17	pg g^{-1}	2.3
Yb	ng g^{-1}	17	0.86	5.1	0.24	0.77	1.2	pg g^{-1}	5
Lu	ng g^{-1}	2.4	0.13	0.81	0.037	0.11	0.18	pg g^{-1}	1.9
Tl	ng g^{-1}	1.0	0.12	0.42	0.009	0.11	0.19	pg g^{-1}	0.2
Pb	ng g^{-1}	133	53	126	15	27	240	pg g^{-1}	14
Bi	ng g^{-1}	0.88	0.27	1.1	0.06	0.13	0.57	pg g^{-1}	0.2
^{226}Ra	fg g^{-1}	271	43	1911	44	19	82	fg g^{-1}	0.4
Th	ng g^{-1}	96	4.8	27	2.1	3.9	7.9	pg g^{-1}	4
U	ng g^{-1}	19	1.2	7.1	0.41	0.9	1.6	pg g^{-1}	0.8