

## **ABSORBED DOSE IN RED BONE MARROW IN JAPAN FOR THE FIRST YEAR**

UNSCEAR 2013 Report, Annex A, Levels and effects of radiation exposure due to the nuclear accident after the 2011 great east-Japan earthquake and tsunami, Appendix C (Assessment of doses to the public)

### **Contents**

This attachment details all of the summary tables for the Committee's estimates of absorbed dose to the red bone marrow of non-evacuated residents across Japan for the first year after the Fukushima-Daiichi nuclear power station accident. These summaries are provided for each age group (adults, 10-year-old children and one-year-old infants) for all districts within Fukushima Prefecture (Group 2), most districts within the Group 3 prefectures (Chiba, Gunma, Ibaraki, Iwate, Miyagi and Tochigi); and for all prefectures in the rest of Japan (Group 4).

The population data are taken from the Japan Census [MIC, 2011].

### **Notes**

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

© United Nations, August 2014. All rights reserved, worldwide.

This publication has not been formally edited.

**Table C-17.1. Average absorbed dose to red bone marrow for adults in the first year for Fukushima Prefecture (excluding evacuated areas)**

The dose estimates are quoted to two decimal places, but this does not imply that level of accuracy

District	Population in 2010 (persons)	Average deposition density of <sup>137</sup> Cs on soil (Bq/m <sup>2</sup> )	Absorbed dose to red bone marrow by pathway, adult, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
<b>Fukushima Ken</b>	<b>2 029 064</b>						
Aizubange Town	17 918	39 561	0.01	0.51	0.03	0.55	1.10
Aizumisato Town	24 631	14 621	0.00	0.19	0.00	0.55	0.74
Aizuwakamatsu City	131 928	24 840	0.00	0.33	0.00	0.55	0.88
Asakawa Town	7 402	23 778	0.00	0.30	0.00	0.55	0.85
Bandai Town	4 293	21 539	0.00	0.27	0.00	0.55	0.83
Date City	69 963	147 327	0.00	1.95	0.01	0.55	2.51
Fukushima City	296 181	229 756	0.00	3.02	0.01	0.55	3.58
Furudono Town	6 374	21 729	0.00	0.28	0.00	0.55	0.83
Hanawa Town	10 663	19 907	0.00	0.25	0.00	0.55	0.80
Hinoemata Village	696	2 432	0.00	0.03	0.00	0.55	0.58
Hirata Village	7 595	17 057	0.00	0.28	0.00	0.55	0.84
Inawashiro Town	16 982	24 640	0.00	0.32	0.00	0.55	0.87
Ishikawa Town	19 175	11 805	0.00	0.15	0.00	0.55	0.70
Iwaki City	354 297	26 637	0.01	0.77	0.01	0.55	1.34
Izumizaki Village	6 949	55 844	0.00	0.75	0.00	0.55	1.31
Kagamiishi Town	13 651	56 832	0.00	0.74	0.00	0.55	1.30
Kanayama Town	2 871	3 167	0.00	0.03	0.00	0.55	0.58
Kawamata Town	16 847	89 663	0.00	1.23	0.01	0.55	1.78
Kitakata City	55 824	20 601	0.01	0.32	0.03	0.55	0.91
Kitashiobara Village	3 791	49 415	0.01	0.63	0.03	0.55	1.21
Koori Town	14 708	208 995	0.00	2.65	0.01	0.55	3.22
Koriyama City	341 781	162 842	0.00	2.01	0.01	0.55	2.57
Kunimi Town	9 952	88 496	0.00	1.14	0.00	0.55	1.69
Miharu Town	17 942	83 625	0.00	1.10	0.00	0.55	1.65
Minamiaizu Town	19 896	5 132	0.00	0.07	0.00	0.55	0.62
Minamisoma City	72 941	109 564	0.00	1.45	0.01	0.55	2.01
Mishima Town	2 213	13 653	0.00	0.17	0.00	0.55	0.72
Motomiya City	30 771	123 962	0.00	1.52	0.01	0.55	2.08
Nakajima Village	4 865	24 789	0.00	0.32	0.00	0.55	0.87
Nihonmatsu City	63 751	196 780	0.00	2.44	0.01	0.55	3.00
Nishiaizu Town	8 237	6 164	0.00	0.07	0.00	0.55	0.63
Nishigo Village	18 615	95 946	0.00	1.15	0.00	0.55	1.71
Ono Town	11 983	21 524	0.00	0.29	0.00	0.55	0.85
Otama Village	8 130	160 958	0.00	2.11	0.01	0.55	2.67
Samegava Village	4 259	21 109	0.00	0.29	0.00	0.55	0.84
Shinchi Town	9 039	49 593	0.00	0.70	0.00	0.55	1.25

District	Population in 2010 (persons)	Average deposition density of $^{137}\text{Cs}$ on soil ( $\text{Bq}/\text{m}^2$ )	Absorbed dose to red bone marrow by pathway, adult, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
Shirakawa City	66 544	72 128	0.00	0.98	0.00	0.55	1.54
Shomogo Town	7 010	3 371	0.00	0.04	0.00	0.55	0.59
Showa Village	1 632	12 239	0.00	0.16	0.00	0.55	0.71
Soma City	38 187	54 637	0.00	0.69	0.00	0.55	1.24
Sukagawa City	78 819	72 012	0.00	1.00	0.00	0.55	1.56
Tadami Town	5 277	5 326	0.00	0.14	0.00	0.55	0.69
Tamakawa Village	7 295	15 702	0.00	0.20	0.00	0.55	0.75
Tamura City	43 231	33 801	0.00	0.52	0.00	0.55	1.08
Tanagura Town	15 702	45 177	0.00	0.58	0.00	0.55	1.13
Tenei Village	6 589	115 528	0.00	1.39	0.00	0.55	1.95
Yabuki Town	18 688	33 479	0.00	0.43	0.00	0.55	0.99
Yamatsuri Town	6 821	6 302	0.00	0.08	0.00	0.55	0.63
Yanaizu Town	4 263	13 126	0.00	0.17	0.00	0.55	0.72
Yukawa Village	3 455	37 554	0.00	0.49	0.01	0.55	1.05

**Table C-17.2. Average absorbed dose to red bone marrow for 10-year-old children in the first year for Fukushima Prefecture (excluding evacuated areas)**

The dose estimates are quoted to two decimal places, but this does not imply that level of accuracy

District	Population in 2010 (persons)	Average deposition density of $^{137}\text{Cs}$ on soil ( $\text{Bq}/\text{m}^2$ )	Absorbed dose to red bone marrow by pathway, 10-year-old child, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
<b>Fukushima Ken</b>	<b>2 029 064</b>						
Aizubange Town	17 918	39 561	0.01	0.72	0.02	0.36	1.11
Aizumisato Town	24 631	14 621	0.00	0.27	0.00	0.36	0.63
Aizuwakamatsu City	131 928	24 840	0.00	0.46	0.00	0.36	0.82
Asakawa Town	7 402	23 778	0.00	0.42	0.00	0.36	0.79
Bandai Town	4 293	21 539	0.00	0.39	0.00	0.36	0.75
Date City	69 963	147 327	0.00	2.75	0.00	0.36	3.11
Fukushima City	296 181	229 756	0.00	4.25	0.01	0.36	4.62
Furudono Town	6 374	21 729	0.00	0.39	0.00	0.36	0.75
Hanawa Town	10 663	19 907	0.00	0.35	0.00	0.36	0.71
Hinoemata Village	696	2 432	0.00	0.04	0.00	0.36	0.40
Hirata Village	7 595	17 057	0.00	0.40	0.00	0.36	0.76
Inawashiro Town	16 982	24 640	0.00	0.45	0.00	0.36	0.81
Ishikawa Town	19 175	11 805	0.00	0.21	0.00	0.36	0.57
Iwaki City	354 297	26 637	0.01	1.09	0.01	0.36	1.47
Izumizaki Village	6 949	55 844	0.00	1.06	0.00	0.36	1.42
Kagamiishi Town	13 651	56 832	0.00	1.05	0.00	0.36	1.41
Kanayama Town	2 871	3 167	0.00	0.05	0.00	0.36	0.41
Kawamata Town	16 847	89 663	0.00	1.73	0.00	0.36	2.09
Kitakata City	55 824	20 601	0.01	0.46	0.02	0.36	0.85
Kitashiobara Village	3 791	49 415	0.01	0.88	0.02	0.36	1.27
Koori Town	14 708	208 995	0.00	3.74	0.01	0.36	4.10
Koriyama City	341 781	162 842	0.00	2.83	0.00	0.36	3.20
Kunimi Town	9 952	88 496	0.00	1.60	0.00	0.36	1.96
Miharu Town	17 942	83 625	0.00	1.55	0.00	0.36	1.91
Minamiaizu Town	19 896	5 132	0.00	0.09	0.00	0.36	0.45
Minamisoma City	72 941	109 564	0.00	2.04	0.00	0.36	2.40
Mishima Town	2 213	13 653	0.00	0.24	0.00	0.36	0.60
Motomiya City	30 771	123 962	0.00	2.14	0.00	0.36	2.51
Nakajima Village	4 865	24 789	0.00	0.45	0.00	0.36	0.81
Nihonmatsu City	63 751	196 780	0.00	3.43	0.01	0.36	3.80
Nishiaizu Town	8 237	6 164	0.00	0.10	0.00	0.36	0.47
Nishigo Village	18 615	95 946	0.00	1.62	0.00	0.36	1.98
Ono Town	11 983	21 524	0.00	0.41	0.00	0.36	0.78
Otama Village	8 130	160 958	0.00	2.96	0.01	0.36	3.33
Samegava Village	4 259	21 109	0.00	0.40	0.00	0.36	0.76
Shinchi Town	9 039	49 593	0.00	0.99	0.00	0.36	1.35
Shirakawa City	66 544	72 128	0.00	1.38	0.00	0.36	1.75

District	Population in 2010 (persons)	Average deposition density of <sup>137</sup> Cs on soil (Bq/m <sup>2</sup> )	Absorbed dose to red bone marrow by pathway, 10-year-old child, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
Shomogo Town	7 010	3 371	0.00	0.06	0.00	0.36	0.42
Showa Village	1 632	12 239	0.00	0.22	0.00	0.36	0.59
Soma City	38 187	54 637	0.00	0.97	0.00	0.36	1.33
Sukagawa City	78 819	72 012	0.00	1.41	0.00	0.36	1.77
Tadami Town	5 277	5 326	0.00	0.20	0.00	0.36	0.56
Tamakawa Village	7 295	15 702	0.00	0.28	0.00	0.36	0.64
Tamura City	43 231	33 801	0.00	0.74	0.00	0.36	1.10
Tanagura Town	15 702	45 177	0.00	0.81	0.00	0.36	1.17
Tenei Village	6 589	115 528	0.00	1.96	0.00	0.36	2.32
Yabuki Town	18 688	33 479	0.00	0.61	0.00	0.36	0.97
Yamatsuri Town	6 821	6 302	0.00	0.12	0.00	0.36	0.48
Yanaizu Town	4 263	13 126	0.00	0.24	0.00	0.36	0.60
Yukawa Village	3 455	37 554	0.00	0.69	0.01	0.36	1.06

**Table C-17.3. Average absorbed dose to red bone marrow for one-year-old infants in the first year for Fukushima Prefecture (excluding evacuated areas)**

The dose estimates are quoted to two decimal places, but this does not imply that level of accuracy

District	Population in 2010 (persons)	Average deposition density of <sup>137</sup> Cs on soil (Bq/m <sup>2</sup> )	Absorbed dose to red bone marrow by pathway one-year-old infant, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
<b>Fukushima Ken</b>	<b>2 029 064</b>						
Aizubange Town	17 918	39 561	0.01	0.85	0.02	0.23	1.10
Aizumisato Town	24 631	14 621	0.00	0.31	0.00	0.23	0.55
Aizuwakamatsu City	131 928	24 840	0.00	0.54	0.00	0.23	0.77
Asakawa Town	7 402	23 778	0.00	0.50	0.00	0.23	0.73
Bandai Town	4 293	21 539	0.00	0.46	0.00	0.23	0.69
Date City	69 963	147 327	0.00	3.25	0.00	0.23	3.48
Fukushima City	296 181	229 756	0.00	5.03	0.01	0.23	5.27
Furudono Town	6 374	21 729	0.00	0.46	0.00	0.23	0.69
Hanawa Town	10 663	19 907	0.00	0.42	0.00	0.23	0.65
Hinoemata Village	696	2 432	0.00	0.05	0.00	0.23	0.28
Hirata Village	7 595	17 057	0.00	0.48	0.00	0.23	0.71
Inawashiro Town	16 982	24 640	0.00	0.54	0.00	0.23	0.77
Ishikawa Town	19 175	11 805	0.00	0.25	0.00	0.23	0.48
Iwaki City	354 297	26 637	0.01	1.30	0.01	0.23	1.55
Izumizaki Village	6 949	55 844	0.00	1.26	0.00	0.23	1.49
Kagamiishi Town	13 651	56 832	0.00	1.24	0.00	0.23	1.47
Kanayama Town	2 871	3 167	0.00	0.06	0.00	0.23	0.29
Kawamata Town	16 847	89 663	0.00	2.04	0.00	0.23	2.28
Kitakata City	55 824	20 601	0.01	0.54	0.01	0.23	0.80
Kitashiobara Village	3 791	49 415	0.01	1.04	0.01	0.23	1.30
Koori Town	14 708	208 995	0.00	4.42	0.00	0.23	4.66
Koriyama City	341 781	162 842	0.00	3.35	0.00	0.23	3.59
Kunimi Town	9 952	88 496	0.00	1.89	0.00	0.23	2.13
Miharu Town	17 942	83 625	0.00	1.83	0.00	0.23	2.06
Minamiaizu Town	19 896	5 132	0.00	0.11	0.00	0.23	0.34
Minamisoma City	72 941	109 564	0.00	2.41	0.00	0.23	2.65
Mishima Town	2 213	13 653	0.00	0.28	0.00	0.23	0.52
Motomiya City	30 771	123 962	0.00	2.53	0.00	0.23	2.77
Nakajima Village	4 865	24 789	0.00	0.53	0.00	0.23	0.76
Nihonmatsu City	63 751	196 780	0.00	4.05	0.01	0.23	4.29
Nishiaizu Town	8 237	6 164	0.00	0.12	0.00	0.23	0.35
Nishigo Village	18 615	95 946	0.00	1.91	0.00	0.23	2.15
Ono Town	11 983	21 524	0.00	0.49	0.00	0.23	0.72
Otama Village	8 130	160 958	0.00	3.51	0.00	0.23	3.74
Samegava Village	4 259	21 109	0.00	0.48	0.00	0.23	0.71
Shinchi Town	9 039	49 593	0.00	1.17	0.00	0.23	1.40
Shirakawa City	66 544	72 128	0.00	1.63	0.00	0.23	1.87

<i>District</i>	<i>Population in 2010 (persons)</i>	<i>Average deposition density of <sup>137</sup>Cs on soil (Bq/m<sup>2</sup>)</i>	<i>Absorbed dose to red bone marrow by pathway one-year-old infant, first year (mGy)</i>				
			<i>External (plume)</i>	<i>External (ground)</i>	<i>Inhalation (plume)</i>	<i>Ingestion</i>	<i>Total</i>
Shomogo Town	7 010	3 371	0.00	0.07	0.00	0.23	0.30
Showa Village	1 632	12 239	0.00	0.27	0.00	0.23	0.50
Soma City	38 187	54 637	0.00	1.15	0.00	0.23	1.38
Sukagawa City	78 819	72 012	0.00	1.67	0.00	0.23	1.90
Tadami Town	5 277	5 326	0.00	0.23	0.00	0.23	0.47
Tamakawa Village	7 295	15 702	0.00	0.33	0.00	0.23	0.56
Tamura City	43 231	33 801	0.00	0.87	0.00	0.23	1.11
Tanagura Town	15 702	45 177	0.00	0.96	0.00	0.23	1.19
Tenei Village	6 589	115 528	0.00	2.31	0.00	0.23	2.55
Yabuki Town	18 688	33 479	0.00	0.72	0.00	0.23	0.96
Yamatsuri Town	6 821	6 302	0.00	0.14	0.00	0.23	0.37
Yanaizu Town	4 263	13 126	0.00	0.28	0.00	0.23	0.51
Yukawa Village	3 455	37 554	0.00	0.81	0.01	0.23	1.05

**Table C-17.4. Average absorbed dose to red bone marrow for adults in the first year for Group 3 prefectures**

The dose estimates are quoted to two decimal places, but this does not imply that level of accuracy

District	Population in 2010 (persons)	Average deposition density of $^{137}\text{Cs}$ on soil ( $\text{Bq}/\text{m}^2$ )	Absorbed dose to red bone marrow by pathway, adult, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
<b>Chiba Ken</b>	<b>6 216 289</b>						
Abiko City		44 667	0.00	0.60	0.00	0.10	0.71
Chiba City		5 400	0.00	0.07	0.00	0.10	0.17
Funabashi City		17 000	0.00	0.23	0.00	0.10	0.33
Ichikawa City		19 500	0.00	0.26	0.00	0.10	0.36
Inzai City		35 750	0.00	0.48	0.00	0.10	0.58
Kashiwa City		43 667	0.00	0.58	0.00	0.10	0.69
Katori City		7 350	0.00	0.10	0.00	0.10	0.20
Kozaki Town		18 000	0.00	0.24	0.00	0.10	0.35
Matsudo City		31 000	0.00	0.42	0.00	0.10	0.52
Nagareyama City		55 500	0.00	0.76	0.00	0.10	0.87
Narita City		14 000	0.00	0.18	0.00	0.10	0.29
Noda City		24 350	0.00	0.33	0.00	0.10	0.43
Sakae Town		20 000	0.00	0.26	0.00	0.10	0.36
Sakura City		8 600	0.00	0.12	0.00	0.10	0.22
Shibayama Town		6 500	0.00	0.09	0.00	0.10	0.19
Shiroi City		33 000	0.00	0.44	0.00	0.10	0.54
Togane City		4 000	0.00	0.05	0.00	0.10	0.15
Tonosho Town		11 000	0.00	0.15	0.00	0.10	0.25
Urayasu City		13 000	0.00	0.17	0.00	0.10	0.27
Yachimata City		5 700	0.00	0.08	0.00	0.10	0.18
Yachiyo City		28 500	0.00	0.37	0.00	0.10	0.48
Yotsukaido City		14 000	0.00	0.19	0.00	0.10	0.29
<b>Gunma Ken</b>	<b>2 008 068</b>						
Annaka City		18 600	0.00	0.25	0.00	0.10	0.35
Fujioka City		4 800	0.00	0.06	0.00	0.10	0.16
Higashiagatsuma Town		13 767	0.00	0.19	0.00	0.10	0.29
Isesaki City		4 500	0.00	0.06	0.00	0.10	0.16
Kanna Town		7 500	0.00	0.10	0.00	0.10	0.20
Kanra Town		9 000	0.00	0.12	0.00	0.10	0.22
Katashina Village		14 117	0.00	0.20	0.00	0.10	0.30
Kawaba Village		26 000	0.00	0.36	0.00	0.10	0.46
Kiryu City		12 911	0.00	0.17	0.00	0.10	0.27
Maebashi City		6 660	0.00	0.09	0.00	0.10	0.19
Midori City		20 180	0.00	0.27	0.00	0.10	0.37
Minakami Town		17 009	0.00	0.23	0.00	0.10	0.34
Naganohara Town		7 233	0.00	0.10	0.00	0.10	0.20
Nakanojo Town		21 714	0.00	0.30	0.00	0.10	0.40



District	Population in 2010 (persons)	Average deposition density of <sup>137</sup> Cs on soil (Bq/m <sup>2</sup> )	Absorbed dose to red bone marrow by pathway, adult, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
Nanmoku Village		12 550	0.00	0.17	0.00	0.10	0.27
Numata City		18 467	0.00	0.25	0.00	0.10	0.35
Ota City		6 633	0.00	0.09	0.00	0.10	0.19
Shibukawa City		18 250	0.00	0.24	0.00	0.10	0.35
Shimonita Town		12 800	0.00	0.17	0.00	0.10	0.27
Shinto Village		5 600	0.00	0.07	0.00	0.10	0.17
Showa Village		13 500	0.00	0.18	0.00	0.10	0.28
Takasaki City		14 143	0.00	0.19	0.00	0.10	0.29
Takayama Village		36 000	0.00	0.50	0.00	0.10	0.60
Tomioka City		14 875	0.00	0.20	0.00	0.10	0.30
Tsumagoi Village		10 000	0.00	0.14	0.00	0.10	0.24
Ueno Village		7 800	0.00	0.10	0.00	0.10	0.20
<b>Ibaraki Ken</b>	<b>2 969 770</b>						
Ami Town		27 333	0.00	0.37	0.00	0.10	0.48
Bando City		6 300	0.00	0.09	0.00	0.10	0.19
Daigo Town		10 940	0.00	0.15	0.00	0.10	0.25
Hitachi City		26 500	0.00	0.35	0.00	0.10	0.46
Hitachinaka City		38 000	0.00	0.50	0.00	0.10	0.60
Hitachiomiya City		4 400	0.00	0.06	0.00	0.10	0.16
Hitachiota City		6 060	0.00	0.08	0.00	0.10	0.18
Hokota City		12 817	0.00	0.17	0.00	0.10	0.28
Ibaraki Town		15 000	0.00	0.20	0.00	0.10	0.30
Inashiki City		20 500	0.00	0.28	0.00	0.10	0.38
Ishioka City		11 633	0.00	0.16	0.00	0.10	0.26
Itako City		12 000	0.00	0.17	0.00	0.10	0.27
Joso City		6 500	0.00	0.09	0.00	0.10	0.19
Kamisu City		10 000	0.00	0.14	0.00	0.10	0.24
Kasama City		20 000	0.00	0.27	0.00	0.10	0.37
Kashima City		17 667	0.00	0.24	0.00	0.10	0.34
Kasumigaura City		19 500	0.00	0.27	0.00	0.10	0.37
Kawachi Town		8 400	0.00	0.12	0.00	0.10	0.22
Kitaibaraki City		18 857	0.00	0.26	0.00	0.10	0.36
Miho Village		16 850	0.00	0.23	0.00	0.10	0.34
Mito City		12 500	0.00	0.17	0.00	0.10	0.27
Moriya City		30 000	0.00	0.41	0.00	0.10	0.52
Naka City		19 000	0.00	0.26	0.00	0.10	0.36
Namegata City		13 333	0.00	0.19	0.00	0.10	0.29
Oarai Town		19 000	0.00	0.25	0.00	0.10	0.35
Omitama City		16 500	0.00	0.22	0.00	0.10	0.33
Ryugasaki City		21 500	0.00	0.30	0.00	0.10	0.40
Sakai Town		5 000	0.00	0.07	0.00	0.10	0.17

District	Population in 2010 (persons)	Average deposition density of <sup>137</sup> Cs on soil (Bq/m <sup>2</sup> )	Absorbed dose to red bone marrow by pathway, adult, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
Sakuragawa City		4 200	0.00	0.06	0.00	0.10	0.16
Takahagi City		17 329	0.00	0.23	0.00	0.10	0.34
Tokai Village		14 000	0.00	0.19	0.00	0.10	0.29
Tone Town		35 000	0.00	0.46	0.00	0.10	0.56
Toride City		36 333	0.00	0.49	0.00	0.10	0.60
Tsuchiura City		19 817	0.00	0.27	0.00	0.10	0.37
Tsukuba City		13 429	0.00	0.18	0.00	0.10	0.29
Tsukubamirai City		19 000	0.00	0.26	0.00	0.10	0.36
Ushiku City		39 500	0.00	0.54	0.00	0.10	0.65
<b>Iwate Ken</b>	<b>1 330 147</b>						
Fujisawa Town		23 000	0.00	0.31	0.00	0.09	0.40
Hiraizumi Town		14 000	0.00	0.19	0.00	0.09	0.28
Ichinoseki City		15 836	0.00	0.21	0.00	0.09	0.30
Kanegasaki Town		13 000	0.00	0.18	0.00	0.09	0.28
Kitakami City		2 400	0.00	0.03	0.00	0.09	0.12
Ofunato City		5 200	0.00	0.07	0.00	0.09	0.16
Oshu City		12 786	0.00	0.17	0.00	0.09	0.27
Rikuzentakata City		10 600	0.00	0.14	0.00	0.09	0.24
Sumita Town		10 100	0.00	0.14	0.00	0.09	0.23
<b>Miyagi Ken</b>	<b>2 348 165</b>						
Higashimatsushima City		5 600	0.00	0.08	0.00	0.10	0.18
Ishinomaki City		4 593	0.00	0.06	0.00	0.10	0.16
Iwanuma City		6 050	0.00	0.08	0.00	0.10	0.18
Kakuda City		22 500	0.00	0.30	0.00	0.10	0.40
Kami Town		15 000	0.00	0.21	0.00	0.10	0.31
Kawasaki Town		3 550	0.00	0.05	0.00	0.10	0.15
Kesenuma City		6 500	0.00	0.09	0.00	0.10	0.19
Kurihara City		15 735	0.00	0.21	0.00	0.10	0.31
Marumori Town		41 231	0.00	0.55	0.00	0.10	0.65
Minamisanriku Town		6 450	0.00	0.09	0.00	0.10	0.19
Misato Town		4 200	0.00	0.06	0.00	0.10	0.16
Ogawara Town		12 000	0.00	0.16	0.00	0.10	0.26
Onagawa Town		5 200	0.00	0.07	0.00	0.10	0.17
Osaki City		7 050	0.00	0.10	0.00	0.10	0.20
Sendai City		6 000	0.00	0.08	0.00	0.10	0.18
Shichikashuku Town		10 500	0.00	0.15	0.00	0.10	0.25
Shikama Town		3 600	0.00	0.05	0.00	0.10	0.15
Shiroishi City		23 200	0.00	0.31	0.00	0.10	0.41
Tome City		8 275	0.00	0.11	0.00	0.10	0.21
Yamamoto Town		22 333	0.00	0.30	0.00	0.10	0.40
Zao Town		8 200	0.00	0.11	0.00	0.10	0.21

District	Population in 2010 (persons)	Average deposition density of $^{137}\text{Cs}$ on soil ( $\text{Bq}/\text{m}^2$ )	Absorbed dose to red bone marrow by pathway, adult, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
<b>Tochigi Ken</b>	<b>2 007 683</b>						
Ashikaga City		4 850	0.00	0.06	0.00	0.10	0.16
Kanuma City		15 917	0.00	0.21	0.00	0.10	0.31
Mibu Town		7 100	0.00	0.10	0.00	0.10	0.20
Nakagawa Town		9 300	0.00	0.12	0.00	0.10	0.23
Nasu Town		80 143	0.00	1.07	0.01	0.10	1.18
Nasushiobara City		79 824	0.00	1.07	0.01	0.10	1.18
Nikko City		26 885	0.00	0.36	0.00	0.10	0.46
Otawara City		41 500	0.00	0.56	0.00	0.10	0.66
Sakura City		14 433	0.00	0.20	0.00	0.10	0.30
Sano City		7 880	0.00	0.10	0.00	0.10	0.20
Shioya Town		36 800	0.00	0.50	0.00	0.10	0.60
Takanezawa Town		5 000	0.00	0.07	0.00	0.10	0.17
Tochigi City		7 850	0.00	0.11	0.00	0.10	0.21
Utsunomiya City		7 850	0.00	0.11	0.00	0.10	0.21
Yaita City		51 000	0.00	0.70	0.00	0.10	0.80

**Table C-17.5. Average absorbed dose to red bone marrow for 10-year-old children in the first year for Group 3 prefectures**

The dose estimates are quoted to two decimal places, but this does not imply that level of accuracy

District	Population in 2010 (persons)	Average deposition density of $^{137}\text{Cs}$ on soil ( $\text{Bq}/\text{m}^2$ )	Absorbed dose to red bone marrow by pathway, 10-year-old child, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
<b>Chiba Ken</b>	<b>6 216 289</b>						
Abiko City		44 667	0.00	0.86	0.00	0.08	0.94
Chiba City		5 400	0.00	0.10	0.00	0.08	0.18
Funabashi City		17 000	0.00	0.32	0.00	0.08	0.40
Ichikawa City		19 500	0.00	0.36	0.00	0.08	0.45
Inzai City		35 750	0.00	0.67	0.00	0.08	0.76
Kashiwa City		43 667	0.00	0.83	0.00	0.08	0.91
Katori City		7 350	0.00	0.14	0.00	0.08	0.22
Kozaki Town		18 000	0.00	0.35	0.00	0.08	0.43
Matsudo City		31 000	0.00	0.59	0.00	0.08	0.68
Nagareyama City		55 500	0.00	1.08	0.00	0.08	1.17
Narita City		14 000	0.00	0.26	0.00	0.08	0.34
Noda City		24 350	0.00	0.46	0.00	0.08	0.55
Sakae Town		20 000	0.00	0.36	0.00	0.08	0.44
Sakura City		8 600	0.00	0.16	0.00	0.08	0.24
Shibayama Town		6 500	0.00	0.12	0.00	0.08	0.20
Shiroi City		33 000	0.00	0.62	0.00	0.08	0.71
Togane City		4 000	0.00	0.08	0.00	0.08	0.16
Tonosho Town		11 000	0.00	0.21	0.00	0.08	0.30
Urayasu City		13 000	0.00	0.24	0.00	0.08	0.32
Yachimata City		5 700	0.00	0.11	0.00	0.08	0.19
Yachiyo City		28 500	0.00	0.53	0.00	0.08	0.61
Yotsukaido City		14 000	0.00	0.27	0.00	0.08	0.35
<b>Gunma Ken</b>	<b>2 008 068</b>						
Annaka City		18 600	0.00	0.35	0.00	0.08	0.43
Fujioka City		4 800	0.00	0.09	0.00	0.08	0.17
Higashiagatsuma Town		13 767	0.00	0.27	0.00	0.08	0.35
Isesaki City		4 500	0.00	0.09	0.00	0.08	0.17
Kanna Town		7 500	0.00	0.14	0.00	0.08	0.22
Kanra Town		9 000	0.00	0.17	0.00	0.08	0.25
Katashina Village		14 117	0.00	0.28	0.00	0.08	0.36
Kawaba Village		26 000	0.00	0.51	0.00	0.08	0.59
Kiryu City		12 911	0.00	0.25	0.00	0.08	0.33
Maebashi City		6 660	0.00	0.13	0.00	0.08	0.21
Midori City		20 180	0.00	0.38	0.00	0.08	0.46
Minakami Town		17 009	0.00	0.33	0.00	0.08	0.41
Naganohara Town		7 233	0.00	0.14	0.00	0.08	0.22
Nakanoyo Town		21 714	0.00	0.42	0.00	0.08	0.51

District	Population in 2010 (persons)	Average deposition density of <sup>137</sup> Cs on soil (Bq/m <sup>2</sup> )	Absorbed dose to red bone marrow by pathway, 10-year-old child, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
Nanmoku Village		12 550	0.00	0.24	0.00	0.08	0.32
Numata City		18 467	0.00	0.35	0.00	0.08	0.43
Ota City		6 633	0.00	0.13	0.00	0.08	0.21
Shibukawa City		18 250	0.00	0.35	0.00	0.08	0.43
Shimonita Town		12 800	0.00	0.24	0.00	0.08	0.32
Shinto Village		5 600	0.00	0.11	0.00	0.08	0.19
Showa Village		13 500	0.00	0.25	0.00	0.08	0.33
Takasaki City		14 143	0.00	0.27	0.00	0.08	0.35
Takayama Village		36 000	0.00	0.70	0.00	0.08	0.79
Tomioka City		14 875	0.00	0.29	0.00	0.08	0.37
Tsumagoi Village		10 000	0.00	0.20	0.00	0.08	0.28
Ueno Village		7 800	0.00	0.14	0.00	0.08	0.22
<b>Ibaraki Ken</b>	<b>2 969 770</b>						
Ami Town		27 333	0.00	0.53	0.00	0.08	0.61
Bando City		6 300	0.00	0.12	0.00	0.08	0.20
Daigo Town		10 940	0.00	0.21	0.00	0.08	0.30
Hitachi City		26 500	0.00	0.50	0.00	0.08	0.58
Hitachinaka City		38 000	0.00	0.71	0.00	0.08	0.79
Hitachiomiya City		4 400	0.00	0.09	0.00	0.08	0.17
Hitachiota City		6 060	0.00	0.12	0.00	0.08	0.20
Hokota City		12 817	0.00	0.25	0.00	0.08	0.33
Ibaraki Town		15 000	0.00	0.28	0.00	0.08	0.36
Inashiki City		20 500	0.00	0.39	0.00	0.08	0.48
Ishioka City		11 633	0.00	0.23	0.00	0.08	0.31
Itako City		12 000	0.00	0.24	0.00	0.08	0.32
Joso City		6 500	0.00	0.12	0.00	0.08	0.20
Kamisu City		10 000	0.00	0.19	0.00	0.08	0.27
Kasama City		20 000	0.00	0.38	0.00	0.08	0.46
Kashima City		17 667	0.00	0.34	0.00	0.08	0.42
Kasumigaura City		19 500	0.00	0.38	0.00	0.08	0.46
Kawachi Town		8 400	0.00	0.16	0.00	0.08	0.25
Kitaibaraki City		18 857	0.00	0.36	0.00	0.08	0.44
Miho Village		16 850	0.00	0.33	0.00	0.08	0.41
Mito City		12 500	0.00	0.24	0.00	0.08	0.32
Moriya City		30 000	0.00	0.58	0.00	0.08	0.67
Naka City		19 000	0.00	0.37	0.00	0.08	0.45
Namegata City		13 333	0.00	0.26	0.00	0.08	0.35
Oarai Town		19 000	0.00	0.35	0.00	0.08	0.43
Omitama City		16 500	0.00	0.32	0.00	0.08	0.40
Ryugasaki City		21 500	0.00	0.42	0.00	0.08	0.50
Sakai Town		5 000	0.00	0.10	0.00	0.08	0.18

District	Population in 2010 (persons)	Average deposition density of <sup>137</sup> Cs on soil (Bq/m <sup>2</sup> )	Absorbed dose to red bone marrow by pathway, 10-year-old child, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
Sakuragawa City		4 200	0.00	0.08	0.00	0.08	0.16
Takahagi City		17 329	0.00	0.33	0.00	0.08	0.41
Tokai Village		14 000	0.00	0.27	0.00	0.08	0.35
Tone Town		35 000	0.00	0.65	0.00	0.08	0.74
Toride City		36 333	0.00	0.70	0.00	0.08	0.78
Tsuchiura City		19 817	0.00	0.39	0.00	0.08	0.47
Tsukuba City		13 429	0.00	0.26	0.00	0.08	0.34
Tsukubamirai City		19 000	0.00	0.37	0.00	0.08	0.45
Ushiku City		39 500	0.00	0.77	0.00	0.08	0.85
<b>Iwate Ken</b>	<b>1 330 147</b>						
Fujisawa Town		23 000	0.00	0.44	0.00	0.07	0.51
Hiraizumi Town		14 000	0.00	0.27	0.00	0.07	0.34
Ichinoseki City		15 836	0.00	0.30	0.00	0.07	0.37
Kanegasaki Town		13 000	0.00	0.26	0.00	0.07	0.33
Kitakami City		2 400	0.00	0.05	0.00	0.07	0.12
Ofunato City		5 200	0.00	0.10	0.00	0.07	0.18
Oshu City		12 786	0.00	0.25	0.00	0.07	0.32
Rikuzentakata City		10 600	0.00	0.21	0.00	0.07	0.28
Sumita Town		10 100	0.00	0.20	0.00	0.07	0.27
<b>Miyagi Ken</b>	<b>2 348 165</b>						
Higashimatsushima City		5 600	0.00	0.11	0.00	0.08	0.19
Ishinomaki City		4 593	0.00	0.09	0.00	0.08	0.17
Iwanuma City		6 050	0.00	0.12	0.00	0.08	0.20
Kakuda City		22 500	0.00	0.43	0.00	0.08	0.51
Kami Town		15 000	0.00	0.30	0.00	0.08	0.38
Kawasaki Town		3 550	0.00	0.07	0.00	0.08	0.15
Kesenuma City		6 500	0.00	0.13	0.00	0.08	0.21
Kurihara City		15 735	0.00	0.30	0.00	0.08	0.38
Marumori Town		41 231	0.00	0.78	0.00	0.08	0.86
Minamisanriku Town		6 450	0.00	0.13	0.00	0.08	0.21
Misato Town		4 200	0.00	0.08	0.00	0.08	0.16
Ogawara Town		12 000	0.00	0.22	0.00	0.08	0.30
Onagawa Town		5 200	0.00	0.10	0.00	0.08	0.18
Osaki City		7 050	0.00	0.14	0.00	0.08	0.22
Sendai City		6 000	0.00	0.12	0.00	0.08	0.20
Shichikashuku Town		10 500	0.00	0.21	0.00	0.08	0.29
Shikama Town		3 600	0.00	0.07	0.00	0.08	0.15
Shiroishi City		23 200	0.00	0.44	0.00	0.08	0.52
Tome City		8 275	0.00	0.16	0.00	0.08	0.24
Yamamoto Town		22 333	0.00	0.42	0.00	0.08	0.50
Zao Town		8 200	0.00	0.16	0.00	0.08	0.24

District	Population in 2010 (persons)	Average deposition density of $^{137}\text{Cs}$ on soil ( $\text{Bq}/\text{m}^2$ )	Absorbed dose to red bone marrow by pathway, 10-year-old child, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
<b>Tochigi Ken</b>	<b>2 007 683</b>						
Ashikaga City		4 850	0.00	0.09	0.00	0.08	0.17
Kanuma City		15 917	0.00	0.30	0.00	0.08	0.38
Mibu Town		7 100	0.00	0.14	0.00	0.08	0.22
Nakagawa Town		9 300	0.00	0.18	0.00	0.08	0.26
Nasu Town		80 143	0.00	1.52	0.00	0.08	1.61
Nasushiobara City		79 824	0.00	1.52	0.00	0.08	1.61
Nikko City		26 885	0.00	0.51	0.00	0.08	0.60
Otawara City		41 500	0.00	0.79	0.00	0.08	0.88
Sakura City		14 433	0.00	0.28	0.00	0.08	0.36
Sano City		7 880	0.00	0.15	0.00	0.08	0.23
Shioya Town		36 800	0.00	0.71	0.00	0.08	0.79
Takanezawa Town		5 000	0.00	0.10	0.00	0.08	0.18
Tochigi City		7 850	0.00	0.15	0.00	0.08	0.23
Utsunomiya City		7 850	0.00	0.15	0.00	0.08	0.23
Yaita City		51 000	0.00	0.99	0.00	0.08	1.07

**Table C-17.6. Average absorbed dose to red bone marrow for one-year-old infants in the first year for Group 3 prefectures**

The dose estimates are quoted to two decimal places, but this does not imply that level of accuracy

District	Population in 2010 (persons)	Average deposition density of <sup>137</sup> Cs on soil (Bq/m <sup>2</sup> )	Absorbed dose to red bone marrow by pathway, one-year-old infant, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
<b>Chiba Ken</b>	<b>6 216 289</b>						
Abiko City		44 667	0.00	1.01	0.00	0.05	1.06
Chiba City		5 400	0.00	0.12	0.00	0.05	0.17
Funabashi City		17 000	0.00	0.38	0.00	0.05	0.43
Ichikawa City		19 500	0.00	0.43	0.00	0.05	0.48
Inzai City		35 750	0.00	0.80	0.00	0.05	0.85
Kashiwa City		43 667	0.00	0.98	0.00	0.05	1.03
Katori City		7 350	0.00	0.16	0.00	0.05	0.21
Kozaki Town		18 000	0.00	0.41	0.00	0.05	0.46
Matsudo City		31 000	0.00	0.70	0.00	0.05	0.75
Nagareyama City		55 500	0.00	1.28	0.00	0.05	1.33
Narita City		14 000	0.00	0.31	0.00	0.05	0.36
Noda City		24 350	0.00	0.55	0.00	0.05	0.60
Sakae Town		20 000	0.00	0.43	0.00	0.05	0.48
Sakura City		8 600	0.00	0.19	0.00	0.05	0.24
Shibayama Town		6 500	0.00	0.15	0.00	0.05	0.20
Shiroi City		33 000	0.00	0.74	0.00	0.05	0.79
Togane City		4 000	0.00	0.09	0.00	0.05	0.14
Tonosho Town		11 000	0.00	0.25	0.00	0.05	0.30
Urayasu City		13 000	0.00	0.29	0.00	0.05	0.34
Yachimata City		5 700	0.00	0.13	0.00	0.05	0.18
Yachiyo City		28 500	0.00	0.63	0.00	0.05	0.68
Yotsukaido City		14 000	0.00	0.32	0.00	0.05	0.37
<b>Gunma Ken</b>	<b>2 008 068</b>						
Annaka City		18 600	0.00	0.42	0.00	0.05	0.47
Fujioka City		4 800	0.00	0.11	0.00	0.05	0.16
Higashiagatsuma Town		13 767	0.00	0.32	0.00	0.05	0.37
Isesaki City		4 500	0.00	0.10	0.00	0.05	0.15
Kanna Town		7 500	0.00	0.17	0.00	0.05	0.22
Kanra Town		9 000	0.00	0.20	0.00	0.05	0.25
Katashina Village		14 117	0.00	0.33	0.00	0.05	0.38
Kawaba Village		26 000	0.00	0.60	0.00	0.05	0.65
Kiryu City		12 911	0.00	0.29	0.00	0.05	0.34
Maebashi City		6 660	0.00	0.15	0.00	0.05	0.20
Midori City		20 180	0.00	0.45	0.00	0.05	0.50
Minakami Town		17 009	0.00	0.39	0.00	0.05	0.44
Naganohara Town		7 233	0.00	0.17	0.00	0.05	0.22



District	Population in 2010 (persons)	Average deposition density of $^{137}\text{Cs}$ on soil ( $\text{Bq}/\text{m}^2$ )	Absorbed dose to red bone marrow by pathway, one-year-old infant, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
Nakanojo Town		21 714	0.00	0.50	0.00	0.05	0.55
Nanmoku Village		12 550	0.00	0.28	0.00	0.05	0.33
Numata City		18 467	0.00	0.42	0.00	0.05	0.47
Ota City		6 633	0.00	0.15	0.00	0.05	0.20
Shibukawa City		18 250	0.00	0.41	0.00	0.05	0.46
Shimonita Town		12 800	0.00	0.29	0.00	0.05	0.34
Shinto Village		5 600	0.00	0.12	0.00	0.05	0.17
Showa Village		13 500	0.00	0.29	0.00	0.05	0.34
Takasaki City		14 143	0.00	0.32	0.00	0.05	0.37
Takayama Village		36 000	0.00	0.83	0.00	0.05	0.88
Tomioka City		14 875	0.00	0.34	0.00	0.05	0.39
Tsumagoi Village		10 000	0.00	0.23	0.00	0.05	0.29
Ueno Village		7 800	0.00	0.17	0.00	0.05	0.22
<b>Ibaraki Ken</b>	<b>2 969 770</b>						
Ami Town		27 333	0.00	0.63	0.00	0.05	0.68
Bando City		6 300	0.00	0.14	0.00	0.05	0.19
Daigo Town		10 940	0.00	0.25	0.00	0.05	0.30
Hitachi City		26 500	0.00	0.59	0.00	0.05	0.65
Hitachinaka City		38 000	0.00	0.83	0.00	0.05	0.89
Hitachiomiya City		4 400	0.00	0.10	0.00	0.05	0.15
Hitachiota City		6 060	0.00	0.14	0.00	0.05	0.19
Hokota City		12 817	0.00	0.29	0.00	0.05	0.34
Ibaraki Town		15 000	0.00	0.33	0.00	0.05	0.38
Inashiki City		20 500	0.00	0.46	0.00	0.05	0.52
Ishioka City		11 633	0.00	0.27	0.00	0.05	0.32
Itako City		12 000	0.00	0.28	0.00	0.05	0.33
Joso City		6 500	0.00	0.15	0.00	0.05	0.20
Kamisu City		10 000	0.00	0.23	0.00	0.05	0.28
Kasama City		20 000	0.00	0.45	0.00	0.05	0.50
Kashima City		17 667	0.00	0.40	0.00	0.05	0.45
Kasumigaura City		19 500	0.00	0.45	0.00	0.05	0.50
Kawachi Town		8 400	0.00	0.19	0.00	0.05	0.25
Kitaibaraki City		18 857	0.00	0.43	0.00	0.05	0.48
Miho Village		16 850	0.00	0.39	0.00	0.05	0.44
Mito City		12 500	0.00	0.28	0.00	0.05	0.33
Moriya City		30 000	0.00	0.69	0.00	0.05	0.74
Naka City		19 000	0.00	0.43	0.00	0.05	0.48
Namegata City		13 333	0.00	0.31	0.00	0.05	0.36
Oarai Town		19 000	0.00	0.42	0.00	0.05	0.47
Omitama City		16 500	0.00	0.38	0.00	0.05	0.43
Ryugasaki City		21 500	0.00	0.50	0.00	0.05	0.55
Sakai Town		5 000	0.00	0.11	0.00	0.05	0.16

District	Population in 2010 (persons)	Average deposition density of $^{137}\text{Cs}$ on soil ( $\text{Bq}/\text{m}^2$ )	Absorbed dose to red bone marrow by pathway, one-year-old infant, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
Sakuragawa City		4 200	0.00	0.10	0.00	0.05	0.15
Takahagi City		17 329	0.00	0.39	0.00	0.05	0.44
Tokai Village		14 000	0.00	0.32	0.00	0.05	0.37
Tone Town		35 000	0.00	0.77	0.00	0.05	0.82
Toride City		36 333	0.00	0.82	0.00	0.05	0.88
Tsuchiura City		19 817	0.00	0.46	0.00	0.05	0.51
Tsukuba City		13 429	0.00	0.31	0.00	0.05	0.36
Tsukubamirai City		19 000	0.00	0.44	0.00	0.05	0.49
Ushiku City		39 500	0.00	0.91	0.00	0.05	0.96
<b>Iwate Ken</b>	<b>1 330 147</b>						
Fujisawa Town		23 000	0.00	0.52	0.00	0.05	0.57
Hiraizumi Town		14 000	0.00	0.32	0.00	0.05	0.37
Ichinoseki City		15 836	0.00	0.36	0.00	0.05	0.41
Kanegasaki Town		13 000	0.00	0.31	0.00	0.05	0.36
Kitakami City		2 400	0.00	0.05	0.00	0.05	0.11
Ofunato City		5 200	0.00	0.12	0.00	0.05	0.17
Oshu City		12 786	0.00	0.29	0.00	0.05	0.34
Rikuzentakata City		10 600	0.00	0.24	0.00	0.05	0.29
Sumita Town		10 100	0.00	0.23	0.00	0.05	0.28
<b>Miyagi Ken</b>	<b>2 348 165</b>						
Higashimatsushima City		5 600	0.00	0.13	0.00	0.05	0.18
Ishinomaki City		4 593	0.00	0.11	0.00	0.05	0.16
Iwanuma City		6 050	0.00	0.14	0.00	0.05	0.19
Kakuda City		22 500	0.00	0.50	0.00	0.05	0.56
Kami Town		15 000	0.00	0.36	0.00	0.05	0.41
Kawasaki Town		3 550	0.00	0.08	0.00	0.05	0.13
Kesennuma City		6 500	0.00	0.15	0.00	0.05	0.20
Kurihara City		15 735	0.00	0.36	0.00	0.05	0.41
Marumori Town		41 231	0.00	0.92	0.00	0.05	0.97
Minamisanriku Town		6 450	0.00	0.15	0.00	0.05	0.20
Misato Town		4 200	0.00	0.10	0.00	0.05	0.15
Ogawara Town		12 000	0.00	0.26	0.00	0.05	0.31
Onagawa Town		5 200	0.00	0.12	0.00	0.05	0.17
Osaki City		7 050	0.00	0.16	0.00	0.05	0.21
Sendai City		6 000	0.00	0.14	0.00	0.05	0.19
Shichikashuku Town		10 500	0.00	0.25	0.00	0.05	0.30
Shikama Town		3 600	0.00	0.09	0.00	0.05	0.14
Shiroishi City		23 200	0.00	0.51	0.00	0.05	0.57
Tome City		8 275	0.00	0.19	0.00	0.05	0.24
Yamamoto Town		22 333	0.00	0.50	0.00	0.05	0.55
Zao Town		8 200	0.00	0.18	0.00	0.05	0.23

District	Population in 2010 (persons)	Average deposition density of $^{137}\text{Cs}$ on soil ( $\text{Bq}/\text{m}^2$ )	Absorbed dose to red bone marrow by pathway, one-year-old infant, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
<b>Tochigi Ken</b>	<b>2 007 683</b>						
Ashikaga City		4 850	0.00	0.11	0.00	0.05	0.16
Kanuma City		15 917	0.00	0.36	0.00	0.05	0.41
Mibu Town		7 100	0.00	0.17	0.00	0.05	0.22
Nakagawa Town		9 300	0.00	0.21	0.00	0.05	0.26
Nasu Town		80 143	0.00	1.80	0.00	0.05	1.85
Nasushiobara City		79 824	0.00	1.80	0.00	0.05	1.85
Nikko City		26 885	0.00	0.61	0.00	0.05	0.66
Otawara City		41 500	0.00	0.94	0.00	0.05	0.99
Sakura City		14 433	0.00	0.33	0.00	0.05	0.38
Sano City		7 880	0.00	0.17	0.00	0.05	0.22
Shioya Town		36 800	0.00	0.84	0.00	0.05	0.89
Takanezawa Town		5 000	0.00	0.11	0.00	0.05	0.17
Tochigi City		7 850	0.00	0.18	0.00	0.05	0.23
Utsunomiya City		7 850	0.00	0.18	0.00	0.05	0.23
Yaita City		51 000	0.00	1.17	0.00	0.05	1.22

**Table C-17.7. Average absorbed dose to red bone marrow for adults in the first year for Group 4 prefectures**

The dose estimates are quoted to two decimal places, but this does not imply that level of accuracy

Prefecture [City]	Population in 2010 (persons)	Average deposition density of <sup>137</sup> Cs on soil (Bq/m <sup>2</sup> )	Absorbed dose to red bone marrow by pathway, adult, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
Aichi [Nagoya]	7 410 719	9	0.00	0.00	0.00	0.09	0.09
Akita [Akita]	1 085 997	175	0.00	0.00	0.00	0.09	0.09
Aomori [Aomori]	1 373 339	67	0.00	0.00	0.00	0.09	0.09
Ehime [Matsuyama]	1 431 493	7	0.00	0.15	0.00	0.09	0.24
Fukui [Fukui]	806 314	31	0.00	0.08	0.00	0.09	0.17
Fukuoka [Dazaifu]	5 071 968	1	0.00	0.11	0.00	0.09	0.20
Gifu [Kakamigahara]	2 080 773	16	0.00	0.05	0.00	0.09	0.14
Hiroshima [Hiroshima]	2 860 750	4	0.00	0.00	0.00	0.09	0.09
Hokkaido [Sapporo]	5 506 419	9	0.00	0.00	0.00	0.09	0.09
Hyogo [Kobe]	5 588 133	8	0.00	0.00	0.00	0.09	0.09
Ishikawa [Kanazawa]	1 169 788	13	0.00	0.00	0.00	0.09	0.09
Kagawa [Takamatsu]	995 842	6	0.00	0.00	0.00	0.09	0.09
Kagoshima [Kagoshima]	796 896	1	0.00	0.02	0.00	0.09	0.11
Kanagawa [Chigasaki]	4 544 545	3 857	0.00	0.00	0.00	0.09	0.09
Kochi [Kochi]	764 456	36	0.00	0.01	0.00	0.09	0.10
Kumamoto [Uto]	1 817 426	0	0.00	0.00	0.00	0.09	0.09
Kyoto [Kyoto]	2 636 092	7	0.00	0.00	0.00	0.09	0.09
Mie [Yokkaichi]	1 854 724	27	0.00	0.00	0.00	0.09	0.09
Miyazaki [Miyazaki]	1 135 233	6	0.00	0.00	0.00	0.09	0.09
Nagano [Nagano]	2 152 449	1 251	0.00	0.00	0.00	0.09	0.09
Nagasaki [Omura]	1 426 779	2	0.00	0.00	0.00	0.09	0.09
Nara [Nara]	1 400 728	7	0.00	0.00	0.00	0.09	0.09
Niigata [Niigata]	2 374 450	49	0.00	0.00	0.00	0.09	0.09
Oita [Oita]	1 196 529	1	0.00	0.00	0.00	0.09	0.09
Okayama [Okayama]	1 945 276	4	0.00	0.00	0.00	0.09	0.09
Okinawa [Uruma]	1 392 818	4	0.00	0.00	0.00	0.09	0.09
Osaka [Osaka]	8 865 245	9	0.00	0.00	0.00	0.09	0.09
Saga [Saga]	849 788	1	0.00	0.00	0.00	0.09	0.09
Saitama [Saitama]	7 194 556	6 284	0.00	0.00	0.00	0.09	0.09
Shiga [Otsu]	1 410 777	7	0.00	0.00	0.00	0.09	0.09
Shimane [Matsue]	717 397	6	0.00	0.00	0.00	0.09	0.09
Shizuoka [Shizuoka]	3 765 007	643	0.00	0.00	0.00	0.09	0.09
Tokushima [Myozai]	785 491	8	0.00	0.00	0.00	0.09	0.09
Tokyo [Shinjuku]	13 159 388	8 499	0.00	0.00	0.00	0.09	0.09
Tottori [Touhaku]	588 667	11	0.00	0.00	0.00	0.09	0.09
Toyama [Imizu]	1 093 247	16	0.00	0.00	0.00	0.09	0.09
Wakayama [Wakayama]	1 002 198	10	0.00	0.00	0.00	0.09	0.09

<i>Prefecture [City]</i>	<i>Population in 2010 (persons)</i>	<i>Average deposition density of <sup>137</sup>Cs on soil (Bq/m<sup>2</sup>)</i>	<i>Absorbed dose to red bone marrow by pathway, adult, first year (mGy)</i>				
			<i>External (plume)</i>	<i>External (ground)</i>	<i>Inhalation (plume)</i>	<i>Ingestion</i>	<i>Total</i>
Yamagata [Yamagata]	1 168 924	10 813	0.00	0.00	0.00	0.09	0.09
Yamaguchi [Yamaguchi]	1 451 338	3	0.00	0.00	0.00	0.09	0.09
Yamanashi [Kofu]	863 075	208	0.00	0.00	0.00	0.09	0.09

**Table C-17.8. Average absorbed dose to red bone marrow for 10-year-old children in the first year for Group 4 prefectures**

The dose estimates are quoted to two decimal places, but this does not imply that level of accuracy

Prefecture [City]	Population in 2010 (persons)	Average deposition density of $^{137}\text{Cs}$ on soil ( $\text{Bq}/\text{m}^2$ )	Absorbed dose to red bone marrow by pathway, 10-year-old child, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
Aichi [Nagoya]	7 410 719	9	0.00	0.00	0.00	0.07	0.07
Akita [Akita]	1 085 997	175	0.00	0.00	0.00	0.07	0.07
Aomori [Aomori]	1 373 339	67	0.00	0.00	0.00	0.07	0.07
Ehime [Matsuyama]	1 431 493	7	0.00	0.20	0.00	0.07	0.27
Fukui [Fukui]	806 314	31	0.00	0.12	0.00	0.07	0.19
Fukuoka [Dazaifu]	5 071 968	1	0.00	0.16	0.00	0.07	0.23
Gifu [Kakamigahara]	2 080 773	16	0.00	0.07	0.00	0.07	0.14
Hiroshima [Hiroshima]	2 860 750	4	0.00	0.00	0.00	0.07	0.07
Hokkaido [Sapporo]	5 506 419	9	0.00	0.00	0.00	0.07	0.07
Hyogo [Kobe]	5 588 133	8	0.00	0.00	0.00	0.07	0.07
Ishikawa [Kanazawa]	1 169 788	13	0.00	0.00	0.00	0.07	0.07
Kagawa [Takamatsu]	995 842	6	0.00	0.00	0.00	0.07	0.07
Kagoshima [Kagoshima]	796 896	1	0.00	0.03	0.00	0.07	0.10
Kanagawa [Chigasaki]	4 544 545	3 857	0.00	0.00	0.00	0.07	0.07
Kochi [Kochi]	764 456	36	0.00	0.01	0.00	0.07	0.08
Kumamoto [Uto]	1 817 426	0	0.00	0.00	0.00	0.07	0.07
Kyoto [Kyoto]	2 636 092	7	0.00	0.00	0.00	0.07	0.07
Mie [Yokkaichi]	1 854 724	27	0.00	0.00	0.00	0.07	0.07
Miyazaki [Miyazaki]	1 135 233	6	0.00	0.00	0.00	0.07	0.07
Nagano [Nagano]	2 152 449	1 251	0.00	0.00	0.00	0.07	0.07
Nagasaki [Omura]	1 426 779	2	0.00	0.00	0.00	0.07	0.07
Nara [Nara]	1 400 728	7	0.00	0.00	0.00	0.07	0.07
Niigata [Niigata]	2 374 450	49	0.00	0.00	0.00	0.07	0.07
Oita [Oita]	1 196 529	1	0.00	0.00	0.00	0.07	0.07
Okayama [Okayama]	1 945 276	4	0.00	0.00	0.00	0.07	0.07
Okinawa [Uruma]	1 392 818	4	0.00	0.00	0.00	0.07	0.07
Osaka [Osaka]	8 865 245	9	0.00	0.00	0.00	0.07	0.07
Saga [Saga]	849 788	1	0.00	0.00	0.00	0.07	0.07
Saitama [Saitama]	7 194 556	6 284	0.00	0.00	0.00	0.07	0.07
Shiga [Otsu]	1 410 777	7	0.00	0.00	0.00	0.07	0.07
Shimane [Matsue]	717 397	6	0.00	0.00	0.00	0.07	0.07
Shizuoka [Shizuoka]	3 765 007	643	0.00	0.00	0.00	0.07	0.07
Tokushima [Myozai]	785 491	8	0.00	0.00	0.00	0.07	0.07
Tokyo [Shinjuku]	13 159 388	8 499	0.00	0.00	0.00	0.07	0.07
Tottori [Touhaku]	588 667	11	0.00	0.00	0.00	0.07	0.07
Toyama [Imizu]	1 093 247	16	0.00	0.00	0.00	0.07	0.07
Wakayama [Wakayama]	1 002 198	10	0.00	0.00	0.00	0.07	0.07

<i>Prefecture [City]</i>	<i>Population in 2010 (persons)</i>	<i>Average deposition density of <sup>137</sup>Cs on soil (Bq/m<sup>2</sup>)</i>	<i>Absorbed dose to red bone marrow by pathway, 10-year-old child, first year (mGy)</i>				
			<i>External (plume)</i>	<i>External (ground)</i>	<i>Inhalation (plume)</i>	<i>Ingestion</i>	<i>Total</i>
Yamagata [Yamagata]	1 168 924	10 813	0.00	0.00	0.00	0.07	0.07
Yamaguchi [Yamaguchi]	1 451 338	3	0.00	0.00	0.00	0.07	0.07
Yamanashi [Kofu]	863 075	208	0.00	0.00	0.00	0.07	0.07

**Table C-17.9. Average absorbed dose to red bone marrow for one-year-old infants in the first year for Group 4 prefectures**

The dose estimates are quoted to two decimal places, but this does not imply that level of accuracy

Prefecture [City]	Population in 2010 (persons)	Average deposition density of $^{137}\text{Cs}$ on soil ( $\text{Bq}/\text{m}^2$ )	Absorbed dose to red bone marrow by pathway, one-year-old infant, first year (mGy)				
			External (plume)	External (ground)	Inhalation (plume)	Ingestion	Total
Aichi [Nagoya]	7 410 719	9	0.00	0.00	0.00	0.05	0.05
Akita [Akita]	1 085 997	175	0.00	0.00	0.00	0.05	0.05
Aomori [Aomori]	1 373 339	67	0.00	0.00	0.00	0.05	0.05
Ehime [Matsuyama]	1 431 493	7	0.00	0.00	0.00	0.05	0.05
Fukui [Fukui]	806 314	31	0.00	0.00	0.00	0.05	0.05
Fukuoka [Dazaifu]	5 071 968	1	0.00	0.00	0.00	0.05	0.05
Gifu [Kakamigahara]	2 080 773	16	0.00	0.00	0.00	0.05	0.05
Hiroshima [Hiroshima]	2 860 750	4	0.00	0.00	0.00	0.05	0.05
Hokkaido [Sapporo]	5 506 419	9	0.00	0.00	0.00	0.05	0.05
Hyogo [Kobe]	5 588 133	8	0.00	0.00	0.00	0.05	0.05
Ishikawa [Kanazawa]	1 169 788	13	0.00	0.00	0.00	0.05	0.05
Kagawa [Takamatsu]	995 842	6	0.00	0.00	0.00	0.05	0.05
Kagoshima [Kagoshima]	796 896	1	0.00	0.00	0.00	0.05	0.05
Kanagawa [Chigasaki]	4 544 545	3 857	0.00	0.08	0.00	0.05	0.13
Kochi [Kochi]	764 456	36	0.00	0.00	0.00	0.05	0.05
Kumamoto [Uto]	1 817 426	0	0.00	0.00	0.00	0.05	0.05
Kyoto [Kyoto]	2 636 092	7	0.00	0.00	0.00	0.05	0.05
Mie [Yokkaichi]	1 854 724	27	0.00	0.00	0.00	0.05	0.05
Miyazaki [Miyazaki]	1 135 233	6	0.00	0.00	0.00	0.05	0.05
Nagano [Nagano]	2 152 449	1 251	0.00	0.03	0.00	0.05	0.08
Nagasaki [Omura]	1 426 779	2	0.00	0.00	0.00	0.05	0.05
Nara [Nara]	1 400 728	7	0.00	0.00	0.00	0.05	0.05
Niigata [Niigata]	2 374 450	49	0.00	0.00	0.00	0.05	0.05
Oita [Oita]	1 196 529	1	0.00	0.00	0.00	0.05	0.05
Okayama [Okayama]	1 945 276	4	0.00	0.00	0.00	0.05	0.05
Okinawa [Uruma]	1 392 818	4	0.00	0.00	0.00	0.05	0.05
Osaka [Osaka]	8 865 245	9	0.00	0.00	0.00	0.05	0.05
Saga [Saga]	849 788	1	0.00	0.00	0.00	0.05	0.05
Saitama [Saitama]	7 194 556	6 284	0.00	0.14	0.00	0.05	0.19
Shiga [Otsu]	1 410 777	7	0.00	0.00	0.00	0.05	0.05
Shimane [Matsue]	717 397	6	0.00	0.00	0.00	0.05	0.05
Shizuoka [Shizuoka]	3 765 007	643	0.00	0.01	0.00	0.05	0.06
Tokushima [Myozai]	785 491	8	0.00	0.00	0.00	0.05	0.05
Tokyo [Shinjuku]	13 159 388	8 499	0.00	0.19	0.00	0.05	0.24
Tottori [Touhaku]	588 667	11	0.00	0.00	0.00	0.05	0.05
Toyama [Imizu]	1 093 247	16	0.00	0.00	0.00	0.05	0.05
Wakayama [Wakayama]	1 002 198	10	0.00	0.00	0.00	0.05	0.05
Yamagata [Yamagata]	1 168 924	10 813	0.00	0.24	0.00	0.05	0.29



<i>Prefecture [City]</i>	<i>Population in 2010 (persons)</i>	<i>Average deposition density of <sup>137</sup>Cs on soil (Bq/m<sup>2</sup>)</i>	<i>Absorbed dose to red bone marrow by pathway, one-year-old infant, first year (mGy)</i>				
			<i>External (plume)</i>	<i>External (ground)</i>	<i>Inhalation (plume)</i>	<i>Ingestion</i>	<i>Total</i>
Yamaguchi [Yamaguchi]	1 451 338	3	0.00	0.00	0.00	0.05	0.05
Yamanashi [Kofu]	863 075	208	0.00	0.00	0.00	0.05	0.05

## References

MIC. The basic information about the population census for 2010 in Japan. Ministry of Internal Affairs and Communications. [Internet] Available from (<http://www.stat.go.jp/data/kokusei/2010/special/english/index.htm>) on 6 December 2011.