

Continents	Country	City	Ranking of radiation exposure effects by city over time based on nuclear explosion simulation Elapsed time interval after a 20-kiloton detonation (hour)							
			0-3 Rank	3-6 Rank	6-9 Rank	9-12 Rank	12-15 Rank	15-18 Rank	18-21 Rank	21-24 Rank
Central Asia	Afghanistan	Kabul	4	3	19	71	45	11	2	2
South America	Argentina	Buenos Aires	170	50	77	84	165	46	21	16
West Asia	Armenia	Yerevan	6	8	14	9	9	6	6	5
Australia	Australia	Melbourne	204	212	207	198	122	117	146	168
Australia	Australia	Sydney	203	217	210	189	197	183	181	202
Europe	Austria	Vienna	57	54	59	69	49	36	61	53
Europe	Azerbaijan	Baku	72	48	23	54	94	145	102	60
South Asia	Bangladesh	Chittagong	107	30	92	144	150	101	71	74
South Asia	Bangladesh	Dhaka	98	86	121	148	123	90	76	78
Europe	Belarus	Homyel	202	208	218	214	210	202	185	198
Europe	Belarus	Minsk	215	200	206	213	207	201	186	193
Europe	Belarus	Vitebsk	198	203	203	156	175	166	192	203
South America	Bolivia	Santa Cruz de la Sierra	208	131	109	176	211	212	210	214
South America	Brasil	Rio de Janeiro	48	25	17	15	18	31	67	66
South America	Brasil	São Paulo	130	17	1	1	19	38	105	79
Europe	Bulgaria	Sofia	54	39	5	8	70	10	10	15
North America	Canada	Calgary	126	95	27	19	17	28	30	45
North America	Canada	Edmonton	153	149	127	98	74	107	194	176
North America	Canada	Montréal	191	218	217	212	204	204	204	207
North America	Canada	Ottawa	161	207	212	210	216	215	211	212
North America	Canada	Toronto	216	214	209	206	215	216	218	216
North America	Canada	Winnipeg	201	197	211	209	209	179	182	172
South America	Chile	Santiago	27	21	6	2	4	24	68	63
East Asia	China	Beijing	93	65	65	73	55	50	44	49
East Asia	China	Changsha	123	181	170	160	109	86	118	89
East Asia	China	Chengdu	22	40	39	46	50	30	12	12
East Asia	China	Chongqing	18	20	24	22	15	20	26	25
East Asia	China	Dongguan	101	89	88	91	72	45	48	64
East Asia	China	Foshan	95	107	151	94	108	73	56	91

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East Asia	China	Guangzhou	69	88	99	88	52	59	65	92
East Asia	China	Hangzhou	110	147	147	106	87	60	50	80
East Asia	China	Harbin	125	183	174	179	118	115	143	117
East Asia	China	Jinan	157	167	164	190	178	198	187	184
East Asia	China	Nanjing	164	171	169	172	131	111	104	111
East Asia	China	Qingdao	195	188	114	163	169	167	164	165
East Asia	China	Shanghai	182	134	118	143	146	188	195	175
East Asia	China	Shenyang	160	152	73	62	65	47	37	70
East Asia	China	Shenzhen	41	59	51	49	46	55	38	55
East Asia	China	Suzhou	189	154	142	162	136	164	177	173
East Asia	China	Tianjin	158	161	208	173	173	191	213	206
East Asia	China	Wuhan	97	116	154	96	79	62	47	37
East Asia	China	Xi'an	50	91	63	52	16	4	3	6
East Asia	China	Zhengzhou	156	124	103	125	127	120	106	112
South America	Colombia	Bogotá	20	7	8	7	20	32	24	40
Africa	Congo	Kinshasa	11	42	69	28	111	123	84	51
Europe	Czech Republic	Prague	10	56	52	115	107	157	172	160
South America	Ecuador	Guayaquil	183	90	139	150	80	70	59	100
Africa	Egypt	Cairo	137	123	161	195	195	206	169	154
Europe	England	Birmingham	99	96	60	42	120	105	128	115
Europe	England	Leeds	64	33	54	95	139	148	144	125
Europe	England	Liverpool	147	118	136	193	90	210	212	215
Europe	England	London	196	135	134	78	145	155	190	159
Europe	England	Sheffield	49	16	18	55	172	163	176	171
Europe	Finland	Helsinki	73	130	172	184	184	199	184	186
Europe	France	Lyon	66	78	81	99	171	186	179	145
Europe	France	Marseille	25	31	35	100	119	158	145	138
Europe	France	Nice	30	83	42	65	60	132	97	43
Europe	France	Paris	178	209	137	113	106	161	158	133

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Europe	France	Toulouse	190	166	95	116	168	165	130	110
Europe	Georgia	Tbilisi	12	19	74	13	57	52	46	21
Europe	German	Berlin	173	169	125	211	218	217	203	204
Europe	German	Cologne	114	182	66	70	95	189	170	177
Europe	German	Hamburg	129	101	83	161	201	207	183	200
Europe	German	Munich	46	58	47	31	138	22	22	35
Europe	Hungary	Budapest	26	27	33	34	56	43	40	33
South Asia	India	Ahmedabad	199	157	129	217	203	174	155	167
South Asia	India	Bengaluru	197	104	177	194	190	171	141	152
South Asia	India	Bhopal	105	92	178	192	198	175	135	135
South Asia	India	Chennai	209	180	158	134	170	184	154	128
South Asia	India	Hyderabad	169	132	186	76	121	113	89	106
South Asia	India	Indore	154	47	187	202	187	143	115	147
South Asia	India	Jaipur	43	43	140	169	151	85	54	57
South Asia	India	Kanpur	118	82	87	153	132	137	132	114
South Asia	India	Kolkata	115	113	152	154	152	153	148	153
South Asia	India	Lucknow	159	71	58	130	182	168	162	130
South Asia	India	Mumbai	80	63	84	82	86	71	87	62
South Asia	India	Nagpur	124	133	201	204	194	142	122	107
South Asia	India	New Delhi	162	136	148	131	141	149	129	108
South Asia	India	Patna	56	38	115	158	160	128	110	88
South Asia	India	Pimpri-Chinchwad	15	28	138	200	185	96	62	73
South Asia	India	Pune	24	46	193	203	183	125	113	84
South Asia	India	Surat	175	64	102	159	113	67	53	59
South Asia	India	Thane	86	52	49	83	93	82	81	87
South Asia	India	Vadodara	150	129	120	168	153	140	123	99
South Asia	India	Visakhapatnam	67	80	112	178	174	131	78	76
Southeast Asia	Indonesia	Jakarta	132	76	75	109	98	93	60	7
West Asia	Iran	Isfahan	14	26	40	85	166	87	57	36

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West Asia	Iran	Mashhad	9	13	22	67	58	29	16	13
West Asia	Iran	Tehran	5	9	85	41	25	25	17	9
West Asia	Iraq	Baghdad	111	53	32	79	128	135	168	166
West Asia	Israel	Haifa	166	145	162	152	186	136	35	71
West Asia	Israel	Jerusalem	2	1	2	26	96	109	45	31
West Asia	Israel	Tel Aviv	168	144	145	120	163	144	92	67
Europe	Italy	Milan	87	62	29	32	27	44	70	42
Europe	Italy	Rome	82	119	64	66	68	34	131	4
East Asia	Japan	Fukuoka	134	205	195	149	176	172	151	178
East Asia	Japan	Kawasaki	172	198	185	126	129	141	140	136
East Asia	Japan	Kobe	149	153	165	108	81	100	103	104
East Asia	Japan	Kyoto	60	186	199	185	85	110	116	129
East Asia	Japan	Nagoya	151	156	135	119	34	19	18	23
East Asia	Japan	Okinawa City	145	168	179	146	193	200	196	205
East Asia	Japan	Osaka	47	138	116	75	110	121	111	140
East Asia	Japan	Saitama	140	177	156	80	64	99	156	150
East Asia	Japan	Sapporo	165	210	198	177	157	181	180	190
East Asia	Japan	Sendai	163	211	204	207	205	187	205	213
East Asia	Japan	Tokyo	148	201	184	167	126	127	138	156
East Asia	Japan	Yokohama	122	202	197	114	114	129	147	144
West Asia	Jordan	Amman	23	15	9	72	158	134	36	39
Central Asia	Kazakhstan	Almaty	19	10	25	14	8	2	1	1
Africa	Kenya	Nairobi	42	12	124	201	196	169	124	131
Southeast Asia	Laos	Vientiane	55	77	146	145	73	57	33	32
North America	Mexico	Mexico City	116	55	37	40	51	118	109	54
East Asia	Mongolia	Ulaanbaatar	39	60	76	63	37	26	23	30
Southeast Asia	Myanmar	Yangon	90	61	57	43	39	58	43	58
Africa	Nigeria	Lagos	186	121	111	68	29	49	96	121
East Asia	North Korea	Chongjin	40	105	50	92	67	130	75	68

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East Asia	North Korea	Hamhung	13	36	36	23	13	13	13	46
East Asia	North Korea	Hungnam	28	74	108	107	112	92	72	95
East Asia	North Korea	Kaechon	33	125	86	58	28	18	14	19
East Asia	North Korea	Kaesong	63	108	106	59	71	116	101	103
East Asia	North Korea	Mangyongdae-ri	106	178	123	61	41	98	93	119
East Asia	North Korea	Nampo	121	165	78	86	99	156	153	149
East Asia	North Korea	Pyongyang	83	179	202	171	133	112	112	123
East Asia	North Korea	Sariwon-si	70	106	91	56	14	12	20	34
East Asia	North Korea	Sinŭiju	109	98	38	16	12	8	5	8
East Asia	North Korea	Sunchon	35	57	48	48	21	21	9	18
East Asia	North Korea	Wonsan	37	114	191	124	84	51	25	28
Europe	Norway	Oslo	51	72	46	21	30	42	41	27
South Asia	Pakistan	Battagram	3	6	26	89	35	15	8	10
South Asia	Pakistan	Faisalabad	92	29	61	140	97	84	99	97
South Asia	Pakistan	Gujranwala	143	112	101	151	147	133	119	102
South Asia	Pakistan	Hyderabad	135	99	93	199	200	146	127	126
South Asia	Pakistan	Karachi	138	22	31	27	2	17	34	65
South Asia	Pakistan	Lahore	78	97	113	166	116	147	152	134
South Asia	Pakistan	Multan	79	41	94	103	59	65	80	82
South Asia	Pakistan	Muzaffarabad	1	2	16	37	22	5	4	3
South Asia	Pakistan	Peshawar	17	18	21	39	33	16	11	14
South Asia	Pakistan	Quetta	16	14	104	187	162	75	49	24
South Asia	Pakistan	Rahim Yar Khan	71	35	182	141	142	126	85	75
South Asia	Pakistan	Rawalpindi	21	44	45	81	63	27	19	22
South America	Paraguay	Asuncion	192	111	122	87	159	209	198	181
South America	Peru	Lima	167	122	72	38	43	80	90	93
Southeast Asia	Philippines	Quezon City	127	170	150	165	148	119	126	124
Europe	Poland	Krakow	113	73	43	112	135	154	133	137
Europe	Poland	Warsaw	200	206	194	208	177	170	165	170

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Europe	Portugal	Lisbon	88	102	55	90	143	182	166	164
Europe	Romania	Bucharest	128	66	79	57	42	48	73	122
North Asia	Russia	Chelyabinsk	185	164	131	182	192	197	157	143
North Asia	Russia	Irkutsk	139	192	181	174	124	106	83	98
North Asia	Russia	Kazan	171	204	214	219	213	205	188	209
North Asia	Russia	Krasnodar	181	151	71	117	91	79	94	118
North Asia	Russia	Krasnoyarsk	32	79	80	77	69	104	95	81
North Asia	Russia	Moscow	214	213	216	215	208	195	209	211
North Asia	Russia	Nizhny Novgorod	155	199	166	104	117	151	136	188
North Asia	Russia	Novosibirsk	142	159	144	139	188	193	201	201
North Asia	Russia	Omsk	179	190	167	129	189	190	202	197
North Asia	Russia	Perm	188	194	189	170	161	138	163	183
North Asia	Russia	Rostov-on-Don	176	160	126	127	154	150	134	141
North Asia	Russia	Saint Petersburg	177	175	153	97	180	178	173	169
North Asia	Russia	Samara	29	67	30	29	53	72	77	96
North Asia	Russia	Saratov	81	139	68	105	155	162	175	161
North Asia	Russia	Tyumen	146	189	97	155	164	159	139	142
North Asia	Russia	Ufa	117	110	149	60	48	68	98	120
North Asia	Russia	Vladivostok	133	184	119	142	137	194	197	191
North Asia	Russia	Volgograd	152	150	67	12	24	33	52	48
North Asia	Russia	Voronezh	94	87	105	157	156	152	149	192
North Asia	Russia	Yekaterinburg	206	185	205	181	191	192	167	158
West Asia	Saudi Arabia	Riyadh	211	94	89	191	199	208	207	195
Europe	Serbia	Belgrade	103	68	34	33	75	94	79	77
Africa	South Africa	Johannesburg	136	81	175	196	179	177	86	101
East Asia	South Korea	Busan	120	140	130	133	144	160	178	146
East Asia	South Korea	Changwon	68	172	171	137	140	124	114	127
East Asia	South Korea	Cheonan	91	158	173	121	130	114	107	116
East Asia	South Korea	Daegu	104	148	157	147	134	95	159	155

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East Asia	South Korea	Daejeon	65	143	53	47	38	64	55	69
East Asia	South Korea	Gwangju	85	195	180	135	102	88	63	86
East Asia	South Korea	Incheon	131	126	56	44	31	39	28	26
East Asia	South Korea	Jeju	62	115	163	123	125	108	125	148
East Asia	South Korea	Jeonju	77	187	188	101	100	78	74	113
East Asia	South Korea	Seongnam-si	59	84	82	36	36	63	42	38
East Asia	South Korea	Seoul	108	137	98	51	54	97	82	85
East Asia	South Korea	Suwon	141	173	96	45	66	81	91	151
Europe	Spain	Barcelona	44	34	117	93	78	53	69	41
Europe	Spain	Madrid	61	37	15	11	26	37	27	56
Europe	Sweden	Stockholm	193	191	183	136	101	139	150	162
West Asia	Syria	Aleppo	38	11	11	53	47	40	29	17
West Asia	Syria	Damascus	8	4	3	17	40	122	108	61
East Asia	Taiwan	Kaohsiung	52	69	70	110	88	74	121	132
East Asia	Taiwan	New Taipei City	102	128	176	138	82	69	66	83
East Asia	Taiwan	Taichung	84	85	90	30	7	1	7	11
East Asia	Taiwan	Tainan	36	70	107	128	83	56	58	72
East Asia	Taiwan	Taipei	96	174	190	132	89	61	39	47
Southeast Asia	Thailand	Bangkok	100	100	160	118	61	41	32	29
West Asia	Turkey	Istanbul	76	45	20	25	77	66	51	44
Europe	Ukraine	Kharkiv	112	141	155	183	167	176	161	179
Europe	Ukraine	Kyiv	119	163	200	197	181	185	189	174
Europe	Ukraine	Odesa	174	120	141	188	202	203	193	182
South America	Uruguay	Montevideo	213	196	196	186	206	211	217	199
North America	USA	Austin	210	176	159	74	44	89	208	196
North America	USA	Chicago	220	220	220	218	219	218	214	217
North America	USA	Dallas	74	142	143	164	149	180	206	194
North America	USA	Denver	144	75	28	20	32	77	160	185
North America	USA	Fort Worth	180	117	100	64	62	102	171	163

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North America	USA	Houston	207	162	110	111	104	91	199	187
North America	USA	Indianapolis	221	216	219	205	214	213	215	218
North America	USA	Jacksonville	217	193	192	175	212	214	216	208
North America	USA	Kansas City	184	127	128	102	115	173	200	210
North America	USA	Los Angeles	45	24	12	4	3	3	15	52
North America	USA	New York	219	219	213	220	217	219	219	219
North America	USA	Oklahoma City	187	109	62	35	105	196	191	189
North America	USA	Philadelphia	218	221	221	221	221	220	220	220
North America	USA	Phoenix	31	51	13	10	5	9	31	94
North America	USA	San Antonio	194	155	168	180	92	83	117	180
North America	USA	San Diego	58	32	7	3	1	7	88	109
North America	USA	San Francisco	205	103	41	18	11	23	174	20
North America	USA	San Jose	34	23	10	6	6	14	100	90
North America	USA	Seattle	53	49	44	24	23	35	137	105
North America	USA	Washington	212	215	215	216	220	221	221	221
South America	Venezuela	Caracas	7	5	4	5	10	76	142	157
Southeast Asia	Vietnam	Hanoi	75	146	132	122	103	54	64	50
Southeast Asia	Vietnam	Ho Chi Minh	89	93	133	50	76	103	120	139

Ranking of radiation dose by time from a simultaneous nuclear explosion simulation in 221 cities (average of maximum values obtained from six simulations for each city)

○ The effective dose is confined to the city for 0-3 hours, after that, the maximum effective dose occurs where the radioactive cloud spreads.(possible 1,000 km away).

○ Related sites: <https://sites.google.com/kgamma.com/k-gamma> <http://www.k-gamma.com/>

تصنيف جرعة الإشعاع حسب الوقت من محاكاة انفجار نووي متزامن في ٢٢١ مدينة (متوسط القيم القصوى المستقاة من ست عمليات محاكاة لكل مدينة).

تقتصر الجرعة الفعالة على المدينة لمدة ٣-٠ ساعات، وبعد ذلك، تحدث أقصى جرعة فعالة حيث تنتشر السحابة المشعة (ربما لمسافة ١٠٠٠ كيلومتر).

مواقع ذات صلة: <https://sites.google.com/kgamma.com/k-gamma> <http://www.k-gamma.com/>

221个城市同时进行核爆炸模拟时辐射剂量按时间排序 (每个城市6次模拟获得的最大值的平均值)

○ 有效剂量在0-3小时内限制在城市范围内，之后，最大有效剂量出现在放射性云扩散的区域 (可能在1000公里外)。

○ 相关网站: <https://sites.google.com/kgamma.com/k-gamma> <http://www.k-gamma.com/>

Classement des doses de rayonnement en fonction du temps, à partir d'une simulation d'explosion nucléaire simultanée dans 221 villes (moyenne des valeurs maximales obtenues à partir de six simulations pour chaque ville).

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○ La dose efficace est limitée à la ville pendant 0 à 3 heures. Ensuite, la dose efficace maximale est atteinte là où le nuage radioactif se propage (possiblement à 1 000 km).

○ Sites connexes : <https://sites.google.com/kgamma.com/k-gamma> <http://www.k-gamma.com/>

221 शहरों में एक साथ परमाणु विस्फोट सिमुलेशन से समय के अनुसार विकिरण खुराक की रैंकिंग (प्रत्येक शहर के लिए छह सिमुलेशन से प्राप्त अधिकतम मानों का औसत)

○ प्रभावी खुराक 0-3 घंटे तक शहर तक ही सीमित रहती है, उसके बाद, अधिकतम प्रभावी खुराक वहाँ होती है जहाँ रेडियोधर्मी बादल फैलता है। (संभवतः 1,000 किमी दूर)।

○ संबंधित साइटें: <https://sites.google.com/kgamma.com/k-gamma> <http://www.k-gamma.com/>

221都市における同時核爆発シミュレーションによる時間別放射線量ランキング (各都市6回のシミュレーションから得られた最大値の平均)

○ 実効線量は0~3時間都市内に限定され、その後、放射性雲が広がる場所で最大実効線量が発生します (1,000km離れた場所でも可能)。

○ 関連サイト : <https://sites.google.com/kgamma.com/k-gamma> <http://www.k-gamma.com/>

221개 도시 동시 핵폭발 시뮬레이션 시간별 방사선 피폭량 순위 (각 도시별 6회 시뮬레이션에서 얻은 최댓값의 평균)

○ 최대 방사선 피폭은 0~3시간은 도시에 국한되지만, 그 이후에는 방사능구름이 퍼지는 지역에서 최대 유효선량이 발생(1,000km 이상 떨어진 지역도 가능).

○ 관련 사이트: <https://sites.google.com/kgamma.com/k-gamma> <http://www.k-gamma.com/>

Рейтинг доз облучения по времени при моделировании одновременного ядерного взрыва в 221 городе (среднее значение максимальных значений, полученных в результате шести симуляций для каждого города)

○ Эффективная доза ограничена городом в течение 0–3 часов, после чего максимальная эффективная доза достигается в месте распространения радиоактивного облака (возможно, на расстоянии 1000 км).

○ Связанные сайты: <https://sites.google.com/kgamma.com/k-gamma> <http://www.k-gamma.com/>

Clasificación de la dosis de radiación según el tiempo a partir de una simulación simultánea de una explosión nuclear en 221 ciudades (promedio de los valores máximos obtenidos en seis simulaciones para cada ciudad).

○ La dosis efectiva se limita a la ciudad durante 0-3 horas; posteriormente, la dosis efectiva máxima se produce donde se extiende la nube radiactiva (posiblemente a 1000 km de distancia).

○ Sitios relacionados: <https://sites.google.com/kgamma.com/k-gamma> <http://www.k-gamma.com/>

(ہر شہر کے لیے چھ تخروپن سے حاصل کردہ زیادہ سے زیادہ اقدار کی اوسط) 221 شہروں میں بیک وقت جوہری دھماکے کے تخروپن سے تابکاری کی خوراک کی درجہ بندی

○ وقت ہوتی ہے جہاں تابکار بادل پھیلتا ہے۔ (ممکنہ 1,000 کلومیٹر دور)۔ مؤثر خوراک 0-3 گھنٹے تک شہر تک محدود ہے، اس کے بعد، زیادہ سے زیادہ مؤثر خوراک اس وقت ہوتی ہے جہاں تابکار بادل پھیلتا ہے۔

○ متعلقہ سائٹس: <https://sites.google.com/kgamma.com/k-gamma> <http://www.k-gamma.com/>