Fatal and non-fatal accidents in sand collapse prevention civil engineering work in Japan in 1999-2022

sand collapse prevention civil engineering work industry Code No.030108

Type of accidents in sand collapse prevention civil engineering work in 1999-2022

Type of accidents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
fall from height	117	117	93	82	67	60	72	57	51	53	44	32	47	38	40	44	24	21	19	32	29	28	31	28	1,226
falling to same level	44	30	36	19	29	18	18	11	13	17	11	16	7	11	16	15	7	7	8	6	13	6	7	11	376
crash	15	20	10	11	5	10	11	9	6	4	4	6	3	1	5	3	1	1	3	7	1	4	3	6	149
struck by flying or falling object	43	51	35	31	24	28	21	21	15	14	13	13	18	20	16	13	10	7	11	7	7	7	10	9	444
collapse	20	17	15	18	21	10	13	6	7	5	4	5	4	1	4	1	5	2	1	1	4	6	4	7	181
crashed by	29	23	20	23	20	15	13	12	29	7	10	9	9	7	17	8	7	11	5	11	8	9	8	9	319
caught in/between	51	33	26	33	31	21	19	18	18	19	14	12	12	18	11	13	9	6	15	10	12	7	9	16	433
cut	12	10	10	3	17	8	6	4	5	5	7	4	4	3	4	7	2	3	4	4	4	5	1	2	134
injury to the sole of the foot	1	1	2		1		1			2			1										1		10
drown																									
contact to high/low-	2	1	1		2	1			1		1	2		1	3				1	1	1	1	1		20

temperature																									
contact to harmful substance		1	1	1				1	1	2	1	1	1	1	1	1							3		16
electric shock																									
explosion	1																								1
burst											1														1
fire													1				1		1						3
traffic accident (public road)	2	7	7	6	1	4	4	5	4	4	7	2	3	7	2	5	1	5	3	2	1	2	5	2	91
traffic accident (others)				1											1										2
reaction to motion/improper motion	7	7	2	8	6	6	4	3	1	3	1	4	4		2	1	3	2	2	2	4	1	2	2	77
others	1	3	3		1		3	1	1		2		1	1						1			5		23
unclassifiable					1				1								1								3
total	345	321	261	236	226	181	185	148	153	135	120	106	115	109	122	111	71	65	73	84	84	76	90	92	3,509

Causal agents (large) of fatal and non-fatal accidents in sand collapse prevention civil engineering work in 1999-2022

Causal (L) agents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
machine	61	43	49	27	45	27	28	24	26	27	12	18	19	15	22	22	19	13	10	17	20	19	9	13	585

crane, conveying machine	27	33	21	39	33	35	29	19	19	17	25	15	14	19	20	15	7	16	12	13	11	6	13	17	475
other equipment	31	28	19	25	16	12	21	18	21	7	16	4	10	9	12	12	9	6	8	9	10	9	13	9	334
temporary buildings, establishments	99	80	78	51	55	40	35	37	28	33	27	37	22	18	26	28	15	15	17	15	20	14	15	23	828
substance, material	41	53	32	27	19	20	18	14	12	16	9	15	13	15	8	6	3	3	6	7	6	5	9	10	367
load	2	2	2	5	2	3	4	2	2	5	4		1	1	1	2	1	1	2	1	2	1	1		47
environment	80	78	60	59	55	42	48	33	43	29	26	16	35	31	32	26	14	11	17	21	13	21	24	20	834
others	4	4		3	1	2	2	1	2	1	1	1	1	1	1		3		1	1	2	1	6		39
total	345	321	261	236	226	181	185	148	153	135	120	106	115	109	122	111	71	65	73	84	84	76	90	92	3,509

Causal agents (middle) of fatal and non-fatal accidents in sand collapse prevention civil engineering work in 1999-2022

Causal (M) agents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
engine																									
power transmission mechanism	1																			1				1	3
woodworking machine	7	6	6	3	11	4	2	4	3	4	4	1	3	1	1	4		2	3		4	1			74

construction machine	48	31	36	20	25	19	21	18	18	21	5	13	13	13	17	17	15	10	6	10	15	13	8	10	422
metal manufacturing machine		2		1	3				2	1	1	1	1				1	1		3		1			18
general machine	5	4	7	3	6	4	5	2	3	1	2	3	2	1	4	1	3		1	2	1	3	1	2	66
mobile silviculture machine																				1		1			2
crane	12	10	2	17	18	16	9	8	4	9	10	5	5	5	7	3	2	9	4	2	5	2	3	8	175
conveying machine	14	16	15	17	12	16	20	7	15	7	9	8	8	11	10	9	5	6	7	10	5	2	8	6	243
vehicle	1	7	4	5	3	3		4		1	6	2	1	3	3	3		1	1	1	1	2	2	3	57
pressure vessel	1																								1
chemical facilities																									
welding equipment																									
kiln, caldron																									
electric equipment															1										1
human power machine, tools	8	6	4	6	4	6	5	5	4		3	3	1	2	2	5	2		4	1			1	2	74
tools	20	19	15	18	12	5	16	11	14	7	13	1	9	6	9	6	7	4	4	6	9	9	11	6	237
other equipments,																									

facilities	2	3		1		1		2	3					1		1		2		2	1		1	1	21
temporary buildings, establishments	99	80	78	51	55	40	35	37	28	33	27	37	22	18	26	28	15	15	17	15	20	14	15	23	828
hazards, harmful substances	1	1	2	1				1	1		1	1		1	1				1				2		14
materials	40	52	30	26	19	20	18	13	11	16	8	14	13	14	7	6	3	3	5	7	6	5	7	10	353
load	2	2	2	5	2	3	4	2	2	5	4		1	1	1	2	1	1	2	1	2	1	1		47
natural environment	80	78	60	59	55	42	48	33	43	29	26	16	35	31	32	26	14	11	17	21	13	21	24	20	834
other causal agent										1	1		1									1	5		9
no causal agent	3	4		3	1	2	2	1	1			1			1		2		1	1	2		1		26
unclassifiable	1								1					1			1								4
total	345	321	261	236	226	181	185	148	153	135	120	106	115	109	122	111	71	65	73	84	84	76	90	92	3,509

Causal agents (small) of fatal and non-fatal accidents in sand collapse prevention civil engineering work in 1999-2022

Causal (S) agents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
engine																									
power transmission mechanism																				1				1	2

circular sawing machine			3		3		2		3	1	1		2	1		2			1		1				20
band sawing machine																									
wood planer machine																									
hollow chisel mortiser, wood borer																									
chamfering machine, router, woodworking milling machine																									
chain saw			3		8			3		2	3	1	1		1	2		2	2		2	1			31
other woodworking machines								1		1											1				3
leveling, transporting or loading machine			5		3		3	3	8	4		4	1	3	2	1	3	3	1	1	4		1	1	51
excavating machine			22		14		15	15	6	8	3	5	10	6	10	12	5	2	3	7	8	8	4	5	168
foundation work machine					1		1			1				2			1					1	1		8
hardening machine									1			2						2							5

demolition machine					1				1	3		1							1			1		1	9
vehicle for high lift work																1								1	2
other construction machines			9		6		2		2	5	2	1	2	2	5	3	6	3	1	2	3	3	2	2	61
lathe																									
drill press, milling machine																									
grinding machine, buffing machine					1				1	1	1		1				1	1		2		1			10
power press																									
forging pressure hammer																									
shearing machine																									
other metal manufacturing machines					2				1			1								1					5
centrifugal machine																									
mixer, grinder					1							2													3
roll machine (except printingroll machine)																									

injection molding machine																									
food manufacturing machine																									
printing machine																									
industrial robot																									
other general power machines			7		5		5	2	3	1	2	1	2	1	4	1	3		1	2	1	3	1	2	47
felling machine																				1		1			2
mobile logging machine																									
skyline yarding machine																									
other mobile silviculture machine																									
crane					8		2		2	3		2		2	4	1			1		1	1		1	28
mobile crane			2		10		6	6		6	10	2	4	2	3	2	2	8	2	2	4	1	3	7	82
derrick crane																									
elevator, lift																									
cargo lifting appliance																									
gondola																									

lumberyard equipment, logging cableway							1	1	1			1		1											5
simple skyline yarding equipment																									
other powered crane								1	1				1					1	1						5
truck			8		5		12	5	7	5	6	6	5	6	7	7	4	6	5	7	5	2	6	5	119
forklift																	1								1
railway equipment									1	1		1								1			2		6
conveyor					1		1		1					1						1					5
loader					1					1					1										3
straddle carrier																									
rough terrain hauler			2		3		1	1			1		2	1	1	1			1					1	15
other powered conveying machines			5		2		6	1	6		2	1	1	3	1	1			1	1					31
cars, bus, motorcycle			4		3			4		1	6	2	1	3	3	3		1	1	1	1	2	2	3	41
railway vehicle																									
other vehicles																									
boiler																									

pressure vessel																									
other pressure vessels																									
chemical facilities																									
gas welding equipment																									
arc welding equipment																									
other welding equipment																									
kiln, caldron																									
industrial dryer																									
other kiln, caldron																									
transmission															1										1
electric power facilities																									
other electrical equipment																									
human power cranes																									
human power hauling equipment																									

human power machine									1						1				1						3
hand tool			4		4		5	5	3		3	3	1	2	1	5	2		3	1			1	2	45
ladder			7		8		9	7	7	3	8		4	2	4	4	3	3	2	4	6	5	5	4	95
slinging tool			2		2		1		2	1	2			1	1		3			1	1	2	3	1	23
other tools			6		2		6	4	5	3	3	1	5	3	4	2	1	1	2	1	2	2	3	1	57
other equipment, facilities								2	3					1		1		2		2	1		1	1	14
scaffolding			23		9		11	6	4	7	7	5	4	3	5	9	3	4	1	4	3	1		3	112
timbering			6		3		2	2	2	3	1	1	1								1			2	24
stairs, landing stage			3		5		2	1	3	3	1	1	1	1	4	3	1			1	2	1	1	2	36
opening											1			1			1				1				4
roof, beam, haze, crossbeam, principal rafter								3		1		1					1	1							7
working platform, boot board			7		7		2	4	1	6	3	2	1			4		1	1			1	3	1	44
passage			12		7		3	4	2	3	4	7	2	1	6	2	2	4	6	4	5	3	2	7	86
building, establishment			24		21		14	11	13	6	9	15	7	8	4	6	6	3	6	6	7	7	5	5	183
other temporary buildings,			3		3		1	6	3	4	1	5	6	4	7	4	1	2	3		1	1	4	3	62

establishments																									
explosive substance																									
inflammable substance								1											1						2
inflammable gas																									
harmful substance			1								1			1									2		5
radiation																									
other hazards, harmful substances			1						1			1			1										4
metal material			12		11		6	5	4	7	2	7	2	6	2	1	1	1	2	2	3	2	2	6	84
lumber, bamboo			5		2		5	2	4	3	1	3	4	3	3			1		3		2	3	1	45
stone, sand, substance			9		3		6	3	1	2	4	4	2		2	3	2		1	1	2			2	47
other materials			4		3		1	3	2	4	1		5	5		2		1	2	1	1	1	2	1	39
load			2		2		3	2	2	4	4		1	1	1	2	1		2	1	2	1			31
machine/equipment as load							1			1								1					1		4
natural ground, rock			44		45		34	25	28	24	17	12	23	22	18	17	10	5	7	12	11	17	15	13	399
standing tree			10		8		11	6	11	5	7	1	11	6	8	7	2	6	5	5	1	3	7	6	126
water			1								1	1		1						1					5
abnormal																									

environment																									
high/cold temperature environment			1					1	1		1	1		1	3				1	1		1	1		13
other environments			4		2		3	1	3			1	1	1	3	2	2		4	2	1		1	1	32
other causal agent										1	1		1									1	5		9
no causal agent					1		2	1	1			1			1		2		1	1	2		1		14
unclassifiable									1					1			1								3
total	345	321	261	236	226	181	185	148	153	135	120	106	115	109	122	111	71	65	73	84	84	76	90	92	3,509

Workers age of fatal and non-fatal accidents in sand collapse prevention civil engineering work in 1999-2022

Age	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
19 years old or less	8	7	5	4	3	3	1		1			5		1	2	3	2		1		1		2		49
20-29	26	29	30	30	19	12	19	17	14	9	10	6	8	9	5	10	6	6	6	6	4	7	7	5	300
30-39	33	25	28	21	34	28	23	28	14	21	16	12	20	23	18	10	12	5	9	9	6	10	18	7	430
40-49	51	47	44	27	39	37	22	16	17	22	14	17	30	15	19	21	12	14	14	12	14	15	19	17	555
50-59	106	87	80	71	73	53	71	56	57	42	37	32	26	28	34	28	19	20	13	19	16	20	16	23	1,027
60 years old or more	121	126	74	83	58	48	49	31	50	41	43	34	31	33	44	39	20	20	30	38	43	24	28	40	1,148
total	345	321	261	236	226	181	185	148	153	135	120	106	115	109	122	111	71	65	73	84	84	76	90	92	3,509

Workers' number of workplace of fatal and non-fatal accidents in sand collapse prevention civil engineering work in 1999-2022

Workers scale	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
9 workers or less	137	124	108	102	99	87	80	80	68	56	65	60	62	53	51	52	27	27	32	46	43	38	44	41	1,582
10-29	142	143	113	101	81	63	79	47	73	59	47	40	39	47	54	46	32	33	34	30	30	30	38	40	1,441
30-49	46	38	33	23	32	24	17	13	12	16	3	6	6	8	7	10	9	3	6	7	11	5	6	8	349
50-99	13	14	6	7	11	6	5	7		1	5		6		8	2	3	1	1	1		3	1	3	104
100-299	7	2	1	3	3	1	4	1		3			2	1	2	1		1					1		33
300 workers or more																									
total	345	321	261	236	226	181	185	148	153	135	120	106	115	109	122	111	71	65	73	84	84	76	90	92	3,509

Month of fatal and non-fatal accidents in sand collapse prevention civil engineering work in 1999-2022

Month	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
January	38	33	24	17	19	18	10	18	15	14	12	14	11	11	9	8	5	3	5	4	9	4	6	12	319
February	29	31	19	30	24	18	16	16	8	14	11	10	9	8	8	8	7	7	7	6	8	2	8	9	313
March	25	23	29	19	23	21	11	10	19	10	6	7	14	8	12	8	11	5	6	5	4	7	4	6	293
April	26	24	16	12	8	9	15	9	3	6	5	8	4	10	5	4	5	5	3	6	6	5	6	8	208
May	26	19	16	21	16	14	11	10	11	8	10	13	16	8	3	8	5	6	9		7	8	6	3	254
June	21	22	16	12	15	16	16	13	9	7	6	7	9	8	9	5		3	4	6	6	6	8	9	233

July	28	29	27	26	16	15	18	12	9	12	9	6	10	16	18	14	9	3	6	11	6	5	10	5	320
August	23	26	17	17	16	14	13	21	14	6	6	10	8	7	14	9	9	8	8	5	8	7	9	5	280
September	31	29	24	17	23	8	11	10	19	17	13	10	7	7	15	11	3	7	7	14	7	10	5	11	316
October	36	30	26	23	21	22	25	7	13	9	17	8	6	11	12	11	9	10	4	12	7	4	11	14	348
November	41	24	26	23	23	17	24	13	10	16	13	9	13	9	10	17	7	5	9	5	10	8	9	5	346
December	21	31	21	19	22	9	15	9	23	16	12	4	8	6	7	8	1	3	5	10	6	10	8	5	279
total	345	321	261	236	226	181	185	148	153	135	120	106	115	109	122	111	71	65	73	84	84	76	90	92	3,509

Prefecture of fatal and non-fatal accidents in sand collapse prevention civil engineering work in 1999-2022

Prefecture	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
Hokkaido	17	10	16		13		8	7	4	6	14	6	5	4	4	1	3		4	6	8	3	9	3	151
Aomori	3	2	5		3		4	2	4	1	3	1	2	1	1		3	1	1	1	2	2			42
Iwate	4	1	6		1		1		3	1	1	1	3	3	1	2			1	4		1	1	4	39
Miyagi	3				1					2	3	1	1		2	3	2				1		1	1	21
Akita	5	8	5		7		2	1	2	1	1	2			3	1	1					3	1	3	46
Yamagata	1	4	2		2					1		1	1		1	2	2						2	1	20
Fukushima	5	6	1		4		1		2				1	3	1	2						3		2	31
Ibaraki	2	1	1								1				1		1								7
Tochigi	3	3	3		2		3	3	1	1	3	2	4	2		1		1			1			1	34
Gunma	7	12	15		7		5	4	3	4	4	4	2		5	2	4	1	2	2	6	1	6	1	97

Saitama	1				4		2															1	2	1	11
Chiba		3					2	2	1				1			1		1			1			1	13
Tokyo	1		6		3		8	2	2	1	2		1	2	2	3	4	3	5		1	1	2	1	50
Kanagawa	10	5	5		12		7		1	1	4	2	4	2	1	2	3		2			3	1	1	66
Niigata	12	10	7		7		8	13	4	8	3	3	1	2	2	6	1	4	1	2	2		2		98
Toyama	13	7	5		6		4	1	6	1	2	2	2	6	4	1			3	2	1		5		71
Ishikawa	3	1	4		2		3	1	3	5	3	2	2		1	2	1					2	3	1	39
Fukui	21	17	7		11		8	7	4	4	3	2	1	2	2	2		1		1	3		2	1	99
Yamanashi	6	8	7		6		4	5	6	11	4	1	6		5	3	3	2	3	2	2	4			88
Nagano	19	18	14		10		8	8	15	5	6	3	4	5	8	4	5		6	4	3	3	8	9	165
Gifu	25	27	10		11		5	7	5	6	2	2	6	6	5	2	5		2		1	2	4	2	135
Shizuoka	7	8	6		7		5	5	8	4	7	2	4	3	4	5	6	4	9	4	2	2	4	5	111
Aichi	9	8	4		4		5	2	2	2	3	2	1		1	2		1			1	1			48
Mie	12	13	2		4		5	5	4	4	2	1	1	2	1	1		1	1		3	1	1	1	65
Shiga	2	4	2		1		1	2		1	3	1			1					1	1		1		21
Kyoto	5	1	1				1	2	3				1	1			1	1	1			2	3		23
Osaka	2						1		1		1				1				1	1					8
Hyogo	2	9	7		8		8	10	6	7	3	4	2	3	6	4		3		2	5	1	2	3	95
Nara	7	7	1		5		1	2	3		3	4		1	4	3		1			1	2		2	47
Wakayama	8	6	12		4		2	1		2		4	5	5	4	2			1	1		1		3	61
Tottori	1	1	4				1	2	4	3	3	1	2	3		3	1	1	1				3	1	35

Shimane	7	6	4		3		1			1		1	3	6	4	4		1	1	1	1		1	1	46
Okayama	8	8	5		6		3	2		2		1	1	1	2	1			3	1	3	2	2	1	52
Hiroshima	13	11	11		8		6	5	1	3	3	3	1	1	1	2		6	2	4	6	7	1	4	99
Yamaguchi	2	5	6		2		4	2	2	5	2	3	7	1	1	1		3		2	2	2	1	4	57
Tokushima	6	13	17		10		10	13	9	7	3	5	1	6	2	6	3	2	1	3	1	1		1	120
Kagawa	1	1	2				4			1			1	1	1	2	1		1		1		1	1	19
Ehime	13	12	9		9		9	3	4	4	3	3	6	11	7	4	3	5	6	10	4	6		3	134
Kochi	20	24	13		5		5	6	7	7	4	8	3	4	4	9	1	5	1	4	4	11	6	6	157
Fukuoka	6	7	3		3		4	6	4	3	5	6	2	1	5	5	4	1	3	6	5		4	2	85
Saga	1	1	2				1				1	1	1		3		1			3		1			16
Nagasaki	7	1	2		3		2	2	1		1	4	1	1		5	1		2	2		2		2	39
Kumamoto	4	8	7		4		6	1	2	2	3	5	4	4	3	2	2	4	2	1	5		1	6	76
Oita	18	6	6		6		1	4	9	6	3	4	4	5	8	4	3	2	1	7	4		5	7	113
Miyazaki	5	4	5		2		1		2		1	1	2	2	1	1		1				2		1	31
Kagoshima	18	14	11		20		14	10	15	12	7	7	15	7	8	5	6	9	6	7	3	3	5	5	207
Okinawa							1							2	1										4
total	345	321	261	236	226	181	185	148	153	135	120	106	115	109	122	111	71	65	73	84	84	76	90	92	3,509

Fatal and non-fatal accidents mean fatal and non-fatal injuries and occupational diseases with work absence of 4 days and more.

Data of 2022 year do not include Covid-19 cases. Data of 2020 & 2021 year include Covid-19 cases. Fatal and non-fatal data are same situation.

Data of 2011 year include fatal and non-fatal accidents caused by Great East Japan Earthquake in 2011.

Data sources: https://anzeninfo.mhlw.go.jp/user/anzen/tok/anst00.html (MHLW, Japan)

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Fatal accidents in sand collapse prevention civil engineering work in Japan in 1999-2022

sand collapse prevention civil engineering work industry Code No.030108

Type of fatal accidents in sand collapse prevention civil engineering work in 1999-2022

Type of accidents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
fall from height	9	12	7	3	5	5	7	2	9	8	4	2	5	2	3	2	1	3		3	1	2	2	1	98
falling to same level	1	1	2		1	1	1		1			2		1										1	12
crash						1								1											2
struck by flying or falling object	1	2	1	3		2		3	2		1	1		2	1	1								1	21
collapse	3	3		5	3	1			2		2	2	1		2			1			1				26
crashed by	1	5	1		1	2	1		3	1	1	1	1		3			3	1	1	1		1	2	30
caught in/between	2		2	2	1		2			1														1	11
cut	1																								1
injury to the sole of the foot																									

drown																									
contact to high/low-temperature																									
contact to harmful substance																									
electric shock																									
explosion																									
burst																									
fire																									
traffic accident (public road)			1						1		1					1						2	1		7
traffic accident (others)																									
reaction to motion/improper motion																									
others																	1								1
unclassifiable																									
total	18	23	14	13	11	12	11	5	18	10	9	8	7	6	9	4	2	7	1	4	3	4	4	6	209

Causal agents (large) of fatal accidents in sand collapse prevention civil engineering work in 1999-2022

Causal (L) agents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
machine	8	4	4	2	3		2		4	3		2		2	1	1				1		1	1	3	42
crane, conveying machine	1	2	3	3	2	7	4		4	2	2	2			1	2		1			1	3	1	1	42
other equipment		2					1	2					1								1		2		9
temporary buildings, establishments	5	5	3	1	3	2	3	1	3	4	1	3	2		2			2							40
substance, material		1						1						1											3
load																									
environment	4	9	4	7	3	3	1	1	7	1	6	1	4	2	5	1	1	4	1	3	1			2	71
others														1			1								2
total	18	23	14	13	11	12	11	5	18	10	9	8	7	6	9	4	2	7	1	4	3	4	4	6	209

Causal agents (middle) of fatal accidents in sand collapse prevention civil engineering work in 1999-2022

Causal (M) agents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
engine							1																		1
power transmission mechanism																									

woodworking machine	1																								1
construction machine	7	4	4	2	3		1		4	3		2		2	1	1				1		1	1	3	40
metal manufacturing machine																									
general machine																									
mobile silviculture machine																									
crane		2		1		4	2			2		1			1	1		1			1	1			17
conveying machine	1		3	2	1	3	2		4		2	1				1								1	21
vehicle					1																	2	1		4
pressure vessel																									
chemical facilities																									
welding equipment																									
kiln, caldron																									
electric equipment																									
human power machine, tools																									
tools		2					1	2					1								1		2		9
other equipments,																									

facilities																									
temporary buildings, establishments	5	5	3	1	3	2	3	1	3	4	1	3	2		2			2							40
hazards, harmful substances																									
materials		1						1						1											3
load																									
natural environment	4	9	4	7	3	3	1	1	7	1	6	1	4	2	5	1	1	4	1	3	1			2	71
other causal agent																									
no causal agent																	1								1
unclassifiable														1											1
total	18	23	14	13	11	12	11	5	18	10	9	8	7	6	9	4	2	7	1	4	3	4	4	6	209

Causal agents (small) of fatal accidents in sand collapse prevention civil engineering work in 1999-2022

Causal (S) agents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
engine							1																		1
power transmission mechanism																									

circular sawing machine	1																								1
band sawing machine																									
wood planer machine																									
hollow chisel mortiser, wood borer																									
chamfering machine, router, woodworking milling machine																									
chain saw																									
other woodworking machines																									
leveling, transporting or loading machine				1			1		1	1				1											5
excavating machine	7	4	3	1	3				2	1		1		1	1	1				1		1	1	1	29
foundation work machine																									
hardening machine																									

demolition machine										1														1	2
vehicle for high lift work																								1	1
other construction machines			1						1			1													3
lathe																									
drill press, milling machine																									
grinding machine, buffing machine																									
power press																									
forging pressure hammer																									
shearing machine																									
other metal manufacturing machines																									
centrifugal machine																									
mixer, grinder																									
roll machine (except printingroll machine)																									

injection molding machine																									
food manufacturing machine																									
printing machine																									
industrial robot																									
other general power machines																									
felling machine																									
mobile logging machine																									
skyline yarding machine																									
other mobile silviculture machine																									
crane		1				1	2			1		1				1									7
mobile crane		1		1		3				1					1			1			1	1			10
derrick crane																									
elevator, lift																									
cargo lifting appliance																									
gondola																									

lumberyard equipment, logging cableway																									
simple skyline yarding equipment																									
other powered crane																									
truck			2	1			1		1		1	1				1								1	9
forklift						1																			1
railway equipment																									
conveyor																									
loader																									
straddle carrier																									
rough terrain hauler	1		1	1	1				1																5
other powered conveying machines						2	1		2		1														6
cars, bus, motorcycle					1																	2	1		4
railway vehicle																									
other vehicles																									
boiler																									

pressure vessel																									
other pressure vessels																									
chemical facilities																									
gas welding equipment																									
arc welding equipment																									
other welding equipment																									
kiln, caldron																									
industrial dryer																									
other kiln, caldron																									
transmission																									
electric power facilities																									
other electrical equipment																									
human power cranes																									
human power hauling equipment																									

human power machine																									
hand tool																									
ladder																									
slinging tool		1						1													1		1		4
other tools		1					1	1					1										1		5
other equipment, facilities																									
scaffolding	1	2	1	1	1						1							1							8
timbering		1				1							1												3
stairs, landing stage	1																								1
opening																									
roof, beam, haze, crossbeam, principal rafter										1															1
working platform, boot board	1																								1
passage		1							1			1													3
building, establishment	2	1	2			1	3	1	2	2			1		2			1							18
other temporary buildings,					2					1		2													5

establishments																									
explosive substance																									
inflammable substance																									
inflammable gas																									
harmful substance																									
radiation																									
other hazards, harmful substances																									
metal material								1						1											2
lumber, bamboo																									
stone, sand, substance		1																							1
other materials																									
load																									
machine/equipment as load																									
natural ground, rock	4	4	3	6	3	3	1	1	6	1	5		3	1	3	1	1	2		2	1			1	52
standing tree		3	1	1					1		1	1	1	1	2			2	1	1				1	17
water																									
abnormal																									

environment																									
high/cold temperature environment																									
other environments		2																							2
other causal agent																									
no causal agent																	1								1
unclassifiable														1											1
total	18	23	14	13	11	12	11	5	18	10	9	8	7	6	9	4	2	7	1	4	3	4	4	6	209

Workers age of fatal accidents in sand collapse prevention civil engineering work in 1999-2022

Age	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
19 years old or less												1													1
20-29		1			2		1		1												1				6
30-39	2	1	2	2	2	3	4		2	1	2		1	2											24
40-49	5	6	1	1	2			1	2	3			3		2	1		2				2			31
50-59	5	5	4	4	3	8	1	3	8	1	1	3	2	1	3	2	2	2		3	1	1	1	2	66
60 years old or more	6	10	7	6	2	1	5	1	5	5	6	4	1	3	4	1		3	1	1	1	1	3	4	81
total	18	23	14	13	11	12	11	5	18	10	9	8	7	6	9	4	2	7	1	4	3	4	4	6	209

Workers' number of workplace of fatal accidents in sand collapse prevention civil engineering work in 1999-2022

Workers scale	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
9 workers or less	4	7	5	6	6	4	6	5	6	2	5	4	4	5	3	2		2	1	2		3	1	3	86
10-29	11	8	6	3	2	7	2		10	7	4	3	1	1	5	2		4		1	2	1	1	1	82
30-49	1	7	2	3	2	1	3		1			1			1			1		1			2	2	28
50-99	1	1	1	1									2				2				1				9
100-299	1				1				1	1															4
300 workers or more																									
total	18	23	14	13	11	12	11	5	18	10	9	8	7	6	9	4	2	7	1	4	3	4	4	6	209

Month of fatal accidents in sand collapse prevention civil engineering work in 1999-2022

Month	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
January	2	3	1	2	1				2	1	1		2	1										1	17
February	1	1	1			3	1			1	1	1	1	1				2			1				15
March		5			1		1	1	3	2			2		1	1									17
April	5		2	1			1			1					1		1	1				1	1	2	17
May		3	4			1			1		1			1		1									12
June	1	1	1		1	2	1		1						1			1			1		1		12

July	2	1	3	4		1	1		1		2	1		1			1	2							20
August	1	2		2	1	1		1	3			1			3	1		1	1						18
September	1	2	1	1		1	2	1	3	1	1	4	1							1		1	1		22
October		2	1	1	4	2			1	1	3	1	1	1		1				2	1			1	23
November	3	2		1	3	1	1	2	2	2				1	3							1		1	23
December	2	1		1			3		1	1										1		1	1	1	13
total	18	23	14	13	11	12	11	5	18	10	9	8	7	6	9	4	2	7	1	4	3	4	4	6	209

Prefecture of fatal accidents in sand collapse prevention civil engineering work in 1999-2022

Prefecture	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
Hokkaido	1	2	1		2	2	2	1	1		1			1					1		1	1			17
Aomori				1						1	1											1			4
Iwate														1									1	2	4
Miyagi	1			1																					2
Akita												1					1								2
Yamagata				1																					1
Fukushima	1												1											1	3
Ibaraki																									
Tochigi							1		1																2
Gunma			1		1				1														1		4

Saitama																									
Chiba									1																1
Tokyo			1				1		1																3
Kanagawa	1					1	3			1	2				1										9
Niigata	1	1	1		2											1					1				7
Toyama	1		2				1		1				1												6
Ishikawa	1					3				1		1				1									7
Fukui	1	2	1						2	1															7
Yamanashi		1	1	3	1	1			3	2			1		1										14
Nagano		3	2								1		1		2						1	1	1		12
Gifu		3		1				1				1													6
Shizuoka	2	1		1		1			2		1				2			1		1					12
Aichi	1			1	1							1													4
Mie	1	1																1							3
Shiga																									
Kyoto																									
Osaka																									
Hyogo			1								1		2			1						1			6
Nara	1																	1							2
Wakayama																									
Tottori																									

Shimane														1	1								1		3
Okayama		1						1																	2
Hiroshima		3	1																	1				1	6
Yamaguchi			1			1						1						2							5
Tokushima		1	1		1			1				1													5
Kagawa						1																			1
Ehime						1	1		1	1		1		1				1						1	8
Kochi	3	3																							6
Fukuoka				3				1		1	1				1		1								8
Saga	1	1													1										3
Nagasaki					1						1		1												3
Kumamoto					2					1				1		1								1	6
Oita				1			1					1		1						1					5
Miyazaki									1																1
Kagoshima	1					1	1		3	1								1		1					9
Okinawa																									
total	18	23	14	13	11	12	11	5	18	10	9	8	7	6	9	4	2	7	1	4	3	4	4	6	209

Data sources: https://anzeninfo.mhlw.go.jp/user/anzen/tok/anst00.html (MHLW, Japan)

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