

Fatal and non-fatal accidents in gravel digging in Japan in 1999-2021

gravel digging industry Code No.020202

Type of accidents in gravel digging in 1999-2021

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	total	Type of accidents
fall from height	31	35	34	23	25	23	31	21	26	25	16	14	23	13	17	17	23	17	16	20	20	22	25	517	fall from height
falling to same level	15	18	14	10	9	7	11	8	8	10	11	4	10	11	10	15	9	5	6	7	8	6	9	221	falling to same level
crash	6	14	6	7	4	4	5	7	2	1	4	5	5	1	2	1	1	2	1	6	3	2	1	90	crash
struck by flying or falling object	15	12	15	15	12	5	9	8	6	6	8	8	6	3	4	5	6	8	1	6	3	8	1	170	struck by flying or falling object
collapse	5	2	5	6	1	3	1	3	3		1	1	2	1			2	1	2	2	1			42	collapse
crashed by	9	7		5	9	1	7	7	7	4	5	5	2	2	4	3	2	3	2	2	3	5	3	97	crashed by
caught in/between	22	31	35	37	31	36	30	25	26	20	16	17	16	22	18	24	12	6	12	12	18	13	15	494	caught in/between
cut		2	3	6		2		4	2					3		2	1	1	3	1	2	1		33	cut
injury to the sole of the foot	1						1		1															3	injury to the sole of the foot
drown		1			1	1		1							1	1		1						7	drown
contact to high/low-temperature	4		5	1	1	1	1		1								1		2		1	1		19	contact to high/low-temperature

contact to harmful substance															1						1			2	contact to harmful substance
electric shock		1				1																		2	electric shock
explosion			2											2										4	explosion
burst								1							1									2	burst
fire																									fire
traffic accident (public road)	2	4	6	6	2		1		5	1	4		3	2	1		2	4	3	3	1	1	3	54	traffic accident (public road)
traffic accident (others)																	2							2	traffic accident (others)
reaction to motion/improper motion	10	9	3	1	6	11	3	3	2	1	2	3	3	2	4	5	1		1	1	4	3	6	84	reaction to motion/improper motion
others	1	1					1	1	1								2		1	1				9	others
unclassifiable			1																					1	unclassifiable
total	121	137	129	117	101	95	101	89	90	68	67	57	70	62	62	74	64	48	50	61	65	62	63	1,853	total

Causal agents (large) of fatal and non-fatal accidents in gravel digging in 1999-2021

[illegible]

tools	7	6	5	6	5	1	8	5	7	5	4	1	3	4	4	2	2	2	6	3	4	5	3	98	tools
other equipments, facilities	2	6	3		4	3	3	3	2	1		3	2	1	1	2	1			1	1		2	41	other equipments, facilities
temporary buildings, establishments	21	24	19	15	16	14	19	14	9	8	12	7	16	9	12	15	9	7	7	5	14	9	9	290	temporary buildings, establishments
hazards, harmful substances			1			1								2							2			6	hazards, harmful substances
materials	13	16	16	12	10	6	13	6	6	10	3	5	2	6	3	4	3	4	3	7	3	3	2	156	materials
load	1	3	2		1	1	1	1	2		1	1					1							15	load
natural environment	9	11	6	7	3	9	3	6	7	2	3	4	4	4	5	3	3	4	2	1	4	4	5	109	natural environment
other causal agent	1	1					1										1					1		5	other causal agent
no causal agent	5	3	2	2	4	3		3			2	2		2	2	3				1		2	5	41	no causal agent
unclassifiable	1		1	1																				3	unclassifiable
total	121	137	129	117	101	95	101	89	90	68	67	57	70	62	62	74	64	48	50	61	65	62	63	1,853	total

Causal agents (small) of fatal and non-fatal accidents in gravel digging in 1999-2021

[illegible]

engine														1										1	engine
power transmission mechanism			5		3		4	1	1	2					1		1	1	2		3	2	1	27	power transmission mechanism
circular sawing machine																	1				1			2	circular sawing machine
band sawing machine																									band sawing machine
wood planer machine																									wood planer machine
hollow chisel mortiser, wood borer																									hollow chisel mortiser, wood borer
chamfering machine, router, woodworking milling machine																									chamfering machine, router, woodworking milling machine
chain saw			1						1					1		1								4	chain saw
other woodworking machines													1			1								2	other woodworking machines
leveling, transporting or loading machine			14		5		9	6	3	2	4	5	4	3	4	4	3	2	3	8	3	8	4	94	leveling, transporting or loading machine
excavating machine			7		8		5	2	4	2	2	2	7	3	3	4	2	2	2	2	4	1	2	64	excavating machine
foundation work machine							1																	1	foundation work machine

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machine																									machine
food manufacturing machine																									food manufacturing machine
printing machine																									printing machine
industrial robot																									industrial robot
other general power machines			9		2		5	3	9	2	2	5	2	2	2	3	1	1	3	5		4	2	62	other general power machines
felling machine																									felling machine
mobile logging machine																									mobile logging machine
skyline yarding machine																									skyline yarding machine
other mobile silviculture machine																									other mobile silviculture machine
crane					1					2			1			2	1	2	1					10	crane
mobile crane								2	3		1		3			1	1				1	2		14	mobile crane
derrick crane																									derrick crane
elevator, lift																									elevator, lift
cargo lifting appliance																									cargo lifting appliance
gondola																									gondola
lumberyard equipment, logging cableway																									lumberyard equipment, logging cableway

simple skyline yarding equipment																									simple skyline yarding equipment
other powered crane			2					1		1							1					2	1	8	other powered crane
truck			10		8		5	10	11	16	13	7	9	7	11	7	18	15	10	8	10	11	16	202	truck
forklift					1				1												1			3	forklift
railway equipment																									railway equipment
conveyor			15		20		12	17	13	12	10	7	9	11	10	14	8	3	6	8	7	5	5	192	conveyor
loader							1	1	1		2		2	1			1		1	3	2			15	loader
straddle carrier																									straddle carrier
rough terrain hauler																			1	1				2	rough terrain hauler
other powered conveying machines					2		1		1		1									1				6	other powered conveying machines
cars, bus, motorcycle			2		1		3		3				2	2	1	1	1	2		1			3	22	cars, bus, motorcycle
railway vehicle																									railway vehicle
other vehicles			1				1			1		1		1			1			1				8	other vehicles
boiler																									boiler
pressure vessel																				1				1	pressure vessel
other pressure vessels												1												1	other pressure vessels
chemical facilities																									chemical facilities
gas welding																							1	1	gas welding

facilities			3		4		3	3	2	1		3	2	1	1	2	1			1	1		2	30	facilities
scaffolding			1		1			1		2		1	1	1			2	1			1			12	scaffolding
timbering																									timbering
stairs, landing stage			1		2		5	2	3	1	4	1	1	2	2	2	2	3	2		2	2	2	39	stairs, landing stage
opening								2					1				1				1			5	opening
roof, beam, haze, crossbeam, principal rafter			2				1	1					2	1						1				8	roof, beam, haze, crossbeam, principal rafter
working platform, boot board			1		3		2		1	1	3	3	1			2		1			1	3	2	24	working platform, boot board
passage			5		3		5	2	1	3	3	1	5	2	6	7	2	2	2	3	3	1	5	61	passage
building, establishment			5		3		3	5	2	1	1	1	4	2	1	2			3	1	5	3		42	building, establishment
other temporary buildings, establishments			4		4		3	1	2		1		1	1	3	2	2				1			25	other temporary buildings, establishments
explosive substance																									explosive substance
flammable substance			1																		1			2	flammable substance
flammable gas														2										2	flammable gas
harmful substance																									harmful substance
radiation																									radiation
other hazards, harmful substances																					1			1	other hazards, harmful substances

metal material			3		8		6	2	3	5		3	1	1	2	2	1	2	3	7	1	1	2	53	metal material
lumber, bamboo			2		1				1		1						1	1			1			8	lumber, bamboo
stone, sand, substance			10		1		5	3	1	5	1	2	1	5		2	1	1			1	1		40	stone, sand, substance
other materials			1				2	1	1		1				1							1		8	other materials
load			1		1		1	1	2		1	1												8	load
machine/equipment as load			1														1							2	machine/equipment as load
natural ground, rock			2		2		1	2	4		1	2		1	1	1	1	1	1		2	1	2	25	natural ground, rock
standing tree								1	2		2	1		1				1					1	9	standing tree
water								1							1			1						3	water
abnormal environment															1									1	abnormal environment
high/cold temperature environment			1		1												1					1		4	high/cold temperature environment
other environments			3				2	2	1	2		1	4	2	2	2	1	1	1	1	2	2	2	31	other environments
other causal agent							1										1					1		3	other causal agent
no causal agent			2		4			3			2	2		2	2	3				1		2	5	28	no causal agent
unclassifiable			1																					1	unclassifiable
total			129		101		101	89	90	68	67	57	70	62	62	74	64	48	50	61	65	62	63	1,383	total

Workers age of fatal and non-fatal accidents in gravel digging in 1999-2021

Age	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	total	Age
19 years old or less	1	2	2					1	1						1	1	1							10	19 years old or less
20-29	8	22	9	10	4	8	6	5	6	2	4	3	2	3	3	1	2	5	2	2	4	3	4	118	20-29
30-39	12	14	17	22	10	9	18	16	10	12	8	9	10	7	4	7	6	6	3	2	9	6	9	226	30-39
40-49	32	25	28	18	22	16	16	15	17	10	11	9	15	17	12	11	13	8	8	17	12	9	11	352	40-49
50-59	39	44	45	43	40	35	35	32	30	26	27	12	18	19	20	26	13	10	12	16	14	16	12	584	50-59
60 years old or more	29	30	28	24	25	27	26	20	26	18	17	24	25	16	22	28	29	19	25	24	26	28	27	563	60 years old or more
total	121	137	129	117	101	95	101	89	90	68	67	57	70	62	62	74	64	48	50	61	65	62	63	1,853	total

Workers' number of workplace of fatal and non-fatal accidents in gravel digging in 1999-2021

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	total	Workers scale
9 workers or less	50	60	49	53	44	51	39	43	44	34	30	27	38	30	25	31	29	20	23	17	22	22	22	803	9 workers or less
10-29	54	58	58	44	40	32	49	38	33	30	31	25	28	24	25	40	31	23	27	36	35	36	33	830	10-29
30-49	13	14	16	16	13	8	9	4	13	4	5	5	4	5	9	2	4	5		7	8	4	5	173	30-49
50-99	3	5	5	4	4	4	4	3			1			2	2	1				1			3	42	50-99
100-299	1		1					1						1	1									5	100-299
300 workers or more																									300 workers or more
total	121	137	129	117	101	95	101	89	90	68	67	57	70	62	62	74	64	48	50	61	65	62	63	1,853	total

Month of fatal and non-fatal accidents in gravel digging in 1999-2021

Month	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	total	Month
January	11	10	18	6	13	11	3	8	8	5	12	3	7	5	4	4	6	3	4	5	9	5	6	166	January
February	7	16	9	8	14	11	9	11	12	8	1	3	5	9	6	5	6	5	1	5	5	9	4	169	February
March	8	5	13	11	10	6	5	7	8	5	4	7	8	7	6	7	8	4	5	6	4	7	5	156	March
April	7	15	10	8	6	11	11	7	8	9	5	6	8	7	4	9	3	2	6	4	2	6	4	158	April
May	10	12	6	7	8	4	8	8	5	7	6	6	2	4	6	5	9	2	3	3	3	6	4	134	May
June	15	10	10	16	4	6	11	9	8	5	8	4	11	2	7	7	4	2	5	8	3	3	7	165	June
July	16	16	12	6	9	9	12	9	13	5	8	7	7	5	3	7	5	8	4	4	10	4	11	190	July
August	9	12	8	9	12	6	8	10	8	6	4	5	3	3	4	6	6	3	2	5	5	5	1	140	August
September	14	9	13	11	6	12	7	8	6	3	5	3	5	2	5	6	4	3	6	3	4	4	4	143	September
October	9	12	7	6	6	8	9	3	5	6	7	6	2	4	6	6	2	5	2	10	6	6	6	139	October
November	8	11	14	14	9	6	9	9	5	4	3	3	5	7	5	8	4	6	9	4	7	3	6	159	November
December	7	9	9	15	4	5	9		4	5	4	4	7	7	6	4	7	5	3	4	7	4	5	134	December
total	121	137	129	117	101	95	101	89	90	68	67	57	70	62	62	74	64	48	50	61	65	62	63	1,853	total

Prefecture of fatal and non-fatal accidents in gravel digging in 1999-2021

Prefecture	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	total	Prefecture
Hokkaido	24	25	11		14		13	13	14	9	17	11	15	11	14	12	17	9	5	10	14	15	14	287	Hokkaido
Aomori	2	2	3		1		2	2	2	1	1	1	2	1		1	1			1	2			25	Aomori
Iwate	3	1	3		3		1	1	3	1	2	1			1	2	2	1			1	2	1	29	Iwate

Miyagi	1	1	4		2		3	3	1	1	2	1	1	1	1	3	6	1	2	3		1	1	39	Miyagi
Akita	2	4	3		3		2	6				2	1		1	2	1		1	2	2	1	1	34	Akita
Yamagata	5	7	5		2		2		2	1		1	2	3	2			2	1		1	2	1	39	Yamagata
Fukushima	3	2	1		1			4			1		1	1	3	3			4	3	2	3	1	33	Fukushima
Ibaraki	7	8	4		3		6	3	2	5	2	4	2	3	1	2	2	2	1		2	4	1	64	Ibaraki
Tochigi	3	4	4		3		6	2	5	5		3	2	2	4	2			1	1	1	2	2	52	Tochigi
Gunma	2	2	4		1		2			2	1	1	2	1	1			1	2	1				23	Gunma
Saitama	2	3			1		2		4			1	2	1					1	2			1	20	Saitama
Chiba	4	5	2		2		1	2	3	1	1	2	2	2	4	1	1	2	4	4	4	2		49	Chiba
Tokyo									1										1					2	Tokyo
Kanagawa	2	2	1		3		1	1		1		1	1			1		1		1		2	1	19	Kanagawa
Niigata	9	8	9		12		9	7	8	6	3	4	5	8	6	5	5	5	3	5	5	3	11	136	Niigata
Toyama	3	3	5		2		6	1		3	5	4	3	1	3	2	3	1	1	2	1	1	2	52	Toyama
Ishikawa			1		1						1		4	1			1	1	2		1	1		14	Ishikawa
Fukui	1	2			1								1	1	1	1	2	2	1			2		15	Fukui
Yamanashi	6	2	6		4		6	3	6	3		3		2	2	4	1		1	2		1	2	54	Yamanashi
Nagano	10	2	10		7		3	1	2	2	3	1	3	1	1	3			2	2	6	3	4	66	Nagano
Gifu	4	7	6		5		8	5	4	5	3	2	3	2		5	2	4	3	8	4	2	4	86	Gifu
Shizuoka	11	2	7		6		3	9	9	6	8	1	5	4	4	3	1	2	3	3	3	2	4	96	Shizuoka
Aichi	1	1	3				1	1	1		2	1	1	1	1	3		1	1			1	2	22	Aichi
Mie		9	6		7		3	2	4	3			2	2	3	4	3	2		4		3	2	59	Mie
Shiga	2		4		3			1				1	2				1							14	Shiga
Kyoto	1	1	3		3		2	1	1				1	1			2		2	1	1	1	1	22	Kyoto

Osaka	2								1	1				2				1		1				8	Osaka
Hyogo	2	4	4				1	1	1		3	1		1	1	1			1		3	3	1	28	Hyogo
Nara		1						1										1						3	Nara
Wakayama		3	2		1				2		1		1	1	2	1	1	3	1	1	1	2	1	24	Wakayama
Tottori																									Tottori
Shimane		2	1		1														1					5	Shimane
Okayama	1	2	2				2		2					1		1								11	Okayama
Hiroshima		2	1		2		1	1		1	1		1			1	1							12	Hiroshima
Yamaguchi		2	2				1							1		1	1				1			9	Yamaguchi
Tokushima		5	2		2		1	2	2				1	1	1	1			1	1	2	1	2	25	Tokushima
Kagawa								2																2	Kagawa
Ehime		1					1	1	1	1	1	1	1	1	1	1					1	1		13	Ehime
Kochi	2	1							1					1		1				1	1			8	Kochi
Fukuoka	1	3	5		1			1		1	2	1			1	2	2	1			1			22	Fukuoka
Saga	1																							1	Saga
Nagasaki																									Nagasaki
Kumamoto	1	4	2		1		1	3	1	4	5	3	1	2		1	2	3	1	1	4	1		41	Kumamoto
Oita	1	1	2		2		3	3	1	3		1	1		1	2	3	2	1	1				28	Oita
Miyazaki	1	2	1		1		3	5	4	2	1	4		1	2	2	3		2				2	36	Miyazaki
Kagoshima	1	1					4	1	2		1		1								1			12	Kagoshima
Okinawa							1																1	2	Okinawa
total	121	137	129		101		101	89	90	68	67	57	70	62	62	74	64	48	50	61	65	62	63	1,641	total

[illegible]

injury to the sole of the foot																									injury to the sole of the foot
drown		1			1	1		1						1	1		1							7	drown
contact to high/low-temperature																1								1	contact to high/low-temperature
contact to harmful substance																									contact to harmful substance
electric shock																									electric shock
explosion														1										1	explosion
burst																									burst
fire																									fire
traffic accident (public road)				1	1				1							1				1				5	traffic accident (public road)
traffic accident (others)																									traffic accident (others)
reaction to motion/improper motion																									reaction to motion/improper motion
others																									others
unclassifiable																									unclassifiable
total	4	4	6	2	4	7	3	4	4	2	2	2	4	3	3	5	3	2	3		3	2	3	75	total

Causal agents (large) of fatal accidents in gravel digging in 1999-2021

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	total	Causal (L) agents
machine	2		3		1	3		1	2	1	1		2			4						1	2	23	machine
crane, conveying machine		3		2	1	1	1		2	1		1	1	1	1	1	1		2		2		1	22	crane, conveying machine
other equipment		1	1		1																			3	other equipment
temporary buildings, establishments						1	2						1	1	1		1		1					8	temporary buildings, establishments
substance, material	1		1		1			1				1		1				1				1		8	substance, material
load																									load
environment	1		1			2		2			1				1		1	1			1			11	environment
others																									others
total	4	4	6	2	4	7	3	4	4	2	2	2	4	3	3	5	3	2	3		3	2	3	75	total

Causal agents (middle) of fatal accidents in gravel digging in 1999-2021

[illegible]

[illegible]

[illegible]

total	4	4	6	2	4	7	3	4	4	2	2	2	4	3	3	5	3	2	3		3	2	3	75	total
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Causal agents (small) of fatal accidents in gravel digging in 1999-2021

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

hand tool																									hand tool
ladder																									ladder
slinging tool																									slinging tool
other tools																									other tools
other equipment, facilities		1	1		1																			3	other equipment, facilities
scaffolding																									scaffolding
timbering																									timbering
stairs, landing stage																									stairs, landing stage
opening						1										1								2	opening
roof, beam, haze, crossbeam, principal rafter																									roof, beam, haze, crossbeam, principal rafter
working platform, boot board							1							1										2	working platform, boot board
passage																									passage
building, establishment													1	1				1						3	building, establishment
other temporary buildings, establishments							1																	1	other temporary buildings, establishments
explosive substance																									explosive substance
inflammable substance																									inflammable substance

[illegible]

no causal agent																									no causal agent
unclassifiable																									unclassifiable
total	4	4	6	2	4	7	3	4	4	2	2	2	4	3	3	5	3	2	3		3	2	3	75	total

Workers age of fatal accidents in gravel digging in 1999-2021

Age	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	total	Age
19 years old or less																									19 years old or less
20-29					1									1										2	20-29
30-39		1	1			2	1				1										1			7	30-39
40-49	1	2		2	2					1			1	1			1						1	12	40-49
50-59	2	1	2			2	1	3	4	1		1				2	1	2						22	50-59
60 years old or more	1		3		1	3	1	1			1	1	3	1	3	3	1		3		2	2	2	32	60 years old or more
total	4	4	6	2	4	7	3	4	4	2	2	2	4	3	3	5	3	2	3		3	2	3	75	total

Workers' number of workplace of fatal accidents in gravel digging in 1999-2021

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	total	Workers scale
9 workers or less	1	2	1	1	1	5		1	2			2	3	2	2	3	1	2	2		1	1		33	9 workers or less
10-29	2	2	3	1	1	2	3	2	1	2	2		1		1	2	2		1		2	1	1	32	10-29
30-49	1		2		2				1					1									1	8	30-49
50-99								1															1	2	50-99

100-299																										100-299
300 workers or more																										300 workers or more
total	4	4	6	2	4	7	3	4	4	2	2	2	4	3	3	5	3	2	3		3	2	3	75	total	

Month of fatal accidents in gravel digging in 1999-2021

Month	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	total	Month
January	2	2				1		2			1				1								1	10	January
February		1	2		1		1								1				1		1			8	February
March																2	1							3	March
April					1	1	1							1			1		1			1		7	April
May						1				1		1												3	May
June	1								1				1	1				1					1	6	June
July					1			1	2				1			1					1			7	July
August				2		1				1			1				1							6	August
September			2			2	1		1				1											7	September
October								1				1			1	1					1			5	October
November	1	1	1		1	1										1		1	1			1	1	10	November
December			1								1			1										3	December
total	4	4	6	2	4	7	3	4	4	2	2	2	4	3	3	5	3	2	3		3	2	3	75	total

Prefecture of fatal accidents in gravel digging in 1999-2021

[illegible]

Shizuoka																					1		1	Shizuoka
Aichi						1								1									2	Aichi
Mie													1		1								2	Mie
Shiga																								Shiga
Kyoto						1									1							1	3	Kyoto
Osaka													1										1	Osaka
Hyogo																								Hyogo
Nara																								Nara
Wakayama																								Wakayama
Tottori																								Tottori
Shimane																								Shimane
Okayama																								Okayama
Hiroshima																								Hiroshima
Yamaguchi																								Yamaguchi
Tokushima																								Tokushima
Kagawa																								Kagawa
Ehime																					1		1	Ehime
Kochi						1															1		2	Kochi
Fukuoka						1																	1	Fukuoka
Saga																								Saga
Nagasaki																								Nagasaki
Kumamoto						1				1	1												3	Kumamoto
Oita																1							1	Oita

Miyazaki						1		1							1									3	Miyazaki
Kagoshima								1																1	Kagoshima
Okinawa																									Okinawa
total	4	4	6	2	4	7	3	4	4	2	2	2	4	3	3	5	3	2	3		3	2	3	75	total

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

Return to https://www.jisha.or.jp/english/statistics/2021e_industry.html