

Fatal and non-fatal accidents in hydroelectric plant construction work in Japan in 1999-2021

hydroelectric plant construction work industry Code No.030101

Type of accidents in hydroelectric plant construction work 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	13	9	12	10	7	5	5	3	10	5	5	3	8	3	3	7	5	3	2	6	8	4	6	142	fall from height
falling to same level	8	6	4	6	3	2	3	2	2	1	2	2	2	2			1	7	3	1	1	2	2	62	falling to same level
crash	3	2		1	1		1		1	1	3		1	2					2	3				21	crash
struck by flying or falling object	6	5	3	4	3	5	5	3	4	3	1			3	1	4	2	2	2		2	2	3	63	struck by flying or falling object
collapse	2	2	4	1	2		2			2	2	1		1	3		1	1	1	1	1			27	collapse
crashed by	3	2	3	4		2	2	1	2	2	5	3	4		1	3	3		1		2	1	2	46	crashed by
caught in/between	6	4	5	6	4	5	5	6	2	5	6	2	5	2	3	3	5	4	3	5	5	7	4	102	caught in/between
cut	1		4	3			2	1	1	2	1	1				1	1	1				2	1	22	cut
injury to the sole of the foot		1	1																					2	injury to the sole of the foot
drown						1					1		1			1				1				5	drown
contact to high/low-temperature			1							1	1		1	1						1		1	1	8	contact to high/low-temperature

contact to harmful substance		1			1			2				1					1					1		7	contact to harmful substance
electric shock			1																					1	electric shock
explosion																									explosion
burst																									burst
fire																									fire
traffic accident (public road)	2		1	1	1			3	2	2	2	4	2	3		1	1	1		1	1		2	30	traffic accident (public road)
traffic accident (others)													1											1	traffic accident (others)
reaction to motion/improper motion			1		1	2	1		1	2	1				1	1	2			3		1	1	18	reaction to motion/improper motion
others		1		1		1		1									1				2	2	12	21	others
unclassifiable																									unclassifiable
total	44	33	40	37	23	23	26	22	25	26	30	17	25	17	12	21	22	20	14	22	22	23	34	578	total

Causal agents (large) of fatal and non-fatal accidents in hydroelectric plant construction work in 1999-2021

[illegible]

tools	5	2	3	4	1	2		2		2			3		2	2	1	2	4	3	1	1	4	44	tools
other equipments, facilities	1	1		3	1	1			1	1						1						1	1	12	other equipments, facilities
temporary buildings, establishments	14	8	11	9	5	7	7	3	6	3	6	2	4	7	1	5	3	6	3	7	2	3	5	127	temporary buildings, establishments
hazards, harmful substances		1			1			2									1					1		6	hazards, harmful substances
materials	3	5	2	5	2	3	5	2	2		2			1	4	2	4	1	1	2	4	1		51	materials
load	1			1			1	1	1		1		1		1			1	1					10	load
natural environment	4	1	6	3	1	2	3	1	4	6	4	6	2	1	2	1	3	2	1	1	3	2	2	61	natural environment
other causal agent		1		1																		2	12	16	other causal agent
no causal agent			1		1	1				1	1				1	1	1			2	1		1	12	no causal agent
unclassifiable													1				1							2	unclassifiable
total	44	33	40	37	23	23	26	22	25	26	30	17	25	17	12	21	22	20	14	22	22	23	34	578	total

Causal agents (small) of fatal and non-fatal accidents in hydroelectric plant construction work in 1999-2021

[illegible]

engine																									engine
power transmission mechanism			1							1														2	power transmission mechanism
circular sawing machine			3								1	1										2		7	circular sawing machine
band sawing machine																									band sawing machine
wood planer machine									1															1	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	chain saw
other woodworking machines																									other woodworking machines
leveling, transporting or loading machine			1		1			2				1							1		1			7	leveling, transporting or loading machine
excavating machine			2		2		1			1	3	2	1			2		2	1					17	excavating machine
foundation work machine															2					1				3	foundation work machine

[illegible]

machine																									machine
food manufacturing machine																									food manufacturing machine
printing machine																									printing machine
industrial robot																									industrial robot
other general power machines			1				1	2		1	1		1	1			1	1				1		11	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				1				1					1		4	crane
mobile crane			1				1	1		1	1		2			3	2			1		2	1	16	mobile crane
derrick crane																									derrick crane
elevator, lift													1											1	elevator, lift
cargo lifting appliance																									cargo lifting appliance
gondola																									gondola
lumberyard equipment, logging																									lumberyard equipment, logging

gas welding equipment										1													1	gas welding equipment	
arc welding equipment																					2		2	arc welding equipment	
other welding equipment																								other welding equipment	
kiln, caldron																								kiln, caldron	
industrial dryer																								industrial dryer	
other kiln, caldron																								other kiln, caldron	
transmission										1													1	transmission	
electric power facilities																								electric power facilities	
other electrical equipment			1																				1	other electrical equipment	
human power cranes																								human power cranes	
human power hauling equipment			1					1	1														3	human power hauling equipment	
human power machine																								human power machine	
hand tool							1			1			1								1		4	hand tool	
ladder					1			1					2		2	1	1		1	2	1		2	14	ladder
slinging tool			2					1			1		1					2	1			1	9	slinging tool	
other tools			1							1						1		2	1			1	1	8	other tools

harmful substances					1																1		2	harmful substances	
metal material			1		1		4	1	2		1				2	1	3	1	1	1	2	1		22	metal material
lumber, bamboo							1				1								1	2			5	lumber, bamboo	
stone, sand, substance			1		1			1					1			1							5	stone, sand, substance	
other materials															2	1							3	other materials	
load								1	1		1		1		1		1	1					7	load	
machine/equipment as load							1																1	machine/equipment as load	
natural ground, rock			5		1		1		3	6	1	2		1	2	1	3	1			1	1		29	natural ground, rock
standing tree							1				1	2							1				1	6	standing tree
water													1							1	1		3	water	
abnormal environment												1											1	abnormal environment	
high/cold temperature environment			1										1										1	3	high/cold temperature environment
other environments							1	1	1		2	1					1			1	1		9	other environments	
other causal agent																					2	12	14	other causal agent	
no causal agent			1		1					1	1				1	1	1			2	1		1	11	no causal agent
unclassifiable													1				1						2	unclassifiable	
total			40		23		26	22	25	26	30	17	25	17	12	21	22	20	14	22	22	23	34	441	total

Workers age of fatal and non-fatal accidents in hydroelectric plant construction work 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	2		1		1		1	1			1		1								1		1	10	19 years old or less
20-29	7	4	8	8	6	2	3	2	2	5	2	3	3	2	3		1	4			4	7	5	81	20-29
30-39	3	7	4	7		4	4	2	5	11	9	2	4	2	4	3	3	2	4	7	2	1	5	95	30-39
40-49	8	7	9	5	3	6	5	5	2	2	7	3	5	5	1	6	1	1	5	6	4	4	10	110	40-49
50-59	13	10	13	13	9	10	8	7	10	3	4	4	6	6	2	4	7	8	1	4	5	6	9	162	50-59
60 years old or more	11	5	5	4	4	1	5	5	6	5	7	5	6	2	2	8	10	5	4	5	6	5	4	120	60 years old or more
total	44	33	40	37	23	23	26	22	25	26	30	17	25	17	12	21	22	20	14	22	22	23	34	578	total

Workers' number of workplace of fatal and non-fatal accidents in hydroelectric plant construction work 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	11	15	10	13	10	11	14	10	7	12	11	8	6	4	6	11	9	7	10	12	10	8	15	230	9 workers or less
10-29	19	11	19	15	8	6	8	6	12	9	13	8	12	8	4	7	6	5	3	8	11	8	8	214	10-29
30-49	4	5	6	1	1	2	1	4	5	1	4	1	3	2	2	1	5	6	1	1	1	3	7	67	30-49
50-99	3	2	3	5	3	3	2		1	1	1		3	3		2	2	1		1		2	2	40	50-99
100-299	6		2	2	1	1	1	2		1	1		1					1				1	2	22	100-299
300 workers or more	1			1						2												1		5	300 workers or more
total	44	33	40	37	23	23	26	22	25	26	30	17	25	17	12	21	22	20	14	22	22	23	34	578	total

Month of fatal and non-fatal accidents in hydroelectric plant construction work 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	3	2	3	2	1	2	3		1	6		1	3		3	2	3	3	3	2		4	49	January
February		4	3	6	1	2	2		2	2	5			3	1	1	1	2	1	1	2	3	2	44	February
March	12	3	1	3	1	1	4		3	3	1	1	4	1	2	2	3	1		2	3	2	1	54	March
April	4		3	2	5		2	1	2	1	3	5					1	4	1	2	4	1	1	42	April
May	4	4	5	3	1	3		5	2	2	1	2	3		3	5	1	1			1	1		47	May
June	4	1	2	4	1	3	3	1	1	2	1	1			2		2				2	1	3	34	June
July	3	3	4	1		4	1	1		2	1	2	3	3		1	3	1		1	3	4	1	42	July
August		4	2	3	2	1	3	1	2	1	2		4		1	2	1	1	3	2	2	1	13	51	August
September	5	3	7	5	2	1		2	1	3	3		2	4	1	1	3	3	1	2	1	1	5	56	September
October	4	2	6		4	4	5	3	4	5	1	2	3	2		5	1	2	3	2	1	4	1	64	October
November	4	3	1	6	2	2	2	2	3	4	2	1	1	1	2	1	2	2		3	1	3	2	50	November
December	2	3	4	1	2	1	2	3	5		4	3	4				2		2	4		2	1	45	December
total	44	33	40	37	23	23	26	22	25	26	30	17	25	17	12	21	22	20	14	22	22	23	34	578	total

Prefecture of fatal and non-fatal accidents in hydroelectric plant construction work 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	9	2	5		1		4		1	5	2	1	3	3	2	1	1	4	1	2		1	2	50	Hokkaido
Aomori	2							1	1		1	1		1	1		1		1			2		12	Aomori

[illegible]

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total	44	33	40		23		26	22	25	26	30	17	25	17	12	21	22	20	14	22	22	23	34	518	total
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Fatal and non-fatal accidents mean fatal and non-fatal injuries and occupational diseases with work absence of 4 days and more. 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.htm> (MHLW, Japan)

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Fatal accidents in hydroelectric plant construction work in Japan in 1999-2021

hydroelectric plant construction work industry Code No.030101

Type of fatal accidents in hydroelectric plant construction work in 1999-2021

[illegible]

[illegible]

total	1	1			1	2		1		1	1	1	3	1	2	2	2	2		2				23	total
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Causal agents (large) of fatal accidents in hydroelectric plant construction work 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													1			1		1						3	machine
crane, conveying machine	1							1				1	1				1	1						6	crane, conveying machine
other equipment																									other equipment
temporary buildings, establishments						2					1		1	1	1	1	1			1				9	temporary buildings, establishments
substance, material															1									1	substance, material
load																									load
environment		1			1					1										1				4	environment
others																									others
total	1	1			1	2		1		1	1	1	3	1	2	2	2	2		2				23	total

Causal agents (middle) of fatal accidents in hydroelectric plant construction work in 1999-2021

[illegible]

[illegible]

no causal agent																									no causal agent
unclassifiable																									unclassifiable
total	1	1			1	2		1		1	1	1	3	1	2	2	2	2		2				23	total

Causal agents (small) of fatal accidents in hydroelectric plant construction work in 1999-2021

[illegible]

[illegible]

[illegible]

mobile crane												1											1	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																								other powered crane
truck	1							1				1					1	1					5	truck
forklift																								forklift
railway equipment																								railway equipment
conveyor																								conveyor
loader																								loader
straddle carrier																								straddle carrier
rough terrain hauler																								rough terrain hauler
other powered conveying machines																								other powered conveying machines
cars, bus, motorcycle																								cars, bus, motorcycle

human power hauling equipment																									human power hauling equipment
human power machine																									human power machine
hand tool																									hand tool
ladder																									ladder
slinging tool																									slinging tool
other tools																									other tools
other equipment, facilities																									other equipment, facilities
scaffolding						1										1			1					3	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	working platform, boot board
passage																									passage
building, establishment						1					1					1								3	building, establishment
other temporary buildings,																									other temporary buildings,

[illegible]

temperature environment																										temperature environment
other environments																										other environments
other causal agent																										other causal agent
no causal agent																										no causal agent
unclassifiable																										unclassifiable
total	1	1			1	2		1		1	1	1	3	1	2	2	2	2		2					23	total

Workers age of fatal accidents in hydroelectric plant construction work 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											1	19 years old or less
20-29						1									1									2	20-29
30-39																		1		1				2	30-39
40-49	1	1								1		1	1	1		2				1				9	40-49
50-59						1		1					1		1		2							6	50-59
60 years old or more					1						1							1						3	60 years old or more
total	1	1			1	2		1		1	1	1	3	1	2	2	2	2		2				23	total

Workers' number of workplace of fatal accidents in hydroelectric plant construction work in 1999-2021

[illegible]

9 workers or less					1	1				1		1	1		1	2	2			2					12	9 workers or less
10-29	1					1		1			1				1										5	10-29
30-49		1											1					2							4	30-49
50-99													1												1	50-99
100-299													1												1	100-299
300 workers or more																										300 workers or more
total	1	1			1	2		1		1	1	1	3	1	2	2	2	2		2					23	total

Month of fatal accidents in hydroelectric plant construction work in 1999-2021

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Saga																									Saga
Nagasaki																									Nagasaki
Kumamoto											1												1		Kumamoto
Oita																									Oita
Miyazaki						1																	1		Miyazaki
Kagoshima																									Kagoshima
Okinawa																									Okinawa
total	1	1			1	2		1		1	1	1	3	1	2	2	2	2		2				23	total

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

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