

Industrial accidents in sand collapse prevention civil engineering work in Japan in 1999-2020

sand collapse prevention civil engineering work industry Code No.030108

Type of accidents in sand collapse prevention civil engineering work in 1999-2020

| 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 |
|------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 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   |
| 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    |
| crash                              | 15   | 20   | 10   | 11   | 5    | 10   | 11   | 9    | 6    | 4    | 4    | 6    | 3    | 1    | 5    | 3    | 1    | 1    | 3    | 7    | 1    | 4    |
| 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    |
| collapse                           | 20   | 17   | 15   | 18   | 21   | 10   | 13   | 6    | 7    | 5    | 4    | 5    | 4    | 1    | 4    | 1    | 5    | 2    | 1    | 1    | 4    | 6    |
| crashed by                         | 29   | 23   | 20   | 23   | 20   | 15   | 13   | 12   | 29   | 7    | 10   | 9    | 9    | 7    | 17   | 8    | 7    | 11   | 5    | 11   | 8    | 9    |
| 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    |
| cut                                | 12   | 10   | 10   | 3    | 17   | 8    | 6    | 4    | 5    | 5    | 7    | 4    | 4    | 3    | 4    | 7    | 2    | 3    | 4    | 4    | 4    | 5    |
| injury to the sole of the foot     | 1    | 1    | 2    | -    | 1    | -    | 1    | 0    | 0    | 2    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| drown                              | 0    | 0    | 0    | -    | 0    | -    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| contact to high/low-temperature    | 2    | 1    | 1    | -    | 2    | 1    | 0    | 0    | 1    | 0    | 1    | 2    | 0    | 1    | 3    | 0    | 0    | 0    | 1    | 1    | 1    | 1    |
| contact to harmful substance       | 0    | 1    | 1    | 1    | 0    | -    | 0    | 1    | 1    | 2    | 1    | 1    | 1    | 1    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 0    |
| electric shock                     | 0    | 0    | 0    | -    | 0    | -    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| explosion                          | 1    | 0    | 0    | -    | 0    | -    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| burst                              | 0    | 0    | 0    | -    | 0    | -    | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| fire                               | 0    | 0    | 0    | -    | 0    | -    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    | 0    |
| 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    |
| traffic accident (others)          | 0    | 0    | 0    | 1    | 0    | -    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| reaction to motion/improper motion | 7    | 7    | 2    | 8    | 6    | 6    | 4    | 3    | 1    | 3    | 1    | 4    | 4    | 0    | 2    | 1    | 3    | 2    | 2    | 2    | 4    | 1    |
| others                             | 1    | 3    | 3    | -    | 1    | -    | 3    | 1    | 1    | 0    | 2    | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    |

|                |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|
| unclassifiable | 0   | 0   | 0   | -   | 1   | -   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1  | 0  | 0  | 0  | 0  |    |
| total          | 345 | 321 | 261 | 236 | 226 | 181 | 185 | 148 | 153 | 135 | 120 | 106 | 115 | 109 | 122 | 111 | 71 | 65 | 73 | 84 | 84 | 76 |

Causal agents (middle) of industrial accidents in sand collapse prevention civil engineering work in 1999-2020

| 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 |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| engine                       | 0    | 0    | 0    | -    | 0    | -    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| power transmission mechanism | 1    | 0    | 0    | -    | 0    | -    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    |
| woodworking machine          | 7    | 6    | 6    | 3    | 11   | 4    | 2    | 4    | 3    | 4    | 4    | 1    | 3    | 1    | 1    | 4    | 0    | 2    | 3    | 0    | 4    | 1    |
| construction machine         | 48   | 31   | 36   | 20   | 25   | 19   | 21   | 18   | 18   | 21   | 5    | 13   | 13   | 13   | 17   | 17   | 15   | 10   | 6    | 10   | 15   | 13   |
| metal manufacturing machine  | 0    | 2    | 0    | 1    | 3    | -    | 0    | 0    | 2    | 1    | 1    | 1    | 1    | 0    | 0    | 0    | 1    | 1    | 0    | 3    | 0    | 1    |
| general machine              | 5    | 4    | 7    | 3    | 6    | 4    | 5    | 2    | 3    | 1    | 2    | 3    | 2    | 1    | 4    | 1    | 3    | 0    | 1    | 2    | 1    | 3    |
| mobile silviculture machine  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 0    | 0    | 0    | 1    | 0    | 1    |
| crane                        | 12   | 10   | 2    | 17   | 18   | 16   | 9    | 8    | 4    | 9    | 10   | 5    | 5    | 5    | 7    | 3    | 2    | 9    | 4    | 2    | 5    | 2    |
| conveying machine            | 14   | 16   | 15   | 17   | 12   | 16   | 20   | 7    | 15   | 7    | 9    | 8    | 8    | 11   | 10   | 9    | 5    | 6    | 7    | 10   | 5    | 2    |
| vehicle                      | 1    | 7    | 4    | 5    | 3    | 3    | 0    | 4    | 0    | 1    | 6    | 2    | 1    | 3    | 3    | 3    | 0    | 1    | 1    | 1    | 1    | 2    |
| pressure vessel              | 1    | 0    | 0    | -    | 0    | -    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| chemical facilities          | 0    | 0    | 0    | -    | 0    | -    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| welding equipment            | 0    | 0    | 0    | -    | 0    | -    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| kiln, caldron                | 0    | 0    | 0    | -    | 0    | -    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| electric equipment           | 0    | 0    | 0    | -    | 0    | -    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| human power machine, tools   | 8    | 6    | 4    | 6    | 4    | 6    | 5    | 5    | 4    | 0    | 3    | 3    | 1    | 2    | 2    | 5    | 2    | 0    | 4    | 1    | 0    | 0    |
| tools                        | 20   | 19   | 15   | 18   | 12   | 5    | 16   | 11   | 14   | 7    | 13   | 1    | 9    | 6    | 9    | 6    | 7    | 4    | 4    | 6    | 9    | 9    |
| other equipments, facilities | 2    | 3    | 0    | 1    | 0    | 1    | 0    | 2    | 3    | 0    | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 2    | 0    | 2    | 1    | 0    |
| temporary buildings,         | 99   | 80   | 78   | 51   | 55   | 40   | 35   | 37   | 28   | 33   | 27   | 37   | 22   | 18   | 26   | 28   | 15   | 15   | 17   | 15   | 20   | 14   |

|                             |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |  |
|-----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|--|
| establishments              |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |  |
| hazards, harmful substances | 1   | 1   | 2   | 1   | 0   | -   | 0   | 1   | 1   | 0   | 1   | 1   | 0   | 1   | 1   | 0   | 0  | 0  | 1  | 0  | 0  | 0  |  |
| materials                   | 40  | 52  | 30  | 26  | 19  | 20  | 18  | 13  | 11  | 16  | 8   | 14  | 13  | 14  | 7   | 6   | 3  | 3  | 5  | 7  | 6  | 5  |  |
| load                        | 2   | 2   | 2   | 5   | 2   | 3   | 4   | 2   | 2   | 5   | 4   | 0   | 1   | 1   | 1   | 2   | 1  | 1  | 2  | 1  | 2  | 1  |  |
| natural environment         | 80  | 78  | 60  | 59  | 55  | 42  | 48  | 33  | 43  | 29  | 26  | 16  | 35  | 31  | 32  | 26  | 14 | 11 | 17 | 21 | 13 | 21 |  |
| other causal agent          | 0   | 0   | 0   | -   | 0   | -   | 0   | 0   | 0   | 1   | 1   | 0   | 1   | 0   | 0   | 0   | 0  | 0  | 0  | 0  | 0  | 1  |  |
| no causal agent             | 3   | 4   | 0   | 3   | 1   | 2   | 2   | 1   | 1   | 0   | 0   | 1   | 0   | 0   | 1   | 0   | 2  | 0  | 1  | 1  | 2  | 0  |  |
| unclassifiable              | 1   | 0   | 0   | -   | 0   | -   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 1  | 0  | 0  | 0  | 0  | 0  |  |
| total                       | 345 | 321 | 261 | 236 | 226 | 181 | 185 | 148 | 153 | 135 | 120 | 106 | 115 | 109 | 122 | 111 | 71 | 65 | 73 | 84 | 84 | 76 |  |

Causal agents (small) of industrial accidents in sand collapse prevention civil engineering work in 1999-2020

| 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 |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| engine  |      |      | 0    |      | 0    |      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| power transmission mechanism                            |      |      | 0    |      | 0    |      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    |
| circular sawing machine                                 |      |      | 3    |      | 3    |      | 2    | 0    | 3    | 1    | 1    | 0    | 2    | 1    | 0    | 2    | 0    | 0    | 1    | 0    | 1    | 0    |
| band sawing machine                                     |      |      | 0    |      | 0    |      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| wood planer machine                                     |      |      | 0    |      | 0    |      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| hollow chisel mortiser, wood borer                      |      |      | 0    |      | 0    |      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| chamfering machine, router, woodworking milling machine |      |      | 0    |      | 0    |      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| chain saw   |      |      | 3    |      | 8    |      | 0    | 3    | 0    | 2    | 3    | 1    | 1    | 0    | 1    | 2    | 0    | 2    | 2    | 0    | 2    | 1    |
| other woodworking machines                              |      |      | 0    |      | 0    |      | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0    |
| leveling, transporting or loading machine               |      |      | 5    |      | 3    |      | 3    | 3    | 8    | 4    | 0    | 4    | 1    | 3    | 2    | 1    | 3    | 3    | 1    | 1    | 4    | 0    |
| excavating machine                                      |      |      | 22   |      | 14   |      | 15   | 15   | 6    | 8    | 3    | 5    | 10   | 6    | 10   | 12   | 5    | 2    | 3    | 7    | 8    | 8    |





|   |  |  |    |    |    |    |    |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
|---|--|--|----|----|----|----|----|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|
| equipment                                     |  |  |    |    |    |    |    |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| arc welding equipment                         |  |  | 0  | 0  | 0  | 0  | 0  | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| other welding equipment                       |  |  | 0  | 0  | 0  | 0  | 0  | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| kiln, caldron                                 |  |  | 0  | 0  | 0  | 0  | 0  | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| industrial dryer                              |  |  | 0  | 0  | 0  | 0  | 0  | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| other kiln, caldron                           |  |  | 0  | 0  | 0  | 0  | 0  | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| transmission                                  |  |  | 0  | 0  | 0  | 0  | 0  | 0 | 0 | 0  | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| electric power facilities                     |  |  | 0  | 0  | 0  | 0  | 0  | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| other electrical equipment                    |  |  | 0  | 0  | 0  | 0  | 0  | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| human power cranes                            |  |  | 0  | 0  | 0  | 0  | 0  | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| human power hauling equipment                 |  |  | 0  | 0  | 0  | 0  | 0  | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| human power machine                           |  |  | 0  | 0  | 0  | 0  | 1  | 0 | 0 | 0  | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| hand tool                                     |  |  | 4  | 4  | 5  | 5  | 3  | 0 | 3 | 3  | 1 | 2 | 1 | 5 | 2 | 0 | 3 | 1 | 0 | 0 | 0 | 0 |
| ladder  |  |  | 7  | 8  | 9  | 7  | 7  | 3 | 8 | 0  | 4 | 2 | 4 | 4 | 3 | 3 | 2 | 4 | 6 | 5 | 0 | 0 |
| slinging tool                                 |  |  | 2  | 2  | 1  | 0  | 2  | 1 | 2 | 0  | 0 | 1 | 1 | 0 | 3 | 0 | 0 | 1 | 1 | 2 | 0 | 0 |
| other tools                                   |  |  | 6  | 2  | 6  | 4  | 5  | 3 | 3 | 1  | 5 | 3 | 4 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 0 | 0 |
| other equipment, facilities                   |  |  | 0  | 0  | 0  | 2  | 3  | 0 | 0 | 0  | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 0 |
| scaffolding                                   |  |  | 23 | 9  | 11 | 6  | 4  | 7 | 7 | 5  | 4 | 3 | 5 | 9 | 3 | 4 | 1 | 4 | 3 | 1 | 0 | 0 |
| timbering                                     |  |  | 6  | 3  | 2  | 2  | 2  | 3 | 1 | 1  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| stairs, landing stage                         |  |  | 3  | 5  | 2  | 1  | 3  | 3 | 1 | 1  | 1 | 1 | 4 | 3 | 1 | 0 | 0 | 1 | 2 | 1 | 0 | 0 |
| opening                                       |  |  | 0  | 0  | 0  | 0  | 0  | 0 | 1 | 0  | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| roof, beam, haze, crossbeam, principal rafter |  |  | 0  | 0  | 0  | 3  | 0  | 1 | 0 | 1  | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| working platform, boot board                  |  |  | 7  | 7  | 2  | 4  | 1  | 6 | 3 | 2  | 1 | 0 | 0 | 4 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| passage                                       |  |  | 12 | 7  | 3  | 4  | 2  | 3 | 4 | 7  | 2 | 1 | 6 | 2 | 2 | 4 | 6 | 4 | 5 | 3 | 0 | 0 |
| building, establishment                       |  |  | 24 | 21 | 14 | 11 | 13 | 6 | 9 | 15 | 7 | 8 | 4 | 6 | 6 | 3 | 6 | 6 | 7 | 7 | 0 | 0 |



|                      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|
| 19 years old or less | 8   | 7   | 5   | 4   | 3   | 3   | 1   | 0   | 1   | 0   | 0   | 5   | 0   | 1   | 2   | 3   | 2  | 0  | 1  | 0  | 1  | 0  |
| 20-29                | 26  | 29  | 30  | 30  | 19  | 12  | 19  | 17  | 14  | 9   | 10  | 6   | 8   | 9   | 5   | 10  | 6  | 6  | 6  | 6  | 4  | 7  |
| 30-39                | 33  | 25  | 28  | 21  | 34  | 28  | 23  | 28  | 14  | 21  | 16  | 12  | 20  | 23  | 18  | 10  | 12 | 5  | 9  | 9  | 6  | 10 |
| 40-49                | 51  | 47  | 44  | 27  | 39  | 37  | 22  | 16  | 17  | 22  | 14  | 17  | 30  | 15  | 19  | 21  | 12 | 14 | 14 | 12 | 14 | 15 |
| 50-59                | 106 | 87  | 80  | 71  | 73  | 53  | 71  | 56  | 57  | 42  | 37  | 32  | 26  | 28  | 34  | 28  | 19 | 20 | 13 | 19 | 16 | 20 |
| 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 |
| total                | 345 | 321 | 261 | 236 | 226 | 181 | 185 | 148 | 153 | 135 | 120 | 106 | 115 | 109 | 122 | 111 | 71 | 65 | 73 | 84 | 84 | 76 |

Workers' number of workplace of industrial accidents in sand collapse prevention civil engineering work in 1999-2020

| Workers scale       | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 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   |
| 10-29               | 142  | 143  | 113  | 101  | 81   | 63   | 79   | 47   | 73   | 59   | 47   | 40   | 39   | 47   | 54   | 46   | 32   | 33   | 34   | 30   | 30   | 30   |
| 30-49               | 46   | 38   | 33   | 23   | 32   | 24   | 17   | 13   | 12   | 16   | 3    | 6    | 6    | 8    | 7    | 10   | 9    | 3    | 6    | 7    | 11   | 5    |
| 50-99               | 13   | 14   | 6    | 7    | 11   | 6    | 5    | 7    | 0    | 1    | 5    | 0    | 6    | 0    | 8    | 2    | 3    | 1    | 1    | 1    | 0    | 3    |
| 100-299             | 7    | 2    | 1    | 3    | 3    | 1    | 4    | 1    | 0    | 3    | 0    | 0    | 2    | 1    | 2    | 1    | 0    | 1    | 0    | 0    | 0    | 0    |
| 300 workers or more | 0    | 0    | 0    | —    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| total               | 345  | 321  | 261  | 236  | 226  | 181  | 185  | 148  | 153  | 135  | 120  | 106  | 115  | 109  | 122  | 111  | 71   | 65   | 73   | 84   | 84   | 76   |

Month of industrial accidents in sand collapse prevention civil engineering work in 1999-2020

| Month     | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| January   | 38   | 33   | 24   | 17   | 19   | 18   | 10   | 18   | 15   | 14   | 12   | 14   | 11   | 11   | 9    | 8    | 5    | 3    | 5    | 4    | 9    | 4    |
| February  | 29   | 31   | 19   | 30   | 24   | 18   | 16   | 16   | 8    | 14   | 11   | 10   | 9    | 8    | 8    | 7    | 7    | 7    | 6    | 8    | 2    |      |
| March     | 25   | 23   | 29   | 19   | 23   | 21   | 11   | 10   | 19   | 10   | 6    | 7    | 14   | 8    | 12   | 8    | 11   | 5    | 6    | 5    | 4    | 7    |
| April     | 26   | 24   | 16   | 12   | 8    | 9    | 15   | 9    | 3    | 6    | 5    | 8    | 4    | 10   | 5    | 4    | 5    | 5    | 3    | 6    | 6    | 5    |
| May       | 26   | 19   | 16   | 21   | 16   | 14   | 11   | 10   | 11   | 8    | 10   | 13   | 16   | 8    | 3    | 8    | 5    | 6    | 9    | 0    | 7    | 8    |
| June      | 21   | 22   | 16   | 12   | 15   | 16   | 16   | 13   | 9    | 7    | 6    | 7    | 9    | 8    | 9    | 5    | 0    | 3    | 4    | 6    | 6    | 6    |
| July      | 28   | 29   | 27   | 26   | 16   | 15   | 18   | 12   | 9    | 12   | 9    | 6    | 10   | 16   | 18   | 14   | 9    | 3    | 6    | 11   | 6    | 5    |
| August    | 23   | 26   | 17   | 17   | 16   | 14   | 13   | 21   | 14   | 6    | 6    | 10   | 8    | 7    | 14   | 9    | 9    | 8    | 8    | 5    | 8    | 7    |
| September | 31   | 29   | 24   | 17   | 23   | 8    | 11   | 10   | 19   | 17   | 13   | 10   | 7    | 7    | 15   | 11   | 3    | 7    | 7    | 14   | 7    | 10   |
| October   | 36   | 30   | 26   | 23   | 21   | 22   | 25   | 7    | 13   | 9    | 17   | 8    | 6    | 11   | 12   | 11   | 9    | 10   | 4    | 12   | 7    | 4    |
| November  | 41   | 24   | 26   | 23   | 23   | 17   | 24   | 13   | 10   | 16   | 13   | 9    | 13   | 9    | 10   | 17   | 7    | 5    | 9    | 5    | 10   | 8    |
| December  | 21   | 31   | 21   | 19   | 22   | 9    | 15   | 9    | 23   | 16   | 12   | 4    | 8    | 6    | 7    | 8    | 1    | 3    | 5    | 10   | 6    | 10   |



|       |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|
| total | 345 | 321 | 261 | 236 | 226 | 181 | 185 | 148 | 153 | 135 | 120 | 106 | 115 | 109 | 122 | 111 | 71 | 65 | 73 | 84 | 84 | 76 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|

Prefecture of industrial accidents in sand collapse prevention civil engineering work in 1999-2020

| Prefecture | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Hokkaido   | 17   | 10   | 16   |      | 13   |      | 8    | 7    | 4    | 6    | 14   | 6    | 5    | 4    | 4    | 1    | 3    | 0    | 4    | 6    | 8    | 3    |
| Aomori     | 3    | 2    | 5    |      | 3    |      | 4    | 2    | 4    | 1    | 3    | 1    | 2    | 1    | 1    | 0    | 3    | 1    | 1    | 1    | 2    | 2    |
| Iwate      | 4    | 1    | 6    |      | 1    |      | 1    | 0    | 3    | 1    | 1    | 1    | 3    | 3    | 1    | 2    | 0    | 0    | 1    | 4    | 0    | 1    |
| Miyagi     | 3    | 0    | 0    |      | 1    |      | 0    | 0    | 0    | 2    | 3    | 1    | 1    | 0    | 2    | 3    | 2    | 0    | 0    | 0    | 1    | 0    |
| Akita      | 5    | 8    | 5    |      | 7    |      | 2    | 1    | 2    | 1    | 1    | 2    | 0    | 0    | 3    | 1    | 1    | 0    | 0    | 0    | 0    | 3    |
| Yamagata   | 1    | 4    | 2    |      | 2    |      | 0    | 0    | 0    | 1    | 0    | 1    | 1    | 0    | 1    | 2    | 2    | 0    | 0    | 0    | 0    | 0    |
| Fukushima  | 5    | 6    | 1    |      | 4    |      | 1    | 0    | 2    | 0    | 0    | 0    | 1    | 3    | 1    | 2    | 0    | 0    | 0    | 0    | 0    | 3    |
| Ibaraki    | 2    | 1    | 1    |      | 0    |      | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    | 0    |
| Tochigi    | 3    | 3    | 3    |      | 2    |      | 3    | 3    | 1    | 1    | 3    | 2    | 4    | 2    | 0    | 1    | 0    | 1    | 0    | 0    | 1    | 0    |
| Gunma      | 7    | 12   | 15   |      | 7    |      | 5    | 4    | 3    | 4    | 4    | 4    | 2    | 0    | 5    | 2    | 4    | 1    | 2    | 2    | 6    | 1    |
| Saitama    | 1    | 0    | 0    |      | 4    |      | 2    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    |
| Chiba      | 0    | 3    | 0    |      | 0    |      | 2    | 2    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 1    | 0    | 0    | 1    | 0    |
| Tokyo      | 1    | 0    | 6    |      | 3    |      | 8    | 2    | 2    | 1    | 2    | 0    | 1    | 2    | 2    | 3    | 4    | 3    | 5    | 0    | 1    | 1    |
| Kanagawa   | 10   | 5    | 5    |      | 12   |      | 7    | 0    | 1    | 1    | 4    | 2    | 4    | 2    | 1    | 2    | 3    | 0    | 2    | 0    | 0    | 3    |
| Niigata    | 12   | 10   | 7    |      | 7    |      | 8    | 13   | 4    | 8    | 3    | 3    | 1    | 2    | 2    | 6    | 1    | 4    | 1    | 2    | 2    | 0    |
| Toyama     | 13   | 7    | 5    |      | 6    |      | 4    | 1    | 6    | 1    | 2    | 2    | 2    | 6    | 4    | 1    | 0    | 0    | 3    | 2    | 1    | 0    |
| Ishikawa   | 3    | 1    | 4    |      | 2    |      | 3    | 1    | 3    | 5    | 3    | 2    | 2    | 0    | 1    | 2    | 1    | 0    | 0    | 0    | 0    | 2    |
| Fukui      | 21   | 17   | 7    |      | 11   |      | 8    | 7    | 4    | 4    | 3    | 2    | 1    | 2    | 2    | 2    | 0    | 1    | 0    | 1    | 3    | 0    |
| Yamanashi  | 6    | 8    | 7    |      | 6    |      | 4    | 5    | 6    | 11   | 4    | 1    | 6    | 0    | 5    | 3    | 3    | 2    | 3    | 2    | 2    | 4    |
| Nagano     | 19   | 18   | 14   |      | 10   |      | 8    | 8    | 15   | 5    | 6    | 3    | 4    | 5    | 8    | 4    | 5    | 0    | 6    | 4    | 3    | 3    |
| Gifu       | 25   | 27   | 10   |      | 11   |      | 5    | 7    | 5    | 6    | 2    | 2    | 6    | 6    | 5    | 2    | 5    | 0    | 2    | 0    | 1    | 2    |
| Shizuoka   | 7    | 8    | 6    |      | 7    |      | 5    | 5    | 8    | 4    | 7    | 2    | 4    | 3    | 4    | 5    | 6    | 4    | 9    | 4    | 2    | 2    |
| Aichi      | 9    | 8    | 4    |      | 4    |      | 5    | 2    | 2    | 2    | 3    | 2    | 1    | 0    | 1    | 2    | 0    | 1    | 0    | 0    | 1    | 1    |
| Mie        | 12   | 13   | 2    |      | 4    |      | 5    | 5    | 4    | 4    | 2    | 1    | 1    | 2    | 1    | 1    | 0    | 1    | 1    | 0    | 3    | 1    |
| Shiga      | 2    | 4    | 2    |      | 1    |      | 1    | 2    | 0    | 1    | 3    | 1    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 1    | 1    | 0    |
| Kyoto      | 5    | 1    | 1    |      | 0    |      | 1    | 2    | 3    | 0    | 0    | 0    | 1    | 1    | 0    | 0    | 1    | 1    | 1    | 0    | 0    | 2    |
| Osaka      | 2    | 0    | 0    |      | 0    |      | 1    | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 1    | 1    | 0    | 0    |
| Hyogo      | 2    | 9    | 7    |      | 8    |      | 8    | 10   | 6    | 7    | 3    | 4    | 2    | 3    | 6    | 4    | 0    | 3    | 0    | 2    | 5    | 1    |
| Nara       | 7    | 7    | 1    |      | 5    |      | 1    | 2    | 3    | 0    | 3    | 4    | 0    | 1    | 4    | 3    | 0    | 1    | 0    | 0    | 1    | 2    |
| Wakayama   | 8    | 6    | 12   |      | 4    |      | 2    | 1    | 0    | 2    | 0    | 4    | 5    | 5    | 4    | 2    | 0    | 0    | 1    | 1    | 0    | 1    |
| Tottori    | 1    | 1    | 4    |      | 0    |      | 1    | 2    | 4    | 3    | 3    | 1    | 2    | 3    | 0    | 3    | 1    | 1    | 1    | 0    | 0    | 0    |

|           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |
|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|
| Shimane   | 7   | 6   | 4   | 3   | 1   | 0   | 0   | 1   | 0   | 1   | 3   | 6   | 4   | 4   | 0  | 1  | 1  | 1  | 1  | 0  |
| Okayama   | 8   | 8   | 5   | 6   | 3   | 2   | 0   | 2   | 0   | 1   | 1   | 1   | 2   | 1   | 0  | 0  | 3  | 1  | 3  | 2  |
| Hiroshima | 13  | 11  | 11  | 8   | 6   | 5   | 1   | 3   | 3   | 3   | 1   | 1   | 1   | 2   | 0  | 6  | 2  | 4  | 6  | 7  |
| Yamaguchi | 2   | 5   | 6   | 2   | 4   | 2   | 2   | 5   | 2   | 3   | 7   | 1   | 1   | 1   | 0  | 3  | 0  | 2  | 2  | 2  |
| Tokushima | 6   | 13  | 17  | 10  | 10  | 13  | 9   | 7   | 3   | 5   | 1   | 6   | 2   | 6   | 3  | 2  | 1  | 3  | 1  | 1  |
| Kagawa    | 1   | 1   | 2   | 0   | 4   | 0   | 0   | 1   | 0   | 0   | 1   | 1   | 1   | 2   | 1  | 0  | 1  | 0  | 1  | 0  |
| Ehime     | 13  | 12  | 9   | 9   | 9   | 3   | 4   | 4   | 3   | 3   | 6   | 11  | 7   | 4   | 3  | 5  | 6  | 10 | 4  | 6  |
| Kochi     | 20  | 24  | 13  | 5   | 5   | 6   | 7   | 7   | 4   | 8   | 3   | 4   | 4   | 9   | 1  | 5  | 1  | 4  | 4  | 11 |
| Fukuoka   | 6   | 7   | 3   | 3   | 4   | 6   | 4   | 3   | 5   | 6   | 2   | 1   | 5   | 5   | 4  | 1  | 3  | 6  | 5  | 0  |
| Saga      | 1   | 1   | 2   | 0   | 1   | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 3   | 0   | 1  | 0  | 0  | 3  | 0  | 1  |
| Nagasaki  | 7   | 1   | 2   | 3   | 2   | 2   | 1   | 0   | 1   | 4   | 1   | 1   | 0   | 5   | 1  | 0  | 2  | 2  | 0  | 2  |
| Kumamoto  | 4   | 8   | 7   | 4   | 6   | 1   | 2   | 2   | 3   | 5   | 4   | 4   | 3   | 2   | 2  | 4  | 2  | 1  | 5  | 0  |
| Oita      | 18  | 6   | 6   | 6   | 1   | 4   | 9   | 6   | 3   | 4   | 4   | 5   | 8   | 4   | 3  | 2  | 1  | 7  | 4  | 0  |
| Miyazaki  | 5   | 4   | 5   | 2   | 1   | 0   | 2   | 0   | 1   | 1   | 2   | 2   | 1   | 1   | 0  | 1  | 0  | 0  | 0  | 2  |
| Kagoshima | 18  | 14  | 11  | 20  | 14  | 10  | 15  | 12  | 7   | 7   | 15  | 7   | 8   | 5   | 6  | 9  | 6  | 7  | 3  | 3  |
| Okinawa   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 2   | 1   | 0   | 0  | 0  | 0  | 0  | 0  | 0  |
| total     | 345 | 321 | 261 | 226 | 185 | 148 | 153 | 135 | 120 | 106 | 115 | 109 | 122 | 111 | 71 | 65 | 73 | 84 | 84 | 76 |

Industrial accidents mean fatal and non-fatal injuries with work absence of 4 days and more. Data of 2011 year include Industrial accidents caused by Great East Japan Earthquake in 2011.

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

Return to [https://www.jisha.or.jp/english/statistics/2020e\\_industry.html](https://www.jisha.or.jp/english/statistics/2020e_industry.html)

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Fatal accidents in sand collapse prevention civil engineering work in Japan in 1999-2020

sand collapse prevention civil engineering work industry Code No.030108

Type of fatal accidents in sand collapse prevention civil engineering work in 1999-2020

| 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 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| fall from height      | 9    | 12   | 7    | 3    | 5    | 5    | 7    | 2    | 9    | 8    | 4    | 2    | 5    | 2    | 3    | 2    | 1    | 3    | 0    | 3    | 1    | 2    |
| falling to same level | 1    | 1    | 2    | 0    | 1    | 1    | 1    | 0    | 1    | 0    | 0    | 2    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| crash                 | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| struck by flying or   | 1    | 2    | 1    | 3    | 0    | 2    | 0    | 3    | 2    | 0    | 1    | 1    | 0    | 2    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 0    |



|                                     |    |    |    |    |    |    |    |   |    |    |   |   |   |   |   |   |   |   |   |   |   |   |
|-------------------------------------|----|----|----|----|----|----|----|---|----|----|---|---|---|---|---|---|---|---|---|---|---|---|
| construction machine                | 7  | 4  | 4  | 2  | 3  | 0  | 1  | 0 | 4  | 3  | 0 | 2 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| metal manufacturing machine         | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| general machine                     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| mobile silviculture machine         |    |    |    |    |    |    |    |   |    |    |   |   |   |   |   |   | 0 | 0 | 0 | 0 | 0 | 0 |
| crane                               | 0  | 2  | 0  | 1  | 0  | 4  | 2  | 0 | 0  | 2  | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| conveying machine                   | 1  | 0  | 3  | 2  | 1  | 3  | 2  | 0 | 4  | 0  | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| vehicle                             | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| pressure vessel                     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| chemical facilities                 | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| welding equipment                   | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| kiln, caldron                       | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| electric equipment                  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| human power machine, tools          | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| tools                               | 0  | 2  | 0  | 0  | 0  | 0  | 1  | 2 | 0  | 0  | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| other equipments, facilities        | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| temporary buildings, establishments | 5  | 5  | 3  | 1  | 3  | 2  | 3  | 1 | 3  | 4  | 1 | 3 | 2 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| hazards, harmful substances         | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| materials                           | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1 | 0  | 0  | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| load                                | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| natural environment                 | 4  | 9  | 4  | 7  | 3  | 3  | 1  | 1 | 7  | 1  | 6 | 1 | 4 | 2 | 5 | 1 | 1 | 4 | 1 | 3 | 1 | 0 |
| other causal agent                  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| no causal agent                     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| unclassifiable                      | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| total                               | 18 | 23 | 14 | 13 | 11 | 12 | 11 | 5 | 18 | 10 | 9 | 8 | 7 | 6 | 9 | 4 | 2 | 7 | 1 | 4 | 3 | 4 |











|                                   |    |    |    |    |    |    |    |   |    |    |   |   |   |   |   |   |   |   |   |   |   |   |
|-----------------------------------|----|----|----|----|----|----|----|---|----|----|---|---|---|---|---|---|---|---|---|---|---|---|
| stone, sand, substance            | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| other materials                   | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| load                              | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| machine/equipment as load         | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| natural ground, rock              | 4  | 4  | 3  | 6  | 3  | 3  | 1  | 1 | 6  | 1  | 5 | 0 | 3 | 1 | 3 | 1 | 1 | 2 | 0 | 2 | 1 | 0 |
| standing tree                     | 0  | 3  | 1  | 1  | 0  | 0  | 0  | 0 | 1  | 0  | 1 | 1 | 1 | 1 | 2 | 0 | 0 | 2 | 1 | 1 | 0 | 0 |
| water                             | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| abnormal environment              | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| high/cold temperature environment | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| other environments                | 0  | 2  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| other causal agent                | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| no causal agent                   | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| unclassifiable                    | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| total                             | 18 | 23 | 14 | 13 | 11 | 12 | 11 | 5 | 18 | 10 | 9 | 8 | 7 | 6 | 9 | 4 | 2 | 7 | 1 | 4 | 3 | 4 |

Workers age of fatal accidents in sand collapse prevention civil engineering work in 1999-2020

| Age                  | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 19 years old or less | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| 20-29                | 0    | 1    | 0    | 0    | 2    | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0    |
| 30-39                | 2    | 1    | 2    | 2    | 2    | 3    | 4    | 0    | 2    | 1    | 2    | 0    | 1    | 2    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| 40-49                | 5    | 6    | 1    | 1    | 2    | 0    | 0    | 1    | 2    | 3    | 0    | 0    | 3    | 0    | 2    | 1    | 0    | 2    | 0    | 0    | 0    | 2    |
| 50-59                | 5    | 5    | 4    | 4    | 3    | 8    | 1    | 3    | 8    | 1    | 1    | 3    | 2    | 1    | 3    | 2    | 2    | 2    | 0    | 3    | 1    | 1    |
| 60 years old or more | 6    | 10   | 7    | 6    | 2    | 1    | 5    | 1    | 5    | 5    | 6    | 4    | 1    | 3    | 4    | 1    | 0    | 3    | 1    | 1    | 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    |

Workers' number of workplace of fatal accidents in sand collapse prevention civil engineering work in 1999-2020

| Workers scale     | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|-------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 9 workers or less | 4    | 7    | 5    | 6    | 6    | 4    | 6    | 5    | 6    | 2    | 5    | 4    | 4    | 5    | 3    | 2    | 0    | 2    | 1    | 2    | 0    | 3    |



|           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tochigi   | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Gunma     | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Saitama   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chiba     | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tokyo     | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kanagawa  | 1 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Niigata   | 1 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Toyama    | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ishikawa  | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fukui     | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Yamanashi | 0 | 1 | 1 | 3 | 1 | 1 | 0 | 0 | 3 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nagano    | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Gifu      | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Shizuoka  | 2 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| Aichi     | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mie       | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Shiga     | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kyoto     | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Osaka     | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hyogo     | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Nara      | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Wakayama  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tottori   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Shimane   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Okayama   | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hiroshima | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Yamaguchi | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| Tokushima | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kagawa    | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ehime     | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Kochi     | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fukuoka   | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Saga      | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nagasaki  | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kumamoto  | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

|           |    |    |    |    |    |    |    |   |    |    |   |   |   |   |   |   |   |   |   |   |   |   |
|-----------|----|----|----|----|----|----|----|---|----|----|---|---|---|---|---|---|---|---|---|---|---|---|
| Oita      | 0  | 0  | 0  | 1  | 0  | 0  | 1  | 0 | 0  | 0  | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Miyazaki  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 1  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kagoshima | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 0 | 3  | 1  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| Okinawa   | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| total     | 18 | 23 | 14 | 13 | 11 | 12 | 11 | 5 | 18 | 10 | 9 | 8 | 7 | 6 | 9 | 4 | 2 | 7 | 1 | 4 | 3 | 4 |

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

Return to [https://www.jisha.or.jp/english/statistics/2020e\\_industry.html](https://www.jisha.or.jp/english/statistics/2020e_industry.html)