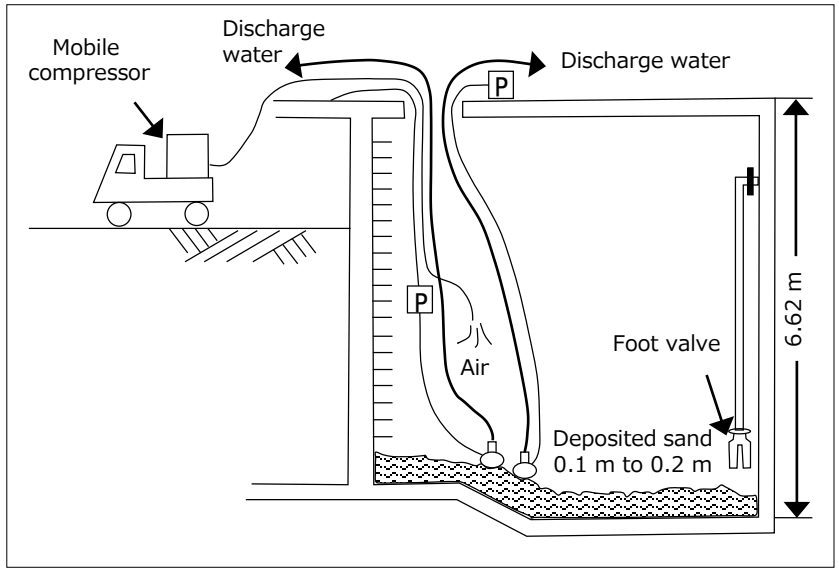
Case involving carbon monoxide poisoning inside pumping well at waterworks water intake

Schematic diagram showing situation at time of accident



[Location of accident]

Water intake pumping well
(At the water intake, intake water is drawn to the water purification plant by a pumping well connected to the settling basin by a gate.)

[Cause of accident]

Three workers were replacing a non-return valve (foot valve) on a water conduit inside the pumping well. As the workers used a submerged pump inside the pumping well powered by a gasoline engine to pump out water, exhaust gas built up inside the pumping well, causing the workers to feel unwell or lose consciousness.

[Damage/injuries]

A worker outside the pumping well raised the alarm. The water purification plant staff who rushed to the scene rescued two of the workers affected inside the pumping well, while the third worker escaped unassisted. All three were taken to the hospital and hospitalized for 11 days.

Extract from [Preventive measures]

[1] Do not use internal combustion engines in locations with poor ventilation.
[2] In situations where the use of internal combustion engines is unavoidable, deploy ventilation systems to ensure adequate ventilation.

Riken Keiki Recommendations
Pay attention to changes in the working environment in poorly-ventilated locations. The risks involved are not just carbon monoxide poisoning, but also accidents due to unforeseen oxygen deficiency and combustible gases. We recommend using gas detectors to confirm the effectiveness of ventilation and wearing portable gas monitors to allow monitoring of work conditions.

Derived from the “Occupational accident case studies” on the Ministry of Health, Labour and Welfare “Safety at Work Site”