

# Résumé: legal guidance for professional diving

- 1) Ordinance on Safety and Health of Work under High Pressure
- 2) Industrial Safety and Health Act

# Work under High Pressure

- Diving operations as definition (Article 1-2)
  - “The operation carried out in water using diving apparatus while receiving the air supply from an air compressor or by manual pump, or from **a compressed-air cylinder**” (Article 20 of the Order for Enforcement of Industrial Safety and Health Act).
    - \* Skin diving is not covered by the Ordinance.
    - \*\* Diving with scuba tank is under the Ordinance regardless of the maximum depth (some Articles may not apply).
- Special education (Article 11)

The employer shall give the worker the special education focusing on the operations at the time of placement when the worker is to be placed on:

  - the work on the operation of valves and cocks for adjusting ventilation to diving workers;
  - the work on the operation of a hospital lock.

# Diver's license

- Restrictions on professional diving (Article 12, OSH Act Article 61)  
Other than those qualified to engage in diving by Diver's license:
  - employers are not allowed to have workers engage in diving work:
  - any person shall not conduct diving operations.
- Diver's license (Article 52)  
The director of the prefectural Labour Bureau may grant diver's license to:
  - those who have passed the license examination for diver,
  - those who are approved by the Minister of Health, Labour and Welfare.

# Work plan

- Work plan for diving (Article 12-2 by Article 27)  
The employer shall establish in advance a work plan in conformity with workers' safety and health on diving operations, and carry out the work by the said work plan including:
  - gas composition of supplied air,
  - the time spent from when the diving workers start descending until they commence ascending,
  - the maximum water pressure of the diving operations,
  - the rate of descending and ascending,
  - the water pressure, stopping ascending and the time spent keeping the depth.

Employer shall notify those items of the established work plan to the workers concerned.

# Supplied air

- Restriction of the gas partial pressure (Article 15 by Article 27)  
The composition of the supplied air to diving workers shall be as follows:
  - oxygen 18-160 kPa unless taking care of diving workers not to be drowned with oxygen 18-220 kPa,
  - nitrogen  $\leq$  400 kPa
  - carbon dioxide  $\leq$  0.5 kPa.
- Restriction of the exposure to oxygen (Article 16)  
The oxygen exposure shall not exceed 600 UPTD /day and 2500 UPTD /week.

$$\text{UPTD} = t \times \left( \frac{PO_2 - 50}{50} \right)^{0.83}$$

\* The UPTD is to be calculated by the summation of UPTD of divided units shown in the Ministerial Notification.

# Ascending

- The ascending rate (Article 18)
  - the ascending rate  $\leq 0.08$  MPa /min.,
  - the depth and time of suspension during ascending shall be determined so that the *He* and  $N_2$  gas partial pressure of the semi-saturated tissue  $\leq$  the maximum allowable value.

The employer shall not have the diving workers, after ascending, engage in work with heavy load.

# Recordkeeping

- The record of diving data (Article 20-2)  
The employer shall, at every operations, record the result of the items shown in workplan along with the names of diving workers and the date and time of ascending.

# Diving operations

- Supplied air (Article 28)  
Supplied air of compressed air:
  - $\geq 60$  L/min. at pressure at work
  - or equipped with a pressure regulator with capacity  $\geq 40$  L/min. for each diving worker and supplied air with pressure 0.7 MPa higher than at work.
- Pressure regulator (Article 30)  
At least two-step regulators required for the diving operation with air cylinders  $\geq 1$  MPa.



# Special cases at ascending

- Special cases at ascending (Article 32)  
*Supplied air of compressed air:*
  - $\geq 60$  L/min. at pressure at work
  - or equipped with a pressure regulator with capacity  $\geq 40$  L/min. for each diving worker and supplied air with pressure 0.7 MPa higher than at work.

# Regular check etc.

- Life line (Article 33)
  - for descending and ascending,
  - with indicators every three (3) meters
- Regular check and repair of equipment (Article 34)
  - before each diving operation: air cylinder, pressure regulators, life line, etc.,
  - Regular check in determined period: hydro-barometer every month, hydro-watch every three months, air cylinder every six (6) months, etc.
  - Repair if necessary.
  - Record keeping required for three (3) years.

# Medical Examination

- Medical examination for diver (Article 38)  
Every six (6) months for all regular diving workers:
  - investigation of anamnesis and diving operation history,
  - examination of the presence of subjective or objective symptoms such as articular pain, waist pain, pain in lower extremities, ear ringing, etc.,
  - examination of motor functions of upper and lower extremities,
  - examination of the eardrum and hearing acuity, measurement of blood pressure, and examination of the presence or absence of sugar and protein in the urine,
  - measurement of pulmonary capacity.→ Possibly further diagnosis by physician.
- Result of Medical Examination (Article 39, 39-2, 39-3)
  - record keeping of personal medical record for five years,
  - opinion of physician within three months, followed by its record keeping,
  - notification by employer to each worker.

# Prohibition of workers with diseases

- Reporting of medical examination (Article 40)  
Employer shall submit a report on the medical examination record without delay.
- Prohibition of workers with diseases (Article 41)  
Based on the opinion of a physician, employer shall not have workers ,suffering from diseases given below, engage in diving during a predetermined period:
  - decompression illness,
  - respiratory diseases such as pulmonary tuberculosis or pneumoconiosis,
  - diseases in the blood or circulatory systems such as anemia, heart disease or hypertension,
  - psychoneurotic diseases such as alcoholism, neuralgia,
  - Meniere’s disease or other ontological diseases,
  - diseases in the locomotive organs such as rheumatism,
  - asthma or Basedow’s disease.

# Hospital lock

- Installation of hospital lock (Article 42)  
Employer shall install or be ready to use a hospital lock necessary for possible first-aid treatment to diving workers.
- Entry Prohibited (Article 43)  
Unless necessary, a hospital lock and its operating area are not allowed to enter. The sign of no entry needs to be shown.
- Operation of a hospital lock (Article 44)
  - regular check of basic function before the diving operations,
  - pure oxygen prohibited for compression,
  - keeping barometric pressure in both the main and sub-main rooms be kept equal and the door closed,
  - continuous supervising by an operator of the hospital lock.→ Record keeping required for five years.

# References

- For further information, visit our governmental legal website:
  - Ordinance on Safety and Health of Work under High Pressure (Japanese)  
<https://elaws.e-gov.go.jp/document?lawid=347M50002000040>
  - Ordinance on Industrial Safety and Health  
<http://www.japaneselawtranslation.go.jp/law/detail/?id=1984&vm=04&re=01&new=1>
  - Order for Enforcement of Industrial Safety and Health Act  
<http://www.japaneselawtranslation.go.jp/law/detail/?id=2245&vm=04&re=01&new=1>
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