

➔ Norwegian version

Regulations concerning the performance of work, use of work equipment and related technical requirements

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Kapitteloversikt:

Part 1: Introductory provisions

Part 2: Requirements for work involving chemical and biological risk factors

Part 3: Requirements for work under exposure to physical risk factors

Part 4: Requirements relating to other work that involves risk

Part 5: Register of exposed employees

Part 6: Final provisions

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Amendment Regulations not yet incorporated in this text:

14 December 2018 No 1976 (in force 1 January 2019 and 1 January 2020),

20 December 2018 No 2185 (section 1-5, in force 1 January 2019).

This is an unofficial translation of the Norwegian version of the Regulation and is provided for information purposes only. Legal authenticity remains with the Norwegian version as published in Norsk Lovtidend. In the event of any inconsistency, the Norwegian version shall prevail.

The translation is provided by The Norwegian Labour Inspection Authority (Arbeidstilsynet).

Legal basis: Adopted by the Ministry of Labour (now the Ministry of Labour and Social Affairs) on 6 December 2011 pursuant to the Act of 17 June 2005 No 62 relating to working environment, working hours and employment protection etc. (the Working Environment Act) Section 1-3 (3), Section 1-4 (1), Section 1-6, Section 2-2, Section 3-1 final paragraph, Section 3-2 final paragraph, Section 4-1 final paragraph, Section 4-2 final paragraph, Section 4-3 (5), Section 4-4 final paragraph, Section 4-5 (6) and (7) and Section 5-5.

EEA references: The EEA Agreement Annex II Chapter XV point 4 (Directive 76/769/EEC as amended by Directive 2003/53/EC and Directive 1999/77/EC), Annex VII point 1 (Directive 2005/36/EC as amended by Directive 2006/100/EC, Regulation (EC) No 1430/2007, Regulation (EC) No 755/2008, Regulation (EC) No 279/2009 and Regulation (EU) No 213/2011), Annex XVIII point 5 (Directive 2009/148/EC), point 9 (Directive 89/654/EEC), point 10 (Directive 2009/104/EC), point 11 (Directive 89/656/EEC), point 12 (Directive 90/269/EEC), point 13 (Directive 90/270/EEC), point 14a (Directive 2004/37/EC as amended by Directive 2014/27/EU), point 15 (Directive 2000/54/EC), point 16b (Directive 92/57/EEC), point 16c (Directive 92/58/EEC as amended by Directive 2014/27/EU), point 16d (Directive 92/85/EEC as amended by Directive 2017/27/EU), point 16f (Directive 92/104/EEC), point 16h (Directive 98/24/EC as amended by Directive 2017/27/EU), point 16ja (Directive 2002/44/EC), point 16jb (Directive 2003/10/EC), point 16jc (Directive 2013/35/EU), point 16je (Directive 2006/25/EC), point 16jg (Directive 2010/32/EU).

Part 1: Introductory provisions

Chapter 1. Introductory provisions

Section 1-1. Purpose

The purpose of these regulations is to ensure that work is executed and work equipment used in a safe manner so that employees are protected against harm to life and health.

Section 1-2. Scope

The regulations apply to the performance of work, to the use of work equipment and to technical requirements of the work equipment.

Chapter 2 of the regulations concerning a substance index does not apply to hazardous chemicals in transit through or stored as transit goods in Norway, unless they are subject to treatment or processing.

Chapter 26 of the regulations concerning work under water or under increased ambient pressure does not apply to:

- a) members of the Police Emergency Response Unit, when diving is necessary in order to carry out duties assigned to the police;
- b) conscripts and military service personnel in the Norwegian Armed Forces who carry out diving as a military activity.

The provisions on diving certificates in Chapter 26 do not apply to research and healthcare personnel who must carry out necessary work in pressurised hyperbaric chambers.

Sections 4-4, 10-1, 10-2, 10-3, 13-1, 13-2, 13-3, 13-4, 25-1 and 27-4, and Chapters 5, 17, 20, 24, 26, 28 and 29 of the regulations do not apply to offshore petroleum activities or activities at onshore facilities as mentioned in Section 6(e) of the Framework Regulations.

The regulations apply to Svalbard:

- a) with the exception of the provisions of Sections 10-1 to 10-3 and Chapter 13;
- b) unless otherwise provided for in the Regulations of 18 January 1993 No 33 relating to the coal mines on Svalbard.

Section 1-3. To whom the regulations apply

1. Employers shall ensure that the provisions of these regulations are implemented.
2. The provisions of these regulations shall, where applicable, also be complied with by:
 - a) safety representatives and working environment committees;
 - b) family-run farms in agriculture;
 - c) undertakings with no employees

- that use work equipment;
 - that handle asbestos and asbestos-containing materials in their work;
 - in the building and construction industry;
 - in agriculture;
 - that carry out work under water or under increased ambient pressure;
 - that can be exposed to biological agents during their work, with the exception of the requirements relating to keeping records and medical examinations;
 - that can be exposed to chemicals in their work, with the exception of the requirements for an emergency response plan, medical examination, relocation and keeping records of carcinogenic or mutagenic chemicals and lead
3. The provisions of Chapter 26 on health and safety during work under water or under increased ambient pressure do not apply to:
- a) conscripts and military service personnel in the Norwegian Armed Forces who carry out diving as a military activity;
 - b) members of the Police Emergency Response Unit when the diving is carried out as part of the service;
 - c) research and health personnel who work in decompression chambers.

Section 1-4. *Definitions*

For the purpose of these regulations, the following definitions shall apply:

- 1) *work premises*: rooms that the undertaking uses in connection with the work such as workrooms, personnel rooms, access areas etc.;
- 2) *work equipment*: technical installations etc. such as machinery, lifting accessories, safety components, containers, means of transport, appliances, installations, tools and any other object used in connection with the production of a product or the performance of work;
- 3) *load-lifting equipment*: plant designed for lifting and lowering operations;
- 4) *asbestos*: the fibrous, crystalline silicate minerals chrysotile (white asbestos), crocidolite (blue asbestos), amosite (brown asbestos), anthophyllite asbestos, tremolite asbestos and actinolite asbestos;
- 5) *wastewater treatment plant*: wastewater networks, including pump stations, treatment plants and pipelines for carrying away residual water;
- 6) *standby diver*: a diver who is ready to provide sufficiently rapid assistance to a diver under water in a hazardous or emergency situation;
- 7) *rock work*: all forms of rock breaking, including work on inspection, scaling and securing rock; Includes loading and transport of blasted rock within the workplace;
- 8) *biological agents*: live or dead micro-organisms, cell cultures, endoparasites and prions that can cause infections, allergies or toxicity in humans;
- 9) *use of work equipment*: work operations such as starting, stopping, installation and dismantling, transportation, use, monitoring, inspection, repair, maintenance, care and cleaning;
- 10) *decompression*: relieving increased pressure to restore normal pressure;
- 11) *diving bell*: a compression chamber designed and equipped to transfer divers between the work site and the surface decompression chamber;
- 12) *diving operation*: work under increased ambient pressure, under water or in a decompression chamber, where the diver is supplied with breathing gas;
- 13) *umbilical*: the breathing gas hose, communication cable and, if applicable, safety line, bundled into a single unit;
- 14) *electromagnetic field*: static electric, static magnetic and time variable electric, magnetic and electromagnetic field with frequencies up to 300 GHz.
- 15) *danger zone*: any area where the safety of employees may be at risk due to the nature of the work, including any area in or around work equipment;
- 16) *hazardous chemical*: Chemicals that can constitute a risk to the health and safety of employees;
 - all chemicals that meet the criteria for classification pursuant to the Regulations of 16 June, No. 622 on the classification, labelling and packaging of substances and mixtures (CLP). This applies regardless of whether the chemical is classified in accordance with said Regulations. Substances that are harmful to the external environment only, do not fall under the scope of these regulations.
 - any chemical substance for which limit values have been adopted,
 - any other chemical that may constitute a risk to the health and safety of employees.
- 17) *fibre*: a particle longer than 5 µm, with a diameter smaller than or equal to 3 µm, and with a length to width ratio greater than or equal to 3:1;

- 18) *reproductive harm*: substances or mixtures that meet the criteria for classification as reprotoxic as laid down in the Regulations of 16 June 2012 No 622 on the classification, labelling and packaging of substances and mixtures (CLP); cf. Regulation (EC) No. 1272/2008 in Annex I. The following is considered reproductive harm:
- harm to a person's reproductive capacity (reprotoxicity) in that the ability to produce healthy and normal children is partially or wholly, permanently or transiently impaired as a consequence of exposure in the working environment,
 - harm or disease suffered by the child as a consequence of pre-natal exposure or exposure through breastfeeding,
- 19) *test dive*: a diving operation carried out in connection with research or development work, where the dive is intended to produce results that provide a basis for demonstrating the effect on divers or the safety of diving operations;
- 20) *limit value*: a value for exposure that must not be exceeded;
- 21) *suspended work platform*: a freely moving rope-suspended mechanically operated work platform;
- 22) *hand signals*: movements or positioning of arms and hands, in a coded form, in order to provide guidance to persons carrying out work that can entail a risk to employees;
- 23) *non-coherent optical radiation*: artificial optical radiation, with the exception of laser radiation;
- 24) *containment of biological agents*: barriers used to prevent biological agents from coming into contact with people or the environment;
- 25) *ionising radiation*: x-radiation, particle radiation, or radiation from a radioactive substance within the wavelength range 0.01-10 nm
- 26) *chemicals*: elements, chemical compounds or mixtures thereof, whether they occur naturally or are manufactured or are used or released in connection with any work operation, regardless of whether they were intentionally manufactured. This applies irrespective of whether the chemical is available on the market;
- 27) *climbing scaffold*: a mechanically operated work platform that moves vertically in guiderails;
- 28) *bell run (diving)*: a bell run is the time that passes from the bell is disconnected from the surface habitat until it is reconnected;
- 29) *carcinogenic chemicals and processes*: substances or mixtures that meet the criteria for classification as carcinogenic pursuant to the Regulations of 16 June 2012 No 622 on the classification, labelling and packaging of substances and mixtures (CLP); cf. Regulation (EC) No. 1272/2008 in Annex I. The following processes or chemicals released during these processes, are also regarded as carcinogenic:
- production of auramine,
 - work involving exposure to polycyclic aromatic hydrocarbons (PAH), which occur in soot, tar or pitch,
 - work involving exposure to dust, fumes or mist emitted during calcination and electrolytic processing of nickel from ore,
 - highly acidic processes for the production of 2-propanol, work that entails exposure to hardwood dust
- The above list is not exhaustive and does not preclude that other processes may be regarded as carcinogenic.
- 30) *artificial optical radiation*: electromagnetic radiation of a wavelength range between 100 nm and 1 mm that is not emitted from the sun. The spectrum of optical radiation is divided into ultraviolet radiation, visible radiation (light) and infrared radiation,
- Ultraviolet radiation*: optical radiation of wavelength range between 100 nm and 400 nm. The range is further divided into UVA (315-400 nm), UVB (280-315 nm) and UVC (100-280 nm),
- Visible radiation*: optical radiation of wavelength range between 380 nm and 780 nm, Infrared radiation: optical radiation of wavelength range between 780 nm and 1 mm. The range is further divided into IR-A (780-1400 nm), IR-B (1400-3000 nm) and IR-C (3000 nm-1 mm),
- 31) *laser (light amplification by stimulated emission of radiation)*: any device that can be made to produce or amplify electromagnetic radiation in the optical radiation wavelength range by a process of controlled stimulated emission;
- 32) *laser radiation*: optical radiation from a laser;
- 33) *lifts and stackers for goods*: forklifts and similar motorised mobile work equipment for lifting, moving and stacking;
- 34) *lifting appliance*: *components or equipment not mounted on the machine and which make it possible to grip the load, and which are placed either between the machine and the load or on the load itself, or which are intended to be an integrated part of the load,*
- 35) *earth-moving machine*: an engine-powered machine designed to lift or transport materials, i.e. earth, sand, rock etc., for example a dumper, road planer, excavator, bulldozer, dump truck, scraper or backhoe loader;

- 36) *saturation dive*: a dive that lasts so long that the maximum amount of breathing gas is dissolved in the body;
- 37) *mobile work equipment*: a technical device that moves on wheels, crawler tracks etc., with or without own propulsion;
- 38) *mutagenic chemicals*: substances or mixtures that meet the criteria for being classified as mutagenic pursuant to the Regulations of 16 June 2012 No 622 on the classification, labelling and packaging of substances and mixtures (CLP); cf. Regulation (EC) No. 1272/2008 Annex I.
- 39) *surface-supplied diving*: diving operation where the diver works under increased ambient pressure and is supplied with breathing gas from the surface;
- 40) *personal protective equipment*: all equipment, including accessories to the equipment, that is worn or carried by an employee to protect the employee from one or more hazards that can threaten his or her safety and health during the work. Personal protective equipment does not include:
- normal work clothes and uniforms that are not especially intended to protect employees' health and safety,
 - emergency and rescue equipment,
 - self-defence equipment,
 - portable equipment for tracking and detection of hazardous and harmful agents,
 - personal protective equipment used in accordance with requirements set out in the Road Traffic Act;
- 41) *rescue diver*: a diver whose task is to rescue a person in the water during the period when life-saving can be hoped for;
- 42) *risk*: a function of the probability of an undesirable incident taking place and the consequences for the employees' life or health;
- 43) *scuba diving*: diving where the diver carries a self-contained underwater breathing apparatus;
- 44) *safety signs and signalling*: the use of signs, colours, light signals, acoustic signals, verbal communication or hand signals to refer to a particular object, activity or situation and that provides information or instructions about how people should act in different situations with regard to safety and health in the workplace. The definition does not include signs and signalling regulated by other legislation or pursuant to regulations relating to road, rail, air or sea transport or transport by inland waterways;
- 45) *pointed or sharp objects*: objects that can cut, pierce the skin and cause injury and/or infections;
- 46) *infection risk group*: classification of live biological agents according to the infection risk they represent pursuant to Section 6-1 of the Regulations concerning Action and Limit Values;
- 47) *action value*: an exposure value that requires measures to be implemented to reduce the health risk to a minimum;
- 48) *compression period for diving*: the period for which a diver is under increased ambient pressure, reckoned from the start of compression in a hyperbaric chamber until decompression is completed, also including the 'surface interval' in connection with surface decompression;
- 49) *hot work*: work where heat is used, such as open flames, hot surfaces or ignition sparks. Hot work also includes work operations such as welding, soldering, torch cutting and metal grinding etc. that can also give rise to hazardous gases.

Section 1-5. Exemption

The Norwegian Labour Inspection Authority and the Petroleum Safety Authority Norway may grant exemption from the regulations in their respective areas if warranted on special grounds, if it is justified from a safety and health perspective and not in breach of the EEA Agreement.

Part 2: Requirements for work involving chemical and biological risk factors

Chapter 2. Substance index

Section 2-1. *Requirements for a substance index*

The employer shall establish a substance index of hazardous chemicals that can constitute a health hazard, including those that are formed during processes within the undertaking. The substance index shall be established before the hazardous chemicals are formed, produced, packed, used or stored by the undertaking.

For the three groups mentioned below, the substance index shall contain the following information:

Group 1) Pursuant to the Regulations of 30 May 2008 No 516 on registration, evaluation, authorisation and restriction of chemicals (the REACH Regulations), safety data sheets and any appendices thereto shall be available for chemicals that fall under the scope of Article 31 of and Annex II to Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

Group 2) For hazardous chemicals that do not belong to groups 1 or 3, product information sheets shall be available that, as a minimum, contain the following information:

- a) name,
- b) composition,
- c) information about the supplier,
- d) physical, chemical and harmful properties,
- e) toxicological data,
- f) risk factors,
- g) preventive safety measures, and
- h) first aid treatment.

Group 3) For hazardous biological material, product information sheets shall be prepared that, as a minimum, contain the following information:

- a) name,
- b) information about the supplier,
- c) harmful properties / toxicological data,
- d) information about any risk of infection,
- e) risk factors,
- f) preventive safety measures, and
- g) first aid treatment.

If it is not relevant or technically possible to provide any or all the information required under this provision, the grounds for this shall be stated in the substance index.

Section 2-2. *Structure of the substance index*

The substance index may be established electronically and/or on paper, and shall be structured so that it is easy to search for information about individual chemicals.

The information provided shall be in Norwegian and be brief and easy to understand. The employer must ensure that employees who do not master Norwegian are given sufficient written information and training based on the information in the substance index.

The employer is obliged to update the information when changes occur, harmful conditions are found to exist etc. that are of material importance to prevent harm to health.

Section 2-3. *Use of the information in the substance index*

The employer shall use the information in the substance index to ensure safe handling and storage of chemicals within the undertaking.

The employer shall use the information in the substance index when mapping risks, implementing protective measures and/or preparing work instructions.

Section 2-4. *Access to the substance index*

The employer shall ensure that the employees have easy access to the substance index with information about the chemicals that they use in their work or otherwise come into contact with. Relevant safety data and product information sheets shall also be available at each individual work site.

In addition, the employees shall have satisfactory access to any electronic substance indexes.

The safety representative shall have access to the applicable substance index for his/her own safety area. The senior safety representative shall have access to the complete substance index for the undertaking.

Chapter 3. Work where chemicals may constitute a risk to the health and safety of employees

Section 3-1. *Risk assessment of health hazards associated with the use and handling of chemicals*

The employer shall map and document the presence of chemicals, including fibrous asbestos dust, and assess any risk relating to the health and safety of employees that may be associated with these chemicals.

The risk assessment shall pay particular attention to the following:

- a) the hazardous properties of the chemicals,
- b) the supplier's information about health, environmental and safety risks,
- c) the conditions in the workplace where the chemicals are present,
- d) the amount of chemicals and the way in which they are used,
- e) whether the work processes and the work equipment are appropriate,
- f) the anticipated number of exposed employees,
- g) the type, level, duration, frequency and routes of exposure,
- h) limit values,
- i) the effect of implemented and planned preventive measures,
- j) the conclusions of completed health surveys, and
- k) injuries, diseases, work accidents and near-accidents.

Further information must be obtained as necessary.

A new risk assessment shall be carried out for every temporary workplace.

Section 3-2. *Measurement of pollutants in the working atmosphere as a basis for risk assessment*

If the employer is unable to document that the pollution of the working atmosphere is at a completely safe level, cf. the Regulations concerning Action and Limit Values, the working environment shall be monitored by taking regular measurements.

Measurements shall also be taken when changes have been made in the undertaking that may increase the employees' exposure to pollutants in the working atmosphere.

The mapping and measurements shall be documented.

Section 3-3. *Measurements of vinyl chloride monomer in the working atmosphere*

In the case of closed systems for polymerisation of the carcinogenic substance vinyl chloride monomer, a requirement for use of a continuous or permanent periodic measurement method applies in addition to the general requirement for measurements.

Section 3-4. *Training in work with hazardous chemicals*

The employer shall ensure that employees and safety representatives receive training in the following:

- a) hazardous chemicals that are present or may be present in the workplace; the names of these chemicals; the risk they represent to the employees' health and safety; and applicable limit values for these chemicals,
- b) use of the substance index,
- c) conducted risk assessments and important changes to same,
- d) correct use of the work equipment employed,
- e) necessary protective measures for safe execution of the work, and
- f) handling of operational disturbances and possible emergency situations.

Undertakings with no employees shall be in possession of the equivalent knowledge.

Section 3-5. *Information about risks associated with hazardous chemicals*

The employer shall ensure that employees and safety representatives are kept informed about the following:

- a) hazardous chemicals that are present or may be present in the workplace, the names of these chemicals, the risk they represent to the employees' health and safety, and the applicable limit values for these chemicals;
- b) conducted risk assessments and important changes to same;
- c) correct use of the work equipment employed;
- d) necessary protective measures for safe execution of the work;
- e) handling of operational disturbances and possible emergency situations;
- f) the substance index.

Undertakings with no employees shall obtain the equivalent knowledge.

Section 3-6. *Information to employees about the results of measurements of pollutants in the working atmosphere*

When regular measurement of chemical pollution of the working atmosphere takes place in accordance with Sections 3-2 and 3-3, affected employees and their representatives shall be informed about the measurement results.

Affected employees and their representatives shall be informed immediately of any exceedances of the limit values for chemical pollution of the working atmosphere.

Section 3-7. *Storage and handling of chemicals*

Chemicals shall be handled and stored in a completely safe manner so as to avoid harm to health, fire, explosion and other accidents.

Section 3-8. *Measures against risks caused by chemicals*

The employer shall ensure that health and safety risks caused by chemicals are eliminated or reduced to a completely safe level by:

- a) designing and adapting the workplace and the work to be carried out;
- b) making available suitable equipment for the execution of the work, including equipment for repairs, maintenance and cleaning;
- c) limiting the number of employees being exposed to chemicals to a minimum;
- d) limiting the level and duration of exposure to a minimum;
- e) limiting the amount of chemicals in the workplace to the amount that is necessary for the work in question;
- f) implementing appropriate hygiene and cleaning measures.

If these measures are not sufficient, the employer shall ensure that the risk is eliminated or reduced to a completely safe level by implementing the following measures, listed in order of priority:

- a) designing appropriate work processes and procedures for technical control, and using appropriate equipment and materials;

- b) implementing collective protective measures at the source of the risk, including ventilation;
- c) implementing personal protective measures and distributing personal protective equipment if the exposure cannot be avoided by other means.

Section 3-9. *Measures against harmful chemicals in connection with repairs, maintenance and cleaning*

If there is a risk of exposure to potentially harmful chemicals in connection with repairs, maintenance and cleaning, measures shall be implemented to reduce the exposure to a minimum. The employer shall ensure that the exposure does not persist and that it is kept as low as possible for each individual employee.

Section 3-10. *Measures in connection with flammable and explosive chemicals and unstable chemicals*

The employer shall ensure the following, listed in order of priority:

- a) that the working atmosphere does not contain any ignitable concentrations of flammable chemicals, that dangerous amounts of reactive chemicals are not present in the workplace, that no sources of ignition are present that can cause fire or explosion, and that there are no other conditions whereby reactive chemicals can cause dangerous situations;
- b) that the employees will not be injured should a fire or explosion occur or as a consequence of any other dangerous situation that can be caused by reactive chemicals.

Section 3-11. *Special measures for work with carcinogenic or mutagenic chemicals*

A closed system shall be used where it is not technically feasible to substitute carcinogenic or mutagenic chemicals and processes pursuant to Section 10-1 of the Regulations concerning Organisation, Management and Employee Participation. Where use of a closed system is not technically feasible, it must be ensured that the exposure is kept to a minimum and at a completely safe level.

Carcinogenic and mutagenic chemicals shall be stored and transported in closed containers that are clearly labelled and, if possible, sealed.

Access to premises where employees may be exposed to carcinogenic or mutagenic chemicals shall only be granted to employees who are to carry out work in the premises, including cleaning and repairs.

Appropriate warning and safety signs shall be posted to delimit areas in which there is a risk of exposure to carcinogenic or mutagenic chemicals. Smoking prohibited signs shall be posted in areas where employees may be exposed to carcinogenic or mutagenic chemicals.

Section 3-12. *Requirements for personal protective equipment for work with isocyanates*

Where effective ventilation is not possible, the employer shall ensure that employees use suitable respiratory protection when carrying out work in which isocyanates are released to the working atmosphere. Employees shall also be protected against skin exposure when working with chemicals that contain isocyanates.

The employer shall ensure that supplied air respirators are used during spray-application of chemicals containing isocyanates.

Section 3-13. *The employer's obligation to label chemicals*

The employer shall ensure that containers and packaging for hazardous chemicals that are produced, packaged, used or stored by the undertaking are labelled appropriately with Norwegian chemical names, hazard pictograms and warning phrases. In special cases, the hazard pictogram and warning phrase can be left out.

Section 3-14. *Sand and other blasting agents*

Sand and other blasting agents to be used for sand-blasting shall meet the requirements of the Regulations concerning Action and Limit Values.

Section 3-15. *Emergency response plans for emergency situations arising during work with chemicals*

Based on the risk assessment, the employer must assess whether accidents, injuries or emergency situations can occur due to the presence of hazardous chemicals in the workplace. If such incidents can occur, the employer shall prepare an emergency response plan for dealing with such accidents, injuries and emergency situations.

The emergency response plan shall be made known and be available to the employees, safety representatives and external rescue and emergency services as applicable.

Exercises shall be conducted regularly in accordance with the emergency response plan.

Should an accident, injury or emergency situation occur, the emergency response plan shall be implemented and the employees notified immediately. Only the employees who are to carry out the repair work and other necessary work shall be granted access to the affected area. The employees shall be equipped with necessary personal protective equipment.

External rescue and emergency services shall be informed about the specific dangers that can arise.

Section 3-16. *Handling of hazardous waste*

Waste that contains carcinogenic or mutagenic chemicals shall be collected in clearly labelled closed containers.

Such waste shall be destroyed in a completely safe manner or delivered to an authorised receiving facility for hazardous waste.

Section 3-17. *Hygiene measures for work with chemicals*

Where employees may be exposed to carcinogenic or mutagenic chemicals, the employer shall make sure that measures are implemented to ensure that:

- a) the employees do not eat, drink, use tobacco etc. in work premises that may be contaminated by carcinogenic or mutagenic chemicals,
- b) the employees are informed about the increased risk associated with the use of tobacco,
- c) the employees are provided with appropriate work clothes in addition to necessary personal protective equipment; see Chapter 15 of the Regulations concerning Organisation, Management and Employee Participation,
- d) private clothing and work clothes / personal protective equipment are stored separately in separate lockers,
- e) work clothes and personal protective equipment are washed or cleaned,
- f) containers and similar that contain contaminated work clothes / personal protective equipment are clearly labelled,
- g) work clothes and personal protective equipment that may be contaminated by carcinogenic or mutagenic chemicals are not brought to mess rooms or similar, or taken home,
- h) cleaning facilities are available in or in the immediate vicinity of the work premises.

The costs of the measures mentioned in these provisions shall not be borne by the employees.

Section 3-18. *Requirements for maintenance and cleaning of work equipment when handling chemicals*

Work equipment used when handling chemicals shall be maintained and cleaned so as to prevent any risk of harm to health, fire and explosion.

Ventilation rates shall be measured and recorded regularly where faults may be harmful to health.

Section 3-19. *Prohibition on work with special chemicals*

Manufacturing, production or use of the following carcinogenic chemicals is prohibited:

- a) 2-Naphthylamine and salts of 2-Naphthylamine (CAS No 91-59-8)
- b) 4-Aminobiphenyl and salts of 4-Aminobiphenyl (CAS No 92-67-1)
- c) Benzidine and salts of Benzidine (CAS No 92-87-5)
- d) 4-nitrobiphenyl (CAS No 92-93-3).

The prohibition in the first paragraph shall not apply if the chemical substance is present in a substance or mixture as a contaminant or by-product or as part of a waste product, provided that the concentration does not exceed 0.1% by weight.

Nor does the prohibition in the first paragraph apply if the chemical:

- a) is used for the purpose of scientific research and trials, including analyses;
- b) is used in work operations intended to remove chemicals that are by-products or waste products;
- c) is used as an intermediate product in the production of the prohibited chemicals mentioned in the first paragraph, and for such use.

The employer shall ensure that employees are not exposed to substances as mentioned in the first paragraph by implementing measures to ensure that the production and use of these substances take place in a closed system from which the substances cannot be removed unless it is necessary in order to control the process or maintain the system.

Section 3-20. *Medical examination of employees who may be exposed to hazardous chemicals*

The employer must ensure that the employee is given an appropriate medical examination if he or she may be exposed to hazardous chemicals in such a way that it might damage the person's health.

Appropriate medical examinations shall be able to ascertain any disease or health effect of the chemicals in question and provide the basis for preventive measures in the undertaking or other measures that can reduce the risk of harm to the employee's health.

The medical examination shall be carried out before the employee starts working with hazardous chemicals and at regular intervals thereafter. The medical practitioner shall decide the frequency and content of examinations on the basis of the type, level and duration of the exposure, and on the basis of the employee's health condition.

The employee shall be informed about the requirement for a medical examination before being assigned the work.

Section 3-21. *The employer's follow-up of medical examinations in connection with exposure to chemicals*

If disease or other effect on health is found to exist that the medical practitioner believes may be due to exposure to hazardous chemicals in the workplace, or if the biological limit value for lead has been exceeded, the employer shall:

- a) review the risk assessment carried out pursuant to Section 3-1;
- b) take necessary action to eliminate or reduce the risk associated with working with hazardous chemicals to a completely safe level;
- c) offer suitable medical examinations to other employees who have been similarly exposed.

Section 3-22. *Relocation of employees exposed to chemicals*

Insofar as it is possible, the employer shall ensure that, whenever necessary on grounds of health, employees are relocated to other work in the undertaking where they do not suffer hazardous chemical exposure.

Section 3-23. *Medical examinations in connection with work as smoke or chemical diver*

Persons who are to carry out smoke or chemical diving shall undergo medical examinations that include a clinical examination of all relevant factors, including physical capacity tests.

The employer shall ensure that such medical examinations are carried out regularly.

Should the smoke diver or chemical diver, or the employer, find that there are health problems that may have a bearing on the diver's ability to work as a smoke or chemical diver, the employer may demand that the smoke or chemical diver shall undergo a new medical examination.

Section 3-24. *The employer's follow-up of medical examinations of smoke and chemical divers*

Should the medical examination show that an employee suffers from disease, injury or reduced physical capacity that increases the risk of accidents or health impairment in connection with smoke or chemical diving, the employee shall not be used for such work but assigned alternative work.

Section 3-25. *Medical examinations in connection with work with lead and lead compounds*

Employees who are to work with lead and lead compounds shall undergo medical examinations before they are assigned such work.

The medical examination shall include a clinical examination and measurement of the blood lead level.

The blood lead level shall be measured every three months.

If three quarterly examinations in a row show values of less than 0.5 $\mu\text{mol/l}$ for women of fertile age, or of less than 1.0 $\mu\text{mol/l}$ for other employees, the blood lead level may be checked once a year for as long as the exposure level and working conditions remain unchanged.

If the employee's blood lead level is so high that relocation is necessary, cf. Section 3-22, the employee shall be examined by a medical practitioner. Medical examinations shall also be carried out of employees if they are exposed to lead concentrations in air that exceed the limit values set out in Section 5-1 of the Regulations relating to Action and Limit Values as regards work atmosphere pollution, as well as Section 5-2 as regards Biological Limit Values.

Employees who have been granted exemption under Section 1-5 shall undergo regular medical examinations, at least every three years for as long as the exemption is valid.

Section 3-26. *Temporary relocation in connection with work with lead and lead compounds*

Employees who work with lead or lead compounds shall be relocated for a minimum of three months if the following limit values are exceeded:

Female employees of fertile age who are found to have blood lead levels of more than 0.75 $\mu\text{mol/l}$ or between 0.5 and 0.75 $\mu\text{mol/l}$ in three consecutive quarterly examinations shall be relocated to other work until these values have dropped to below 0.5 $\mu\text{mol/l}$.

Other employees who are found to have blood lead levels of more than 2.0 $\mu\text{mol/l}$ or between 1.5 and 2.0 $\mu\text{mol/l}$ in three consecutive quarterly examinations shall be relocated to other work until these values have dropped to below 1.5 $\mu\text{mol/l}$.

Section 3-27. *Special requirements for the medical fitness of smoke and chemical divers*

For smoke and chemical diving, the employer may only use persons who in a medical examination have been found to be medically fit for the work.

Chapter 4. Work with asbestos

Section 4-1. *Prohibition on asbestos and asbestos-containing materials*

Use and other handling of asbestos and asbestos-containing materials are prohibited unless otherwise provided for in Section 4-2.

Section 4-2. *Exception from the prohibition on work with asbestos*

The following work is exempt from Section 4-1:

- a) demolition, repairs and maintenance of asbestos-containing materials, including handling of asbestos-containing waste from such work;
- b) mining and processing of rock containing a maximum of 1% asbestos by weight;
- c) sampling and analysis to determine the asbestos content of a particular material.

Section 4-3. *Permission from the Labour Inspection Authority to work with asbestos*

Undertakings carrying out demolition, repair and maintenance work on asbestos-containing materials must have permission from the Labour Inspection Authority.

The application for such permission shall include information about:

- a) how the work will be organised,
- b) which methods will be used,
- c) which protective measures will be implemented,
- d) training of employees,
- e) medical examinations of the employees, and
- f) the undertaking's experience of this kind of work.

The instructions provided for in Section 4-6 shall be enclosed with the application.

Before the application is sent to the Labour Inspection Authority, it shall be submitted for comment to the safety representative(s), working environment committee and health and safety personnel of the undertaking that is to carry out the work.

Should an undertaking that has been granted permission to work with asbestos fail to perform the work in a safe manner, or otherwise act in contravention of these regulations, the Labour Inspection Authority may withdraw such permission.

Section 4-4. *Notification to the Labour Inspection Authority of work with asbestos*

The employer shall notify the Labour Inspection Authority of any work with asbestos or asbestos-containing materials. The notification shall be sent before the work commences. In the case of demolition, repair and maintenance work, the notification shall be sent well in advance and no later than one week before the work commences.

As a minimum, the notification shall provide an overview of:

- a) where the work site is located;
- b) the types and quantities of asbestos and asbestos-containing materials that will be used or handled;
- c) the activities and methods involved in the work;
- d) the number of employees involved and what training they have received;
- e) the start-up date and duration of the work;
- f) measures that will be implemented to limit the employees' exposure to asbestos.

The form issued by the Directorate of Labour Inspection shall be used.

The employees and their representatives shall have access to the notification.

The employer shall submit a new notification if there is a probability that changes in the working conditions will lead to a material increase in the exposure to fibrous asbestos dust.

Section 4-5. *Training in work with asbestos*

The employer may only assign work with asbestos and asbestos-containing materials to employees who have received special training.

Such training shall be given by competent persons.

The instructions given shall be easy to understand and provide the employees with necessary know-how and skills in preventive and safety work, particularly as regards:

- a) the properties and health effects of asbestos, including the risk associated with smoking;
- b) the types of products and materials that can be assumed to contain asbestos;
- c) work that can involve exposure to asbestos and the importance of preventive control measures to reduce exposure;
- d) the limit value in Section 5-1 of the Regulations concerning Action and Limit Values, cf. Annex I, and the need for control measurements of the air;
- e) safe working methods, safe control measures, safe working equipment and safe protective equipment;
- f) the purpose and correct choice of respiratory protection, the limitations of such respiratory protection and how to use it correctly;
- g) emergency procedures;
- h) procedure for complete cleaning;
- i) waste handling;
- j) the requirement for medical examinations under Section 4-13.

The training shall include practical exercises.

The training shall be adapted to the work to be carried out. It shall be given regularly and when necessary as a consequence of developments in technology.

The employer shall bear the costs of the training.

The employee representatives shall be informed about the content of the training.

Section 4-6. *Instructions for handling asbestos-containing materials*

The employer shall prepare written instructions for handling asbestos-containing materials and for protection against fibrous asbestos dust. The instructions shall be available in the workplace.

Section 4-7. *Measures to reduce exposure to fibrous asbestos dust*

The exposure of employees to fibrous asbestos dust shall be reduced to a minimum, particularly by means of the following measures:

- a) the number of employees who are or can be exposed to fibrous asbestos dust shall be limited to a minimum;
- b) asbestos and asbestos-containing materials shall be handled separately from other activities;
- c) the work processes shall be designed to prevent the formation of asbestos dust or, if this is impossible, be designed to prevent agitation and dispersion of the asbestos dust. In connection with indoor handling of asbestos or asbestos-containing materials, negative pressure zones shall be established, if necessary, in order to prevent the spread of asbestos dust to the surrounding. The establishment of negative pressure shall be documented;
- d) where local exhaust ventilation is used, the exhaust air shall not be returned to the work premises but cleaned and discharged to the open air. The exhaust air from a mobile vacuum cleaner used to absorb fibrous asbestos dust may be returned, however, provided that the air is cleaned so that at least 99.99% of the asbestos dust is removed;
- e) regular and effective cleaning and maintenance must be possible of all premises and all equipment used in handling asbestos;

- f) asbestos and asbestos-containing materials that emit asbestos dust shall be stored and transported in suitable closed packaging that is sufficiently protected against crushing, tearing etc.;
- g) asbestos waste shall be collected and removed from the workplace immediately in suitable closed packaging and stored in closed, lockable containers. This does not apply to natural rock materials that contain asbestos. The packaging and container shall be clearly marked with the following text: 'Inneholder asbest. Innånding av støv fra dette materialet kan forårsake kreft. Bruk egnet verneutstyr' ('Contains asbestos. Inhalation of dust from this material can cause cancer. Use suitable protective equipment'). Such waste shall then be handled in accordance with Chapter 11 of the Regulations of 1 June 2004 No 930 relating to recovery and treatment of waste (the Waste Regulations).

Section 4-8. *Measurements of asbestos fibres*

If the risk assessment shows that it is necessary in order to ensure that the limit value is not exceeded, regular measurements shall be carried out of airborne fibrous asbestos in the workplace. This does not apply to work where the employees use protective clothing and respiratory protection in accordance with Section 4-15.

The sampling shall be representative of the exposure of individual employees to fibrous asbestos dust.

The sampling shall be carried out in consultation with the employees or their representatives in the undertaking.

The sampling shall cover a sufficient period to enable determination of representative exposure over an eight-hour reference period.

The fibres shall be counted using a light microscope with dispersion staining in accordance with the method recommended by the World Health Organization in 1997 or using another method that gives corresponding results.

The sampling and fibre counting shall be carried out by competent persons. The employer shall keep records of the fibre measurements.

The employees and their representatives shall be informed about the results of the measurements and given an explanation of what the results mean.

Section 4-9. *Measures when the limit value for asbestos fibres is exceeded*

If the limit value set out in the Regulations concerning Action and Limit Values is exceeded, the employer shall promptly seek to determine the cause of the exceedance and immediately implement preventive and protective measures to improve the situation. Work in the affected area may not continue unless such measures are implemented.

The employer shall immediately take new measurements of airborne asbestos fibres in order to check the effect of the measures.

If the exposure to asbestos fibres cannot be reduced in any other way, the employees shall use protective clothing and respiratory protection in accordance with Section 4-15. This must not be a permanent solution, and the employees' use of such protective safety equipment shall be limited to what is absolutely necessary. The employer shall consult with the employees or their representatives to ensure that the employees are granted breaks as necessary in relation to the physical and environmental strain.

The employer shall immediately inform affected employees and their representatives of the exceedance and the cause of it. The employees or their representatives shall be consulted at the earliest possible time concerning what measures to implement or, if an emergency situation exists, be informed of measures that have been implemented.

Section 4-10. *Safety signage for work with asbestos*

Areas where work is carried out with asbestos or asbestos-containing material shall be clearly marked with the following text:

*«Asbest – adgang forbudt for uvedkommende»
(«Asbestos – access prohibited for unauthorised persons»)*

Areas where the limit value laid down in the Regulations concerning Action and Limit Values (cf. Annex 1) will be exceeded, shall, in addition, be marked with the following text:

*«Tiltaksverdien for asbesteksponering vil bli overskredet»
(«The action value for asbestos exposure will be exceeded»)*

Section 4-11. *Prohibition on smoking during work with asbestos*

Smoking is prohibited in areas where asbestos or asbestos-containing material is being handled.

Section 4-12. *Restrictions on the possibility of being assigned work with asbestos*

Individuals who suffer from a chronic pulmonary, respiratory or heart disease may not be assigned work in which they can be exposed to fibrous asbestos dust.

Section 4-13. *Medical examination of employees exposed to fibrous asbestos dust*

The employer shall ensure that employees who can be or have been exposed to fibrous asbestos dust while working for the employer undergo suitable medical examinations of the lungs and respiratory organs.

Such medical examinations shall be carried out before the employees are assigned work in which they can be exposed to fibrous asbestos dust. The medical examination shall include X-ray examination of the lungs. Further medical examinations shall be carried out at least every three years. The medical practitioner decides whether more frequent medical examinations are necessary and the content of such examinations on the basis of the employees' health condition and the level and duration of exposure.

On termination of the employment relationship, the medical practitioner will decide whether there is a need for further medical examinations. If further follow-up is required, the employees shall be informed about this in writing.

Any costs of medical examinations of employees not covered by the National Insurance scheme shall be covered by the employer.

Section 4-14. *Removal of asbestos before demolition work*

Asbestos and asbestos-containing materials shall be removed and an after-inspection shall be carried out in accordance with Section 4-17 before other demolition work commences. This does not apply where employees will be exposed to less risk if the materials are not removed before the commencement of other demolition work.

Section 4-15. *Protective clothing and respiratory protection*

The employer shall ensure that the employees use protective coveralls with hood, and approved respiratory protection equipment.

The protective clothing shall be made of dust-repelling material and be without pockets etc. Used protective clothing shall be removed before leaving the work site. Protective clothing and work clothes must not be taken home.

The employer shall ensure that protective clothing is kept in a dedicated room, separate from private clothing and work clothes. The room shall be marked in accordance with Section 4-10.

Protective clothing of the disposable type shall be replaced after every work session.

Protective clothing of the non-disposable type and respiratory protection equipment shall be cleaned after every work session.

The employer shall see to the washing of protective clothing and work clothes. Protective clothing must not be washed together with other clothes.

Used protective clothing shall be placed in dedicated plastic bags marked

«Forurenset av asbest»

(«Contaminated with asbestos»)

before being sent to a laundering facility that is equipped for the purpose.

Section 4-16. *Wash place for work with asbestos*

A wash place with a washbasin and shower with hot and cold water shall be readily available in connection with work with asbestos.

The employer shall instruct those who participate in the work to shower after every work session unless the risk assessment shows that the exposure to fibrous asbestos dust is kept at a safe, low level. The employer shall in any case instruct those who participate in the work to shower at the end of the working day.

The time spent on washing and changing shall be included in the working hours.

The wash place shall be marked in accordance with Section 4-10.

Section 4-17. *Control of asbestos work*

When the work has been completed, the undertaking shall ensure that necessary checks are carried out to verify that fibrous asbestos dust has been removed. The concentration of airborne fibrous asbestos must not exceed 0.01 fibres per cm³.

Such checks shall be carried out after the area has been completely cleaned and while it is still shut off from the surroundings.

If negative pressure has been established, it shall be maintained while the check is carried out.

Chapter 5. Hot work

Section 5-1. *Risk assessment in connection with work where heat is used or developed during execution (hot work)*

In connection with the planning and execution of hot work, and the procurement of equipment, the employer shall assess the risk associated with all types of exposure that can harm the health of employees. The employer shall have the requisite knowledge about possible pollution of the working atmosphere by substances emitted from filler metals, base materials, surface treatment, antioxidants and gases.

In workplaces that are not designed for hot work, the risk of fire and explosion shall be assessed prior to use of equipment that can generate heat or sparks.

Section 5-2. *Mapping of pollutants in the working atmosphere in connection with hot work*

In work premises where hot work is carried out, the employer shall map the work operations that can pollute the working atmosphere; see Section 5-1.

This mapping shall also include surface treatment, filler metals, cleaning etc. that can contribute to pollution; see Section 5-5.

Section 5-3. *Training in hot work*

The employer shall ensure that employees carrying out hot work and the safety representative receive training in

- a) working methods;
- b) use of work equipment;
- c) use of personal protective equipment.

Section 5-4. *Information about the risks associated with hot work*

The employer shall ensure that employees carrying out hot work and the safety representative are kept informed about the following:

- a) health hazards and the risk of accidents;
- b) necessary protective measures;
- c) the results of measurements of the working atmosphere;
- d) any special measures that are implemented at any time.

Section 5-5. *Planning and implementing measures in connection with hot work*

The employer shall plan work operations in which heat is used (hot work). As far as possible, the planning shall seek to avoid work in confined spaces and situations in which it is difficult to provide sufficient ventilation.

Hot work shall not take place in spaces where chlorinated solvent vapours are present.

Insofar as it is practicable, surface treatment, working methods, filler metals, cleaning etc. shall be chosen so as to reduce air pollution to a minimum.

It must be documented that such factors have been assessed as a basis for necessary measures, including the choice of protective equipment.

The employer shall ensure that employees who carry out hot work are protected from harmful radiation, dangerous electrical voltages, spatter etc.

Section 5-6. *Implementation of measures against the risk of fire and explosion in connection with hot work*

Before hot work is commenced in or on containers, tanks, pipelines etc. that contain or have contained substances associated with a fire or explosion risk, measures shall be implemented to avoid fire and explosion.

All combustible material in the vicinity of the workplace shall be removed or shielded using a heat-resistant material.

Gas cylinders shall always be placed and secured in a safe manner so that they are not accidentally exposed to heat and so as to avoid any risk of fire or explosion.

Gas cylinders shall be placed so that they can be easily brought to safety should a fire or explosion occur.

The power supply's mains voltage shall be disconnected and all gas shall be shut off on conclusion of the work.

Section 5-7. *Requirements for equipment in connection with hot work*

Only completely safe and suitable equipment shall be used for work operations in connection with hot work. Equipment that does not work as intended shall be replaced or repaired immediately.

All oxygen equipment shall be kept free of oil and grease.

Welding nozzles/blowpipes, inert gas metal welding guns/ spray guns, electrode holders and cables must be placed safely.

Hoses and valves shall be checked for leakages before use.

Section 5-8. *Securing against fire and explosion in gas equipment*

In order to avoid fire and explosion in gas equipment, the employer shall ensure that the following equipment is used for welding, thermal cutting, soldering and thermal spraying:

- blowpipes fitted with check valves on all hoses connected to the handle
- oxygen regulators fitted with flashback arrestor
- fuel gas regulators fitted with flashback arrestor
- gas hoses and hose couplings specially designed for the purpose
- acetylene valves, nozzles and gas lines of material containing more than 70% copper.

Chapter 6. Work in surroundings that may entail exposure to biological agents

Section 6-1. *Assessment of the risk of exposure to biological agents*

For every activity, the employer shall assess the risk of employees being exposed to biological agents. If the activity involves a risk to the employees' health and safety, the exposure shall be mapped and consideration shall be given to how the exposure occurs. Both the risk of infection and other health risks shall be considered. This shall serve as the basis for a risk assessment of the conditions by the employer.

The risk assessment shall be conducted on the basis of all available information, including the following in particular:

- biological agents that may be present;
- toxins, allergens or other harmful substances that may originate from the biological agents;
- the infection risk groups the biological agents belong to;
- information about diseases caused by the biological agents that the employees can contract in connection with their work, whether infectious, allergic or toxic in nature;
- recommendations from the competent authority regarding special protective and safety measures that should be implemented in order to protect employees who are or can be exposed to biological agents in their working environment;
- the probability that the biological agents will cause harm to the health of employees;
- awareness that a disease identified in one employee may be directly linked to that employee's work; and
- the risk of injury or infection from biological agents as a result of handling pointed or sharp objects.

Section 6-2. *Assessment of biological agents*

In the case of biological agents not listed as classified biological agents, cf. the Regulations concerning Action and Limit Values, the employer shall conduct an assessment of the infection risk group on the basis of the criteria set out in said regulations.

In the case of work that can entail exposure to biological agents that have become multidrug resistant, the employer shall conduct an assessment of whether the work can be carried out subject to more stringent containment measures than the ones adopted for the infection risk group to which the biological agent belongs.

Based on the above, the employer shall assess whether and, if so, which protection and safety measures must be implemented for the protection of employees.

Section 6-3. *Notification to the Labour Inspection Authority*

The Labour Inspection Authority shall be notified at least 30 days prior to the date on which an undertaking starts to use biological agents in risk groups 2, 3 or 4.

A new notification shall be submitted in the following cases:

- a) when biological agents belonging to a risk group other than the one that has previously been notified are to be used;
- b) in connection with use for the first time of each subsequent biological agent in risk group 4;
- c) in connection with use for the first time of each subsequent biological agent classified in risk group 3 by the employer in accordance with Section 2-1;
- d) when material changes are made to processes or procedures with a bearing on health, the environment and safety in the workplace, which renders a previous notification obsolete.

Laboratories engaged in diagnostics in connection with biological agents in infection risk group 4 shall notify of their own activities only.

Notifications under this section shall contain the following information:

- a) the name, address and organisation number of the undertaking or facility;
- b) the name of the person who is responsible for health, safety and the environment in the workplace, and his or her professional qualifications;
- c) the name of the safety representative / senior safety representative;
- d) the results of the risk assessment conducted in accordance with Section 6-1;
- e) which biological agent the notification concerns;
- f) planned protective and safety measures.

The notification shall be signed by the employer and safety representative / senior safety representative. The safety representative / senior safety representative may submit their own opinion.

Section 6-4. *Training in work where employees can be exposed to biological agents*

The employer shall ensure that employees who are assigned work where they are or can be exposed to biological agents are given the necessary practical and theoretical training and instruction in the work in advance, so that exposure can be avoided as far as possible or reduced to a minimum. The training must include, in particular:

- a) information about the risk assessment that has been conducted and any material changes to it;
- b) necessary protective measures;
- c) hygiene requirements;
- d) use of personal safety equipment, including protective clothing;
- e) information about the risk of infection from biological agents when handling pointed or sharp objects.

Section 6-5. *Protective measures against the risk of infection from biological agents*

Exposure to biological agents shall be eliminated or avoided unless it is clear that such exposure cannot adversely affect the health of employees.

Based on the risk assessment, the employer shall implement necessary containment measures. In the case of industrial processes, isolates and laboratories, such containment measures shall be in accordance with Chapter 8 of the Workplace Regulations.

For handling pointed or sharp objects that may cause injury and/or infection from biological agents, equipment with protective safety devices shall be used where such equipment is available and suitable for the purpose.

Section 6-6. *Measures in the event of accidental exposure to biological agents*

The employer shall ensure that procedures are established and internalised that must be complied with in accident and emergency situations involving biological agents, in addition to procedures for all handling of biological agents classified in infection risk group 4. These procedures must be available in writing and, if necessary, posted in the workplace.

The employer shall ensure that an emergency response plan is prepared for dealing with accidents and incidents involving biological agents.

The employer shall ensure that the employees and their representatives are informed immediately of any accidents and incidents that may have led to the spread of biological agents capable of causing serious infection or disease. The employer shall ensure that the employees and their representatives are informed at the earliest opportunity of the causes of the accident or incident and of the measures that have been or will be implemented.

The employer shall immediately notify the Labour Inspection Authority of any accidents and incidents.

Section 6-7. *Requirements for personal protective equipment for work with hazardous biological agents*

If hazardous biological agents cannot be removed or avoided, the employer shall ensure that the employees are provided with and are instructed to use appropriate work clothes and personal protective equipment.

Employees who come into direct contact with wastewater or sludge shall use watertight coveralls, boots and gloves.

Section 6-8. *Control of measures to contain biological agents*

When the risk assessment shows that it is necessary, the employer shall ensure control, including sampling if applicable, in order to determine whether the hazardous biological agents have spread beyond the containment area.

Section 6-9. *Hygiene and cleaning in connection with exposure to biological agents*

The employer shall ensure that measures are implemented to prevent employees from eating, drinking and smoking in work areas that may be contaminated by biological agents.

The employer shall ensure that satisfactory procedures are in place to ensure that work clothes and personal protective equipment that may be contaminated by biological agents are removed when leaving the work area and are kept separate from other clothes and equipment. Before being reused, such work clothes and personal protective equipment shall be disinfected and cleaned, and, if defective, repaired or replaced. Contaminated work clothes and personal protective equipment shall be destructed if necessary.

The employer shall establish procedures to ensure necessary disinfection of work areas.

Section 6-10. *Storage, handling, transportation and waste treatment*

The employer shall establish procedures as necessary to ensure safe storage, handling and transportation of biological agents at the work site. Specific procedures shall be established for collecting, handling and examining samples of human and animal origin that may contain hazardous biological agents.

The employer shall issue instructions so that waste is collected, stored and removed without exposing employees to health hazards. The waste containers shall be clearly and unambiguously labelled and, if necessary, sealed. If necessary, the waste shall be subject to suitable pre-treatment to render it harmless.

The employer shall ensure that secure waste bins for pointed and sharp objects are placed as close as possible to the site where such equipment is handled or may be present.

Syringe needles shall not be recapped after use, unless the equipment used is of the type that eliminates any risk of puncture wounds.

Section 6-11. *Medical examination of employees who may be exposed to biological agents*

If the risk assessment shows that an employee may be exposed to hazardous biological agents in such a way that measures over and above the ordinary hygienic safety measures are necessary, the employee shall undergo an appropriate medical examination.

The medical examination shall provide the basis for preventive measures in the undertaking or measures to reduce the risk of harm to the employee's health as a result of work with biological agents.

The appropriate medical examination shall be carried out before the employee may be exposed to biological agents and at regular intervals thereafter. A medical practitioner shall decide the frequency and content of examinations on the basis of the nature, level and duration of the exposure, and on the basis of the employee's health condition.

If an employee is found to suffer from an infection and/or disease that may be due to exposure to a biological agent in the working environment, the employer shall offer appropriate medical examinations to other employees who have been similarly exposed.

Section 6-12. *Vaccination of employees who may be exposed to biological agents*

The employer shall ensure that the employees are offered safe and effective vaccination against the biological agents to which they may be exposed. The employees concerned shall be provided with information about the benefits and drawbacks of vaccination.

The employer shall cover the costs of the vaccination.

Chapter 7. Work where there is a risk of reproductive harm

Section 7-1. *Risk assessment of the risk of reproductive harm*

The employer shall ensure that an assessment is carried out of whether any exposures in the working environment are associated with a risk of reproductive harm to employees. If such a risk is present, the employer shall ensure that the exposures that can cause reproductive harm are identified. The employer shall assess the total risk of reproductive harm.

Section 7-2. *Information about the risk of reproductive harm*

If the risk assessment shows that the employees are or may be at risk of reproductive harm, the employer shall ensure that the employees are provided with necessary information about such conditions, including information about how they can protect themselves against such a risk. This information shall also be provided when employees are recruited.

Section 7-3. *Implementation of measures in connection with work where there is a risk of reproductive harm*

Based on a risk assessment, the employer shall decide which protection and safety measures to implement.

If permitted by the activity, the employer shall primarily ensure that employees are not exposed to agents in the working environment that can cause reproductive harm.

If it is not technically or organisationally possible to avoid exposing employees to agents in the working environment that can cause reproductive harm, the employer shall ensure that necessary protection and safety measures are implemented. This includes the use of personal protective equipment where necessary. The measures implemented shall be based on the risk assessment mentioned in Section 7-1 of the Regulations concerning Organisation, Management and Employee Participation and in Section 7-1 of this chapter.

Pregnant and breastfeeding employees must not under any circumstances be assigned work if the risk assessment shows that the work entails a risk of reproductive harm.

Section 7-4. *Relocation of employees where there is a risk of reproductive harm*

The employer shall ensure that pregnant and breastfeeding employees are relocated to other work if exposures in the working environment entails a risk of reproductive harm to the child.

If necessary and feasible in practice, the employer shall ensure that relocation to other work is also offered to men and non-pregnant women of reproductive age.

Insofar as it is technically feasible, the employer shall take steps to facilitate that relocated employees can return to their regular work as soon as possible without being exposed to any risk of reproductive harm. Such adaptation of the workplace and working environment may involve implementation of new protection and safety measures; see Section 7-3.

Where relocation in accordance with the first to third paragraphs above is not possible, the employer shall document this in writing.

Chapter 8. Work at wastewater treatment plants

Section 8-1. *Training in work at wastewater treatment plants*

Individuals who work at wastewater treatment plants shall be trained in how to organise the work, working methods, which aids to use and how to use them. It must be possible to document such training.

Section 8-2. *Work near pools and in water-carrying pipelines at wastewater treatment plants*

A lifeline, harness and buoyancy vest shall be worn when working in water-carrying pipelines or at work sites where sudden flooding may occur.

Section 8-3. *Measures to deal with low oxygen concentrations, and hazardous and flammable gas concentrations*

If it is necessary, in connection with inspections or other work of short duration at wastewater treatment plants, to enter spaces that contain hazardous gases, where the oxygen concentration is too low or where there is a risk of explosion, no work shall be carried out over and above what is strictly necessary. No work shall be carried out that can cause fire or explosion. Tools and aids shall be of a non-sparking material.

Supplied air respirators and a lifeline and harness shall be worn for such work. Where there is no risk of flammable gases or too low oxygen concentrations, other respiratory protection equipment that provides satisfactory protection against the hazardous gases in question may be used.

If the pool is covered to prevent pollution because of air supply or another process, and it is necessary to open the cover to carry out work in the pool, the air supply shall be stopped and, if necessary, temporary guard rails shall be installed.

Section 8-4. *Measures in connection with work at wastewater treatment plants*

Where the work is associated with a risk of drowning, falling, oxygen deficiency in the air, dangerous gas concentrations or other risks to life or health, at least one person shall be assigned the duties of a safety watch.

The safety watch shall have available necessary aids and protective and first aid equipment.

Section 8-5. *Requirements for removal of sludge and water at wastewater treatment plants*

If work is to be carried out in a sump, pool or similar, wastewater and sludge must be removed from the work site.

Chapter 9. Work with cytostatics

Section 9-1. *Special measures when working with cytostatics*

Cytostatics shall be handled in a separate room.

A cover shall be placed on the worktop to prevent the cytostatics from coming into contact with the worktop. The surface shall be covered with an absorbent material. The cover shall be replaced after each preparation and be discarded in labelled hazardous waste containers.

Part 3: Requirements for work under exposure to physical risk factors

Chapter 10. Requirements for the use of work equipment

Section 10-1. Requirement for documented safety training for work equipment when its use requires special care

When the employer, based on a risk assessment, finds that a piece of work equipment needs to be used with special care, only employees with documented safety training in accordance with Section 10-2 may be used for the work.

Documented safety training may be provided by the employer or by another competent person.

Section 10-2. Requirement for documented safety training when using work equipment

Anyone who is to use work equipment as mentioned in Sections 10-1 and 10-3 shall receive practical and theoretical training in its structure and operation, properties during use and area of use, as well as maintenance and inspection. The training shall impart knowledge about the requirements for safe use and operation provided for in regulations and user manuals.

Documentation shall be issued that practical and theoretical training has been provided in accordance with these regulations.

Documentation of practical and theoretical training shall be available to the safety representatives and be presented to the authorities on request.

The employer may only assign work with the work equipment in question to employees who have received training in the appropriate area.

The requirement for documented training does not apply to demonstration and testing in connection with repairs.

Nationals of other EEA states and Switzerland must apply to the Labour Inspection Authority for permission to use work equipment as mentioned in Section 10-3.

Section 10-3. Work equipment subject to a requirement to undergo documented safety training provided by a certified training enterprise

Documented safety training in accordance with Section 10-2 shall be provided in the form of certified safety training for the following work equipment:

- bridge cranes and overhead travelling cranes where their use entails a risk of harm to life or health
- tower cranes
- mobile cranes with a capacity of more than 2 tm
- portal cranes
- cranes with a capacity of more than 2 tm, mounted on a lorry or lorry trailer
- lifts and stackers for goods, with permanent operator's seat on the vehicle
- earth-moving machines with engine power greater than 15 kW (20.4 hp).

Section 10-4. Requirements relating to equipment-specific training

The employer shall ensure that the employee receives the necessary training in the specific work equipment he or she is going to use. The training shall be adapted to the nature of the work equipment and shall ensure that the employee knows how to use the work equipment safely. Written documentation shall be provided confirming what work equipment the employee has received training in, who has provided the training and who has received it.

Section 10-5. *Information to employees about safe use of work equipment*

The employer shall ensure that necessary information is provided about safe use of the work equipment that is provided for the employees in their work.

In particular, the employer shall ensure that the employees are kept informed about the following:

- a) the risks they are exposed to when using the work equipment, including risks associated with possible irregularities;
- b) precautions that, based on experience, they need to take when using the work equipment;
- c) dangers caused by nearby work equipment;
- d) dangers caused by changes to nearby work equipment.

Section 10-6. *The employer's general duties in connection with the use of work equipment*

The employer shall ensure that only work equipment that meets the regulatory requirements for the work equipment in question is used.

In the case of machinery and other work equipment manufactured and placed on the market before 1 January 1995, the employer shall ensure that only equipment that meets the requirements set out in Chapters 10, 18 and 19 is used.

In the case of machinery traded after 1 January 1995, the employer shall ensure that the machinery used meets the occupational health and safety requirements that applied when the work equipment was manufactured and placed on the market.

Work equipment shall be used for the work operations and under the conditions for which it is designed.

Work equipment shall not be used to transport persons unless it was designed and built for the purpose.

Section 10-7. *Installation and removal of work equipment*

Work equipment shall be installed and removed under safe conditions, particularly through ensuring compliance with any instructions issued by the manufacturer.

Section 10-8. *Control devices and control systems*

Control devices shall be clearly visible, identifiable and user-friendly, have logical movement and not put unnecessary strain on the user.

Where necessary, control devices shall be appropriately marked.

Control devices shall be placed outside the danger zone, unless it is necessary for special reasons to place them inside that zone. There must be no risk involved in operating the controls.

Work equipment that regularly requires work movements into the danger zone shall only be operated by persons who have received special instruction in how it can be operated without entailing a danger to life and health.

There must be no risk associated with faults in or unintended movement of control devices.

The operator must have a clear view of the danger zone to ensure that it is unoccupied. Where this is not possible, an audible or visible warning sign must be automatically released before every start.

Exposed employees shall have the time and opportunity to avoid any danger associated with start or stop of work equipment.

The control systems must be safe and designed so that failure, fault, unintentional movement or impact does not lead to danger.

Section 10-9. *Start and stop of work equipment*

It must only be possible to start work equipment by deliberate use of control devices that are intended for the purpose.

The same shall apply to:

- a) restart after a stop, regardless of the reason for the stop;
- b) control of a material change in the operating conditions, for example speed, pressure etc., unless such restart or change is of no danger to exposed employees.

The requirements in the previous paragraph do not apply to automatic work equipment if the restart or change in the working conditions is an integral part of the normal work operation.

Work equipment shall have control devices that make it possible to bring it to a complete and safe stop.

Each work station must be fitted with a control device capable of stopping some or all of the work equipment depending on the nature of the danger, so that the work equipment is safe.

The stop order for the equipment shall have priority over the start order. When the work equipment or its dangerous parts have been stopped, the energy supply to the actuators concerned must be switched off.

Section 10-10. *Emergency stop*

Where necessary, work equipment shall be equipped with an emergency stop function, depending on the dangers associated with the equipment and the time it normally takes to stop it.

Section 10-11. *Stabilisation of work equipment*

When necessary, work equipment or parts of such equipment shall be stabilised by use of clamping or similar.

Section 10-12. *Danger of falling or ejected objects*

Where there is a risk of objects falling or parts being ejected from the work equipment, it shall be equipped with suitable safety devices to protect against the danger involved.

Section 10-13. *Danger of work equipment breaking*

If there is a possibility that the work equipment or parts if it can break or disintegrate, it must be arranged so that fragments or loose parts do not pose a danger to the life and health of employees.

Section 10-14. *Danger in connection with moving parts*

If there is a possibility that employees can be injured as a result of physical contact with moving parts of the work equipment, the work equipment shall be equipped with protective guards or devices to prevent access to the danger zones or to stop the movement of the dangerous parts before access to the danger zones is granted.

Protective devices must:

- a) have a robust structure;
- b) not give rise to any additional risk;
- c) not be easy to move or render inoperative;
- d) be located at an adequate distance from the danger zone;
- e) not unnecessarily restrict the view of the work equipment's work operation;
- f) not obstruct necessary work such as installation, replacement of parts and maintenance. Access shall be limited to the area where such work is to be carried out and, if possible, not involve the removal of protective guards or devices.

Section 10-15. *Dangerous temperatures in work equipment*

Where necessary, work equipment parts with high or very low temperatures shall be protected so that employees do not come into contact with or come too close to these parts.

Section 10-16. *Warning devices on work equipment*

Warning devices on work equipment shall be clear, unambiguous and easy to perceive and understand.

Section 10-17. *Disconnection of energy sources in work equipment*

Work equipment shall be equipped with clearly identifiable devices for disconnection of the energy supply. Reconnection shall not take place until employees are no longer at risk.

Section 10-18. *Electrical hazard associated with use of work equipment*

Work equipment shall be arranged so as to protect exposed employees against direct and indirect contact with electricity.

Where static electricity is generated in connection with the work, it must be removed by earthing if there is a risk of fire or explosion.

Section 10-19. *Danger of fire and substance emissions in connection with use of work equipment*

Work equipment shall be arranged so that employees are protected against any dangers associated with overheating of or a fire in the work equipment, and against emissions of gas, dust, liquid, vapour and other substances that are produced or used by or stored inside the work equipment. Where there is a risk of exposure to such emissions, the work equipment shall be equipped with separate collection or suction devices close to the sources of danger.

Where there is a risk of fire, extinguishing equipment shall be present in mobile work equipment and be readily available by stationary work equipment.

Section 10-20. *Danger of lightning*

Work equipment that can be struck by lightning during use shall be protected against the impact of lightning by arrangements or suitable measures.

Section 10-21. *Danger of explosion in connection with use of work equipment*

Work equipment shall be arranged so as to avoid any danger of explosion, whether it arises from the work equipment itself or as a result of substances produced or used by or stored inside the work equipment.

Section 10-22. *Marking of work equipment*

Work equipment shall carry necessary warnings and markings to ensure safe use. Markings shall be in the form of recognised symbols or text in Norwegian. Another language that is understandable to the employees shall be used where necessary.

Section 10-23. *Requirements for computer equipment*

The use of computer equipment shall not constitute a risk to employees.

The characters on the screen shall be well-defined and clearly formed, of adequate size and with adequate spacing between the characters and lines.

The image on the screen must be stable, with no flickering or other forms of instability.

The brightness and contrast between the characters and the background must be easy to regulate and change by the operator, and equally easy to adjust to the ambient conditions.

Free and easy adjustment of the screen to the user's needs must be possible.

The screen shall be free of reflection and glare liable to cause discomfort to the user.

The document holder must be steady, adjustable and placed so as to minimise uncomfortable head and eye movements.

The computer keyboard shall be at the lowest possible height and should be tiltable. It must be separate from the screen so that the employee can adopt a comfortably posture without suffering fatigue in the arms or hands.

There must be sufficient space in front of the keyboard to provide support for the forearms and hands of the operator.

The keyboard must have a matt surface to avoid reflective glare.

The arrangement of the keyboard and the characteristics of the keys shall be such as to facilitate the use of the keyboard.

The symbols on the keys must be sufficiently contrasted and legible when viewed from the normal working position.

Chapter 11. Facilitating use of work equipment

Section 11-1. *Positioning, assembly and securing of work equipment*

Work equipment shall be installed and positioned so that it is completely safe for the employees using the equipment and for other employees.

Machinery and auxiliary equipment shall be arranged and oriented so that there is no risk of fire associated with its use.

Measures shall also be implemented so that it can be used without danger and unfortunate strain.

Measures shall be implemented to eliminate any dangers associated with heat, cold, radiation, electricity, dust, smoke, gas, vapour, oil products, chemicals, biological agents, explosives etc.

For indoor use of combustion engines, necessary measures shall be implemented to prevent employees from being exposed to hazardous gases.

Section 11-2. *Work equipment the use of which is associated with particular danger*

If the use of work equipment can entail a particular risk of harm to life or health, the employer shall see to the implementation of necessary measures to ensure that:

- a) use of the work equipment is limited to the persons who have been assigned to use it, and who have received necessary training;
- b) persons who are to carry out repairs, alterations or maintenance are specially designated to carry out such work; and
- c) work equipment to be repaired is not put into service if the defect, wear, tear or damage can entail a risk during use.

Section 11-3. *Choice and use of mechanical and electrical equipment*

In connection with the choice, installation, commissioning, operation and maintenance of mechanical and electrical equipment, the employer shall have regard to the safety, life and health of the employees. In particular, account shall be taken of the special working conditions in each individual workplace, the characteristics of the work and any dangers that can arise during use. The work equipment shall be used for the work operations and under the conditions for which it is designed.

Section 11-4. *Traffic regulation and other measures when using mobile work equipment*

Where mobile work equipment is used at a work site, traffic rules shall be prepared and complied with.

Organisational and other measures shall be implemented to prevent employees on foot from entering the working area of self-propelled work equipment. If the work can only be carried out properly if employees on foot are present, appropriate measures shall be implemented to prevent them from being injured by the equipment.

The transportation of employees by self-propelled work equipment is only permitted if safe facilities have been provided for the purpose. If work has to be carried out while moving, the speed shall be adapted as necessary.

Chapter 12. Inspection and maintenance of work equipment and plant

Section 12-1. *Training in maintenance of work equipment*

The employer shall ensure that employees who are to carry out inspection and maintenance work receive training as necessary.

Section 12-2. *Competence requirements for those who carry out installation, inspection and maintenance of work equipment*

Installation, inspection, maintenance and repairs of work equipment shall only be carried out by persons who have received necessary theoretical and practical training and instruction in such work.

If the safety of the work equipment depends on the conditions under which it is installed, the inspection shall be carried out by qualified personnel in order to ensure that:

- the work equipment has been correctly installed and works as intended;
- health and safety conditions are maintained; and
- degradation can be detected and remedied in good time.

Section 12-3. *Requirements for systematic inspection and maintenance*

Maintenance work shall be carried out in a safe manner.

The maintenance work shall be carried out with due regard to ongoing activities.

If the safety of the work equipment depends on the conditions under which it is installed, the employer shall ensure that an inspection is carried out before it is first used. Such an inspection shall be carried out after every installation at a new site or workplace.

The employer shall ensure periodic inspection if the work equipment and plant are exposed to impacts that cause degradation and can potentially lead to dangerous situations.

Section 12-4. *Requirements for systematic inspection and maintenance of work equipment and plant*

Procedures for systematic inspection and maintenance of the following must always be in place:

- necessary and suitable safety equipment to ensure that it is always ready for use and in working order;
- existing systems for energy distribution on building and construction sites or other temporary workplaces. The systems shall be identified, inspected and clearly marked before a building and construction site is established;
- mechanical and electrical equipment and plant in connection with rock work, and in connection with any testing of mechanical and electrical equipment and systems, including ventilation systems;
- the ventilation function. It shall be regularly measured and recorded if faults are associated with risk, for example in connection with rock work;
- combustion engines for underground use in connection with rock work; see Section 27-17;
- high-pressure jetting equipment;
- scaffolds; see Section 17-8;
- cofferdams and caissons for use during excavation work.

Section 12-5. *Requirement for measures to deal with faults*

The employer shall implement measures as necessary to safeguard health, safety and the environment in the event of faults.

If faults are detected that have a bearing on safety, the work equipment shall be removed from service immediately and not be put back into service before the fault has been repaired.

Section 12-6. *Requirements for carrying out maintenance of work equipment*

As a rule, it should only be possible to carry out maintenance work when the equipment has been stopped and the energy supply disconnected. If this is not possible, protective measures shall be implemented so that the maintenance work can be carried out without risk or so that it can be carried out outside the danger zones.

Section 12-7. *Inspection and maintenance of energy distribution systems*

Systems for energy distribution on building and construction sites or other temporary workplaces shall be regularly inspected and maintained.

Before a building and construction site is established, the existing systems shall be identified, inspected and clearly marked.

Section 12-8. *Requirements for documentation of inspection and maintenance*

If a piece of machinery has a maintenance log, it shall be kept updated. A log shall always be kept for equipment and plant for rock work and equipment for high-pressure jetting.

As regards work equipment subject to a requirement for inspection by an enterprise of competence, the requirements for documentation are set out in Section 13-4.

It must be clearly stated what has been inspected and who carried out the inspection.

When work equipment is used outside the undertaking, it shall be accompanied by documentation of the most recent inspection.

Inspection, testing and maintenance logs shall be kept in a safe manner and be available to safety representatives, the working environment committee and supervisory authorities.

Chapter 13. Work equipment subject to a requirement for inspection by an enterprise of competence

Section 13-1. Work equipment subject to a requirement for inspection by an enterprise of competence

The employer shall ensure that the following work equipment undergoes inspection by an enterprise of competence:

- work equipment for lifting suspended loads;
- lifting accessories;
- lifts and stackers for goods;
- earth-moving machines with engine power greater than 15 kW (20.4 hp);
- work equipment on salvage vehicles;
- work equipment with a work platform or basket designed for lifting or transporting persons, and which is controlled from the platform or basket;
- suspended work platforms;
- climbing scaffolds for heights exceeding 3 metres;
- studio and stage rigging systems;
- building site lifts; and
- slipways.

Section 13-2. Times for inspection by an enterprise of competence

Inspection of work equipment by an enterprise of competence as mentioned in Section 13-1 shall be carried out:

- every 12 months;
- when the work equipment has not been used for the past 6 months and putting it back into service may be associated with a danger to life or health;
- when more frequent inspections are required because of the environment in which the work equipment is located;
- when the work equipment has been significantly overloaded, and
- following major repairs or alterations.

Inspections by an enterprise of competence can be carried out at more infrequent intervals when it can be documented that this will not entail any danger to life or health and the expert finds that it is completely safe.

Section 13-3. Work equipment subject to a requirement for inspection by an enterprise of competence in connection with installation or assembly

When the safe use of work equipment is dependent on the installation or assembly of the equipment, the employer shall ensure that an inspection is carried out by an enterprise of competence before it is first used and each time it is installed or assembled on a new site. The inspection shall ensure that the work equipment is correctly installed or erected and works as intended. This applies in particular to:

- foundations for and erection of portal and bridge cranes;
- foundations for and assembly of work equipment for loading and offloading ships;
- foundations for and erection of tower cranes;
- installation of transverse cranes and hoists tracks/rails;
- installation of pillar and wall slewing cranes;
- installation of suspended work platforms,
- assembly of climbing scaffolds for heights exceeding 3 metres;
- assembly and installation of building site lifts; and
- retrofitting of cranes with a capacity exceeding 2 tm on vehicles and other mobile plant.

Section 13-4. *Documentation of inspection by an enterprise of competence*

Documentation of inspection by an enterprise of competence, including confirmation that it is completely safe to use the work equipment, shall be kept in an expedient place so that it can be presented to public authorities on request. The documentation shall also be available to the enterprise of competence.

The documentation shall follow the work equipment in connection with changes in ownership.

The procedures for inspection by an enterprise of competence shall be described in the undertaking's internal control system.

Chapter 14. Work that can entail exposure to noise or mechanical vibrations

Section 14-1. *Risk assessment of health hazards associated with noise and mechanical vibrations*

The employer shall map and document the extent to which the employees are exposed to noise and vibrations and assess any risks to their health and safety that such exposure might entail.

The scope of assessments and noise measurements shall enable the determination of the noise exposure suffered by employees compared with the lower action values; see the Regulations concerning Action and Limit Values.

In the case of vibrations, the daily exposure values shall be mapped by recording work execution with particular emphasis on working methods, the intensity of vibrations and vibration information of relevance to the specific work situations, including information from the equipment manufacturer. When necessary, the employer shall carry out measurements of vibration exposure.

The risk assessment shall pay particular attention to the following:

- a) the level, type and duration of the exposure and exposure to impulse noise such as impacts and bursts, variations in the vibration level and recurring bursts;
- b) effects on the health and safety of employees who are particularly exposed to risk;
- c) insofar as it is possible, any effects on the health and safety of employees as a result of the combined effect of noise and chemical substances and of noise and vibrations at work;
- d) how the noise affects the possibility of recognising warning signals or other sounds that must be audible in order to reduce the risk of accident;
- e) indirect effects on the employees' health and safety due to interactions between vibrations and the work site or the work equipment;
- f) action values and limit values for daily exposure to vibrations; see Chapters 2 and 3 of the Regulations concerning Action and Limit Values;
- g) the manufacturers' information about the noise and vibration level of the work equipment;
- h) whether alternative work equipment exists that generates less noise and exposure to vibrations;
- i) exposure to noise and whole-body vibrations other than during ordinary working hours for which the employer is responsible;
- j) insofar as it is possible, relevant information from medical examinations and other published information;
- k) increased health risk as a result of the combined effect of vibrations and other factors in the workplace; and
- l) availability of hearing protection that provides sufficient attenuation.

Section 14-2. *Measurement of noise and mechanical vibrations as a basis for risk assessment*

Mapping and measurement of noise and mechanical vibrations as a basis for risk assessment shall be carried out to the extent necessary to be able to determine the level of employee exposure in accordance with Section 14-1.

Hand and arm vibrations shall be measured in accordance with NS-EN-ISO-5349-2. The measurements shall be conducted for each hand if it is necessary to hold the equipment with both hands.

Measurements shall also be taken if changes have been made in the undertaking that may increase the employees' exposure to noise.

Mapping and measurements shall be documented.

Section 14-3. *Training where employees may be exposed to noise or mechanical vibrations*

The employer shall ensure that employees who may be exposed to noise or mechanical vibrations and the safety representative receive training in

- a) safe working methods that reduce exposure and the risk of harm to health;
- b) when it is necessary to use hearing protection and how it should be used.

Section 14-4. *Information about risks relating to noise and mechanical vibrations*

The employer shall ensure that employees and safety representatives are kept informed about relevant risks relating to noise if they are exposed to noise levels equal to or exceeding $L_{EX,8h} = 80$ dB or $L_{pC,peak} = 130$ dB, and about risks relating to vibrations, if the risk assessment shows that the employees may be exposed to vibrations.

The employer shall ensure that employees and safety representatives are kept informed about the following:

- a) the risk assessment that has been carried out and the measures that have been implemented;
- b) action and limit values for exposure;
- c) the measurement results;
- d) risks relating to noise and vibrations, how to recognise signs of harm and how to report them;
- e) conditions under which they are entitled to a medical examination, and the purpose of the medical examination;
- f) any risk of harm to health arising from use of the work equipment.

Section 14-5. *Measures against noise*

The employer shall implement necessary measures on the basis of the health and safety risks identified in the risk assessment. Among other things, the employer shall ensure that any risk as a result of noise is eliminated or reduced to the lowest possible level by:

- a) considering alternative working methods that involve less noise exposure;
- b) choosing appropriate work equipment to reduce noise to a minimum;
- c) designing and arranging the workplace and work premises, for example so that technical devices are assembled, positioned and used so as not to give rise to unnecessary noise;
- d) technical noise reduction measures to reduce noise transmission through the air, for example by use of screens, encasements and sound absorbents;
- e) technical noise reduction measures to reduce structural noise and vibrations through balancing, dampening or isolation of sound sources;
- f) systematic maintenance of work equipment, the workplace and means of noise attenuation;
- g) arranging the work to limit the exposure time and intensity, with sufficient noise-free rest periods;
- h) ensuring medical examinations.

The employer shall adapt these measures to take account of employees who may be particularly exposed to accident or health hazards.

Section 14-6. *Special measures against noise where action values are exceeded*

Endeavours shall be made to reduce the noise exposure to at least 10 dB below the lower action values provided for in the Regulations concerning Action and Limit Values; see Section 2-1.

If the lower action values or the upper action value for the peak sound pressure level, $L_{pC,peak}$, are exceeded, the employer shall consider technical or administrative measures to reduce the noise exposure and prepare a written action plan. The peak sound pressure level, $L_{pC,peak}$, means the C-weighted peak emission sound pressure level, measured during the measurement period with the instrument set to 'peak'.

The employer shall check the effect of the measures that are implemented.

Section 14-7. *Special measures against noise where limit values are exceeded*

If the limit values for noise exposure are exceeded, the employer shall immediately implement measures to reduce the exposure to below the limit values.

In order to avoid exceedance of the limit values in future, the employer shall identify the reasons why the limit values were exceeded.

Section 14-8. *Measures against mechanical vibrations where action values are exceeded*

If the action values for mechanical vibrations are exceeded, the employer shall implement technical and organisational measures on the basis of the health and safety risks identified in the risk assessment, by:

- a) considering alternative working methods that involve less exposure to vibrations;
- b) choosing appropriate work equipment of good ergonomic design in relation to the work to be carried out, so as to reduce the exposure to vibrations;
- c) designing and adapting the workplace and the work to be carried out;
- d) ensuring that the employees have access to additional equipment or aids that reduce the risk of harm from vibrations;
- e) systematic maintenance of work equipment and the workplace;
- f) limiting the exposure time and intensity;
- g) having expedient work schedules and sufficient rest periods;
- h) providing work clothes for employees exposed to damp and cold.

The employer shall adapt these measures to take account of employees who may be particularly exposed to accident or health hazards.

Section 14-9. *Measures against mechanical vibrations where limit values are exceeded*

If the limit values for daily exposure are exceeded, the employer shall immediately implement measures to reduce the exposure to below the limit values.

In order to avoid exceedance of the limit values in future, the employer shall identify the reasons why the limit values were exceeded.

Section 14-10. *Requirements for hearing protection*

The employer shall make hearing protection available to employees where noise levels exceed $L_{EX,8h} = 80$ dB or are experienced as a nuisance.

If the action values cannot be complied with by technical or administrative means and the employees can be exposed to noise equal to or exceeding the upper action values, the employer shall ensure that the employees use appropriate hearing protection that provides adequate protection.

The type of hearing protection shall be chosen in consultation with the employees in order to reduce the risk and strain associated with its use to a minimum.

Section 14-11. *Medical examination of employees who may be exposed to working conditions that are harmful to their hearing*

The employer shall ensure that employees are offered suitable medical examinations and hearing tests, when the risk assessment shows that health risks exist.

The employer shall ensure that employees who are exposed to noise levels exceeding $L_{EX,8h} = 80$ dB or $L_{pC,peak} = 130$ dB, undergo medical examinations that include hearing tests.

The medical examinations shall be able to identify any adverse health effects caused by noise and provide the basis for preventive measures in the undertaking or other measures that can reduce the risk of harm to the employee's health.

Based on the employee's health condition and the type, level and duration of exposure, the medical practitioner shall decide the content of the examination and how frequently the employee should be examined.

Section 14-12. *Medical examination of employees who are exposed to mechanical vibrations*

The employer shall ensure that employees are offered suitable medical examinations if they are exposed to vibrations that exceed the action values for vibrations, or if the exposure gives reason to suspect that lower exposure levels can be harmful to health.

The medical examinations shall be able to identify any adverse health effects caused by vibrations and provide the basis for preventive measures in the undertaking or other measures that can reduce the risk of harm to the employee's health.

Based on the employee's health condition and the type, level and duration of exposure, the medical practitioner shall decide the content of the examination and how frequently the employee should be examined.

The employee shall be informed about the result of the medical examination. The employee shall be informed of any need for medical examinations after the exposure has stopped.

Section 14-13. *Follow-up by the employer of medical examination of employees exposed to noise or mechanical vibrations*

If the medical examination identifies health impairments or other adverse health effects that are due to mechanical vibrations or noise in the workplace or that are a combined effect of noise and other factors, the employer shall:

- a) consider the causes of the health impairment;
- b) revise and update the risk assessment;
- c) take account of the advice of competent medical personnel or public authorities;
- d) take necessary action to eliminate or reduce the risk associated with work that exposes employees to noise or mechanical vibrations;
- e) offer appropriate medical examinations to other employees who have been similarly exposed.

Section 14-14. *Relocation of employees exposed to noise or mechanical vibrations*

Insofar as it is possible, the employer shall ensure that, when necessary on grounds of employees' health, employees are relocated to other work in the undertaking where they do not suffer hazardous exposure to noise or mechanical vibrations.

Chapter 15. Ionising radiation

Section 15-1. *Preventing exposure to ionising radiation*

The employer shall ensure that all radiation exposure is kept at the lowest possible level.

Section 15-2. *Concurrent work with cytostatics and ionising radiation*

Undertakings with employees who work with ionising radiation and who also work with cytostatics on a regular basis shall prepare work instructions on how to carry out the work and which safety measures to implement to prevent employees from being exposed to radiation and cytostatics.

Section 15-3. *Personal dosimetry*

Employees who work within a controlled or monitored area shall carry a personal dosimeter or ascertain their personal radiation exposure by other means.

The employer shall ensure that the employees are informed about the dose readings and is obliged to store the personal dosimetry reports.

The results of dose readings shall be reported annually to the Norwegian Radiation Protection Authority.

Section 15-4. *Medical examination of employees who may be exposed to ionising radiation*

The employer shall ensure that employees who are to work under conditions where radiation may lead to a dose of more than 6 mSv per year or an equivalent dose of more than 3/10 of the dose limits set out in the Regulations concerning Action and Limit Values, undergo medical examinations before they are assigned such work. The medical examination shall seek to determine whether there are medical reasons why the employee should not work with ionising radiation or whether special measures are required.

Employees who may be exposed to doses of more than 6 mSv in the course of 12 months or equivalent dose of more than 3/10 of the dose limits set out in the Regulations concerning Action and Limit Values, shall undergo medical examinations every three years or more frequently if advised by a medical practitioner. The medical examination shall seek to determine whether there are medical reasons why the employee should not continue to work with ionising radiation or whether special measures are required.

If individual readings show that an employee has been exposed to radiation doses exceeding the dose limits for physical and chemical agents set out in the Regulations concerning Action and Limit Values, the employee shall be referred to a medical practitioner for a medical examination. Such a medical examination shall also be conducted if requested by the employee on special grounds, or if the medical practitioner has decided that the employee needs to be examined.

The employer shall ensure that the medical practitioner has all the exposure information that may be of importance to the medical examination.

The employee shall be informed about the result of the medical examination.

Employees who have a medical certificate stating that they cannot work with ionising radiation shall be transferred to work in which there is no occupational exposure to ionising radiation.

Chapter 16. Artificial optical radiation

Section 16-1. *Risk assessment of health hazards associated with artificial optical radiation*

The employer shall map and document the extent to which the employees are exposed to artificial optical radiation and assess all and any risks relating to their health and safety associated with artificial optical radiation. The risk assessment shall include assessment, calculation and measurement of exposure.

The risk assessment shall pay particular attention to the following:

- a) the level, wavelength range and duration of exposure in connection with artificial optical radiation;
- b) the exposure limit values provided for in Section 4-2 of the Regulations concerning Action and Limit Values;
- c) information from manufacturers of artificial sources of optical radiation and related work equipment;
- d) any effects on the health and safety of employees belonging to particularly sensitive risk groups;
- e) effects on the employees' health and safety due to interactions in the workplace between artificial optical radiation and chemical substances that affect photosensitivity;
- f) indirect effects, for example temporary blinding and visual disturbances, explosion or fire;
- g) the existence of replacement equipment designed to reduce the levels of exposure to artificial optical radiation;
- h) relevant information from health surveys and other public information;
- i) exposure to artificial optical radiation from multiple sources; and

- j) the classification of laser equipment defined in accordance with the relevant IEC standard, and artificial optical radiation that can cause damage similar to that of a class 3B or 4 laser, risk classification of non-coherent optical sources or other similar classification.

Section 16-2. *Assessment, calculation and measurement of artificial optical radiation as a basis for risk assessment*

The employer shall assess the levels of artificial optical radiation from sources of radiation to which the employees may be exposed. If necessary, the levels of the artificial optical radiation shall be calculated and/or measured.

Such assessments, calculations and/or measurements shall be planned and carried out by personnel with relevant competence and be repeated at suitable intervals. A new assessment shall be carried out if changes affect the exposure of employees, and new calculations and/or measurements shall be carried out if necessary.

When measuring artificial optical radiation, the method chosen shall be in accordance with the standards of

1. the International Electrotechnical Commission (IEC) relating to laser radiation, and
2. the recommendations of the International Commission on Illumination (CIE) and the European Committee for Standardization (CEN) relating to artificial optical radiation, except laser radiation.

Exposure situations that are not covered by these standards and recommendations shall be assessed, calculated or measured in accordance with scientifically based international or national guidelines.

The data provided by equipment manufacturers shall be taken into account in the assessment where the equipment is covered by applicable EU directives.

Section 16-3. *Training where employees may be exposed to artificial optical radiation*

The employer shall ensure that employees who may be exposed to artificial optical radiation and the safety representative receive training in

- a) safe work procedures and working methods to reduce the risk of exposure;
- b) correct use of appropriate personal protective equipment.

Section 16-4. *Information about risks associated with artificial optical radiation*

The employer shall ensure that employees and safety representatives are kept informed about the following:

- a) the conducted risk assessment and the measures implemented;
- b) the exposure limit values;
- c) assessment, calculation and measurement as mentioned in Section 16-2;
- d) how to detect and report harmful effects of exposure;
- e) conditions under which the employees are entitled to a medical examination, and the purpose of the medical examination;
- f) potential harm to health associated with artificial optical radiation.

Section 16-5. *Measures against exposure to artificial optical radiation*

The employer shall implement necessary measures on the basis of the health and safety risks identified in the risk assessment. The employer shall ensure that any risk arising from artificial optical radiation is eliminated or reduced to the lowest possible level.

In order to reduce exposure, the conducted risk assessment shall serve as the basis for drawing up an action plan containing technical and/or organisational measures. In particular, the following shall be taken into account:

- a) alternative working methods;
- b) choice of expedient work equipment to ensure a minimum of artificial optical radiation;
- c) technical devices to reduce artificial optical radiation, including the use of shielding, encasements etc.;
- d) systematic maintenance of work equipment, the workplace and work premises;
- e) design and layout of workplaces and work premises

- f) limitation of the duration and level of exposure;
- g) the availability of appropriate personal protective equipment;
- h) user manuals from equipment manufacturers;
- i) special measures targeting employees who belong to sensitive risk groups; and
- j) implementation of medical examinations in accordance with Section 16-7.

The employer shall adapt these measures to take account of employees who may be particularly exposed to accident and health hazards.

Section 16-6. *Special measures against exposure to artificial optical radiation where the limit values are exceeded*

If the risk assessment shows that the exposure limit values are exceeded, the employer shall immediately implement measures to reduce the exposure level to below the limit values. In order to avoid exceedance of the limit values in future, the employer shall identify the reasons why the limit values were exceeded.

Section 16-7. *Medical examination of employees exposed to artificial optical radiation*

The employer shall ensure that the employees are offered suitable medical examinations, where:

- a) exposure to artificial optical radiation exceeds the limit values provided for in Section 4-2 of the Regulations concerning Action and Limit Values; or
- b) employees have a known disease that is the result of exposure to artificial optical radiation; or
- c) the risk assessment shows that a health risk exists.

The employer shall ensure that the risk assessment is available to the person carrying out the medical examination.

The medical examination shall be able to identify adverse health effects caused by artificial optical radiation and provide the basis for preventive measures in the undertaking.

Based on the employee's health condition and the type, level and duration of exposure, the medical practitioner shall decide the content of the examination and how frequently the employee should be examined.

The employee shall be informed about the result of the medical examination. The employee shall be informed of any need for medical examinations after the exposure has stopped.

Section 16-8. *Follow-up by the employer of medical examinations of employees exposed to artificial optical radiation*

If the medical examination identifies health impairments or other adverse health effects that are due to artificial optical radiation, the employer shall:

- a) consider the causes of the health impairment;
- b) revise and update the risk assessment;
- c) implement measures as necessary to remove or reduce the risks involved in work where employees are exposed to artificial optical radiation, including to take account of the advice of competent health personnel or public authorities;
- d) relocate employees; and
- e) offer appropriate medical examinations to other employees who have been similarly exposed.

Section 16-9. *Relocation of employees exposed to artificial optical radiation*

Insofar as it is possible, the employer shall ensure that, whenever necessary on grounds of the employees' health, employees are relocated to other work in the undertaking where they do not suffer hazardous exposure to artificial optical radiation

Chapter 16 A. Electromagnetic field

Section 16 A-1. Risk assessment of health risk associated with exposure to electromagnetic fields

The employer shall ascertain and document to what extent employees are exposed to electromagnetic fields and assess any health and safety risks associated with electromagnetic fields. Such exposure assessment, calculations or measurement shall be included in the risk assessment.

The risk assessment shall pay particular attention to:

- a) the level, frequency range and exposure time in connection with electromagnetic fields,
- b) action and limit values for exposure laid down in Section 4-3 of the Regulations concerning Action and Limit Values,
- c) information from manufacturers of electromagnetic radiation sources and related work equipment,
- d) any effects on the health and safety of employees belonging to particularly sensitive risk groups,
- e) any direct biophysical effects,
- f) indirect effects,
- g) accessibility of alternative equipment constructed to reduce the exposure level for electromagnetic fields,
- h) relevant information from medical examination and other publicly available information,
- i) exposure to electromagnetic fields from several sources and,
- j) coexposure to fields with multiple frequencies.

Section 16 A-2. Assessment and calculation or measurement of electromagnetic fields as a basis for the risk assessment

The employer shall assess and if necessary measure or calculate the levels of electromagnetic fields that the employees may be exposed to.

Assessment and calculation or measurement shall be planned and conducted by qualified personnel and be repeated at suitable intervals. A new assessment shall be carried out if there are any changes that may affect employee exposure. New calculations or measurements shall be carried out if necessary.

Section 16 A-3. Training where the employee may be exposed to electromagnetic fields

The employer shall ensure that employees who may be exposed to electromagnetic fields and the safety representative shall receive training in:

- a) safe work procedures and working methods to reduce the risk of exposure
- b) correct use of appropriate personal protective equipment.

Section 16 A-4. Information about risks associated with electromagnetic fields

The employer shall ensure that employees and safety representatives are kept informed about the following:

- a) the conducted risk assessment and the measures implemented
- b) exposure limit and action values
- c) assessment, calculation and measurement as mentioned in Section 16 A-2
- d) how to detect and report harmful effects of exposure
- e) conditions under which the employees are entitled to a medical examination, and the purpose of the medical examination
- f) potential harm to health associated with electromagnetic fields
- g) the possibility of transient symptoms and sensations associated with impact on the nervous system
- h) employees that are particularly exposed to risk.

Section 16 A-5. Measures to limit exposure to electromagnetic fields

Based on the health and safety risks identified in the risk assessment, the employer shall implement the necessary measures. The employer shall ensure that any risk caused by electromagnetic fields is removed or minimised to the lowest level possible.

In order to reduce exposure, the conducted risk assessment shall serve as the basis for drawing up an action plan containing technical and organisational measures. In particular, the following shall be taken into account:

- a) alternative working methods,
- b) choice of expedient work equipment to ensure a minimum of electromagnetic radiation,
- c) technical devices to reduce electromagnetic radiation, including the use of shielding, encasement etc.
- d) systematic maintenance of work equipment, the workplace and work premises,
- e) design and layout of workplaces and work premises,
- f) limitation of the duration of exposure,
- g) the availability of appropriate personal protective equipment,
- h) user manuals from equipment manufacturers,
- i) suitable restriction and access measures,
- j) procedures to handle spark discharges and contact currents by means of technical tools and employee training,
- k) special measures directed at employees belonging to particularly sensitive risk groups,
- l) implementation of medical examinations in accordance with Section 16 A-7.

The employer shall adapt these measures to suit employees who may be particularly exposed to accident and health hazards.

Section 16 A-6. *Special measures against exposure to electromagnetic fields when the limit values are exceeded*

If the risk assessment shows that the exposure limit values have been exceeded, the employer shall immediately implement measures to reduce the exposure level to below the limit values. In order to avoid exceedance of the limit values in future, the employer shall identify the reasons why the limit values were exceeded.

Section 16 A-7. *Medical examination of employees exposed to electromagnetic fields*

The employer shall ensure that the employees are offered suitable medical examinations, if:

- a) exposure to electromagnetic fields exceeds the limit values provided in Section 4-3 of the Regulations concerning Action and Limit Values, or
- b) employees have a known disease that is the result of exposure to electromagnetic fields.

The employer shall ensure that the risk assessment is available to the person carrying out the medical examination.

The employee shall be informed about the result of the medical examination.

Chapter 17. Work at height

Section 17-1. *Risk assessment and requirements relating to work at height*

In connection with planning and performance of work at height, the employer shall assess the risk to ensure the work can be carried out safely.

The risk assessment shall pay particular attention to the following:

- a) collective fall prevention measures shall take priority over personal fall arrest equipment,
- b) the work equipment has been designed for the work that will be performed and for predictable loads,
- c) scaffolding shall be stable and the foundation shall be capable of supporting the load to which it will be exposed,
- d) the work shall be performed in accordance with ergonomical principles from a suitable surface. If this is not possible, the employer shall select the work equipment that best ensures safe working conditions,
- e) access routes shall be adapted according to how often the employees have to move, how long they are in use and the height of the access,
- f) access routes can be used for evacuation in an emergency situation,
- g) movement between access routes and work platforms, the scaffold decks or gangways shall not entail an increased risk of falling,

- h) safety devices to protect against falls shall be installed where necessary. Collective fall arrest devices may only have openings in access places where there are stairs or ladders, and
- i) equipment is secured to prevent objects from falling and constituting a risk to other people.

If it is necessary to remove a collective fall arrest device temporarily in order to perform a specific task, safety measures shall be implemented which compensate for this. This shall be done before the work task starts. When the work task has been completed or halted, the collective fall arrest device shall be reinstalled.

Section 17-2. Training requirements relating to erection, removal, alteration and inspection of scaffolding when the top deck height of the scaffolding is from two to five metres

The employer shall ensure training for employees who will perform erection, removal, alteration and inspection of system scaffolds where the scaffold top deck height is from two metres and erected as standard and in accordance with the supplier's erection instructions.

The training requirement also applies to erection, removal, alteration and inspection of rolling scaffolds from two metres.

The training shall take into account any elements of risk associated with the work and shall pay particular attention to:

- a) understanding the instructions for erection, removal or alteration of the type of scaffolding in question,
- b) safety during erection, removal or alteration of the type of scaffolding in question,
- c) measures to reduce the risk of falling for persons and objects,
- d) assessment of the condition of the scaffolding material with a view to removing any unsafe scaffolding material, e.g. rot, corrosion and cracks,
- e) safety measures in the case of any changes in weather that may have a negative impact on the safety of the type of scaffolding in question,
- f) permitted loads,
- g) inspection of scaffolding and
- h) all other risks which may arise during the said erection, removal or alteration.

Before an employee is assigned independent work involving erection, removal, alteration and inspection, the employer shall ensure that the employee has had 7.5 hours of theoretical training and 7.5 hours of practical training under supervision and guidance of a qualified person. The employer shall also ensure that the employee receives training in the use of relevant safety equipment to protect against falls during erection, removal and alteration of scaffolding constructions, including the use of personal protective equipment (fall arrest equipment).

An employee who has completed such training according to this provision is considered a qualified person for scaffolding with a top scaffold deck height of up to five metres.

Documentation shall be issued confirming that such practical and theoretical training has been given in accordance with this provision. The safety representative and the Norwegian Labour Inspection Authority shall have access to the documentation of the practical and theoretical training.

Section 17-3. Training requirements relating to erection, removal, alteration and inspection of scaffolding when the top deck height of the scaffolding is from five to nine metres

The employer shall ensure training for employees who will perform erection, removal, alteration and inspection of system scaffolds where the top scaffold deck height is from five to nine metres and erected as standard and in accordance with the supplier's erection instructions.

The training requirement also applies to erection, removal, alteration and inspection of rolling scaffolds from five to nine metres.

The training shall take into account any elements of risk associated with the work and shall comprise the requirements in Section 17-2, third paragraph, letters a-h.

Before an employee is assigned independent work involving erection, removal, alteration and inspection, the employer shall ensure that the employee has had 15 hours of theoretical training and 15 hours of practical training under supervision and guidance of a qualified person. The employer shall also ensure that the employee receives training in the use of relevant safety equipment to protect against falls during erection, removal and alteration of scaffolding constructions, including the use of personal protective equipment (fall arrest equipment).

An employee who has completed such training according to this provision is considered a qualified person for scaffolding with a top scaffold deck height of up to nine metres.

Documentation shall be issued confirming that such practical and theoretical training has been given in accordance with this provision. The safety representative and the Norwegian Labour Inspection Authority shall have access to the documentation of the practical and theoretical training.

Section 17-4. *Training requirements relating to erection, removal, alteration and inspection of scaffolding when the top deck height of the scaffolding is from nine metres, and for scaffolding not erected as standard in accordance with the supplier's erection instructions.*

The employer shall ensure training for employees who will perform erection, removal, alteration and inspection of system scaffolds where the top scaffold deck is from nine metres upwards. This also applies to scaffolding that is not erected as standard according to the supplier's erection instructions, regardless of the height of the top scaffold deck.

The training shall take into account any elements of risk associated with the work and shall also, in addition to the requirements in Section 17-2, third paragraph, letters a-h, comprise:

- a) erection of scaffolding constructions in a manner ensuring health and safety, when the scaffolding includes elements that require special strength and stability calculations,
- b) understanding of the specifications for a planned scaffolding construction, including strength and stability calculations and
- c) training in safe erection, removal and alteration of scaffolding construction, with regard to own health and safety during the work and the health and safety of subsequent users.

Before an employee is assigned independent work involving erection, removal, alteration and inspection, the employer shall ensure that the employee has used scaffolding for at least six months, received 36 hours of theoretical training followed by 72 hours of practical training under the supervision and guidance of a qualified person. The employer shall also ensure that the employee receives training in the use of relevant safety equipment to protect against falls during erection, removal and alteration of scaffolding constructions, including the use of personal protective equipment (fall arrest equipment).

An employee who has completed such training according to this provision is considered a qualified person for scaffolding with a top scaffold deck height from nine metres.

Documentation shall be issued confirming that practical and theoretical training has been given in accordance with this provision. The safety representative and the Norwegian Labour Inspection Authority shall have access to the documentation of the practical and theoretical training.

Section 17-5. *Requirements relating to training of users of scaffolding*

The employer shall ensure that employees who use scaffolding as work platforms to perform work at height have been given training in the use of the relevant scaffolding, including a review of the instructions for erection, use and removal, cf. Section 17-8, second paragraph. The employer is responsible for ensuring that satisfactory training is provided before the work starts.

Section 17-6. *Planning work at height*

Work that requires use of scaffolding, ladders, roof bridges, etc. shall be planned so that the equipment for work at height is erected and worked from in accordance with this chapter and Sections 2-1, 7-1 and 10-1 of the Regulations concerning Organisation, Management and Employee Participation, to ensure safety.

In places where there are special elements of danger, for example traffic, live cables or a landslide risk, etc., special safety measures shall be implemented before equipment for work at height is assembled and used. Work at height shall not be carried out in weather conditions that pose a risk to the employees' health and safety.

Section 17-7. *Dimensioning of scaffolding and guard rails*

The scaffolding, including the guardrails on scaffold deck edges etc., shall be dimensioned to ensure that guardrails and the completed scaffold are sufficiently strong. The same applies to the calculation of wind forces to which the scaffold is exposed.

Section 17-8. *Assembly, use and dismantling of scaffolding*

The employer shall ensure that scaffolders are issued with installation guidelines and written work instructions. The requirement for use of appropriate personal protective equipment during installation work shall be mentioned in particular.

A qualified person who is knowledgeable about the complexity of the scaffolding in question, shall prepare guidelines for assembly, use and dismantling of it. The guidelines may be a general guide from the manufacturer, but shall, if necessary, include complementary and detailed information about the scaffolding in question, to ensure that assembly, use and dismantling of the scaffolding take place in a safe manner.

If the design calculations for the scaffolding are unavailable or do not contain information about the planned arrangements, the scaffolding shall be installed in conformity with a generally recognised standard model, or strength and stability calculations shall be performed.

The scaffolding shall be stable. The load-carrying parts of the scaffolding shall be secured against sliding, either by fixing them to the foundation or by using an anti-skid device. The foundation shall have sufficient load carrying capacity to support the load. Assembly, use and dismantling of rolling scaffolding shall take place in accordance with Section 17-17.

The dimensions, shape and positioning of the scaffold decks shall be adapted to the nature of the work and the load it entails and shall ensure that employees can work and move around in a safe manner. There shall be no dangerous gaps between the deck components and the vertical collective safeguards.

The scaffolding construction shall be planned and designed so that it is possible to hoist or move materials and equipment through or onto the scaffolding without having to move or dismantle important structural or safety components.

When some parts of scaffolding are not ready for use, for example during assembly, dismantling or alteration, physical barriers shall be erected around the dangerous areas to prevent access. Signs shall be put up to prevent the scaffolding from being used.

Section 17-9. *Inspection of scaffolding*

The employer shall ensure that the scaffolding is inspected before it is used. For as long as it is used, it shall be inspected at regular intervals according to the circumstances. The scaffolding shall be inspected before use following a storm, when other circumstances may have had an impact on its stability and strength, and when the scaffolding has been out of use for a week or more.

The employer shall ensure that the inspection is carried out by a qualified person, cf. Sections 17-2, 17-3 and 17-4.

Section 17-10. *Report from inspection of scaffolding*

The employer shall ensure that a report is prepared after inspection of scaffolding. The report shall, as a minimum, contain the following:

- a) information about who performs the inspection and his or her employer,

- b) the owner of the scaffolding,
- c) information of any deficiencies and the deadline for rectifying them,
- d) technical information and
- e) signature of the executing inspector.

If any deficiencies are discovered that may pose a risk to the users of the scaffolding, the person responsible for the inspection shall ensure that a sign is put up to warn the users of this. In addition, physical barriers shall be erected to prevent access to the scaffolding.

The report shall be available to all employers and employees who will use the scaffolding, including the employee representatives, as well as the Norwegian Labour Inspection Authority.

Section 17-11. *Marking of scaffolding*

Scaffolding shall carry permanent and easily visible signs with information about:

- a) the owner of the scaffolding,
- b) the scaffolder,
- c) safe load limits and
- d) a contact person with telephone number and information about the latest inspection date and inspector.

The sign shall be updated following every inspection performed in accordance with Section 17-9.

Section 17-12. *Access and safe use of scaffolding*

Access to the scaffolding shall be safe, convenient and expedient, preferably with a separate stair tower. Ladders may be used for access for work of short duration. Where virtually vertical ladders are used for access to decks higher than 3.5 m, the ladder shall be equipped with hoops from 2.5 m above ground.

The scaffolding shall have sufficient space for users, tools and material. It shall be possible to perform the work using work postures that do not result in unfortunate physical strains.

Employees should be able to move around without any risk of getting caught or colliding with protruding or hanging scaffold parts or objects.

Section 17-13. *Maintenance of scaffolding*

The employer shall make sure that the scaffold components that are used, are easy to clean and maintain.

All components shall be inspected and sorted every time they have been used. Material and equipment in unsatisfactory condition shall be clearly marked or rendered unusable for scaffolding purposes. Damaged components shall be repaired before they are stored together with undamaged material. Any components that cannot be repaired, shall be discarded.

Maintenance, storage and scrapping of type-approved or certified scaffolding components shall take place in accordance with the manufacturer's instructions for assembly and use.

Section 17-14. *Scaffold decks*

Scaffold decks shall be installed so that individual components cannot be displaced during normal use.

Gaps of more than 0.30 m between walls and scaffolding shall be secured, cf. Section 6-5 of the Workplace Regulations. The scaffold decks shall be properly fastened to the scaffold structure and have no tipping ends. The decks shall be even with a design and surface that prevent them from becoming slippery, and they shall not have any openings through which materials, tools etc. can fall. They shall be sufficiently rigid to ensure satisfactory working conditions and security.

Openings shall be secured with guardrails or solid covers.

Section 17-15. *Technical requirements for scaffolding and scaffolding material*

Scaffolding shall be braced in the horizontal and vertical plane as well as in the lateral and longitudinal directions by use of diagonal stays or similar.

All couplers shall be locked when in use, so that they cannot come loose accidentally.

Wooden material shall be unpainted and undamaged. Joints in posts, runners and braces shall be able to transmit the compressive and tensile forces for which the scaffolding is dimensioned.

Brackets mounted on wooden battens must not be used above 5 m. The battens shall be without joints and have a dimension of least 95 mm x 95 mm. The battens shall be sufficiently braced to prevent them from breaking.

Trestle scaffolding shall not be taller than two metres.

Section 17-16. *Technical requirements for cantilever and suspended scaffolding*

Cantilever and suspended scaffolding erected on outriggers shall be secured by properly dimensioning the outriggers and properly fastening the outriggers using stays, bolts or cables. Counterweights may also be used that are dimensioned to prevent tipping according to the maximum load of the scaffold and the imposed load with a safety margin of 2.5. Counterweights shall be properly fastened to the beams.

Suspended scaffolding must be attached using non-flammable components.

Section 17-17. *Use of rolling scaffolds*

Rolling scaffolds shall be used on firm, even, horizontal surfaces only, to ensure adequate stability during movement and use.

Rolling scaffolds shall be equipped with devices that prevent them from moving unintentionally.

If the scaffolding is not supported by outriggers, the wheels shall have good contact with the supporting surface when it is in use.

Rolling scaffolds shall be moved in a safe manner. It is not permitted to occupy rolling scaffolds while they are being moved. Before the scaffolding is moved, objects on it shall be removed or secured against falling.

Rolling scaffolds shall be used in accordance with the manufacturer's instructions.

Section 17-18. *Anchoring of scaffolds*

Scaffolding that is not designed to stand freely or be suspended, shall be anchored by fastening or tying the scaffold to a rigid structure or the ground. Scaffolds shall have sufficient anchor points to secure them against overturning or breaking away.

The fastening devices for the anchor ties shall be suitable for the material of which the supporting structure is made.

The anchor ties shall be dimensioned according to expected wind forces at the site, both transverse and longitudinal. If anchoring devices have not been described in the assembly instructions, they shall be calculated. The calculations shall be documented together with documentation confirming that the construction to which the scaffolding is anchored, can withstand the total expected load.

The anchor ties shall be fastened to the posts or the frames as close to tying points with the horizontal bearers as possible.

The anchoring devices shall be able to absorb both tensile forces and compression.

A row of anchoring devices shall normally be installed at the level of the uppermost runners.

Anchoring devices shall be tested by applying a load that is 20% higher than the load for which they are designed.

Section 17-19. *Scaffolds extending onto the roof*

When scaffolding extends onto a roof or the top of another structure, account shall be taken of its intended use, to ensure that those who use it as a work platform or for access, are not at danger of injuries from falls or falling objects.

If the top scaffold deck is used for work at cornices and access to the roof, the access to the roof shall be safe. Work at cornices shall take place in a manner that does not expose workers to adverse physical strain.

Section 17-20. *Fire risk*

If covered scaffolding is used, the cover shall satisfy the fire requirements for materials used in escape routes.

Section 17-21. *Use of ladders*

Ladders shall be positioned so that they remain steady during use.

Ladders shall be used so that the employees always have a safe hold and firm footing. Employees shall keep a secure hold of any objects they need to carry while standing in the ladder.

Portable ladders shall rest on a stable, sound and firm footing so that the rungs remain horizontal during use. Suspended ladders shall be securely fastened and, with the exception of rope ladders, fastened so that they cannot be displaced and so that swinging is prevented.

Insofar as it is practicable, ladders shall also be fastened at the top or otherwise secured.

Leaning ladders shall always be secured before use.

Ladders shall be secured against slipping and falling sideways or coming away from the structure.

Ladders and extension ladders consisting of several sections shall be used so that the various sections cannot be displaced in relation to each other.

Mobile ladders shall be secured before use.

Section 17-22. *Restrictions on the use of ladders*

Ladders shall be used for access only.

By way of exception, ladders may be used as work platforms for work at height when the use of other and more secure work equipment is inexpedient because the risk is low and

- a) the ladder will only be used for a short time, or
- b) it is not possible for the employer to change the conditions in the workplace.

Free-standing ladders more than 6 metres high shall not be used. Free-standing combination ladders more than 4 metres high shall not be used.

Section 17-23. *Access from ladders*

A ladder used to access a roof, ledge etc. shall extend at least 1 m above the roof or ledge. A ladder used for access shall always be secured at the top.

Section 17-24. *Use of rope for access, work and rescue*

When the employer has assessed the risk and finds it safe, employees may use rope as means of access and to assume working positions. This is conditional on it being possible to carry out the work in a safe manner and on it being inexpedient to use other, safer equipment.

The employer shall make the following arrangements to ensure the safety of employees in connection with the use of rope:

- a) the rope system shall include at least two separately anchored ropes. One rope is used as a work rope for access, descent and support, while the other is used as a safety rope to secure the employees. One rope may be used if, following a risk assessment, the employer finds that use of two ropes would make the work more dangerous. If this is the case, the employer shall implement suitable measures to ensure that the employees are safe,
- b) the employees shall be provided with and use an appropriate harness, which shall be attached to the safety rope,
- c) the work rope shall be equipped with a safe means of ascent and descent and a self-locking system to prevent the user from falling,
- d) the safety rope shall have a mobile fall prevention system that follows the movements of the user,
- e) tools and other equipment used by the employees shall be secured to the employees' harnesses or work seats or by other appropriate means,
- f) the work shall be carefully planned and supervised so that employees can get immediate assistance in an emergency,
- g) The employees shall receive necessary training, practice and instruction in the work to be done, particularly in procedures in connection with rescue operations.

If necessary, the rope shall be fitted with a work seat. This shall be considered with particular regard to the duration of the work and the ergonomic strains the employees are exposed to.

Section 17-25. *Use of safety belt and fastening points for safety ropes*

Where the use of collective safeguards is not possible during routine and maintenance work, personal protective equipment may be used. If there is a risk of falling from a height, a safety harness shall be used. If the distance to the hazardous area is limited, a safety belt can be used. The safety rope and fastening points shall be able to withstand the expected forces that may arise.

Section 17-26 Section 17-34. Section 17-26 – Section 17-34. (Repealed)

Chapter 18. Work with lifting equipment

Section 18-1. *Strength and stability*

Work equipment used for lifting loads, and suspension and anchoring arrangements for such equipment, shall be strong enough to support the loads to which the equipment may be exposed and to maintain stability.

Section 18-2. *Marking of work equipment for lifting loads*

Work equipment used for lifting loads shall be clearly marked with the maximum safe working load and, if applicable, have a rating plate stating the safe working load for each lifting position.

Lifting accessories must be marked so that it is clear how they can be used in a safe manner.

Work equipment that is not designed to lift persons, but that can be used to do so, shall be clearly marked with a prohibition on lifting persons.

Section 18-3. Hazards when loads are lifted

Work equipment used for lifting loads shall be installed so as to prevent employees from being exposed to the risk of the load striking employees, or drifting unintentionally and dangerously, or being released unintentionally or falling freely.

Section 18-4. Mobile or moveable work equipment for lifting loads

Work equipment designed for lifting loads that is mobile or can be dismantled, shall be used so as to ensure that it is stable under all conditions of foreseeable use. Account must be taken of the supporting surface.

Section 18-5. Use of work equipment for lifting non-guided loads

Where two or more units of work equipment for lifting non-guided loads are installed or erected so that their working radiuses overlap, measures shall be taken to avoid collisions between the loads and/or parts of the lifting equipment.

Where mobile work equipment is used to lift non-guided loads, measures shall be taken to prevent the equipment from tilting, overturning, moving or slipping. The employer shall ensure that such measures are properly implemented.

Where an operator of the lifting equipment cannot observe the full path of the load, whether directly or indirectly by means of auxiliary equipment, a person with the requisite competence for the task shall be posted so as to have direct contact with and guide the operator. Organisational measures shall be taken to prevent collisions that could endanger employees.

The work shall be organised in a safe manner, particularly with a view to ensuring that the employee can retain direct or indirect control of the work operation during manual attachment and detachment of the load.

All lifting operations shall be properly planned, appropriately supervised and be carried out with due attention to the employees' health and safety. If the load requires simultaneous use of several units of lifting equipment, and the load is not controlled, procedures shall be established to ensure that the operators coordinate the work in a safe manner.

If lifting equipment used to lift loads that are not controlled is unable to maintain its hold on the load in the event of a complete or partial power failure, measures shall be taken to prevent employees from being exposed to the risk this represents. Suspended loads may only be left without surveillance when access to the danger zone is prevented and the load is safely suspended and held.

Lifting equipment used outdoors to lift loads that are not controlled shall not be used under weather conditions that makes it unsafe to use. Appropriate protective measures shall be taken to avoid exposing employees to risk, and particularly to prevent the equipment from overturning.

Section 18-6. Measures in connection with lifting operations

Measures shall be taken to ensure that employees do not enter the area below suspended loads. Should the employees nevertheless have to enter the area below the load to carry out the work, measures shall be taken to protect the employees from being injured.

The work must be carried out using lifting accessories that are appropriate to the load to be handled, the gripping points, lifting lugs, weather conditions and the method used for slinging and hooking on the load. Assembled lifting accessories that are not disassembled after use shall be clearly marked so that the users are aware of the characteristics of such lifting attachments.

Lifting accessories shall be stored so as to prevent damage and degradation.

Section 18-7. Requirements for equipment for lifting and moving employees

Work equipment for lifting and moving employees shall be designed so as to:

- a) prevent the platform or similar from falling down by suitable devices;
- b) prevent the employee from falling from the platform;
- c) prevent the employee from being crushed, trapped or struck;
- d) ensure that the employee is not exposed to danger and can leave the platform in the event of unintentional operational interruptions.

If the devices mentioned under (a) do not provide adequate safety due to the nature of the work site and height differences, the platform shall be secured by installing an additional rope with an enhanced safety coefficient. The ropes shall be inspected before each use.

Section 18-8. Measures when a person is lifted

Only work equipment and platforms designed for lifting persons shall be used to lift employees.

Work equipment that is not designed for lifting persons may be used for the purpose by way of exception. When such work equipment is occupied by an employee, the control station shall be manned continuously. The employee being lifted shall have reliable means of communication and the possibility of being safely evacuated.

Chapter 19. Work with mobile work equipment

Section 19-1. The safety of mobile work equipment

Mobile work equipment shall be fitted out so that ride-on employees are not endangered. This includes the risk of coming into contact with or being trapped by wheels or tracks.

Section 19-2. Blockages/seizures in drive units

Risks due to blockage or seizure in the work equipment or the drive shaft for energy transmission shall be avoided by using a device that breaks or limits the energy transmission.

Where this is not possible, other measures shall be implemented to protect employees in the event of blockage or seizure.

Section 19-3. Energy transmission

Mobile work equipment shall have a suspension system for drive shafts for the transmission of energy if parts of the drive shaft between different units of the work equipment can be soiled or damaged when dragged along the ground etc.

Section 19-4. Risks in connection with rollover

Mobile work equipment that can roll over during use and that has a seat for the operator or employee shall have:

- a) either a protective structure to ensure that the equipment does not tilt more than a quarter turn, or
- b) a structure that ensures that there is sufficient clearance around the operator or ride-on employee should the tilting movement continue beyond a quarter turn, or
- c) another device of equivalent effect.

The protective structure can be an integral part of the work equipment.

Protective structures are not required if the work equipment is stabilised while in operation, or where the design makes roll-over impossible.

If there is a risk that ride-on employees can be crushed between parts of the work equipment and the ground should the work equipment roll over, a restraining system must be available for these employees.

A lift or stacker that carries one or more employees shall have:

- a) a structure that prevents it from rolling over, or
- b) a roll-over protective structure, or
- c) a structure that ensures that there is sufficient clearance between the ground and the equipment should the lift or stacker roll over, or
- d) a structure restraining employees in the driving seat and thus prevents them from being crushed between the ground and parts of the lift or stacker should it roll over.

Tractors shall be fitted with a type-approved protective structure (driver's cab or protective frame) to protect the operator should the tractor roll over or rear.

Section 19-5. Risks associated with self-propelled work equipment

Self-propelled work equipment that can put employees at risk when moving shall meet the following requirements:

- a) It must have facilities for preventing unauthorised start-up.
- b) It must have appropriate facilities for minimising the consequences of a collision, where there is more than one item of track-mounted work equipment in motion at the same time.
- c) There must be a device for braking and stopping the equipment. Where required on grounds of safety, emergency facilities operated by readily accessible controls or automatic systems must be available to enable braking and stopping in the event of failure of the main facility.
- d) Where the driver's direct field of vision is inadequate to ensure the safety of the employees, appropriate auxiliary devices shall be installed to ensure proper visibility.
- e) Work equipment designed to be used at night or in dark places shall be fitted with lighting appropriate to the work to be carried out.
- f) Work equipment that can constitute a fire hazard, either on its own or with respect to the load being towed or carried, and that is liable to endanger employees, must be equipped with appropriate fire-extinguishing equipment unless such equipment is within reach at the site where the equipment is being used.
- g) Remote-controlled work equipment shall stop automatically as soon as it leaves the control range.
- h) Remote-controlled work equipment that, under normal operating conditions, can put employees at risk of being run over or crushed, must have facilities to guard against this risk, unless other suitable devices are in place to prevent the risk of being run over or crushed.

Mobile work equipment with a combustion engine may not be used in work areas unless a sufficient fresh air supply can be secured to prevent harm to the employees' life and health.

Section 19-6. Driving on frozen water

Where the work makes it necessary to drive on frozen water with mobile work equipment, the work equipment used shall have a cab with an escape route that cannot be blocked.

Chapter 20. High-pressure jetting

Section 20-1. Instructions on high-pressure jetting

The employer shall provide instructions on the safe use of high-pressure jetting equipment.

The instructions shall at least cover the following:

- a) the nozzle of the jetting device, with or without a liquid jet, must never point towards one's own or somebody else's body during use;
- b) a device for mechanical control of the jetting device must be used when the estimated recoil force exceeds 250 N;
- c) the jetting device must be supported against the body if the recoil force of the hand-held jetting device exceeds 150 N;
- d) the trigger or relief valve must never be tied up or otherwise blocked;

- e) setting the control valve for working pressure during use shall only be done in consultation with the person operating the jetting device. The same applies to regulation of the temperature when the liquid is heated;
- f) when the work is completed, the jetting device shall be placed and stored out of reach of unauthorised personnel.

Section 20-2. *High-pressure jetting with assistant operator*

When the conditions indicate that the operator has limited control of the pumping unit, or if otherwise required because of the working conditions, an assistant operator shall keep the pumping unit under observation.

It must be possible for the operator who is in control of and operates the pumping unit to communicate or preferably have visual contact with the operator that operates the jetting device.

The operator that controls the jetting device shall act as team leader and communicate with the assistant operator by means of agreed signals.

Section 20-3. *Use of additives*

Any additives shall be adapted to the system and used in accordance with the instructions for use.

When using additives, the work operation shall be adapted and carried out so as to limit the formation of droplets or vapour.

Section 20-4. *Use of abrasives*

Special precautions must be taken when using abrasives as they significantly increase the penetrating power of the jet.

Section 20-5. *Safety valves on high pressure jetting systems*

Safety valves must never be set to a pressure exceeding the pressure stated on the valve or in the supplier's instructions for the system.

Section 20-6. *Recoil force and body support in connection with high pressure jetting*

Several hand-held jetting devices may not be connected to the same pump where opening or closing the relief valves can produce dangerous changes in the recoil force.

Consideration shall be given to the recoil force's effect on the operator when using a hand-held jetting device.

When the jetting device is supported by the body, the recoil force shall be partly or wholly absorbed by the body.

The surface on which the operator stands shall be sufficiently slip resistant for work using a jetting device, and the operator shall be able to withstand changes in the recoil force from the jetting device during use.

Guard rails shall be used as necessary where work with a jetting device involves a risk of falling, to ensure that the operator can work safely despite the horizontal recoil force.

Section 20-7. *Trigger valve for high-pressure jetting device*

The jetting device must never be dropped or placed so that it can fall down.

The trigger or relief valve shall be secured when the jetting device is not in use.

Section 20-8. *High-pressure jetting of pipes*

When using a hose that is directly connected to a spray nozzle, the liquid pressure shall not be increased to working pressure before the jetting device has been inserted into the pipe or the operators are adequately protected by shields.

Section 20-9. *Maintenance, daily and periodic inspection of high-pressure jetting equipment*

Repair and replacement of couplings shall only be carried out using special equipment and by competent personnel, preferably the hose supplier or system supplier.

If faults are found on a safety valve, the system shall not be used before the valve or relevant parts have been replaced or repaired.

Repair, adjustment and security sealing may only be performed by the supplier or others having the requisite competence.

Hoses and hose couplings shall be inspected before the equipment is used.

Hoses or couplings that show signs of leakage, significant wear or other damage shall be replaced immediately.

Jetting devices shall be inspected regularly in accordance with the instructions for use.

All available electrical components shall be inspected for possible wear and damage.

The trigger valve shall be checked regularly to ensure that it closes as intended when the trigger or pedal is released.

Safety valves shall be tested regularly.

It must be ensured that hose working pressures are correctly adjusted in relation to the maximum working pressure for the pumping unit.

Jetting devices shall be tested and inspected at least once a year by a person with the requisite knowledge and experience of such systems.

Section 20-10. *Cleaning and repair of high pressure jetting systems*

Leakages in pipe and hose couplings shall only be repaired after relieving the systems of pressure.

Repair and replacement of couplings shall only be carried out using special equipment and by competent personnel, preferably the hose supplier or system supplier.

When cleaning jetting devices, replacing nozzles etc., the pump shall be stopped and the liquid pressure released from all parts of the system.

Where a pressure reduction valve has been installed, the adjusting screw for setting the working pressure shall be set to fully relieve the pressure.

On centrally controlled systems, the jetting device and pertaining hose shall be relieved of pressure.

Insofar as it is possible, the same shall be done when the person operating the jetting device leaves his/her workplace.

Section 20-11. *Inspection of high-pressure jetting systems*

The employer shall appoint a person with good knowledge and experience of high-pressure jetting systems to supervise the operation and maintenance of the system.

Chapter 21. Excavation work

Section 21-1. *Obtaining geotechnical expertise*

Before excavation work under the foundation level is initiated for building structures, the excavation shall be assessed by a person with geotechnical expertise.

In connection with the excavation of trenches along the foot of a slope or in a slope with a gradient towards the side of the trench of more than 1:10, the plans for the excavation shall be assessed by an experienced person with sufficient local geotechnical knowledge.

Similarly, special precautions shall be taken in connection with excavation work where the ground in the immediate vicinity of the trench is exposed to additional loads, e.g. near storage sites, retaining walls etc.

Section 21-2. *Work instructions and plans for the work*

Plans shall be in place before the excavation of trenches or shafts deeper than 2.0 m.

The plan shall:

- a) show the longitudinal profile with a description of soil types down to 1.0 m below the bottom of the trench or shaft for trenches without shoring;
- b) show typical cross sections. When shoring (bracing) is planned, this shall be indicated on the drawing;
- c) show where the excavated material is to be placed;
- d) contain work instructions that cover all work operations.

In the case of minor jobs and in emergencies, the plans can be simplified to a schematic.

Section 21-3. *Excavation of trenches that require shoring*

When digging trenches deeper than 3.0 m, the shoring shall be dimensioned by a qualified person and documentation of the calculations shall be available on request. When using prefabricated shoring or other means of personal protection in trenches, the instructions for use shall clearly show what depths and what soils the structure is designed for. The requirement for documentation of calculations in the workplace will then lapse. In this context, piles are not deemed to be prefabricated and shall be dimensioned by a qualified person for depths greater than 3.0 m.

Section 21-4. *Precautions against landslides*

For trenches less than 2.0 m deep, vertical walls without shoring may be used unless special elements of danger exist. For all other unshored trenches and shafts, the sides must be given a safe angle of slope. The angle of slope shall be checked using an angle template and level, or equivalent.

In frozen soil, the trench or shaft may be excavated with vertical sides if the excavation is to be filled before there is a risk of thawing. If the trench or shaft is deeper than the ground frost level, the walls below ground frost level shall be shored where there is a risk of a collapse causing personal injury.

Trenches and shafts with vertical sides that are deeper than 20 m shall have shoring or other means of personal protection.

Nobody must occupy the trench unnecessarily during removal of the shoring.

Section 21-5. *Placement of excavated materials*

Excavated materials shall be placed in such a way as to ensure that they cannot cause a collapse.

The toe of the excavated material must never be less than 1.0 m from the edge of the shaft or trench.

Trenches deeper than 1.0 m shall always be provided with one or more escape routes.

Section 21-6. *Supports and stabilisation of the ground*

Supports shall be erected as soon as possible after excavation of the ground, except where the stability of the ground renders this unnecessary from an employee safety point of view.

Excavated areas to which the employees have access shall be inspected regularly as regards the stability of the ground, and the supports shall be maintained accordingly.

Section 21-7. *Use of cofferdams during excavation work*

The construction, placement, alteration or removal of a cofferdam or caisson shall only take place under the supervision of a competent person.

All cofferdams and caissons shall be inspected regularly by a competent person.

Their stability and robustness shall be checked in an expedient manner.

Formwork, temporary supports and shoring shall be designed, dimensioned, installed and maintained so that they are able to withstand the loads to which they may be exposed.

Chapter 22. Safety signage, signalling and communication

Section 22-1. *Training and instruction in safety signage and signalling*

The employer shall ensure that the employees receive training and instruction in safety signage and signalling in the workplace.

The training shall include special requirements relating to safety signage, especially signs that contain words, and signalling in the workplace. The training shall include the meaning of the signs and signals and what behaviour is expected.

Section 22-2. *Information about safety signage*

The employer shall ensure that the employees and their safety representatives are provided with information about measures to be taken in connection with safety signage and signalling in the workplace. The information shall also be given to the occupational health service, where one is available.

Section 22-3. *Requirement for situational signalling*

When the situation so requires, light signals, audio signals or verbal instructions shall be used to notify of danger, prompt people to take specific actions and for emergency evacuation of persons.

When the situation so requires, hand signals or verbal instructions shall be used to guide persons carrying out work operations that entail danger or risk.

Section 22-4. *Requirement for verbal communication*

The employer shall ensure that the employees have good knowledge of the language used, so that they are able to pronounce and understand spoken messages correctly and act accordingly in a manner appropriate to preventing situations that may entail a risk of harm to life or health.

When safe execution of the work requires verbal instructions, the employer may only use employees who are able to understand such instructions.

Verbal instructions, including instructions agreed in advance, shall be in the form of short texts, sentences, phrases and/or individual words, and they shall be clearly understandable.

Verbal instructions may be given directly using the human voice or indirectly using a human or artificial voice announcement through a medium.

Section 22-5. Requirements for hand signals

Hand signals must be precise, simple, based on big movements, be easy to give and understand and clearly distinguishable from other similar signals.

If both arms are used at the same time, they must be moved symmetrically and only indicate one signal.

Section 22-6. Special rules on the use of signals

The employer shall ensure that:

- a) the person giving the signals, hereinafter called the signaller, uses arm and hand movements to give manoeuvring instructions to the person receiving the signals, hereinafter called the operator;
- b) the signaller is able to monitor all manoeuvres with his/her eyes without thereby putting him/herself at risk;
- c) if the conditions described in b) above cannot be met, that one or more additional signallers are deployed;
- d) the signaller's tasks consist exclusively of giving instruction in connection with the manoeuvring, and of attending to the safety of employees in the vicinity;
- e) the operator interrupts the manoeuvre being carried out and asks for new instructions if it proves impossible to carry out the order with the necessary degree of safety.

Section 22-7. Equipment to be used for signalling

The employer shall provide the signaller with equipment to ensure that:

- a) the operator is able to recognise the signaller without difficulty;
- b) the signaller is wearing one or more easily recognisable personal effects, such as a jacket, helmet, cuffs or wrist-bands, or uses a carry bat;
- c) the easily recognisable personal effects are in strong colours, preferably all in the same colour, and are used exclusively by signallers.

Part 4: Requirements relating to other work that involves risk

Chapter 23. Risk assessments, training and information in connection with manual work

Section 23-1. Risk assessment in connection with planning, design and execution of manual work

In connection with the planning, design and execution of manual work, the employer shall ensure that the organisational conditions that can entail a risk of harm to the health of employees are assessed, both individually and overall.

When assessing work that is to be performed manually, the employer shall particularly take into consideration:

- a) *The nature of the object*

Manual handling can especially cause harm to health if the object:

- is too heavy or too large,
- is unmanageable or difficult to hold on to,
- is unsteady or its content may be displaced,
- is placed so that it needs to be kept at a distance from the body or handled by bending or twisting the body, or
- due to its exterior shape or texture, can inflict injuries on the employee, especially in the event of a collision.

b) *Physical strain*

A physical strain can especially cause harm to health if it:

- is excessive,
- involves having to twist the body,
- can cause sudden movement of heavy objects, or
- is imposed with the body in an unsteady position.

c) *Layout of the working environment*

The layout of the working environment can cause increased risk of harm to health if:

- there is insufficient room to perform the work,
- the floor is uneven and can cause tripping, or is slippery in relation to the employees' footwear,
- objects must be handled at different heights due to differences in the level of the floor or work surface,
- the floor or support point is unstable,
- the workplace or working environment does not allow the employee to handle the object manually at a safe height or from an appropriate working position, or
- the temperature, humidity or ventilation is inappropriate.

d) *The work task*

The work task can especially cause harm to health if it involves one or more of the following:

- too frequent, repetitive and prolonged work operations that put particular strain on the muscular-skeletal system. Static work shall be reduced as far as possible,
- lifting, lowering or carrying over too great distances,
- not enough time for necessary rest or restitution, or
- a work pace determined by a process that the employee cannot adjust.

Section 23-2. *Training relating to ergonomically strenuous work*

In connection with ergonomically strenuous work such as heavy or repetitive work or work at computer screens, the employees shall receive training in how the work is organised, expedient work techniques, the choice and use of work clothes and the use of aids.

Section 23-3. *Information about risks associated with ergonomically strenuous work*

The employer shall ensure that the employees and their representatives are provided with necessary information about ergonomic risk factors associated with heavy and repetitive work and work at computer screens that may be harmful to health, and how to avoid harmful health effects.

When possible, the employees shall be informed about the weight and stability of objects they handle in their work.

The employees shall be informed about the health-related consequences of not performing the work or not using the computer screen work station in accordance with the training and guidelines.

Chapter 23A Work that may entail a risk of exposure to violence and threats of violence.

Section 23A-1. *Risk assessment of risk of exposure to violence and threats of violence*

The employer shall identify any work situation conditions that may entail violence or threats of violence for the employees. During planning, organisation and execution of the work, the employer shall ensure that an individual and joint assessment is conducted of any conditions that may entail a risk of violence and threats of violence.

The risk assessment shall pay particular attention to:

- the organisation and facilitation of the work,
- where, when and in what situations the employee may be exposed to violence or threats of violence,
- work performed alone,
- location and organisation of working hours,
- staffing,
- competence/expertise,
- design of work premises and technical solutions,
- the effect of implemented and planned preventive measures.

Section 23A-2. Training in connection with work that may entail a risk of exposure to violence and threats of violence

If work is to be performed that may entail a risk of exposure to violence or threats of violence, the necessary training and drills shall be carried out in prevention and handling of violence and threat situations. The training shall include use of safety equipment if relevant.

The employer shall ensure that training and drills are repeated and adapted to any significant changes in the risk assessment and otherwise as required.

Section 23A-3. Information in connection with work that may entail a risk of exposure to violence and threats of violence

The employer shall ensure that employees and their representatives are given the necessary information about risk factors related to violence and threats of violence, and implement measures and routines to prevent, handle and follow up violence and threat situations. The employees shall receive information about routines for notifying and reporting violence and threats of violence.

Section 23A-4. Measures against violence and threat situations

The employer shall implement the necessary measures based on the health and safety risks identified in the risk assessment.

The employer shall ensure that risks of violence and threats of violence are reduced or removed insofar as possible. When implementing measures, the following must in particular be taken into consideration:

- a) the organisation and facilitation of the workplace and the work that will be performed,
- b) systematic maintenance of relevant work equipment, etc., e.g. of alarm equipment where this is used,
- c) opportunity to summon help,
- d) staffing, including employees working alone.

Section 23A-5. Employer follow-up of employees exposed to violence or threats of violence

The employer shall ensure that employees that are exposed to violence and threats of violence receive the necessary follow-up, with regard to both the physical and mental strain that the incident may have caused.

Chapter 24. Work on operations control and safety monitoring

Section 24-1. Training and exercises in operations control and safety monitoring work

The employer shall ensure necessary training before the employees are assigned independent operations control or safety monitoring work. The training shall enable the employees to perform their regular work tasks and to handle situations that may arise in the event of critical operational disturbances.

The employees shall receive necessary training when changes are made to facilities, procedures etc.

Regular exercises shall also be organised in handling dangerous situations that may arise.

The content and scope of the training shall be documented.

Section 24-2. *Planning of operations control and safety monitoring (control room)*

When planning work that involves control of automatic systems, the adaptation shall be based on analyses of the process, system and assigned tasks. It must be possible to document the analyses.

The information system, control system and adaptation of the work in general shall be planned in accordance with the employees' physical and mental fitness.

Section 24-3. *Requirements relating to control rooms*

Control rooms shall be designed and located so as to ensure optimum operational safety for the system and the employees with regard to the risk of accidents. In particular, account shall be taken of the risk of fire, explosion and emissions of hazardous substances and biological material.

Section 24-4. *Requirement for system safety*

The employer shall ensure that the work is organised so as to provide the highest possible degree of system safety.

In the assessment, the employer shall give consideration to:

- the system's intrinsic safety;
- possibilities for incorrect operation in connection with operation and maintenance;
- possibilities for handling nonconformity and fault situations effectively;
- the employees' work load;
- the employees' experience and knowledge;
- the employees' physical and mental fitness.

Analyses shall be prepared that take account of the control room operations to be carried out in connection with:

- start-up of the system;
- normal operation;
- change of operating conditions;
- operational disturbances;
- critical operating conditions;
- shutting down and stopping;
- maintenance.

If the systems include computer systems, the analyses shall include both equipment and software.

Section 24-5. *Design of information systems and control devices*

The employer shall facilitate the work and position the equipment in accordance with the results of the analyses described in Sections 24-2 and 24-4 and having regard to ergonomic conditions.

Information shall be easily understandable and be based on uniform use of symbols and colour codes. The information system shall be designed so that the user can retrieve necessary information at all times for the tasks that need to be performed under different operating conditions.

Information systems shall be dimensioned for both normal and critical situations.

The design and choice of information systems, including control devices and information sensors, shall be based on the need for efficient operation and for reducing the risk of incorrect operation.

Control devices and information sensors shall be designed and placed in a logical setting to reduce the risk of incorrect operation. The employee must always have a good overview and not have to spend an unnecessary amount of time on necessary work operations.

Section 24-6. *Marking of control devices etc.*

Text affixed to the equipment that is of importance to the user shall be in Norwegian.

The instruction material that is necessary to ensuring safe operation and use of the equipment shall be in Norwegian. This also applies to information about how to respond in the event of fault warnings.

The control devices shall be clearly marked in Norwegian.

Section 24-7. *Instructions and plans for the work*

A plan must be in place that includes an overview of the division of tasks, manning and shift plans based on analyses as mentioned in Section 24-2.

Tasks shall be clearly defined and they shall be described and facilitated so that no harm to health arises as a result of, for example:

- too many or too strenuous tasks;
- monotonously few or unvaried tasks;
- an unclear division of labour between employees or between employees and their superiors;
- unclear deputy functions.

The plan shall also contain instructions and procedures for operation of the system from the control room. Start-up of the system, normal operation, change of operating conditions, operational disturbances, shutting down and stopping, and maintenance shall be described.

Instructions shall also be available on how the employees can get necessary urgent assistance to handle dangerous situations that may arise.

Instructions shall also be available on special tasks to be performed when accidents occur.

Section 24-8. *Registration and documentation of the work*

The employer shall ensure that systematic records are kept of the following:

- significant operational disturbances;
- near-accidents and accidents at the work site;
- changes made at the work site.

The registration and documentation shall form the basis for the assessment of changes and updates, and for the facilitation of operations control and safety supervision.

Chapter 25. Requirements for inspection, marking and filling of compressed air cylinders for diving and respiratory protection equipment

Section 25-1. *Inspection and testing*

Undertakings that inspect, test, label and top up breathing air must comply with recognised standards in their work with compressed air cylinders and cylinder valves.

Section 25-2. *Regular inspection*

The employer shall ensure inspection and hydrostatic pressure tests of compressed air cylinders and cylinder valves for breathing air for underwater use at least every other year, and of other compressed air cylinders for breathing air at least every five years.

The first inspection and hydrostatic pressure test can be performed three years after the marked date of manufacture.

Section 25-3. *Approval of inspector*

Inspections of compressed air cylinders and cylinder valves shall be carried out by an inspector approved by the Labour Inspection Authority.

Section 25-4. *Requirement for a competent person*

A person competent to perform inspections must have reached the age of 18 and have completed a course with training in

- a) regulatory requirements for inspection and filling;
- b) preparation and making arrangements for inspection;
- c) mechanical damage;
- d) corrosion theory for steel and aluminium;
- e) cleaning and inspection of valves;
- f) pressure testing – manner of operation and requirements;
- g) practical pressure testing;
- h) aids for the inspection;
- i) scrapping rules;
- j) marking and registration.

Section 25-5. *Equipment and qualifications*

The undertaking approved as an inspection body shall ensure that the competent person has the requisite qualifications and equipment for carrying out a fully satisfactory inspection.

Section 25-6. *List of inspected equipment*

The inspector shall keep a list of the inspected equipment, which shall include:

- a) the owner's name;
- b) the manufacturer's name;
- c) serial number;
- d) internal volume in litres;
- e) test pressure (in bar);
- f) month and year of the inspection;
- g) the result of the inspection and pressure testing;
- h) any modifications made to cylinders or valves;
- i) the competent person's signature.

The list shall be stored for at least ten years after the last inspection was recorded.

Section 25-7. *Stamping and marking*

Compressed air cylinders that a competent person has approved for continued use shall be punch-marked with the month and year of inspection and an inspection stamp. The inspection punch mark shall be placed immediately after the month and year. The markings shall be punched into the shoulder of the cylinder, preferably after the previous inspection date.

Section 25-8. *Rejection of compressed air cylinders*

Compressed air cylinders that are not approved for continued use shall be stamped with an X over the inspector's stamp, filling pressure, test pressure and filling gas.

Section 25-9. *Inspection certificate*

If it is impossible or inadvisable to mark the compressed air cylinder, for example because the cylinder is very small, the competent person shall issue an inspection certificate that the owner shall keep and present when the cylinder is filled. The inspection certificate shall contain:

- a) the owner's name;
- b) the manufacturer's name;
- c) serial number;
- d) the month and year of the inspection, and the inspection number;
- e) the competent person's signature.

Section 25-10. *Requirements for filling plant*

Compressed air systems for filling breathing air shall have:

- a) necessary filters and accessories,
- b) a pressure gauge for checking the filling pressure,
- c) a safety valve, and
- d) a pressure limitation valve (pressure control choke) for each outlet with different filling pressures, if the safety valve is not equipped with this function.

The compressor's safety valve can function as the safety valve for the highest filling pressure if the valve is set to that pressure.

The filling panel with accessories shall provide a clear overview to avoid incorrect operation.

The filling pressure gauge shall have a range of no more than twice the maximum filling pressure.

The safety valve for the outlet shall be adjusted and sealed to maximum 15% above the filling pressure stamped on the cylinder.

The pressure limitation valve shall be set so that the cylinder pressure at 15 °C does not exceed the filling pressure stamped on the cylinder.

Section 25-11. *Written instructions for operation and maintenance*

Written instructions shall be available for operation and maintenance of compressed air and filling systems.

Section 25-12. *Log*

A log shall be kept of the operating hours for the compressed air system's compressor. Any changes, repairs and replacements made to the compressed air system and the results of compressed air tests shall be entered in the log.

Section 25-13. *Breathing air testing*

The breathing air from the filling system shall be tested regularly for CO, CO₂, oil and water content by a person with the requisite knowledge.

The tests shall be adapted to the structure and operating conditions of the compressor.

The results shall be entered in the compressor log, which shall be signed by the person who carried out the tests.

Section 25-14. *Inspection of the filling pressure gauge and safety valves*

The filling pressure gauge and safety valves on the outlet and the final compression stage shall be checked every year. The employer shall appoint a person to check, and, if applicable, adjust and seal the safety valves.

Section 25-15. *Requirements of compressed air cylinders before filling*

Before cylinders are filled, they shall be checked to verify that the deadline for testing has not expired, that the inspection stamp is valid and that the valve is undamaged.

If the test deadline has expired or the cylinder does not have a valid inspection stamp, it must not be filled until it has been checked and tested.

If a cylinder or valve is damaged, or if damage is suspected, the cylinder shall not be filled until it has been checked by an approved inspector to the extent deemed necessary by the competent person.

Cylinders shall be filled so that the internal overpressure at 15 °C does not exceed the filling pressure stamped on the cylinder.

Section 25-16. *Requirements of persons who fill compressed air cylinders*

Compressed air cylinders shall only be filled by persons who

- a) have reached the age of 18,
- b) have been given the necessary training in compressed air cylinders, and
- c) have been made aware of the dangers associated with the work.

Chapter 26. Health and safety during work under water or under increased ambient pressure

Section 26-1. *Planning and risk assessment of diving operations*

Before diving operations are initiated, the employer shall map the dangers and difficulties the diver can be exposed to. Diving operations shall then be risk assessed and planned, and measures shall be implemented so that the diving operation can be performed safely with regard to the dangers the assignment may entail for the diver and any other employees involved.

The risk assessment shall emphasise all factors in the surroundings that can have a bearing on the diving operation.

Scuba diving with self-contained air supply shall not be planned with decompression stops.

Diving deeper than 50 metres may only be carried out as saturation diving in accordance with the diving regulations for offshore petroleum activities.

When planning diving operations, an approved diving medical physician shall be consulted as required.

Section 26-2. *Safety procedures*

Based on a risk assessment, the employer shall prepare safety procedures for safe diving; see Section 26-1. The procedures shall refer to the diving and treatment tables used.

The employer shall ensure that employees who participate in diving operations are familiar with the procedures to be used in connection with the diving.

Section 26-3. *Emergency response*

The employer shall prepare an emergency response plan, which must include manning, equipment and emergency procedures as well as measures that follow from or are supplementary to the emergency procedures, including the use of surface decompression chambers.

Emergency procedures for diving operations shall include cases where danger or accident situations may arise, including situations that can be perceived as critical. The emergency procedures must include a description of each person's duties and obligations in an emergency situation.

The employer shall provide training and exercises in emergency response plans and the duties of each person in hazard and accident situations.

The emergency response plan and emergency procedures shall be reviewed regularly and kept up to date.

Section 26-4. *Work instructions*

Written work instructions shall be prepared for each individual work assignment and the conditions under which the diving operation is to take place. The instructions shall include a description of the work assignment, the procedure for safe execution, special conditions that can affect the diving operation in question, what safety measures must be implemented and what qualifications the diver needs to ensure safe execution of the assignment.

The work instructions shall be made known to the employees concerned and be handed over in good time before the work is initiated.

Section 26-5. *The diving medical physician's participation*

The employer shall ensure that a diving medical physician contributes to preparing and maintaining safety procedures and emergency response plans, particularly as regards physiological, medical and hygiene factors.

Section 26-6. *Requirements for equipment for safe diving*

Based on the risk assessment, the employer shall make available necessary equipment so that the diving operation can be carried out in a completely safe manner.

Section 26-7. *Notification of decompression diving*

Diving operations planned with decompression stops shall be notified in writing to the Labour Inspection Authority in good time before the diving operation is initiated. If it is not possible to give notification in advance, it shall be sent as soon as possible.

Section 26-8. *Requirements of the notification*

The notification shall contain the following information:

- a) the name and registered address of the undertaking;
- b) the name of a contact person with telephone number and email address;
- c) the start time, place and duration of the diving operation;
- d) a description of the nature of the assignment;

e) confirmation that a hyperbaric chamber will be present at the dive site.

An explanation shall be provided when notification cannot be given in advance.

Section 26-9. Requirement for obtaining consent for test diving

Employers who wish to carry out test dives must obtain the Labour Inspection Authority's consent in advance.

Section 26-10. Content of application for consent for test diving

The application shall contain the following information:

- a) specification of the purpose of the diving operation;
- b) information about the activities that the applicant wishes to carry out;
- c) specification of the dive site;
- d) specification of when the diving operation is to be carried out;
- e) mapping of dangers and assessment of risk, and plans and measures to reduce the risk factors;
- f) a description of procedures to be established to ensure that the diving operation is carried out in accordance with applicable laws and regulations;
- g) a description of the employees' qualifications and the equipment to be used to ensure safe execution of the test diving operation;
- h) documentation of valid medical certificates for persons who will be deployed under water or under increased ambient pressure;
- i) declaration from the employer that those participating in the diving operation have the requisite competence;
- j) documentation that contact has been established with an approved diving medical physician who will be on standby during the diving operation;
- k) statement on the application from the safety representative or, if the undertaking does not have a safety representative, an employee representative;
- l) a declaration from the employer that necessary first aid equipment will be available;
- m) a declaration from the employer that all equipment to be used during the diving operation has been checked before the diving operation. The inspection must be documented in writing;
- n) emergency response plan for potential hazard and accident situations;
- o) a complete overview of any exemption applications of relevance to the diving operation;
- p) approval from the Regional Committee for Medical and Health Research Ethics.

Section 26-11. Requirement for diving certificate and medical certificate

The person assigned by the employer to carry out work under water or under increased ambient pressure must have a diving certificate that covers the applicable diving activity and a valid medical certificate.

Section 26-12. Basic qualification requirements

The employer shall ensure that everyone who participates in diving operations has the requisite:

- a) theoretical and practical training and instruction to deal with the hazards that the diving operation may entail;
- b) training in correct use and maintenance of the diving equipment;
- c) training in the use of first aid equipment, including oxygen treatment equipment;
- d) fitness of health for the work the person is to carry out.

Section 26-13. Qualification requirements for diving supervisors

The employer shall ensure that the diving supervisor:

- a) has relevant experience as a diver;
- b) has completed a diving supervisor course or can document equivalent knowledge;
- c) is able to lead the diving operation in a safe manner;

- d) is able to safeguard the diver's safety;
- e) has experience of using communication systems.

Section 26-14. *Qualification requirements for divers*

The diver shall have a diving certificate for the relevant depth and work operation and shall have the requisite knowledge for the tasks assigned.

Section 26-15. *Qualification requirements for standby divers*

The standby diver shall hold a diving certificate and be qualified for the relevant depth.

Section 26-16. *Qualification requirements for line attendants*

The line attendant shall have good knowledge of diving and the relevant diving operation. The line attendant must be familiar with the requirements of these regulations and the safety procedures. The line attendant must be familiar with the line signals and be able to use them.

Section 26-17. *Qualification requirements for diving instructors*

As a minimum, diving instructors providing practical training must:

- a) have the same type of diving certificate as the training aims to qualify for;
- b) have at least one year's experience of the type of diving in question;
- c) be fit to carry out instruction work;
- d) have basic knowledge of applicable regulations;
- e) have knowledge of emergency procedures and emergency response measures.

Section 26-18. *Qualification requirements for diving instructors for recreational diving*

Diving instructors providing practical training in undertakings that provide training of recreational divers shall either have a class A diving certificate or have undergone safety training in accordance with recognised European standards for training of recreational divers.

It must be possible to document the safety training.

Section 26-19. *Professional training and rescue diving*

The employer shall ensure that persons working underwater are qualified for the work. The employer shall ensure that divers have the necessary and specific professional qualifications required to perform work under water in a safe manner.

In addition to a class A certificate, persons performing rescue diving must have undergone professional training of at least two weeks' duration.

It must be possible to document the professional qualifications in writing.

Section 26-20. *Documented safety training – class A diving certificate*

The training for a class A diving certificate shall provide the basic theoretic knowledge and practical skills required to be able to stay and move safely under water. The training shall provide a foundation for being able to perform simple and light work under water down to a depth of 30 metres.

The training shall cover knowledge of systematic work on health, safety and the environment as well as applicable laws and regulations. The safety training shall cover the following:

- a) diving theory,
- b) diving physiology,
- c) first aid,
- d) decompression tables,
- e) communication systems,
- f) underwater hazards,
- g) risk assessment,
- h) introduction to the use of hyperbaric chambers,
- i) practical diving,
- j) use of diving equipment,
- k) use of common and simple work equipment,
- l) maintenance and repairs,
- m) surface procedures,
- n) basic diving supervision, and
- o) marking of the dive site.

The training shall include scuba diving with air as the breathing gas.

In the case of persons who will be diving without decompression for scientific purposes only, the requirement for an introduction to the use of hyperbaric chambers may be left out. The requirement for training in the use of simple work equipment under water, cf. Section 26-19, may be replaced by professional training in use of the work equipment required for the individual research assignment.

The training shall have a duration of at least 7 weeks.

Section 26-21. Documented safety training – class B diving certificate

The training for a class B diving certificate shall be based on class A. It shall provide the theoretical knowledge and practical skills required to be able to dive and work at depths down to 50 metres in a safe and secure manner. The safety training shall cover the following:

- a) the dangers that diving down to 50 metres can entail,
- b) physical and medical preconditions,
- c) surface-supplied diving,
- d) progression diving down to 50 metres,
- e) complications in connection with diving,
- f) use of hyperbaric chamber,
- g) use of wet bell,
- h) use of warm-water wet suit,
- i) operational conditions,
- j) diving equipment,
- k) common types of work equipment,
- l) common types of breathing gas, and
- m) diving supervision.

The training shall have a duration of at least 9 weeks.

Section 26-22. Requirements for nationals of another EEA country or Switzerland who intend to set up business in Norway

Nationals of another EEA countries or Switzerland who intend to set up business in Norway and perform underwater work must apply to the Labour Inspection Authority for a permit before starting such work; see Chapter 9 of the Regulations concerning Administrative Arrangements. A permit is granted if the applicant presents:

- proof of nationality, and
- a certificate of competence or other certificate of qualifications required for work in another EEA state or Switzerland.

Section 26-23. Requirements for nationals of another EEA country or Switzerland who intend to work temporarily in Norway

For nationals of another EEA state or Switzerland who are legally established in another EEA country or Switzerland and who intend to perform underwater work in Norway temporarily, Section 9-3 of the Regulations concerning Administrative Arrangements applies, in addition to the special provisions that follow from Section 9-4.

Section 26-24. Requirements for nationals of countries outside the EEA and Switzerland

Nationals of countries outside the EEA and Switzerland need a permit from the Labour Inspection Authority to practise as a diver and perform the function of diving supervisor or standby diver; see Chapter 9 of the Regulations concerning Administrative Arrangements.

Section 26-25. Minimum safe manning

As a minimum, diving operations shall be performed by a diving supervisor, a diver and a standby diver.

The manning shall otherwise be adapted to the tasks to be performed and the dangers that the divers can be exposed to in connection with the individual diving operation.

When rescue divers are deployed by helicopter, the crew can be reduced to two rescue divers when this is necessary due to limited space in the helicopter. One of the rescue divers shall be appointed diving supervisor. It is a condition that the line attendant function is attended to by a competent member of the helicopter crew.

Undertakings engaged in the training of recreational divers (recreational diving instructors) are exempt from the requirement in the first paragraph. At least two instructors shall be present during the practical training. The manning shall always be adapted to the hazards that the instructors can be exposed to in connection with the training. It must be possible to document the assessment of what is deemed to be safe manning. When two or more instructors are in the water at the same time, one of them shall be appointed diving supervisor.

Section 26-26. The duties of the diving supervisor and the standby diver

The employer shall ensure that the diving instructor and other participants in the diving operation are fit for the tasks assigned to them.

The diving supervisor shall:

- a) lead the diving operation;
- b) ensure that the safety and health of the diver and the other employees are attended to during the preparations for and execution of the diving operation;
- c) establish communication with the diver;
- d) keep an overview of the length of the umbilical in the water at all times;
- e) ensure that a log is kept of the diving operation;
- f) lead the surface decompression in the hyperbaric chamber and ensure that decompression is carried out in a safe manner and that injured divers receive treatment in accordance with applicable procedures and the advice of an approved diving medical physician;
- g) interrupt the diving operation if it is not safe to continue;
- h) provide assistance to the diver in the form of tools and equipment;

The standby diver shall:

- a) help to check the tightness and function of the diving equipment before the diving operation starts and that the lifeline or umbilical is securely fastened to the diver
- b) be ready to provide immediate assistance to intervene or assist the diver in an emergency situation.

Section 26-27. Monitoring diving operations

All conditions and equipment used in connection with a diving operation shall be supervised during diving. Particular emphasis shall be given to continuous monitoring of divers under water.

The dive site shall be marked during diving operations.

Section 26-28. *Use of diving and treatment tables*

Diving and stops during diving shall be facilitated and carried out in accordance with recognised diving and treatment tables for safe diving.

Section 26-29. *Hyperbaric chambers*

In connection with diving with decompression stops, a hyperbaric chamber shall be available and ready for use at the dive site.

When warranted by the risk assessment, a hyperbaric chamber shall be available within reasonable time in connection with diving without decompression stops.

The choice of hyperbaric chamber shall be based on the duration and scope of the diving operation.

Section 26-30. *Communication and communication systems*

In connection with diving operations, voice communication shall be used between the diver and diving supervisor in a language that they both master.

When a helicopter with two rescue divers is used, cf. Section 26-25 third paragraph, voice communication shall be used between the divers and the line attendant.

A line shall be used in addition to voice communication, unless this reduces safety. In such case, line signals must have been agreed in advance. Training shall be given and exercises organised in the use of line signals.

In cases where voice communication fails, the dive shall be interrupted unless it needs to continue in order to save lives.

Undertakings engaged in the training of recreational divers (recreational diving instructors) are exempt from the requirement in the first paragraph if the risk assessment shows that voice communication is clearly unnecessary.

Section 26-31. *Reserve breathing gas*

For all types of breathing equipment used in connection with diving, each diver shall have sufficient breathing gas to be able to get to a safe location.

Section 26-32. *Logging of diving operations*

In connection with diving operations, the following information shall be logged for each individual dive and be verified by the diving supervisor:

- a) date,
- b) dive site,
- c) the nature and scope of the work assignment,
- d) names of participants and allocated tasks,
- e) depth and dive profile for each diver,
- f) gas mixture (if other than air), and
- g) any undesirable incidents / nonconformities.

The above-mentioned information shall be stored for 10 years. The information shall be available to the Labour Inspection Authority, the safety representative and each individual diver.

Section 26-33. *Documentation*

Undertakings that carry out diving operations shall prepare and make available complete documentation, including:

- a) an organisation plan for the undertaking that shows how the diving activities are organised,
- b) each person's duties in connection with the diving activities,
- c) safety procedures,
- d) contingency plans, including emergency procedures,
- e) work instructions,
- f) accident reporting procedures,
- g) the diving and treatment tables used, and
- h) logging of the diving operation,
- i) maintenance procedures for the diving equipment, and keeping of inspection logs.

Section 26-34. *Requirements of the diving equipment*

The employer shall ensure that the diving equipment to be used is designed and arranged with sufficient durability and functionality to be capable of protecting the employees from harm to life and health during use of the equipment, including accidents, strain injuries and exposure that may cause harm to health in the short or long run.

All equipment worn by the diver shall be in accordance with applicable international or European standards, or national standards where they exist.

The employer shall assess the risks and implement necessary measures to ensure that diving equipment placed at the disposal of employees is suitable for the diving operation and fit for purpose.

It shall be possible to use the diving equipment without any risk of harm to life or health for the person performing the diving operation.

Section 26-35. *Requirements for umbilical and lifeline*

Lifelines and fixing devices shall be able to withstand the stresses they can be exposed to and have sufficient strength to lift the diver out of the water. The same applies to the umbilical if it is used as a lifeline.

Section 26-36. *Requirements relating to diving panels*

In connection with surface-supplied diving operations, equipment (a diving panel) shall be in place to supply the diver with breathing gas in all predictable situations. The design of the diving panel shall provide a good overview and prevent incorrect operation.

The breathing gas shall have the correct composition, temperature and flow rate, and be supplied in the correct amount.

Section 26-37. *Requirements for communication equipment*

The communication equipment shall be designed to work under all conditions and so that the person monitoring the dive can clearly hear the diver breathing and talking.

Voice communication shall be shielded from noise, interference and other disturbances.

Section 26-38. *Requirements for hyperbaric chambers*

The employer shall ensure that the hyperbaric chamber, the hyperbaric chamber panel and piping are designed so as to ensure that the chamber provides adequate protection for employees in connection with decompression or treatment of decompression sickness. The hyperbaric chamber shall be designed and fitted out for its purpose.

Section 26-39. *Requirement for regular maintenance and inspection*

Work and diving equipment in use shall be subject to regular maintenance and inspection.

Section 26-40. *Cleaning*

The employer shall ensure that the diving system and personal diving equipment is cleaned regularly.

Section 26-41. *Requirement for following instructions for use*

In connection with diving operations, the employer shall comply with the instructions prepared by manufacturers or others relating to the use of equipment, the conditions it can be used under and limitations on use.

The employer shall also ensure that the manufacturer's instructions are complied with in connection with cleaning and maintenance of the work and diving equipment.

Section 26-42. *Health requirements*

Medical certificates shall be issued by an approved diving medical physician. Such medical certificates shall be valid for one year.

If, as a result of a medical examination, an employee is found to have a disease or injury that increases the risk of accidents or harm to health in connection with diving operations, the employee shall not be used for such work.

The employer may demand that the diver undergoes a new medical examination when the employer or diver finds that there are health problems that may have a bearing on the diver's health or ability to attend to his/her own or others' safety.

Section 26-43. *Treatment of decompression sickness*

The employer shall ensure that the diver can be exposed to compression in the event of an emergency situation. Treatment of decompression sickness in a hyperbaric chamber shall start as soon as possible.

Section 26-44. *Requirement for first aid equipment etc.*

The employer shall ensure that appropriate first aid equipment is readily available in all places where the working conditions so require. Oxygen treatment equipment shall also be available at the dive site.

Section 26-45. *Principal undertaking*

If more diving undertakings are to carry out a diving assignment together, they shall appoint one principal undertaking that will coordinate the duties and measures that follow from these regulations. The appointed principal undertaking shall be documented in writing.

Chapter 27. Rock work

Section 27-1. *Pre-investigation in connection with rock work*

Before the work commences, geological, rock-technical and other matters shall be investigated insofar as it is necessary to carry out the work safely.

Section 27-2. *Risk assessment and HSE plan for rock work*

A health, safety and working environment (HSE) plan shall be prepared in writing. The HSE plan shall be prepared on the basis of a risk assessment. The plan shall be readily available in the workplace and shall be stored as long as necessary for safety purposes. The HSE plan shall be regularly updated and be worded so that it can be understood by each individual employee.

The HSE plan shall be prepared before the work commences and shall be revised if significant changes, extensions or alterations take place in the workplace.

The HSE plan shall make it clear that the risks to which the employees are exposed in the workplace have been identified and assessed and shall describe what measures should be implemented to prevent injuries and accidents. In particular, the plan shall show that a safety assessment has been carried out of the design, use and maintenance of the workplace and equipment.

Where relevant, the HSE plan shall include measures to ensure

- safe transport of persons;
- rock support;
- stabilisation of the ground;
- safety in connection with the risk of rock-falls or rock-slides;
- inspection of the workplace;
- registration and keeping records of measurements.

If employees from several undertakings are present in the same workplace, the HSE plan shall describe the objective, measures and procedures for the principal undertaking's coordination of the HSE measures.

For each workplace, the HSE plan shall describe what rules to follow to safeguard the employees' health, safety and working environment, and to achieve safe use of methods and equipment. In addition, the HSE plan shall contain an overview of escape routes, information about the use of evacuation, rescue and first aid equipment, and what measures to take in an emergency situation in or near the workplace. The HSE plan shall also contain provisions relating to the rescue organisation.

The HSE plan shall contain an overview of rock caverns in a scale that makes the presentation understandable. In addition to tunnels and areas of excavation, the overview must show the known features that may have a bearing on the operations and safety.

The HSE plan shall contain information about key aspects of the ventilation system and shall also describe equipment and measures required to prevent explosions.

If harmful gases are or may be present in the air, the HSE plan shall describe the available protective equipment and the preventive measures that have been implemented.

The HSE plan shall provide a detailed description of what measures to take to prevent, detect and combat fire and the spread of fire.

Section 27-3. *Organisation of rock work*

The work stations shall be designed, constructed, equipped, put into operation, used and maintained so that the employees can carry out their tasks without jeopardising their own or other employees' health and safety.

The work stations must be kept in good order and hazardous substances or deposits removed or controlled in order not to endanger the employees' health and safety.

The work stations shall be designed and constructed in accordance with ergonomic principles, at the same time as account must be taken of the need for employees to follow the work operations taking place at their work stations.

In all workplaces, the activities shall be supervised by the employer or a person appointed by the employer. This person must have the competence required to exercise the supervisory function.

In all workplaces, there must be a sufficient number of employees with the requisite skills, experience and training to perform the tasks assigned to them.

Work stations for underground rock work shall be constructed, operated and equipped and maintained so that employees can work and move in them with a minimum of risk

Galleries/drifts shall be signposted so that it is easy for the employees to find their way around.

Work involving a special risk and work that can give rise to serious risk in combination with other activities shall only be carried out by employees who are specifically authorised by the employer and who have specialised skills in that particular area. Such authorisation shall specify the conditions to be met and the precautions to be taken before, during and after completing the work.

Section 27-4. *Notification obligation*

The employer shall notify the Labour Inspection Authority as soon as possible of any serious situations of danger that arise in the workplace. The employer shall confirm such notification in writing within a reasonable period of time, and the safety representative shall be issued with a copy of the confirmation.

Section 27-5. *Instructions for inspection and securing work*

The employer shall prepare instructions to ensure that:

- inspections are carried out on a continuous basis of the rock and of previously completed securing work;
- loose rock that could be dangerous is removed as soon as possible or safely secured;
- rock scaling is carried out from a safe position by employees with experience and an understanding of scaling work;
- visibility, lighting and sound conditions in the workplace are satisfactory where scaling is carried out using manual tools;
- information about any special matters with a bearing on the securing work is passed on to the next shift and registered in writing, and that the documentation is kept in the workplace for the duration of the work;
- barriers are put in place as soon as possible around areas in which there may be a risk of uncontrolled rock-falls or rock-slides, and that the barriers are not removed until inspection and necessary scaling or securing has been carried out.

Section 27-6. *Supervision and communication*

In order to protect the employees from danger while they are carrying out their tasks, the workplace shall be supervised by the employer or persons appointed by the employer. Such supervision may only be carried out by persons who have the necessary skills and competence.

When required in the HSE plan, manned work stations shall be visited by an inspector at least once during each shift.

The employer shall take necessary measures to put in place alarm systems and other means of communication as necessary in order to initiate immediate assistance, evacuation and rescue operations should the need arise.

When a work station is manned by a single employee, it must be ensured that the employee is able to keep in contact by telecommunication. In cases where the means of communication are not sufficient to safeguard the employees' health and safety, manned work stations shall be inspected at least once every two hours.

A system must be in place to make it possible to keep records of employees who are deployed underground at any time and where they are likely to be.

Section 27-7. *Above-ground rock-falls and rock-slides*

The work shall be planned having regard to those parts of the HSE plan that concern the risk of rock-falls or rock-slides. As a preventive measure, the height and gradient of excavated overburden and excavation faces should therefore be adapted to the nature of the underlying surface, the quality of the rock and the excavation methods.

Before work commences or is resumed, overburden or excavation faces above work areas or traffic routes shall be inspected for loose material and rock. If necessary, the walls shall be scaled.

Section 27-8. *Landfill sites for excavated material and other storage sites*

Landfill sites for excavated material, waste heaps, slag heaps and other storage sites, as well as sludge basins, shall be designed, constructed, operated and maintained so that they are stable and so as to safeguard the employees' health, safety and working environment.

Section 27-9. *Measures against air pollution*

The employer shall ensure that adequate measures are put in place where substances associated with a health and safety risk can be emitted to the air. These measures shall:

- a) remove or collect the pollutants at source, or
- b) dilute the pollutants to a level at which they do not put employees at risk.

The ventilation system shall be designed and operated so that it ensures satisfactory air quality in areas that are worked in or occupied. The ventilation parameters shall be measured and recorded on a regular basis.

In places where operational preparations, demolition work or other work is carried out under special operational circumstances that prevent the installation of satisfactory permanent ventilation, special measures shall be taken to safeguard the employees' health and safety, for example by installing temporary ventilation.

The employees shall be instructed as necessary about measures to avoid exposure to air pollution.

Maintenance shall include the removal of any potentially harmful deposits and impurities from ventilation installations.

Section 27-10. *Underground transport*

Underground transport systems shall be installed, operated and maintained so as to safeguard the health and safety of the employees who operate or use them, or who occupy nearby areas.

Section 27-11. *Requirement for personal lamps for rock work*

Where emergency lighting cannot be installed in the workplace, the employees shall be equipped with personal lamps.

When working underground, the employees shall be equipped with personal lamps that are suitable for the purpose.

Section 27-12. *Explosives and initiating devices for use in rock work*

The storage, transport and use of initiating devices shall be carried out by duly authorised competent persons. The tasks shall be organised and performed in such a way that there is no risk to the employees.

Section 27-13. *Lightning warnings in connection with rock work*

Where electrical initiators are used, it must be possible to warn of lightning in a quick and reliable manner when there is a risk of thunder storms.

Section 27-14. *Requirements for equipment and systems in connection with rock work*

Any mechanical and electrical equipment that is located in an area where there may be a risk of fire and explosion from the ignition of gas, vapour or volatile liquids shall be suitable for use in such areas.

If necessary, the equipment shall be fitted with suitable protective devices and fail-safe systems.

Mechanical equipment and plant must be of adequate strength and free from visible defects and suitable for their intended use.

Electrical equipment and plant shall have sufficient capacity and strength for their intended use.

Mechanical and electrical equipment and installations shall be installed and protected so as to prevent danger.

Section 27-15. *Maintenance of equipment and plant in connection with rock work*

An appropriate programme shall be prepared for systematic examination, maintenance and, if appropriate, testing of mechanical and electrical equipment and plant.

Maintenance, examination and testing of all parts of the plant or equipment shall be carried out by a competent person. The maintenance work shall be carried out with due regard to ongoing activities. Records of examinations and tests must be kept and stored in an appropriate manner.

Where a ventilation system is used, it must be kept in good working order.

Adequate safety equipment must be maintained ready for use and in good working order at all times.

Section 27-16. *Drilling with drilling rigs*

The employer shall ensure that nobody occupies the danger zone during drilling with rock drilling rigs for mine and tunnels excavation, and that operators are adequately protected against rockbursts.

During rock drilling operations, all harmful rock dust shall be removed insofar as it is possible.

Section 27-17. *Use of combustion engines in rock work*

Combustion engines used underground shall be inspected regularly and adjustments made as necessary. A log shall be kept of inspections and adjustments.

Petrol or gas must not be used as fuel for combustion engines underground. This prohibition does not apply to emergency vehicles.

Section 27-18. *Hazardous and flammable substances in connection with rock work*

Measures shall be taken to consider quantities and concentrations of hazardous and potentially explosive substances in the air.

When measures are in place that are activated automatically, records shall be kept of measured values as provided for in the HSE plan.

Smoking is prohibited in areas subject to particular fire or explosion hazards. It is also prohibited to use open flame, and to carry out work that can entail an ignition hazard unless adequate safety precautions are taken to prevent the occurrence of fires or explosions. When working underground in mines or quarries where hazardous gases could be present or in mines containing flammable dust, it is also prohibited to carry smoking tobacco or any object that can be used to produce a flame.

When working underground in mines or quarries where hazardous gases could be present or in mines containing flammable dust, torch cutting, welding and similar work may only be carried out by way of exception. Where an exception is made, special measures shall be taken to safeguard the health and safety of employees.

Section 27-19. *Mines and quarries with a gas hazard*

Mines and quarries shall be deemed to be subject to a gas hazard where it cannot be precluded that firedamp will accumulate in a volume that can form a potentially explosive atmosphere.

Measures shall be taken to identify areas of risk, protect employees on production sites that are being extended towards or into such areas, and to gain control of the risk.

While work is in progress, account shall be taken of possible firedamp emissions. Measures shall be taken to remove any risks associated with firedamp as far as possible.

Ventilation measurements as mentioned in Section 27-9 shall be supplemented by firedamp measurements.

Firedamp levels shall be continuously monitored in discharged air flows in places where the construction and extraction are mechanised and at excavation faces etc. where one is dependent on mechanical ventilation.

Only explosives and initiating devices that are designed for use in mines susceptible to firedamp may be used.

Employees shall be protected in areas where a sudden release of gas can occur, with or without entrainment of broken minerals or rock, rockbursts or water inflow.

Section 27-20. *Protection against explosion hazard in connection with rock work*

All necessary measures shall be taken to combat and prevent the formation of explosive atmospheres.

In areas with an explosion hazard, all necessary measures shall be taken to prevent the ignition of explosive atmospheres.

Section 27-21. *Mines and quarries containing flammable dust*

Coal mines shall be deemed to be susceptible to flammable dust, except where the HSE plan shows that none of the coal seams being worked contain dust liable to propagate an explosion.

Only explosives and initiating devices that are intended for use in mines susceptible to flammable dust may be used in such mines.

Measures shall be taken to reduce flammable dust deposits and to remove, neutralise or bind the dust.

The propagation of flammable dust or firedamp explosions, which are liable to trigger further flammable dust explosions, shall be limited by a system of explosion barriers. The location of such explosion barriers shall be described in a document that must be kept updated and be available in the workplace.

Section 27-22. *Protection against fire hazard in connection with rock work*

In all places where workplaces are designed, constructed, fitted out and used, put into operation or maintained, suitable measures shall be taken to prevent the outbreak and spread of fire. Measures shall be taken so that any outbreak of fire can be stopped quickly and effectively.

The amount of combustible materials that is kept underground shall be limited to what is absolutely necessary.

When it is necessary to use hydraulic fluids, such use shall, as far as possible, be limited to fluids that are not easily ignitable so as to avoid the risk of fire and spread of fire. The hydraulic fluids must satisfy specifications and test conditions relating to fire resistance and hygiene criteria.

If hydraulic fluids are used that are not in accordance with such specifications, conditions and criteria, further precautions shall be taken to avoid increasing the risk of fire and spread of fire.

Section 27-23. Evacuation and rescue equipment in connection with rock work

The employer shall ensure that appropriate evacuation and rescue equipment is available and maintained.

The employees shall have respiratory protection equipment available and within reach at all times, so that they can withdraw to safety.

The employees shall receive training in the measures that are expedient in emergency situations.

The equipment shall be maintained and be ready for use at all times.

Appropriate and sufficient breathing and resuscitation equipment shall be available in all areas where employees can be exposed to harmful atmospheres. The equipment shall be properly stored and maintained.

Section 27-24. Training in the use of first aid and resuscitation equipment in connection with rock work

A sufficient number of employees shall receive training in the use of available first aid equipment and be present at the workplace.

Section 27-25. Rescue organisation in connection with rock work

A suitable rescue organisation shall be established so that appropriate action can be taken rapidly and effectively in the event of any serious accident.

In order to be able to provide assistance at all underground sites, the rescue organisation shall have a sufficient number of trained rescue workers and appropriate rescue equipment at its disposal.

Section 27-26. Safety drills in connection with rock work

Regular safety drills shall be organised in all workplaces that are normally manned.

The primary purpose of such drills is to train and check the skills of those employees to whom special duties have been assigned in an emergency situation relating to the use, handling or operation of emergency equipment.

Section 27-27. Medical examinations of employees in connection with rock work

If the risk assessment shows that employees are exposed to gas or dust that puts them at risk of developing pneumoconiosis or other harmful conditions, the employees shall undergo medical examinations adapted to the risk to which they are exposed.

The medical examination shall be carried out before the employees start on any work where they risk exposure. Such examinations shall be carried out at regular intervals thereafter and at least every five years. The content and frequency of the examination shall be decided by a medical practitioner based on the employee's health and the nature, degree and duration of the exposure.

On termination of the employment relationship, the medical practitioner will decide whether there is a need for a medical examination. If further follow-up is required, the employees shall be informed about this in writing.

Section 27-28. *X-ray examinations of employees in connection with rock work*

Employees who are exposed to dust that puts them at risk of developing pneumoconiosis shall undergo an X-ray examination of the lungs before the work commences. This does not apply to employees who have undergone such an examination in the course of the past five years.

An X-ray examination of the lungs shall also be carried out whenever it is considered necessary. The medical practitioner decides whether this is necessary and the frequency of such examinations on the basis of the employee's health condition and the nature, degree and duration of exposure.

Chapter 28. Work in connection with carbon dioxide extinguishing systems

Section 28-1. *Requirement for instructions on installation and testing of carbon dioxide systems*

The employer shall ensure that instructions for installation and testing provide adequate safeguards against accidental release of such systems. The employer shall ensure that safety measures are implemented as necessary.

Section 28-2. *Alternative measures when carbon dioxide systems are inoperable*

When carbon dioxide extinguishing systems are rendered inoperable due to repairs, alternative fire preparedness measures shall be considered.

Section 28-3. *Putting carbon dioxide systems back into operation following repairs or inspection*

Before a carbon dioxide system is put back into ordinary operation after repairs or inspection, it must be ensured that the system is in good working order.

Section 28-4. *Evacuation routes*

Whether it is necessary to establish an additional evacuation route from rooms containing or protected by carbon dioxide that do not have direct access to the open air or two independent escape routes, shall be considered in each individual case.

Section 28-5. *Precautions in connection with the installation of carbon dioxide systems*

In connection with the installation of carbon dioxide systems, necessary measures shall be taken to ensure that the installation can be carried out in a completely safe manner.

Before starting work on the release mechanism and connection between the manifold and the individual cylinders

- a) the cylinders must be in place and properly fastened. Only one protective cylinder valve cap may be removed at any one time, should this be necessary for alignment purposes;
- b) installation of the carbon dioxide piping must be completed;

- c) other work in the carbon dioxide room must be completed;
- d) installation of the release cabinet with valves and locking facilities must be completed,
- e) the door to the carbon dioxide room must be fitted with a lock;
- f) the main valves' 'open' and 'closed' position indicators must be checked by the work foreman;
- g) the main valves must be set to the 'closed' position and locked.

The protective cylinder valve caps shall remain in place on the cylinders until the work mentioned in the first and second paragraphs has been completed and work on adjusting pull cords etc. and on making up the connection between the cylinders and manifold is about to start.

Starting cylinders and release mechanisms must not be connected until the piping between the main valves and the cylinders has been tested for leakages.

Only those involved in the work shall have access to the carbon dioxide room while the release mechanism is being adjusted. The door to the carbon dioxide room shall always be locked when the room is unoccupied.

Section 28-6. *Precautions when testing carbon dioxide systems*

If testing of the carbon dioxide system involves operation of one or more main valves, the rooms protected by carbon dioxide must be unoccupied

Section 28-7. *Locking up carbon dioxide systems*

When the installation of a carbon dioxide system is completed, the carbon dioxide room and the release cabinet shall be kept locked. Before locking up, it must be ensured that the main valves are closed.

Section 28-8. *Precautions in connection with repairs and inspections of carbon dioxide systems*

Before starting any repair and inspection work in rooms protected by a carbon dioxide extinguishing system,

- a) the release mechanism for these rooms shall be effectively secured so that panic release of the system is not possible;
- b) the system shall be locked by closing and locking the main valves and, if applicable, the distribution valves;
- c) if the main valves of a system cannot be locked in the closed position, the system shall be secured by installing a spectacle flange on high pressure pipes before or immediately after the main valve and setting it to the closed position.

Section 28-9. *Repairs, maintenance and inspection of carbon dioxide systems*

In connection with repairs, inspection and replacement of carbon dioxide systems, the rules for installation of a new carbon dioxide system shall be complied with insofar as they are applicable.

If repairs, maintenance or inspection of a carbon dioxide system involves operation of one or more main valves, the rooms protected by carbon dioxide must be unoccupied.

Chapter 29. Work in or on tanks, pipelines, rooms etc. where flammable products or hazardous substances could be present

Section 29-1. *Work where there is a risk of fire or explosion*

When an undertaking plans to carry out work in or on tanks, rooms, pipelines or similar where there is a possibility that flammable products or hazardous substances have accumulated, the undertaking shall implement measures as necessary to ensure that the work can be carried out without risk to life or health.

Before the work commences, the undertaking shall see to inspections and necessary measurements to ensure that the working atmosphere is free of hazards. Such inspections shall be carried out by a competent person who has been specially trained for the task. When the working atmosphere is deemed to be free of hazards, the inspector shall issue a certificate permitting the work.

The undertaking shall notify the Labour Inspection Authority of who is assigned the task of inspector at any time.

Chapter 30. Risk of avalanches in occupancy areas and work areas

Section 30-1. *Assessment of avalanche risk in connection with construction work*

The employer shall ensure that a proper inspection is carried out and a report prepared as the basis for a risk assessment of the avalanche risk. If there is a risk of accidents due to avalanches in or on work sites, access roads, residential and occupancy areas, an avalanche expert shall carry out an inspection to consider what securing and emergency measures it may be necessary to implement. At the same time, any precautions that need to be taken in situations where there is a risk of an avalanche shall be determined.

Section 30-2. *Requirement for preparedness where there is an avalanche risk on a construction site*

On construction sites where an avalanche risk has been identified, emergency preparedness shall be established of a scope and with equipment as decided in consultation with the expert and the local public rescue service. Personal protective equipment shall be made available to the crew, and rescue and first aid equipment shall be procured as necessary.

Regular drills shall be organised.

Section 30-3. *Management and coordination of emergency preparedness*

Where several employers are involved in construction activities, emergency preparedness shall be managed and coordinated by the principal undertaking.

Section 30-4. *Instructions and information about avalanche risks*

Employees who enter areas where there is an avalanche risk shall be instructed about the dangers by means of posted notices or in another expedient manner, and they shall be obliged to comply with the safety instructions that are issued. All access roads where there is an avalanche risk shall be clearly marked.

Part 5: Register of exposed employees

Chapter 31. Register of exposed employees

Section 31-1. *Register of employees exposed to carcinogenic or mutagenic chemicals and lead*

The employer shall ensure that a register is kept of:

- a) employees who are or may be exposed to carcinogenic or mutagenic chemicals classified as Carc. 1A, Carc. 1B, Muta. 1A or Muta. 1B under the Regulations of 16 June 2012 No 622 on the classification, labelling and packaging of substances and mixtures (CLP).
- b) employees who are or may be exposed to substances, mixtures or processes on the following list:
 - work involving production of auramine,
 - work involving exposure to polycyclic aromatic hydrocarbons (PAH) which occur in soot, tar or pitch,
 - work involving exposure to dust, fumes or mist emitted during calcination and electrolytic processing of nickel from ore,
 - work that involves highly acidic processes for the production of 2-propanol,

- work that entails exposure to hardwood dust, as well as substances or mixtures released during such processes.
- c) employees who work with lead and lead compounds.

The register shall include the individual employee's name, national ID number, position and workplace, and information about which hazardous chemicals the employee is exposed to, how and in what concentrations the exposure takes place, and the time and duration of the exposure. The register shall not contain any other information.

The information about individual employees shall be stored for at least 60 years after the exposure has ceased. The register shall not be destroyed in whole or in part except by permission from the Labour Inspection Authority.

Section 31-2. Register of employees who have been or may be exposed to fibrous asbestos dust

The employer shall keep a register of employees who must attend medical examinations as mentioned in Section 4-13.

The register shall include the employees' name, national ID number, position, date of employment, nature and duration of the work, and the exposure the employees are exposed to. The register shall also contain information about the date of the most recent medical examination and the name of the medical practitioner who conducted the examination. The register shall not contain any other information.

The information about individual employees shall be stored for at least 60 years after the exposure has ceased. The register shall not be destroyed in whole or in part except by permission from the Labour Inspection Authority.

Section 31-3. Register of employees exposed to biological agents

The employer shall keep a register of employees who are or have been exposed to biological agents in infection risk group 3 or 4 and biological factors with the D notation, see Section 6-1 of the Regulations concerning Action and Limit Values. The register shall include the employees' name, national ID number and the type of work that has been performed and, if possible, the biological factor to which the employees have been exposed. The register shall also contain information about exposures in connection with any accidents or incidents.

The register shall be stored for at least 10 years after the exposure has ceased.

In the following cases, the register shall be stored for up to 40 years following the last known exposure that could potentially cause infection:

- a) by biological agents known to be capable of giving rise to persistent or latent infections;
- b) that, in the light of present knowledge, are undiagnosable until illness develops many years later;
- c) that have particularly long incubation periods before illness develops;
- d) that result in illnesses that recrudescence at times over a long period despite treatment; or
- e) that may have serious long-term sequelae.

The register of exposed employees shall be placed at the disposal of the Labour Inspection Authority if the undertaking is discontinued.

Section 31-4. Register of employees exposed to ionising radiation

The employer shall keep a register of employees who work with ionising radiation. The register shall contain information about the employees' name, address, national ID number, current position, date of employment and individually measured radiation doses.

Section 31-5. Register of employees exposed to hazardous substances in connection with rock work

The employer shall ensure that a register is kept of employees who are exposed to hazardous substances during rock work.

The register shall contain information about the employees' name, national ID number, position, workplace, the nature of the work and the nature, extent and duration of the exposure. The register shall not contain any information of a private nature.

The information about individual employees shall be stored for at least 60 years after the exposure has ceased. The register shall not be destroyed in whole or in part except by the permission from the Labour Inspection Authority.

Section 31-6. *Access to information in registers*

Employees who are listed in registers regulated under this chapter shall be informed about and have access to the information that concerns them personally.

Information in the register that is not of a personal nature shall be made known to the employees.

The register shall be available to safety and health personnel, safety representatives, members of working environment committees and others who have special duties relating to safeguarding health and safety in the workplace, and the Labour Inspection Authority.

Section 31-7. *Transfer of registers to the Labour Inspection Authority*

If an undertaking with a register of exposed employees is discontinued, the register shall be transferred to the Labour Inspection Authority.

Part 6: Final provisions

Chapter 32. Final provisions

Section 32-1. *Penal sanctions*

Wilful or negligent violation of these regulations or decisions made pursuant to these regulations, or aiding and abetting thereto, is a criminal offence pursuant to Chapter 19 of the Working Environment Act.

Section 32-2. *Fine for violation*

If anybody acting on behalf of the undertaking has violated provisions in these regulations or decisions made pursuant to these regulations, the undertaking may be fined pursuant to Section 18-10 of the Working Environment Act.

Section 32-3. *Transitional provision*

Diving certificates issued under the Regulations of 30 November 1990 No 944 on diving will remain valid for the type of diving the certificates were issued for.

Section 32-4. *Entry into force*

These regulations enter into force on 1 January 2013.