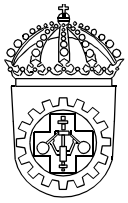

WORK WITH LABORATORY ANIMALS

Ordinance of the Swedish National Board of Occupational Safety and Health containing Provisions on Work with Laboratory Animals, together with General Recommendations on the implementation of the Provisions

Adopted 17th May 1990

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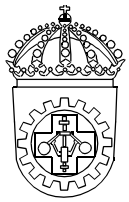
Ordinance of the Swedish National Board of Occupational Safety and Health containing Provisions on Work with Laboratory Animals



Adopted 17th May 1990

The following Provisions are issued by the National Board of Occupational Safety and Health pursuant to Section 18 of the Work Environment Ordinance (SFS 1977:1166).

Scope

Section 1
These Provisions apply to work with laboratory animals. For the purposes of these Provisions, such work is also taken to include continuous activities such as washing up, cleaning, the operation and maintenance of facilities, furnishings and equipment, and the open handling of fodder, bedding material and other materials needed for the work.

For the purposes of these Provisions, the term "laboratory animals" denotes animals bred or used for scientific research or education, medical diagnosis, the production or control of drugs or other comparable purposes.

These Provisions do not apply to work in connection with field experiments or experiments relating to livestock production or game research. Nor do they apply to work included in breeding which is mainly concerned with livestock production or suchlike but where the breeding of laboratory animals forms a minor part of the activity.

Section 2
These Provisions do not apply to a person who, singly or together with a member of his or her family, engages in commercial activity with no employees.

General

Section 3
Work shall be planned and conducted in such a way that the personnel are not exposed to unnecessary contact with allergens, infectious agents or other harmful substances and are otherwise protected against ill-health and accidents.

Section 4
An employer shall ensure that employees have sufficient knowledge of the hazards which work can entail. The written handling and safety instructions necessary for the work shall be kept available at the workplace.

The allocation of duties in connection with operation and maintenance shall be indicated by the instructions.

Facilities, furnishings and equipment

Section 5
Floors, walls and other surfaces shall be easy to clean.

Section 6
The equipment necessary for the avoidance of health hazards shall be kept available.

Section 7
Ventilation installations, local exhaust ventilation devices, ventilated workbenches, ventilated cage transporters and suchlike devices shall be designed in such a way that air contaminants are efficiently taken care of. They shall be adapted to the activity in the facilities. Functional testing and maintenance shall be carried out to such an extent and in such a way that health hazards are avoided.

Exhaust air from facilities where work with laboratory animals is carried out other than occasionally may not be returned to working facilities.

Facilities, furnishings and equipment shall be cleaned with the frequency and to the extent necessary for the avoidance of health hazards. Methods, equipment and aids for cleaning shall be selected so that ill-health is prevented.

Waste management

Section 8
Waste shall be disposed of in such a way that unnecessary contact with it is avoided. The person handing over waste for disposal shall ensure that the recipient receives such information about the waste as is necessary for continued safe handling. Wrapped material shall be marked with an indication of its contents.

There shall be special routines for handling waste which can entail a risk of ill-health or accident.

Personal protective equipment and hygiene

Section 9
Special protective clothing shall be used when necessary to prevent contact with or distribution of substances capable of causing ill-health. Personal protective equipment shall also be used otherwise, when needed.

Section 10
Good personal hygiene shall be observed.

A shower facility shall be available adjacent to changing rooms. A hand-washing facility shall be available close to the place where the work is done.

Immunization and medical examinations

Section 11
The employer shall assess the need for active and/or passive immunization and shall if necessary offer the same to employees.

Section 12
The employer shall offer employees who are to be occupied on regular basis in work with allergenic laboratory animals the opportunity of medical examination before the work is commenced.

If, in the course of work with laboratory animals, an employee develops symptoms suggesting allergy or some other hypersensitivity, the employer shall similarly offer him/her medical examination. An employee who is allergic or hypersensitive to any agent in the occupational environment shall be offered periodic medical examination.

Employees shall receive the information and advice justified by the results of examination.

Entry into force

These Provisions enter into force on 1st July 1992.

SIVERT ANDERSSON

Kurt Baneryd Göran Lindh

General Recommendations of the Swedish National Board of Occupational Safety and Health on the implementation of the Provisions on Work with Laboratory Animals

The following General Recommendations are issued by the National Board of Occupational Safety and Health on the implementation of its Provisions (AFS 1990:11) on Work with Laboratory Animals.

Background

In Sweden at present, some 500,000 laboratory animals are used every year. More than 400,000 of them are rats and mice. To these are added upwards of 20,000 guinea pigs and 11-12,000 rabbits, and between 400 and 1,000 cats, dogs and monkeys respectively. These laboratory animals are used, for example, in research and education, in drug quality control and in vaccine production. Laboratory animals are bred for these purposes.

Approximately 6,000 persons at a hundred or so workplaces come into contact with laboratory animals in the course of their duties. These employees are exposed to several different work environment hazards. It is an amply documented fact that they can become allergic to the animals they work with. Some laboratory animals appear to be more allergenic than others. Allergy can, for example, be caused by substances present in the urine of, above all, rats. When the urine dries into the bedding material, the dust which is then emitted can also cause allergic symptoms.

Allergy problems can also result from contact with animal epithelium or with bedding material as such, or with mites which are carried by the animals, in which case it is not necessary connected with the animal species as such.

Disorders of the respiratory tract can also result from contact with dust from bedding material, without any allergy being involved.

Many tasks in the tending and use of laboratory animals involve contact with agents which are potential skin irritants and therefore present a risk of hand eczema. Factors of this kind include, for example, mechanical irritation or desiccating dust, detergents and moisture, and frequent hand-washing.

There is a serious risk of musculoskeletal problems, such as disorders of the neck/shoulder and lumbar spine. Cages in animal facilities are sometimes positioned high up, in which case the handling of them can lead to potentially harmful physical work loads. Similar problems can be caused by the handling of heavy animals, e.g. when moving them from one place to another.

Cuts and scratches may be inflicted, especially in inexperienced personnel. Injuries of this kind are caused, not only by bites and scratches from animals, but also by the incorrect handling of material.

Certain employees are exposed in the course of their work to other hazards, e.g. exposure to toxic chemicals. Experimental work with animals sometimes entails that the animals are exposed to hazardous substances of different kinds, in which case

employees too are liable to be exposed to them on coming into contact with the animals, bedding material and waste.

Ionizing radiation is another hazard. Animals are sometimes treated with radioactive isotopes. For radiography and fluoroscopy the animals need to be immobilized, which often means employees having to hold the animals during the examination, thereby exposing themselves to a radiation hazard.

The laboratory animals may be infected as a result of microorganisms being deliberately administered to them as part of the experiment. They may also have become inadvertently infected or infested. Infections to which animals are naturally prone seldom cause serious infections to humans, but this does occur. In exceptional cases the risks may be substantial, as for example in the case of certain animals caught in the wild state.

Work with laboratory animals may also have to be performed outside normal working hours, sometimes in the form of solitary work. There have been cases of burglary, assault and threats.

Guidance on certain Sections

Guidance on Section 1
The scope thus defined can, for example, include cleaning staff, air conditioning technicians and other maintenance personnel.

Laboratory animals include, for example, mouse, rat, guinea pig, rabbit, cat, monkey, pig and sheep. Birds, reptiles and fish can also occur, as well as insects and other invertebrates.

Field experiments include, for example, the trapping and marking of wild animals for subsequent observation in their natural habitat.

Guidance on Section 3
It is of the utmost importance that employees should as far as possible be shielded from contact with substances capable of causing ill-health. Close contact with animals is part of the duties of the personnel tending them. The risks involved, however, can be reduced by good planning. This can mean, for example, selecting bedding material with a minimum of dust emission and handling it in such a way as to minimize direct exposure to dust.

Failing strong reasons to the contrary, the aim should be for work with laboratory animals involving more than temporary contact with allergens and other harmful substances to be concentrated eventually within separate buildings or to an effectively segregated part of the building with a separate ventilation system. This solution should always be aimed for in the construction of new facilities or when reconstructing already existing, older ones.

Animals, contaminated cages and suchlike sometimes have to be carried through communal spaces. These transport operations should be performed in such a way that harmful substances like allergens and infectious agents are not transmitted to the employees. For this purpose, use can be made, for example, of cage boxes with filter tops or filtered vehicles.

Apart from allergens and infectious agents, harmful substances also include, for example, dust, mould, radioactive substances and toxic chemicals.

Work with animals constituting an infection or allergy risk ought preferably to be done close to specially designed local exhaust ventilation devices, on ventilated workbenches, in safety cabinets or suchlike. Duties of this kind include, for example, the emptying of bedding material and various manipulations of the animals.

In certain cases, work with laboratory animals comes under the Board's Ordinances on Dangerous Substances (AFS 1985:17), Chemical Laboratory Work (AFS 1987:14), Measures Against Air Contaminants for the Precaution of Ill-health (AFS 1980:11), and Anaesthetic Gases (AFS 1983:11).

In exceptional cases, laboratory animals may be infected with zoonoses, i.e. infections which can be transmitted between animals and humans. When there is no slight risk of infections being transmitted from animals to humans, tests of the animals' health including tests for these zoonoses should be performed. Veterinary experts can advise on the infectious agents and diagnosis relevant to the individual case.

To reduce the risk of zoonoses occurring among the animals, the animal facilities should be made rodent-proof, so that wild rodents are unable to enter them. A pest control programme may also be necessary.

When microorganisms are used in the experiments, the Board's Microorganisms Ordinance (AFS 1988:12) also applies.

When planning facilities, furnishings and equipment and when selecting, for example, packaging sizes for bedding material and fodder, it is important to consider the risk of injuries resulting from manual handling of heavy loads and awkward work postures; see the Board's Ordinance on Work Postures and Working Movements (AFS 1983:6).

In animal facilities, the cages are often placed in racks with wheels. On a sloping floor, a rack which is set in motion can get out of control. This should be considered when designing floors. Racks with lockable wheels are another possibility.

Outside normal working hours, it is often sufficient for the animals to be looked after by one person. If there is a serious risk of injury, e.g. due to physically strenuous work being done by one person only, or if there is a risk of burglary or physical attack, it is advisable that additional personnel should be present. Attacks by aggressive animals are another example of situations which a solitary employee may find very difficult to handle. If there is a serious risk of burglary or attack, an alarm device should also be provided. The Board's Ordinance on Solitary Work (AFS 1982:3) and its General Recommendations on Risks of Violence in the Working Environment (AFS 1983:1) contain rules which may have to be taken into account in this context.

Guidance on Section 4

Chap. 3, Section 3 of the Work Environment Act requires the employer to ensure that the employee acquires a thorough knowledge of the condition in which work is conducted and is informed of the hazards which work may entail. "He shall make sure that the employee has received the training necessary and that he knows what measures must be taken for the avoidance of risks in the work."

The scope of this Ordinance is defined in such a way that its Provisions also apply to service technicians or corresponding employee categories. Sometimes these

categories have a different employer from the person otherwise running the activities. The Work Environment Act makes it the duty of their employer to inform them of the hazards of the working environment. The employer otherwise running the activities, however, normally has a duty of co-ordination, which can often require him to supply information about these hazards to another employer who is engaged for special tasks.

Spoken instructions are often a necessary adjunct to written handling and safety instructions. Any language difficulties should be observed, and it should also be remembered that special rules apply to minors; see the Board's General Recommendations on Information to Immigrants about the Working Environment (AFS 1984:17), and its Ordinance on Minors at Work (AFS 1987:11).

The instructions should make clear the allocation of various duties. It is especially important to make clear who is to supply information, for example, to a service technician temporary employed at a workplace where work is done with laboratory animals. The instructions should also, for example, explain routines for cleaning, disinfection and waste management, and for dealing with spillage and other accidents. They should include a detailed description of working methods considered safe from a health viewpoint. Similarly, they should indicate the type of protective equipment needed for different tasks.

For the avoidance of risks, it is important that employees among other things should have a good knowledge of the behaviour of the animals.

Guidance on Section 5
When selecting construction materials and surfacing, attention should also be paid to the risk of slipping, mould formation, etc.

To facilitate cleaning, floors and bench surfaces should be kept as uncluttered as possible. When planning furnishings and equipment, it is important to avoid the occurrence of cramped, hard-to-clean spaces.

Guidance on Section 6
Equipment includes, for example, cagewasher and lifting devices, as well as devices for replenishing and emptying bedding material.

Where bedding material is replenished or emptied, the facilities should be equipped with a special device with a separate filter for dust extraction. If the animals are kept in cages, a specially designed washing machine for cages should be available. Manual washing of cages often entails unnecessary contact with waste and risk for potentially harmful physical work loads.

Lifting devices and suitable vehicles may be needed for heavy lifting, e.g. when working with large animals and when moving cages and sacks of fodder from one place to another.

Guidance on Section 7
The choice of extractor device will depend, for example, on the type and quantity of contaminant, and the design and intended function of the workplace. The decision, accordingly, should be based on a knowledge of each individual workplace.

Heat recovery systems, in which leakage or the technology in itself (e. g. with a rotary heat exchanger) causes a certain amount of air to be recirculated, the same

negative effects are liable to result as with return air systems, and systems of this kind are therefore to be avoided.

Occasional work with laboratory animals can take the form of laboratory work involving the dissection of animals, which sometimes occurs in schools. Procedural recommendations on this subject are contained in the General Recommendations of the National Board of Education concerning pupils with allergic symptoms in schools (SÖ-FS 1981:222). It is especially important that facilities should be thoroughly cleaned after such laboratory work, in view of the large number of pupils with allergic disorders.

Occasional work with laboratory animals does not, however, include the training of pupils intending to work with such animals.

To prevent air contamination from spreading to duct systems and surrounding areas, it is advisable for the exhaust air ducts from every animal facility to be fitted with filters to trap animal hairs, cutaneous epithelium and dust. The filter units should be designed so as to minimize exposure to harmful substances in connection with filter replacement.

A safety cabinet, ventilated workbench or local exhaust ventilation device is often needed in a supplementary capacity for certain tasks.

Ventilating installations intended for safety ventilation are sensitive to malfunction, and so regular, careful cleaning and other maintenance are necessary to avoid functional impairment, added to which there must be written instructions on cleaning and maintenance routines and on various methods for controlling efficiency and air quality.

One way of facilitating the supervision of the ventilating installation is by fitting it with an alarm device.

Local extraction devices can be fitted with permanent monitoring instruments at the operator's station, to indicate that the projected airflow is being sustained.

It is important that Provision for simple cleaning, maintenance and inspection should already be made at the planning stage.

In these activities it is natural that the person tending the animals should also carry out cleaning, the general aim being for as few persons as possible to have access to the premises. If these premises are cleaned by other personnel, it is important that the latter should be informed about the risks which the work entails and about ways of guarding against them. In such cases, cleaning routines should be described in separate written instructions.

The choice of cleaning method can present problems. Wet cleaning is the method most commonly used today. Dry sweeping is unsuitable, because it raises dust, thereby aggravating the risk of allergens and infectious agents spreading. Vacuum cleaning is efficient in many cases, but it must not be allowed to cause noise disturbances or imbalance in the ventilation system. To prevent dust being returned to the air in the room, the exhaust air from a portable vacuum cleaner should be effectively cleaned. Where possible, a central cleaning system can be installed.

It should be borne in mind that high-pressure cleaners generate aerosols which are liable to spread infectious agents or allergens.

Guidance on Section 8
Employees may become exposed, for example, to allergens and infectious substances through waste disposal, and it is therefore important that direct contact with waste should be avoided. This applies, for example, to waste defined in the Board's Hazardous Waste Ordinance (AFS 1989:2) as hazardous waste, i.e. waste of the following kinds if handling of it can entail a risk of ill-health or accident: waste suspected or known to be infectious, biological waste, sharps, radioactive waste, and pharmaceutical waste.

The Hazardous Waste Ordinance applies only to hazardous waste from health and dental care, dispensaries and veterinary medicine including research and education within these activities, but it should be used as guidelines on the handling of such waste from activities with laboratory animals, even when the activities do not come within these sectors.

Additional stipulations on the labelling of radioactive waste are contained in Provisions etc. on non-nuclear energy radioactive waste, issued by the National Institute of Radiation Protection (SSIFS 1983:7).

Stipulations on other waste liable to entail a risk of ill-health or accident are contained in the Board's Dangerous Substances Ordinance (AFS 1985:17) and its Microorganisms Ordinance (AFS 1988:12).

Guidance on Section 9
To protect the person participating in the work and to reduce the risk of allergens in particular spreading to persons not coming into direct contact with animals, it is important that protective clothing used for working with animals should not be worn on other occasions. Normally protective clothing of this kind also includes footwear. The protective clothing should be stored apart from other clothing.

Other personal protective equipment may comprise watertight gloves of a material with high resistance to penetration if there is a substantial risk of bites and scratches, e.g. when working with monkeys. Respiratory protective devices may be justified in certain cases, especially for dusty work. Employees developing disorders of the respiratory tract due to dust or for some other reason should have access to a high efficiency ventilated visor or helmet. Other solutions are also possible, such as working in special safety cabinets with enhanced ventilation, or in a box or other device where direct contact with the animals is avoided.

Guidance on Section 10
Good personal hygiene reduces the risks of contracting illness as a result of the work. The Board's Personnel Facilities Ordinance (AFS 1984:10) contains stipulations on the design of changing rooms and hygiene facilities.

Guidance on Section 11
The employer should consult medical and veterinary expertise to gauge the need for immunization.

Guidance on Section 12
Employees not regularly working with laboratory animals may, for example, be pupils and teachers in schools. If studies lead to an occupation which involves extensive contact with allergenic laboratory animals, medical examination may be justified while the studies are still in progress.

Several surveys have shown that 20-30 per cent of those working with laboratory animals are allergic to those very animals. The total percentage developing dermatological symptoms and/or symptoms of the mucous membranes and respiratory tract - allergically or non-allergically induced - in connection with laboratory animals is greater still.

Persons with symptomatic asthma, whatever the cause, often have enhanced bronchial sensitivity. They are liable to suffer a deterioration when working with laboratory animals.

It is an established fact that atopics, i.e. persons with a hereditary predisposition for certain forms of allergy, run more risk than non-atopics of developing asthma caused by laboratory animals. Atopics are also more liable to develop hand eczema when working with laboratory animals. Even so, it cannot be termed medically justifiable to advise all atopics against working with laboratory animals.

In the medical check-up employees should be specially informed of the risks of developing allergy. Hand eczema should be examined so as to ascertain its cause wherever possible. Employees should be informed that hand eczema is liable to be aggravated by work with laboratory animals.

Employees should be urged to take medical advice if they develop symptoms prompting any suspicion of allergy.

Once an allergy or some other form of hypersensitivity has developed, it is very liable to increase in the event of further exposure. This increase can be seen when the symptoms appear at lower and lower levels of exposure, and also by other, graver symptoms, such as asthma, appearing in addition.

To prevent allergy arising as a result of exposure at work, efforts should above all be made to limit exposure to allergenic substances.

If an employee is found to be allergic to any agent in the working environment, the latter should be further reviewed and adapted to the task, so that exposure to the allergen will, if possible, be negligible. To achieve this, special safety cabinets with enhanced ventilation or high efficiency ventilated visors or helmets can be used. During medical examination, it is important that the risk of increasing allergic symptoms as a result of continued exposure is discussed with the employee and balanced against the possibilities of improving the exposure situation.

In certain cases it may be directly inadvisable for the employee to continue working with the animals to which he or she is allergic. This includes duties where the use of protective equipment involves manifest difficulties, e.g. mobile work lasting for several hours a day or work which involves acclimatizing the animals to human beings.

If the disorders persist or grow worse, despite every effort having been made to reduce exposure, or if the employee develops asthmatic symptoms from his allergy, it is also highly inappropriate for him to continue with work entailing exposure to substances causing asthma.

If an employee who has developed allergy continues working with laboratory animals, he/she shall be offered periodic medical examinations according to the Provisions. The employer should take medical advice on suitable intervals between such examinations. The employee should also be urged to take medical advice if the symptoms grow worse.

Other relevant rules

The rules etc. especially relevant to work with laboratory animals are listed below.

Statute Book of the Swedish National Board of Occupational Safety and Health

Measures against Air Contaminants for the Prevention of Ill-health (AFS 1980:11)
Solitary Work (AFS 1982:3)
Personal Protective Equipment - General Provisions (AFS 1982:13)
Risks of Violence in the Working Environment (AFS 1983:1) [1)]
Work Postures and Working Movements (AFS 1983:6) [2)]
Anaesthetic Gases (AFS 1983:11)
Personnel Facilities (AFS 1984:10)
First Aid in the Event of Accident and Acute Illness (AFS 1984:14)
Information to Immigrants about the Working Environment (AFS 1984:17)
Dangerous Substances (AFS 1985:17) [3)]
Minors at Work (AFS 1987:11) [4)]
Chemical Laboratory Work (AFS 1987:14)
Microorganisms (AFS 1988:12)
Hazardous Waste (AFS 1989:2)

Other Provisions

General Recommendations by the Swedish National Board of Health and Welfare concerning hazardous waste in health services and medical care (SOSFS 1987:7)
Decontamination, Infections etc., SoS-rapport 1989:31
The Radiation Protection Act (SFS 1988:220)
Provisions etc. issued by the National Institute of Radiation Protection concerning non-nuclear-energy radioactive waste (SSIFS 1983:7)
Report 150 from the Swedish National Board of Public Building, Premises for Laboratory Animals, 1981-12

1) Replaced by AFS 1993:2 Violence and Menaces in the Working Environment *
2) Replaced by AFS 1998:1 Ergonomics for the Prevention of Musculoskeletal Disorders *
3) Replaced by AFS 1994:2 Dangerous Substances *
4) Replaced by AFS 1996:1 Minors at Work

* Available in English