

The Swedish Radiation Protection Authority's Regulations on Emergency Preparedness at Certain Nuclear Facilities;

issued on April 18, 2005.

On the basis of section 7 of the Swedish Radiation Protection Ordinance (1988:293), the Swedish Radiation Protection Authority has issued the following regulations.

Application

1 § These regulations apply to the planning of emergency preparedness and radiation protection measures in case of an emergency or a threat of an emergency in nuclear facilities of threat category I, II or III.

Additional regulations are issued in the regulations from the Nuclear Inspectorate on safety in nuclear facilities.

Definitions

2 § In these regulations the following concepts are used with the meanings specified here.

severe deterministic health effects: deterministic health effects that are life-threatening or cause lasting damages,

facility in threat category I: a nuclear facility where it is possible that a situation may occur that implies severe deterministic health effects outside the facility area,

facility in threat category II: a nuclear facility where it is possible that a situation may occur that implies stochastic or deterministic health effects outside the facility area, however not severe deterministic effects, and when urgent protection measures are needed according to international standards,

facility in threat category III: a nuclear facility where exposure or contamination may occur inside the facility area but not outside the area and when urgent protection measures are needed,

facility area: a sharply marked off area or a building with restricted admittance where a nuclear practice takes place,

deterministic health effects: damages by ionising radiation which occur when the radiation dose exceeds a threshold level, which are different for different damages, and where the degree of seriousness increases with increasing radiation dose,

<i>nuclear facility:</i>	a facility according to the law (1984:3) on nuclear practices,
<i>alarm criteria:</i>	detailed technical or radiological conditions or combinations of conditions or situations of external imminent physical violence leading to determined alarm criteria which are defined by the nuclear facility,
<i>alarm level:</i>	a degree of emergency or a threat of an emergency at a nuclear facility, specified by the Radiation Protection Authority, as general radiological criteria implying the need of measures by the licence holder and the authorities involved to handle the present situation,
<i>emergency:</i>	a condition at a nuclear facility that implies that the situation is not under control and that urgent measures are needed to protect persons from exposure to ionising radiation or, to avert an accident or save a valuable facility or other valuable resources,
<i>assembly station:</i>	a location (or locations) to which persons are supposed to go in case of an emergency if not appointed to specific functions at an emergency situation,
<i>stochastic health effects:</i>	damages by ionising radiation that may occur without exceeding a threshold limit and where the probability for damage increases with increasing radiation dose and where the degree of seriousness is independent of the radiation dose.

Planning of the emergency preparedness

3 § In these regulations sections 4 – 22 apply to all nuclear facilities unless otherwise specified. Furthermore sections 23 – 28 apply to facilities in threat category I, sections 29 – 33 apply to facilities in threat category II and section 34 applies to facilities in threat category III.

4 § The applicable threat category shall be ratified by the Radiation Protection Authority.

5 § A plan for the radiation protection measures in case of an emergency shall be established by the licence holder. The plan shall describe the organisation that is intended to function in case of an emergency and be a part of the documented management system. It shall be kept up to date and its function shall be tested by regular exercises.

The emergency response plan shall include the procedures for joint action with persons who arrive to the facility at an emergency.

The plan and essential changes shall be reported to the Radiation Protection Authority.

Alarm criteria

6 § The safety quality of alarm criteria shall be established by the licence holder. Prior to applicability these criteria shall be reported to the Radiation Protection Authority.

Alarm

7 § There shall be instructions, routines and equipment to activate an alarm at the relevant level as well as contact the Radiation Protection Authority.

8 § One person shall continuously be available who has the authority to decide upon activating the alarm without a delay. This person shall possess the competence to judge if an alarm criteria is fulfilled or not.

9 § If an alarm criteria according to section 6 is fulfilled, the Radiation Protection Authority shall be informed without a delay. The information shall include an initial judgement of the situation, the risk for release of radioactive material and the present local weather conditions.

10 § An alarm shall be able to sound within buildings where urgent actions may be needed as well as outdoors over the facility area.

An alarm shall be possible to activate at least from two independent locations at the facility.

The alarm system shall regularly be tested. Instructions and routines for the testing shall be a part of the emergency response plan.

Premises

11 § There shall be an operational centre or the equivalent from where the emergency response organisation can control the operations in case of an emergency.

There shall also be an alternative operational centre to be used if the regular operational centre can not be used. Instructions for relocation shall be included in the emergency response plan.

12 § Premises and working places that are intended to be manned in an emergency situation shall as far as reasonably possible be protected against external radiation and contamination of air.

Assembly stations

13 § There shall be clearly marked predestined assembly stations.

At each assembly station there shall be instructions on what measures are to be taken. There shall also be a possibility to record what persons have arrived at the station.

Iodine tablets

14 § A sufficient amount of iodine tablets shall be available at facilities where there is a possibility for release of radioactive iodine.

There shall be instructions for the distribution and intake of iodine tablets.

Personal protection equipment

15 § A sufficient amount of personal protection equipment shall be available for those persons who take part in the emergency response organization. This also applies for persons who can be expected to arrive to the facility.

Evacuation

16 § There shall be a plan for evacuation of the facility that is a part of the emergency response plan.

17 § If persons at the facility may have been externally contaminated by radioactive substances contamination, checks shall be performed in connection to the evacuation.

If contaminations are found, decontaminations of affected persons shall be possible.

Education and training

18 § All persons at the facility shall be informed about the meaning of alarm signals, the location of assembly stations and the routines for evacuation.

19 § Specific requirements on competence and plans for education and training shall be available to personnel involved in the emergency response organisation. Such plans shall be a part of the emergency response plans.

Participation in education and training shall be recorded in such a way that information about each person is possible to find.

20 § Personnel that might have tasks during or after an accident at locations where there are risks of large radiation doses or considerable contamination with radioactive substances shall possess special knowledge on work and protection in such locations.

Contact with the Radiation Protection Authority

21 § At an emergency situation when the emergency response organisation has been established a contact person on radiation protection matters shall be available at the facility.

22 § At facilities of threat category I or II shall the operational centre include a prepared working place for a representative of the Radiation Protection Authority.

At facilities of threat category III it shall be possible to arrange such a working place.

Threat category I

Radiation surveillance

23 § Alarming monitors for measurements of external radiation shall be permanently installed in premises which may be manned in an emergency situation for a prolonged time. In other premises mobile alarming monitors may be used.

24 § Monitors for measurements of radiation levels in case of an emergency shall be permanently installed in the reactor containment, the main chimney and the chimney for accident filter system. The monitors shall be able to measure radiation levels that might occur by severe fuel damages.

The measurement readings shall be shown in the control room and be available in the operational centre.

25 § Monitors for measurement of external radiation outdoors shall be permanently installed within the facility area and in the closest vicinity where enterprise is performed by the licence holder or at the request of the licence holder.

The measurement readings shall be shown in the operational centre and in some other location separated from the operational centre.

Filtration

26 § Filters that absorb radioactive substances shall be installed in ducts for air intake into the control room and the operational centre. For the technical support function to the working staff in an affected unit there shall be a predestined alternative working place having filtered ventilation.

Filtered air intake according to the firstsub clause is not required for an alternative operational centre if it is located so that the probability for essential air contamination is low.

Tests and checks of the filters shall be done according to the *annex*.

27 § Air ducts that are intended to be used in an emergency situation for exhaust air from the reactor building with a boiling water reactor or the building for fuel and auxiliary systems with a pressurised water reactor shall be provided with emergency filters.

Tests and checks of the filters shall be done according to the *annex*.

Meteorology data

28 § There shall be equipment for measurement of weather conditions at a suitable location at the facility.

The equipment shall be able to measure

1. the wind direction and the wind speed at about 10 metres height over the ground level,
2. the vertical temperature difference between about 2 metres and one height in the interval 10 – 25 metres for determination of stability as well as the absolute temperature at about 2 metres height and
3. the air temperature, the wind direction and the wind speed at another height in the interval 50 – 100 metres.

The present weather conditions shall be recorded continuously and shall be possible to transfer on line to the Radiation Protection Authority. The weather conditions shall be shown in the operational centre and some other location at the facility.

Threat category II

Radiation surveillance

29 § Alarming monitors for surveillance of external radiation shall be permanently installed in premises which may be manned for a prolonged time in an emergency situation. In other premises mobile alarming monitors may be used.

30 § Monitors for measurements of radiation levels in case of an emergency shall be permanently installed in the main chimney and in other controlled exhaust pathways. The monitors shall be able to measure radiation levels that might occur at an emergency situation.

The measurement readings shall be shown centrally in some location at the facility.

Filtration

31 § Filters that absorb radioactive substances shall be installed in ducts for air intake into the control room or other premises from where the process can be controlled or supervised if they need to be manned for a prolonged time to handle the situation. If temporary work is sufficient, protective masks with filters for particles and iodine may be used.

If filters are permanently installed they shall be tested and checked according to the *annex*.

32 § Filters that absorb radioactive substances shall be installed in ducts for air intake into the operational centre. Tests and checks of such filters shall be done according to the *annex*.

Filtered air intake according to the first sub clause is not required for an alternative operational centre if it is located so that the probability for essential air contamination is small.

Meteorology data

33 § There shall be equipment for measurement of weather conditions at a suitable location at the facility.

The equipment shall be able to measure

1. the wind direction and the wind speed at about 10 metres height over the ground level,
2. the vertical temperature difference between about 2 metres and one height in the interval 10 – 25 metres for determination of stability as well as the absolute temperature at about 2 metres height and
3. the air temperature, the wind direction and the wind speed at another height in the interval 50 – 100 metres.

The present weather conditions shall be recorded continuously and shall be possible to transfer on-line to the Radiation Protection Authority. The weather conditions shall be shown centrally at some location at the facility.

Threat category III

Meteorology data

34 § There shall be equipment for measurement of weather conditions at a suitable location at the facility.

The air temperature, the wind direction and the wind speed shall continuously be recorded.

Exemptions

35 § If special grounds exist, the Swedish Radiation Protection Authority may grant exemptions from these regulations.

These regulations enter into force on January 1st 2006.

On behalf of the Board of the Swedish Radiation Protection Authority

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Tests and checks of emergency ventilation filters

The requirements in this annex are applicable for tests and checks of ventilation filters in systems for an emergency situation regarding the control room, the operational centre and the premises for technical support. The requirements are also valid for filters for emergency ventilation regarding exhaust air to the environment from reactor buildings with boiled water reactors or filters at pressurised water reactors with regard to exhaust air from the building for fuel and auxiliary systems.

The filtering systems shall include carbon or particle filters intended to absorb radioactive iodine and radioactive aerosols from the passing air beam.

Quality assurance

Instructions and routines for testing and checks of filters regarding carbon and particles shall be a part of the documented quality system at the facility.

Degree of absorption

The degree of absorption shall be

1. at least 98 percent of methyl iodide for carbon filters in a cassette box or a correspondingly refilling filter and
2. at least 99,97 percent of a suitable aerosol having a particle size up to 5 micrometers for particle filters.

Checks of new filters

New filters shall be checked with respect to function and manufacture according to the manufacturer's routines or by the licence holder prior to installation at the facility.

Installation check

A check of the installation of a new filter or after any service or similar of the filter shall be done to ensure that mechanical damages or leakage do not exist.

Current checks

Checks of the degree of absorption shall be done

1. if it can be suspected that the filter has been affected for instance by chemicals, fire or liquids,
2. if it can be suspected that the degree of absorption is not sufficient,
3. regarding cassette box filters at least every fifth year,
4. regarding refill filters every eighth year.

At suitable intervals the system for emergency ventilation shall be tested to ensure that it functions. In this connection flows, the electric system and the interactions with other ventilation systems shall be checked.

Documentation

Performed checks as well as incidents that can be judged to have had an impact on the function of the filter system shall be recorded by the licence holder.