

National Emergency Response Plan

Events in nuclear power plants and other nuclear facilities

Vienna, 2025

Legal notice

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Note:

This part of the National Emergency Response Plan: Events in nuclear power plants and other nuclear facilities serves to implement Section 118 of the Radiation Protection Act 2020, Federal Law Gazette I No. 50/2020.

With the amendment to the Federal Ministries Act 1986 (BMG), Federal Law Gazette I No. 10/2025, responsibility for the National Emergency Response Plans was transferred to the Federal Minister of Agriculture, Forestry, Climate and Environmental Protection, Regions and Water Management (BMLUK). To reflect the changed responsibilities, the document has been updated in June 2025 without any changes to its content.

(WORKING TRANSLATION)

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Abstract

The aim of **radiological emergency management** is to protect the population and the environment in the event of a radiological emergency. The Federal Ministry of Agriculture and Forestry, Climate and Environmental Protection, Regions and Water Management (BMLUK) has created an emergency management system with the involvement of all federal ministries concerned. The **National Emergency Response Plan** is a central element of radiological emergency management at federal level. The National Emergency Response Plan is made up of various parts, each of which deals with the different possible types of radiological emergencies. Such emergencies can be triggered by severe nuclear power plant accidents, but also by other events such as transport accidents or lost radiation sources.

This part of the National Emergency Response Plan deals with emergency management in the **event of incidents at nuclear power plants and other nuclear facilities outside Austria.**

Other nuclear facilities are, for example, interim storage facilities for spent fuel elements from nuclear power plants (see chapter Definitions). There are no nuclear power plants in Austria. However, nine such plants with a total of 20 reactor units are located less than 200 km from Austria's borders (as of April 2025). There are currently 417 reactor units in nuclear power plants in operation worldwide, of which 167 are in Europe (as of April 2025).

Hazard scenarios due to nuclear power plant accidents

This part of the National Emergency Response Plan is based on a systematic analysis of the possible effects of nuclear power plant accidents on Austria. The extent to which a nuclear power plant accident can endanger Austria is mainly determined by the distance and severity of the accident as well as the prevailing weather conditions.

Three "hazard scenarios" are distinguished: In the first case, Austria is not or only barely affected radiologically; protective measures are therefore not necessary in Austria. This corresponds to the situation in Austria after the nuclear power plant accident at Fukushima. In the second scenario, measures in agriculture are necessary to protect food in Austria due

to radiological effects. These measures are intended to reduce the radioactive contamination of food as much as possible and to protect the population. This was the case after the nuclear power plant accident in Chernobyl. The third scenario is an accident in which, in addition to agricultural measures, protective measures for the population in Austria are also necessary. Such a situation has not yet occurred in Austria. A key finding of the analysis here is that even in the worst-case scenario of a very severe accident at a nuclear power plant close to the border and unfavourable weather conditions, evacuations in Austria are not necessary. Measures such as "sheltering" or "taking potassium iodide tablets" offer sufficient protection in addition to agricultural measures.

Key points in the National Emergency Response Plan

Summary of responsibilities and tasks

Close cooperation between the authorities and organisations involved in radiological emergency management plays a key role in effective emergency management. The prerequisite is that the respective responsibilities and tasks of those involved are clearly defined and that they are aware of them. The National Emergency Response Plan provides an overview of the responsibilities and tasks at federal level.

Communication and cooperation

In case of radiological emergencies, it is important to obtain information about the event as soon as possible and to pass it on to all those involved. This is a prerequisite for a coordinated response to a radiological emergency. To this end, the communication channels and precise procedures are defined at federal level in the National Emergency Response Plan: The "Situation Centre" of the Federal Ministry of the Interior serves as an "information hub". In the event of an incoming notification of an incident at a nuclear power plant or other nuclear facility, the Situation Centre immediately alerts the on-call duty service of the Radiation Protection Directorate at the BMLUK. With the help of various emergency systems, the Radiation Protection Directorate assesses the situation and the possible effects on Austria and Austrian citizens in affected areas outside Austria. In the event of an emergency, the BMLUK sets up a crisis team. There, the BMLUK decides on measures to protect the population with the involvement of the Ministry of Health (Federal Ministry of Labour, Social Affairs, Health, Care and Consumer Protection). The population is warned immediately and informed about the protective measures via the media. At the same time, the

information is forwarded via the Situation Centre to the relevant federal and provincial authorities, which are responsible for implementing many of the protective measures. In a further step, the BMLUK recommends convening the State Crisis and Disaster Management (SKKM) in the Federal Ministry of the Interior. The ministries involved, the provinces and emergency organisations coordinate the implementation of the measures here and agree on how to inform the public.

Early warning systems of Austrian authorities

Alerting the relevant authorities at an early stage is particularly important in the event of a nuclear power plant accident. In direct response to the severe reactor accident in Chernobyl in 1986, the International Atomic Energy Agency and the European Commission created alert systems. In the event of a malfunction in a nuclear power plant, the responsible authorities in the country where the accident occurred are obliged to warn other countries of a possible release of radioactive substances into the environment. This saves valuable time for the determination of protective measures. Austria has also concluded bilateral information agreements with its neighbouring countries.

Assessment of the impact of nuclear power plant accidents

The BMLUK assesses the effects of nuclear power plant accidents on Austria with the help of various emergency systems. Even before an actual release, weather data and model calculations can be used to forecast where the contaminated air masses will spread and which areas will be affected and to what extent.

In addition, the Austrian Radiation Early Warning System constantly monitors the environment for radioactive contamination. Increased readings due to spreading contaminated air masses are registered immediately. Due to the bilateral agreements, the BMLUK also has access to the automatic monitoring networks of all neighbouring countries except Italy. Increases in measured values, for example due to the release of radioactive substances from a nuclear facility, promptly trigger an alert to the on-call service of the radiation protection directorate at the BMLUK.

Measures to protect the population

Protective measures can significantly reduce the population's exposure to radiation. In the course of an accident, different exposure paths come into play. Radiation exposure is

caused by external radiation, inhalation of radioactive substances or ingestion of radioactivity through food.

In the event of a very severe nuclear power plant accident near the border, sheltering during the passage of contaminated air masses is an important early protective measure. Those affected are protected from external radiation and the inhalation of radioactive substances from the air is minimised.

Large quantities of radioactive iodine are also released in the event of severe reactor accidents. This leads to an increased risk of thyroid cancer in children and adolescents after a few years or even decades. Potassium iodide tablets - if taken at the right time - offer effective protection against this. The two measures, sheltering and taking potassium iodide tablets, are taken in Austria as a precautionary measure for children and adolescents even if they are less exposed to radiation than adults.

Agricultural measures

Experience from Chernobyl has shown that long-term radiation exposure of the population occurs primarily via contaminated food. For this reason, measures to prevent or minimise the entry of radioactive substances into the food chain are very important, even in the case of accidents with comparatively minor effects. For example, livestock should be brought into the barn and provided with uncontaminated feed.

Measures in the food sector

If necessary, increased controls are carried out to monitor feed and food. If EU-wide limits are exceeded, the placing on the market of food and feed from the affected regions is prohibited.

Personal protective measures

In addition to the protective measures announced by the authorities, personal protective measures play a major role. These range from hygienic measures to refraining from eating freshly harvested vegetables from your own garden.

Containment of psychosocial effects

A radiological emergency can also have a significant psychosocial impact. The National Emergency Response Plan provides for support from various organisations.

Alerting and informing the public

In the event of a radiological emergency, informing the public through the responsible authorities, rapid alerting and communication of protective measures is a central part of emergency management. The population is informed via the ORF (television, radio, internet), print media and the websites of the authorities, in particular via the emergency website of the BMLUK. A call centre for telephone enquiries will be activated if necessary. Should the protective measures of sheltering and taking potassium iodide tablets be necessary in Austria, the population in the affected areas will be alerted via the Austria-wide warning and alarm system ("siren warning system") and via AT-Alert

Protection of emergency workers

The National Emergency Response Plan provides for the monitoring and limitation of radiation exposure and other protective measures for the protection of emergency workers during operations.

Measures to maintain emergency preparedness

The document contains measures to ensure that the emergency management system described in the National Emergency Response Plan is maintained and continuously improved to protect the population. These measures include the provision of the necessary resources in all participating organisations and authorities as well as quality assurance measures and the regular updating of the National Emergency Response Plan. The operational readiness and functionality of the entire emergency management system is continuously reviewed and improved through regular emergency exercises.

1 Introduction

1.1 Purpose

The aim of radiological emergency management is to **protect the population and the environment in the event of a radiological emergency**. To ensure this, the Federal Ministry of Agriculture and Forestry, Climate and Environmental Protection, Regions and Water, with the involvement of all federal ministries concerned (see Chapter 2.2), must set up an emergency management **system** in accordance with the Radiation Protection Act 2020 [StrSchG 2020] and make suitable administrative arrangements to maintain such a system. The emergency management system must be designed in accordance with the results of an assessment of possible emergency exposure situations and must enable an **effective response to radiological emergencies**.

An important cornerstone of the emergency management system is the **National Emergency Response Plan, which consists of several parts**. The National Emergency Response Plan forms the working basis for **official emergency management at federal level** and ensures a **coordinated emergency response** by all organisations involved.

The National Emergency Response Plan takes into account the possible types of radiological emergencies in Austria and defines appropriate responses to these emergencies. The National Emergency Response Plan was drawn up by the Federal Ministry of Agriculture and Forestry, Climate and Environmental Protection, Regions and Water Management with the involvement of all federal ministries concerned in accordance with the StrSchG 2020.

1.2 Scope

The scope of application of the National Emergency Response Plan is limited to **emergency management of authorities in the event of radiological emergencies at federal level**. In accordance with StrSchG 2020, the **provincial governors** draw up emergency response plans for their area of responsibility. The **interfaces to the emergency response plans** of the provinces are an important part of the National Emergency Response Plan. All interfaces of the National Emergency Response Plan are summarised in Annex 16. The **late phase** as an existing exposure situation after a radiological emergency is not part of this National Emergency Response Plan. Criteria for the end of an emergency exposure situation and the transition to the late phase are defined in Annex 14 of this document.

The National Emergency Response Plan consists of **several parts** that deal with different possible types of radiological emergencies:

- Events in nuclear power plants and other nuclear facilities
- Satellite re-entry with radioactive inventory
- Events in facilities in Austria
- Radiological terror
- Use of nuclear weapons at a greater distance from Austria

This part of the National Emergency Response Plan deals with **events in nuclear power plants and other nuclear facilities**.

Note: The research reactor at the Atomic Institute (TRIGA Centre Atomic Institute) of the Vienna University of Technology is the only nuclear facility in operation in Austria. It is included in the part of the National Emergency Response Plan that deals with events in Austrian facilities.

1.3 Legal basis

The legal basis at national and international level is summarised in Annex 1.

2 Basics for emergency preparedness

2.1 Categorisation of possible emergency exposure situations

There are currently (as of September 2024) **417** reactor units in nuclear power plants in operation worldwide [IAEA, PRIS]. Of these, **167 reactor units are located in Europe**. **Nine nuclear power plants with a total of 20 reactor units** are less than 200 km from Austria's borders. All German nuclear power plants have been decommissioned since April 2023.

Figure 1: Nuclear power plants in operation with a distance of up to 200 km to the Austrian border (as of April 2025)



Table 1: Nuclear power plants in operation up to 200 km from the Austrian border (as of September 2024) (Source: BMLUK, Radiation Protection Directorate, Power Reactor Information System IAEA)

State	Name of the nuclear power plant	Reactor units in operation	Reactor type	Nominal electrical output per reactor	Distance to the Austrian border	Commissioning
Switzerland	Gösgen	1	Pressurised water reactor (Siemens)	1035	120	1979
Switzerland	Leibstadt	1	Boiling water reactor (General Electric)	1275	105	1984
Switzerland	Beznau	2	Pressurised water reactor (Westinghouse)	380	100	1969/ 1971
Czech Republic	Temelin	2	Pressurised water reactor (WWER-1000)	1056	50	2000/ 2002
Czech Republic	Dukovany	4	Pressurised water reactor (WWER-440/213)	505	30	1985- 1987
Slovak Republic	Bohunice	2	Pressurised water reactor (WWER-440/213)	505	50	1984/ 1985
Slovak Republic	Mochovce	3	Pressurised water reactor (WWER-440/213)	470	100	1998/ 1999/ 2023
Hungary	Paks	4	Pressurised water reactor (WWER-440/213)	500	180	1982- 1987
Slovenia	Krsko	1	Pressurised water reactor (Westinghouse)	727	80	1981

2.1.1 Events in nuclear facilities without radiological impact on the environment and misinformation

Urgent action may be required by the Austrian authorities even in the event of incidents without radiological effects on the surrounding area or in the event of incorrect information. Corresponding procedures and actions are defined in Chapter 2.4.

2.1.2 Events in nuclear facilities with radiological impact on Austria

Scenarios considered

- Scenarios in which no protective measures are necessary in Austria,
- Scenarios in which protective measures are necessary in **the agricultural/food sector** in Austria,
- Scenarios in which protective measures in **the area of agriculture/food and Iodine Thyroid Blocking (ITB) and/or sheltering** in Austria are necessary.

Hazard analysis of radiological effects on Austria

- **All nuclear power plants up to 400 kilometres from** the Austrian border were included in this risk analysis.
- **Various scenarios** were used to assess the radiological effects. Regardless of the probability of occurrence, worst-case scenarios for the release of radioactive substances and weather conditions were also analysed.
- The radiological impacts on Austria from events in nuclear facilities other than nuclear power plants and in more distant nuclear power plants (distance greater than 400 km to Austria's border) are covered by the scenarios analysed.

Results of the hazard analysis

- Evacuations are **not necessary** in Austria, even in the event of severe nuclear power plant accidents close to the border.
- The protective measures intended for in Austria are **sufficient**.

The intended protective measures are described in Chapters 3.4, 3.5 and Annex 12.

The Technical Annex to this National Emergency Response Plan contains further information on the hazard analysis.

2.1.3 Events without direct radiological impact on Austria

There is also a need for action by the Austrian authorities in the event of accidents in nuclear facilities with the release of radioactive substances that have no direct radiological impact on Austria (such as Fukushima). Effects on Austrian citizens in regions outside Austria affected by a nuclear power plant accident or an accident in another nuclear facility and measures to monitor radioactivity in imports to Austria have been taken into account. Corresponding measures are set out in sections 3.5.4 and 3.5.5.

2.1.4 Large-scale increases in measured values of unknown origin

Large-scale elevated readings in the Radiation Early Warning System or in the laboratory-based monitoring system of unknown origin have occurred in the past. In this case, too, there is a need for the Austrian authorities to take action. Corresponding procedures and actions are defined in Chapters 2.4.3 and 3.5.8.

2.2 Organisations involved in emergency management, their responsibilities and operational readiness

The following tables list all the organisations involved in emergency management, their central responsibilities in this regard and their availability in terms of time. The contact addresses can be found in Appendix 2.

2.2.1 Federal bodies, agencies, technical support organisations

Table 2: Federal bodies and agencies, including outsourced federal organisational units
(Source: BMLUK, Radiation Protection Directorate)

Organisation	Responsibility within the scope of emergency management	Time availability
Federal Ministry of Education (BMB)	Protective measures in schools in accordance with circular [Circular 18/2023]	Convening via SKKM (2 to 4 hours)
Federal Ministry for European and International Affairs (BMEIA)	• Travel warnings and recommendations • Protective measures for Austrian citizens abroad	24/7 service for urgent assistance abroad
Federal Ministry of the Interior (BMI), Situation Centre	• National contact point (IAEA, EU, bilateral) • Information hub for receiving, sending and forwarding messages and alerts: Immediate distribution of messages from the BMLUK (situation assessments, etc.) • Convening of the Coordination Board of the State Crisis and Disaster Management (SKKM) • International disaster relief	Permanently staffed 24/7

Organisation	Responsibility within the scope of emergency management	Time availability
Federal Ministry of Agriculture and Forestry, Climate and Environmental Protection, Regions and Water Management (BMLUK)	• Competent authority regarding international obligations for early notification information exchange (IAEA, EU, bilateral) • Operation of emergency systems • Radioactivity monitoring of the environment and animal feed • Situation assessment (including radiological effects) and determination of protective measures with the involvement of the BMASGPK • Information for the public	On-call service outside of working hours: initial arrangements within 30 minutes, arrival at the place of work within one hour
Federal Ministry of Defence (BMLV)	• Internal departmental protective measures (Austrian Armed Forces) • Assistance services in accordance with military law (in particular CBRN defence)	General: 6 to 12 hours as required CBRN hazardous materials on-call service: 24/7 on-call service, approx. 2 hours after request
Federal Ministry of Labour, Social Affairs, Health, Care and Consumer Protection (BMASGPK)	• Involvement in the determination of protective measures • Radioactivity monitoring of foodstuffs • Pre-distribution, storage and dispensing system for potassium iodide tablets (with the co-operation of the provinces)	Named employees of the BMASGPK can be reached by telephone
Coordination Board of the State Crisis and Disaster Management (SKKM)	Coordination regarding the implementation of protective measures and public information	2 to 4 hours after being called

Table 3: Technical support organisations (Source: BMLUK, Radiation Protection Directorate)

Organisation	Responsibility within the scope of emergency management	Time availability
GeoSphere Austria - Federal Institute for Geology, Geophysics, Climatology and Meteorology	• Meteorological advice (weather bulletin) • (Automated) provision of weather forecast data for the BMLUK • Provision of the TAMOS forecasting system	24/7 permanent service (meteorologist in the weather forecast)
Austrian Agency for Health and Food Safety (AGES)	• Laboratory measurements of food, feed and environmental media • Participation in the evaluation of the measurement results • Support for the BMLUK	24/7 on-call service (outside working hours: arrival at the place of work in max. 1.5 hours)
Federal Environment Agency (UBA)	• Technical management of the emergency systems • Support for the BMLUK in a radiological emergency	On-call service outside working hours

2.2.2 Provincial authorities and offices

Table 4: Provincial authorities and offices (Source: BMLUK, Radiation Protection Directorate)

Organisation	Responsibility within the scope of emergency management
Offices of the provincial governments	Implementation of individual protective measures
District administrative authorities	See emergency response plans of the provinces
First responder organisations	See emergency response plans of the provinces
Provincial warning centres (LWZ)	Receipt and distribution of messages and alerts at national level
Intervention teams (emergency workers) at provincial level	See emergency response plans of the provinces

2.2.3 Intervention teams at federal level

Table 5: Intervention teams (emergency workers) at federal level (Source: BMLUK, Radiation Protection Directorate)

Organisation	Responsibility within the scope of emergency management	Time availability
Mobile Task Force (MoEG) Nuclear Engineering Seibersdorf GmbH	• Telephone support and counselling • Measurements and sampling on site • Laboratory analyses • Securing and/or recovering radioactive sources, transport	Call availability for 1 person; partial call availability for the other members of the mobile task force
Austrian Agency for Health and Food Safety (AGES)	• Radioactivity measurements in environmental media and food and animal feed • Participation in the evaluation of the results • On-site measurements (Annex 3)	Deployment at the place of work in max. 1.5 hours after alerting (1 person) In-situ measurement team or mobile radioactivity measurement laboratory on the following working day at the latest
Radiation detection units of the Federal Police (BMI)	• Radiation detection and measurement (ground, car and air) • Forwarding of detection and measurement data • Cordon off radiation areas • Contamination controls	approx. 1 hour

More detailed information on the federal intervention teams (emergency workers) can be found in Annex 3.

Note: Special CBRN defence units of the Austrian Armed Forces are not considered intervention teams (emergency workers), but are deployed as part of an assistance service of the Austrian Armed Forces in accordance with the Austrian Armed Forces Act.

2.3 Communication and arrangements for cooperation and coordination

2.3.1 Unverified messages

Media are monitored by the BMI situation centre with regard to radiological events. In the event of reports of radiological incidents, the on-call service of the Radiation Protection Directorate at the BMLUK is informed. APA reports are also monitored directly by the BMLUK. Reports can also be forwarded from Austrian embassies via the BMEIA or from representations of Austrian ministries that exist in some countries. These reports are generally not verified at this stage.

2.3.2 Official international and bilateral notifications - Austrian national contact point BMI (Situation Centre)

The Situation Centre in the Federal Ministry of the Interior is the Austrian contact point for bilateral and international alerts and reports. This is based on the bilateral agreements listed in Annex 1 and international agreements of the IAEA [EPR-IEComm-2019] and the EU [EURATOM 87/600]. Various systems and reporting channels are available for the transmission of alerts or notifications:

2.3.2.1 International alerts/messages

- ECURIE system of the EC
- USIE system of the IAEA

A detailed description of the ECURIE and USIE notification types can be found in chapter 3.2.

2.3.2.2 Bilateral alerts/messages

- Notifications in accordance with the bilateral agreements to the BMI (Situation Centre) by fax or e-mail
- Events at the Temelin nuclear power plant in accordance with the Melk Agreement [Melk Agreement 2001] ("Quick info"): Reports to BMI (Situation Centre) by fax
- USIE system can also be used for bilateral notifications

2.3.3 BMI (Situation Centre) - BMLUK

The Radiation Protection Directorate at the BMLUK is the federal authority responsible for evaluating incoming reports. All reports received by the BMI (Situation Centre) (international and national, for example from provincial warning centres or other federal ministries) are forwarded to the on-call service of the Radiation Protection Directorate at the BMLUK for evaluation. Communication between the BMI (Situation Centre) and the BMLUK takes place as follows:

- **Telephone notification of the on-call service at the BMLUK and forwarding of reports** to the BMLUK.
- Transmission of report texts from the BMLUK to the BMI (Situation Centre) for further **distribution to the responsible authorities**.
- In very urgent cases, these reports are sent directly from the BMLUK to the responsible authorities (radiation protection distribution list of the BMI, which is also available at the BMLUK). ¹

2.3.4 BMLUK - BMASGPK

In the event of a radiological emergency, the BMLUK, with the involvement of the BMASGPK, must determine any necessary protective measures on the basis of the situation assessment. In such cases, the Radiation Protection Directorate at the BMLUK contacts one of the persons named by the BMASGPK by telephone.

The procedure for determining protective measures is defined in detail between the BMASGPK and the BMLUK: **The BMASGPK is represented in the BMLUK crisis team as early as possible.**

¹ The situation assessments and protective measures of the BMLUK/BMASGPK are usually distributed via the Situation Centre in the BMI by e-mail to the radiation protection distribution list. If the situation requires it, the BMLUK can also distribute the reports directly by e-mail via the BMI radiation protection distribution list, which is also available at the BMLUK.

2.3.5 BMI (Situation Centre) - LWZ/Federal Provinces, Federal Ministries

After receiving the initial assessment prepared by the Radiation Protection Directorate at the BMLUK, this and all other reports (situation assessments and any protective measures) are sent out by the BMI (Situation Centre) to all provincial warning centres, the federal ministries concerned and other first responder organisations.

- The BMI (Situation Centre) sends this information by e-mail via the distribution list maintained by the BMI (radiation protection distribution list).
- In urgent cases, these messages can also be sent directly from the BMLUK.

2.3.6 Feedback from LWZ/Federal Provinces - Provincial Government

These are carried out by the provincial warning centres and the BMI (Situation Centre).

Corresponding regulations must be laid down in the emergency response plans of the provinces.

2.3.7 Further arrangements for cooperation and coordination at federal level

2.3.7.1 Crisis team of the BMLUK

A representative of the BMASGPK is included in the crisis team of the BMLUK at an early stage. If necessary, liaison officers from other federal ministries (such as the Federal Ministry of the Interior) are also sent to the BMLUK crisis team. This enables rapid coordination of protective measures and public information.

2.3.7.2 Radiological Situation Reporting System

Information about a radiological emergency is immediately made available to all authorities and organisations involved in emergency management (limited group of registered users) via the BMLUK's "Radiological Situation Reporting System" web application. This enables an **efficient and coordinated emergency response**. This information includes in particular

- Data on the emergency exposure situation,
- Evaluation of the situation and assessment of the consequences,
- Information for the media/public,
- Protective measures and assessment of their effectiveness (by the provinces) and
- Background information.

The "Radiological Situation Reporting System" works in pull mode; users can call up and download information, but are not notified of the availability of new information. **Therefore, the "Radiological Situation Reporting System" does not replace the existing alerting and reporting channels.**

2.3.7.3 Coordination Board of the State Crisis and Disaster Management (SKKM)

The Coordination Board of the State Crisis and Disaster Management (SKKM) is coordinated by the Federal Ministry of the Interior. The SKKM was established in the BMI by a decision of the Council of Ministers on 20 January 2004. In the event of an emergency, the **BJA, BMEIA, BMF, BMI, BMLV** and the other **relevant federal ministries, the provinces and first responder organisations** are represented on the **SKKM Coordination Board**.

If necessary, representatives of the ORF and the Austrian Press Agency (APA) may be consulted. The Coordination Board is convened by the BMI. It is chaired by the Director General for Public Security or a person authorised by him/her. The responsible specialised department in the BMI acts as the office of the board. The board is responsible in particular for the exchange of information between the agencies involved and the coordination of the measures to be taken. If necessary, the board sets up specialised groups to discuss current problems under the leadership of the department primarily concerned or a province. The BMI (Situation Centre) acts as an operational communication and information tool.

The Coordination Board is generally made up of nominated representatives of the federal ministries as well as the provinces and first responder organisations. In the event of a **radi-**

ological emergency, the Coordination Board is supplemented by **experts from the Radiological Protection Directorate of the specialised ministries (BMLUK, BMASGPK)**. Additional experts from the provinces and emergency response organisations may also be consulted. The main tasks of the SKKM in the event of a radiological emergency are to coordinate the implementation of the protective measures² and to coordinate the provision of information to the public (see Chapter 3.6). It is convened as follows:

- BMLUK recommends BMI to convene the SKKM. Reporting channel: BMLUK - BMI (Situation Centre)
- The BMI convenes the meeting via defined alerting channels (e-mail, fax and SMS distribution list).

The recommendation to the BMI to convene the SKKM is made in accordance with the provisions of the StrSchG 2020. In accordance with the StrSchG 2020, the BMLUK can call on the existing crisis management structures at federal level for the purpose of coordination with all authorities that have a defined role in accordance with the National Emergency Response Plan.

2.3.7.4 Federal Crisis Safety Act

The Federal Crisis Management Act (B-KSG) [B-KSG 2023] came into force at the beginning of 2024. According to the B-KSG, the following is provided for the coordination of crisis management in the event of an emergency:

- **Federal Crisis Safety Cabinet:** This is set up for the overall strategic coordination of crisis prevention and management issues. The Federal Crisis Cabinet consists of the Federal Chancellor and the Vice-Chancellor. If necessary, it can be expanded to include the federal ministers involved in the respective area of responsibility.
- **Coordination body:** This is set up to advise the Federal Government on the decision on the existence of a crisis and to coordinate measures to minimise the risk of an impending crisis by resolution of the Federal Government.

² This includes the implementation of the protective measures defined by the BMLUK with the involvement of the BMASGPK as well as the resulting accompanying measures (e.g. maintaining critical infrastructure in the event of a radiological emergency).

Note: According to Section 13 B-KSG 2023, specific measures for crisis defence and management are regulated by the respective federal law.

The concrete implementation of the B-KSG is currently in progress.

2.4 Procedures

The procedures planned at federal level for events in nuclear power plants and other nuclear facilities are set out below. The procedures at provincial level, in particular with regard to the determination of protective measures, can be found in the emergency response plans of the provinces. The listed schedules only represent a basic framework for the procedures in the event of an incident. The actual procedures may differ depending on the situation. The procedures are only approximately chronological, as many activities are carried out in parallel.

2.4.1 Procedures for events in nuclear power plants and other nuclear facilities

The most important key points in the procedure are shown below. In the case of events without emergency potential, such as misinformation or events without radiological effects that have already ended, the process ends prematurely.

Alerting through official information (bilateral/international) or through non-official information (media, social media, etc.)

Competent authority	Tasks
BMLUK	Official information: Accident country/IAEA/EU via BMI to BMLUK: • Notification and subsequent reports to BMI • Notification of the BMLUK on-call service by BMI Non-official information to BMLUK: • Notification of BMLUK on-call service

Event without emergency potential

Information of the BMLUK due to a media-relevant event OR misinformation.

Competent authority	Tasks
BMLUK	• Obtaining and transmitting further information • Under certain circumstances, preparation BMLUK information for authorities (notification text) • Information of the BMLUK for the public (press release, social media)
BMLUK to BMI	Distribution of the information message to involved authorities and organisations (federal government, provinces, etc.) via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see chapter 2.3.3)

Event with emergency potential

Initial information about an event OR unverified information.

Competent authority	Tasks
BMLUK	Immediate preparation of initial information for authorities (notification text) and the public (press release, possibly social media)
BMLUK to BMI	Distribution of initial information to involved authorities and organisations via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see Chapter 2.3.3)
BMLUK	Transmission of the initial information (press release) to APA

Initial situation assessment as an all-clear for incorrect information or for a completed event OR for an incomplete event.

Competent authority	Tasks
BMLUK	• Obtaining further information on the event (bilateral/international) • Assessment of possible effects on Austria (emergency systems) • Depending on the situation: Request weather bulletin from GeoSphere Austria • Initial situation assessment by BMLUK (notification text for authorities) and information to the public (press release, possibly ORF announcement, possibly social media) • Transmission of press release to APA / possibly ORF announcement to radio and television
BMLUK to BMI	Distribution of the first situation assessment via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see chapter 2.3.3)
BMLUK	• Activation of the radiological situation reporting system • Information on the BMLUK emergency website and possibly on the BMLUK website • And if necessary, activate BMLUK crisis team/emergency centre and contact BMASGPK

Subsequent situation assessments for an incomplete event / incident OR for the warning phase of a radiological emergency (release of radioactive substances cannot be ruled out).

Competent authority	Tasks
BMLUK	• Obtaining further information (bilateral/international) • Further assessments of possible effects on Austria • Request weather bulletin from GeoSphere Austria (if not already arranged) • Crisis team in the BMLUK is constituted (if not already done) • Involvement of the BMASGPK (BMASGPK representation in the BMLUK crisis team) • Further situation assessments by BMLUK (reports and press releases, ORF announcements, social media) • International harmonisation of situation assessments • Public information: press release for APA and emergency website of the BMLUK, ORF announcement for radio and television, social media
BMLUK to BMI	Distribution of reports, press releases, ORF announcements on the situation assessments via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see Chapter 2.3.3)

Competent authority	Tasks
BMLUK	• Keeping radiological situation reports up to date • Keep the BMLUK emergency website and possibly the BMLUK website up to date • Recommendation: Convening the SKKM Coordination Board • Recommendation: Activation of call centre in BMI • Pre-information emergency services / laboratories • Adjustment of the situation assessment in the event of changes of the situation (same procedure)

Warning phase "radiological emergency"

Protective measures in the warning phase of a radiological emergency (release of radioactive substances cannot be ruled out).

Competent authority	Tasks
BMASGPK	BMASGPK representation in the BMLUK crisis team
BMLUK including BMASGPK	• Ongoing updating of the situation assessments • Determination of protective measures for the warning phase in Austria based on situation assessment • Situation assessment for Austrian citizens in the country of accident (before release) • Determination of protective measures for Austrian citizens in the country of the accident based on an assessment of the situation (possibly limited to certain regions and population groups) • Public information: APA, radio and television, social media
BMLUK to BMI	Distribution of reports, press releases and ORF announcements on situation assessments and protective measures via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see chapter 2.3.3)
BMI	• Call centre activation • Convening of the SKKM Coordination Board
BMEIA	Measures to protect Austrian citizens in the country of the accident and other affected countries, travel warnings and travel recommendations
Provinces (LWZ)	• Warn the population in affected districts (warning and alert system and AT-Alert, if urgent protective measures are necessary: Preparation of potassium iodide tablets and/or preparation for sheltering are necessary). • Implementation of protective measures • Information on the implementation of protective measures at BMLUK
BMLUK	• Involvement of intervention teams (emergency workers): AGES and radiation detection units of the police • If necessary, informing military authorities (assistance service)

Competent authority	Tasks
	• International information (bilateral, IAEA, EU)

After release: Before the radioactively contaminated air masses arrive in Austria

Protective measures for the contamination phase in good time before the start of the contamination phase (sufficient time for announcement and implementation of the protective measures); in the case of more remote installations, possibly only after the release of radioactive substances.

Competent authority	Tasks
BMLUK	Coordination with the radiation protection authorities of other countries, in particular the country where the accident occurred
BMLUK including BMASGPK	• Reassessment of the situation / if necessary adjustment of protective measures • Determination of protective measures for the contamination phase (in the case of more distant plants, possibly only after release: if there is sufficient time between release and arrival of radioactive air masses in Austria, the first measurement results from the country of the accident can be taken into account) • Informing the public about protective measures contamination phase (for facilities not close to the border only after release)
BMLUK to BMI	Distribution of reports, press releases and ORF announcements for reassessment of the situation and protective measures via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see Chapter 2.3.3)
BMLUK	International information (bilateral, IAEA, EU) (for installations not close to the border only after release)
Provinces (LWZ)	• Alerting the population in affected districts (warning and alert system and AT-Alert, if urgent protective measures are necessary) • Implementation of the protective measures contamination phase (for plants not close to the border only after release) • Information on the implementation of protective measures at BMLUK (for plants not close to the border only after release)
Coordination Board of the State Crisis and Disaster Management (SKKM)	• Regular coordination in the implementation of the defined protective measures, in particular accompanying measures by other ministries (e.g. BMEIA: measures for Austrian citizens in the country where the accident occurred) • Regular coordination to inform the public

Contamination phase "radiological emergency" in Austria

Adaptation of the situation assessment and, if necessary, the protective measures for the contamination phase of a radiological emergency in the event of the passage of radioactively contaminated air masses.

Competent authority	Tasks
BMLUK	• Coordination with the radiation protection authorities of other countries, in particular the country where the accident occurred • Reporting of measured values and measures in Austria to the EU, the IAEA and bilaterally
BMLUK including BMASGPK	• New situation assessment (message text) based on the measured values from the Austrian Radiation Early Warning System (dose rate and air concentrations) and current information from the accident country (e.g. a new source term) • Coordination with the radiation protection authorities of other countries, in particular the country of the accident (primarily protective measures) • Possibly adaptation of measures • Informing the public about protective measures during the contamination phase
BMLUK to BMI	Distribution of reports, press releases and ORF announcements on the new situation assessment and the adapted protective measures via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see chapter 2.3.3)
BMLUK	• Regularly informing the public, especially about protective measures • Regular international information (bilateral, IAEA, EU)
Provinces (LWZ)	• Further implementation of the measures contamination phase • Further information on the implementation of protective measures at BMLUK (for plants not close to the border only after release)
Coordination Board of the State Crisis and Disaster Management (SKKM)	• Regular coordination in the implementation of the defined protective measures, in particular accompanying measures by other ministries (e.g. BMEIA: measures for Austrian citizens in the country where the accident occurred) • Regular coordination to inform the public

Intermediate phase "radiological emergency" in Austria

Partial cancellation protective measures and definition of additional protective measures for the intermediate phase after the removal of the radioactively contaminated air masses.

Competent authority	Tasks
BMLUK including BMASGPK	• New situation assessment based on available measured values (Austrian Radiation Early Warning System, laboratory-based monitoring system, radiation detection) • Coordination with the radiation protection authorities of other countries, in particular the country where the accident occurred • Determination of protective measures (cancellation of measures already taken/new measures intermediate phase)
BMLUK to BMI	Distribution of reports, press releases and ORF announcements on the new situation assessment and the adapted protective measures for the intermediate phase via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see Chapter 2.3.3)
BMLUK	• Regularly informing the population, especially about protective measures • Regular international information (bilateral, IAEA, EU)
Provinces (LWZ)	• All-clear for the population in affected districts (warning and alarm system and AT-alert when urgent protective measures are cancelled) • Implementation of protective measures intermediate phase • Information on the implementation of protective measures at BMLUK
Coordination Board of the State Crisis and Disaster Management (SKKM)	• Regular coordination in the implementation of the defined protective measures, in particular accompanying measures in the individual departments (e.g. BMEIA: measures for Austrian citizens in the country where the accident occurred) • Regular coordination to inform the public

In the late phase, as an existing exposure situation, the radiological situation is essentially covered. Urgent protective measures are no longer required. Criteria for the transition of a radiological emergency to the late phase are defined in Annex 14.

The **procedures in the late phase** as an existing exposure situation after a radiological emergency are no longer part of this National Emergency Response Plan.

The procedures in the **late phase** must take into account the following tasks in particular:

- Carrying out measurements primarily to check the effectiveness of measures, to determine trends and to record the contamination of individual media or regions more precisely
- Review of the need to maintain previously implemented measures
- Examination of further measures in the late phase, such as urban decontamination measures or measures in the area of food production and agriculture
- Regular adjustments to the measures with the involvement of stakeholders
- Regular exchange of information with the radiation protection authorities of other countries, the EU and the IAEA
- Regular information and, if necessary, support for those affected
- Regular information for the public

2.4.2 Events in nuclear power plants and other nuclear facilities without direct radiological impact on Austria

The most important key points in the procedure are shown below. In the event of incidents without radiological effects on Austrian citizens in the country of the accident, the process ends early.

Alerting through official information (bilateral/international) OR non-official information (media, misinformation, etc.).

Competent authority	Tasks
BMLUK	Official information: Accident country/IAEA/EU via BMI to BMLUK: • Notification and subsequent reports to BMI • Notification of the BMLUK on-call service by BMI Non-official information to BMLUK: • Notification of BMLUK on-call service

Event with emergency potential for Austrian citizens in the country of the accident

Initial information due to an incident OR unverified information ("emergency potential" for Austrian citizens in the country of the accident).

Competent authority	Tasks
BMLUK	Immediate preparation of initial information for authorities (notification text) and the public (press release, possibly social media)
BMLUK to BMI	Distribution of initial information via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see chapter 2.3.3)
BMLUK	Transmission of the initial information (press release) to APA

Initial situation assessment as an all-clear for incorrect information or for a completed event OR for an incomplete event.

Competent authority	Tasks
BMLUK	• Obtaining further information on the event (bilateral/international) • Assessment of possible effects on regions in the country of the accident (using emergency systems in the BMLUK if the event occurs in Europe or using available WMO calculations), international coordination • Request weather bulletin from GeoSphere Austria, if event in Europe • Initial situation assessment by BMLUK (report text) and information to the public (press release, possibly ORF announcement, social media) • Transmission of press release to APA, possibly ORF announcement to radio and television
BMLUK to BMI	Distribution of report, press text, ORF announcement for initial situation assessment via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see Chapter 2.3.3)
BMLUK	• Activation of Radiological Situation Reporting System • Information on the BMLUK emergency website and possibly the BMLUK website • u. If necessary, activate BMLUK crisis team/emergency centre and contact BMASGPK/BMEIA

Subsequent situation assessments for an incomplete event / incident or for the warning phase of a radiological emergency (release of radioactive substances cannot be ruled out).

Competent authority	Tasks
BMLUK	• Obtaining further information (bilateral/international cooperation) • Further assessments of possible impacts on site • Involvement of the BMASGPK (BMASGPK representation in the BMLUK crisis team) • Further situation assessments by BMLUK (reports and press releases, ORF announcements, social media) • International harmonisation of situation assessments • Public information: Press release for APA and emergency website of the BMLUK, ORF announcement for radio and television
BMLUK to BMI	Distribution of reports, press releases, ORF announcements on situation assessments via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see chapter 2.3.3)
BMLUK	• Keeping radiological situation reports up to date • Keep the BMLUK emergency website and possibly the BMLUK website up to date • Recommendation: Convening the SKKM Coordination Board • Recommendation: Activation of call centre in BMI • Adjustment of the situation assessment in the event of changes to the situation (same procedure)

Warning phase radiological emergency in the affected countries

Protective measures in the warning phase of a radiological emergency (release of radioactive substances cannot be ruled out).

Competent authority	Tasks
BMLUK/BMASGPK and BMEIA	• Ongoing update of situational assessments • Determination of protective measures for Austrian citizens in the affected countries based on an assessment of the situation (possibly limited to certain regions and population groups) • Public information: press releases (APA), ORF announcements (radio and television), social media

BMLUK to BMI	Distribution of reports, press releases, ORF announcements on situation assessments and protective measures via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see Chapter 2.3.3)
BMI	• Call centre activation • Convening of the SKKM Coordination Board
BMEIA	Measures to protect Austrian citizens in the country of the accident / travel warnings / travel recommendations
BMLUK	International information (bilateral, IAEA, EU)

After release or from the contamination phase: arrival of the radioactively contaminated air masses in the affected countries

Protective measures for the contamination phase of a radiological emergency

Competent authority	Tasks
BMLUK	Coordination with the radiation protection authorities of other countries, in particular the country where the accident occurred
BMLUK/BMASGPK and BMEIA	• New situation assessment (notification text) based on the measured values in the affected countries (dose rate and air concentrations) and current information from the accident country, such as a new source term • On the basis of the reassessment of the situation, possibly adapt the protective measures for Austrian citizens in the affected countries • Informing the public (press release, ORF announcement, social media)
BMLUK to BMI	Distribution of reports, press releases, ORF announcements on situation assessments and protective measures via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see Chapter 2.3.3)
BMEIA	Adaptation of protective measures for Austrian citizens in the affected countries, travel warnings and travel recommendations
BMLUK	International information (bilateral, IAEA, EU)
Coordination Board of the State Crisis and Disaster Management (SKKM)	• Regular coordination in the implementation of the defined protective measures, in particular accompanying measures in the individual departments (e.g. BMEIA: measures for Austrian citizens in the country where the accident occurred) • Regular coordination to inform the public

Late phase (from intermediate phase)

Competent authority	Tasks
BMLUK, BMASGPK, BMEIA, BMI	• Regular exchange of information/coordination with the radiation protection authorities of affected countries, the EU and the IAEA • Regular reassessments of the situation • Review and possible adjustment of any protective measures taken • Regular information for the public • Distribution of reports, press releases, ORF announcements on situation assessments and protective measures via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see Chapter 2.3.3)

2.4.3 Occurrence of large-scale elevated measured values

The increases in measured values can occur at several monitoring stations in coupled, foreign monitoring networks, in the Radiation Early Warning System (dose rate/AMS stations) or in the laboratory-based monitoring system. While the detection limits and alarm thresholds in the automatic monitoring networks are relatively high, even radionuclide traces in the air can be detected in the laboratory-based monitoring system (see Ru-106 incident, I-131 measurements and detection of radionuclide traces from Fukushima in the past).

The procedure begins with the alerting of measured values and thus after a release of radioactive substances. In contrast to the procedures mentioned above, there is usually no or a very short warning phase for Austria.

Warning phase

No information (possibly due to violation of early reporting obligations by the country of accident).

Alerting through measured values

Alerting by increased measured values (Austrian Radiation Early Warning System, coupled monitoring networks) or by AGES (laboratory-based monitoring system)

Competent authority	Tasks
BMLUK	Alerting the BMLUK on-call service

Initial information on large-scale elevated measured values

Competent authority	Tasks
BMLUK	Immediate preparation of initial information for authorities (report) and the public (press release, possibly social media)
BMLUK to BMI	Distribution of initial information to involved organisations via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see chapter 2.3.3)
BMLUK	Transmission of the initial information as a press release to APA

Initial situation assessment: the measured values are medial ("radionuclide traces") OR radiologically relevant

Competent authority	Tasks
BMLUK	• Obtain further information on the event (bilateral/international), in particular request from IAEA ("Information Request" in USIE) • Assessment of possible effects on Austria (emergency systems) • Request weather bulletin from GeoSphere Austria • Initial situation assessment by BMLUK (report text) and information to the public (press release, possibly ORF announcement, possibly social media) • Transmission of press release to APA, possibly ORF announcement to radio and television
BMLUK to BMI	Distribution of report, press text, ORF announcement for initial situation assessment via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see chapter 2.3.3)
BMLUK	• Activation Radiological Situation Reporting System • Information on the BMLUK emergency website and possibly the BMLUK website • If necessary, activate BMLUK crisis team/emergency centre and contact BMASGPK • Information for intervention teams (emergency workers) / laboratories to consolidate measurements

Subsequent situation assessments in the warning phase of a radiological emergency (radioactively contaminated air masses have not yet arrived in Austria)

OR in the contamination phase (radioactively contaminated air masses have arrived in Austria).

Competent authority	Tasks
BMLUK	• Obtaining further information (bilateral/international) • Further assessments of possible effects on Austria • Request weather bulletin from GeoSphere Austria (if not already arranged) • Crisis team in the BMLUK is constituted (if not already done) • Involvement of BMASGPK (BMASGPK represented in the BMLUK crisis team) • Further situation assessments by BMLUK (reports and press releases, ORF announcements, social media) • International harmonisation of situation assessments • Public information: press release for BMLUK and APA emergency website, ORF announcement for radio and television • Information for intervention teams (emergency workers) / laboratories (if not already done) Consolidation of measurements
BMLUK to BMI	Distribution of reports, press releases, ORF announcements on the situation assessments via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see chapter 2.3.3)
BMLUK	• Keeping radiological situation reports up to date • Keep the emergency website and possibly the BMLUK website up to date • Recommendation: Convening the SKKM Coordination Board • Recommendation: Activation of call centre in BMI • Adjustment of the situation assessment in the event of changes to the (same procedure)

Warning phase in Austria of a radiological emergency: Before the arrival of radioactively contaminated air masses

Protective measures for the warning phase in Austria, if there is sufficient time before the arrival of the radioactively contaminated air masses in Austria OR **protective measures for the contamination phase** in Austria: in good time before the start of the contamination phase (sufficient time for announcement and implementation of the protective measures).

Competent authority	Tasks
BMLUK with the involvement of the BMASGPK	• Coordination with the radiation protection authorities of other countries, in particular the country where the accident occurred • Reassessment of the situation • Determination of protective measures warning and contamination phase • Informing the public about protective measures contamination phase
BMLUK to BMI	Distribution of reports, press releases, ORF announcements on situation assessments and protective measures via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see chapter 2.3.3)
BMLUK	International information (bilateral, IAEA, EU)
Provinces (LWZ)	• Alerting the population in affected districts (warning and alarm system and AT-Alert, if urgent protective measures may be necessary) • Implementation of the measures contamination phase (for plants not close to the border only after release) • Information on the implementation of protective measures at BMLUK (for plants not close to the border only after release)
SKKM Coordination Board	• Regular coordination in the implementation of the defined protective measures, in particular accompanying measures in the individual departments (e.g. BMEIA: measures for Austrian citizens in the country where the accident occurred) • Regular coordination public information

Contamination phase in Austria in the event of a radiological emergency

Adaptation of the situation assessment and, if necessary, the **protective measures** for the contamination phase.

Competent authority	Tasks
BMLUK with the involvement of the BMASGPK	• New situation assessment (report and press release, ORF announcement, social media) based on the measured values from the Austrian Radiation Early Warning System (dose rate and air concentrations) and current information from the country of the accident, such as a new source term • Coordination with the radiation protection authorities of other countries • Definition/adaptation of protective measures for the contamination phase
BMLUK to BMI	Distribution of reports, press releases, ORF announcements on the new situation assessment and protective measures via BMI (Situation Centre) OR directly by BMLUK (radiation protection distributor) (see chapter 2.3.3)
BMLUK	• Regular information of the population, especially about protective measures contamination phase • Regular international information (bilateral, IAEA, EU): Reporting of measured values and measures in Austria to the EU, the IAEA and bilaterally
Provinces (LWZ)	• Further implementation of the measures contamination phase (for plants not close to the border only after release) • Further information on the implementation of protective measures at BMLUK (for plants not close to the border only after release)
Coordination Board of the State Crisis and Disaster Management (SKKM)	• Regular coordination in the implementation of the defined protective measures, in particular accompanying measures by other ministries (e.g. BMEIA: measures for Austrian citizens in the country where the accident occurred) • Coordination public information

Intermediate phase radiological emergency

Partial cancellation of and determination of additional protective measures for the intermediate phase (after removal of the radioactively contaminated air masses).

Competent authority	Tasks
BMLUK with the involvement of the BMASGPK	• New situation assessment based on available measured values (Austrian Radiation Early Warning System, laboratory-based monitoring system, radiation detection) • Coordination with the radiation protection authorities of other countries, in particular the country where the accident occurred • Determination of protective measures (cancellation of measures already taken/new measures intermediate phase)
BMLUK to BMI	Distribution of reports, press releases, ORF announcements on the new situation assessment and the protective measures in the interim phase via BMI (Situation Centre) OR directly by BMLUK (radiation protection distribution list) (see chapter 2.3.3)
BMLUK	• Regularly informing the population about protective measures • Regular international information (bilateral, IAEA, EU)
Provinces (LWZ)	• All-clear for the population in affected districts (warning and alarm system and AT-alert when emergency measures are cancelled) • Implementation of protective measures intermediate phase • Information on the implementation of protective measures at BMLUK
Coordination Board of the State Crisis and Disaster Management (SKKM)	• Regular coordination in the implementation of the defined protective measures, in particular accompanying measures in the individual departments (e.g. BMEIA: measures for Austrian citizens in the country where the accident occurred) • Coordination public information

In the late phase, as an existing exposure situation, the radiological situation is essentially covered. Urgent protective measures are no longer required. Criteria for the transition of a radiological emergency to the late phase are defined in Annex 14. The procedures in the **late phase** must take into account the following tasks in particular:

- Carrying out measurements primarily to check the effectiveness of measures, to determine trends and to record the contamination of individual media or regions more precisely
- Review of the need to maintain measures already in place
- Examination of further measures in the late phase, such as urban decontamination measures or measures in the area of food production and agriculture
- Regular adjustments to the measures with the involvement of stakeholders
- Regular exchange of information with the radiation protection authorities of other countries, the EU and the IAEA
- Regular information and, if necessary, support for those affected
- Regular information for the public

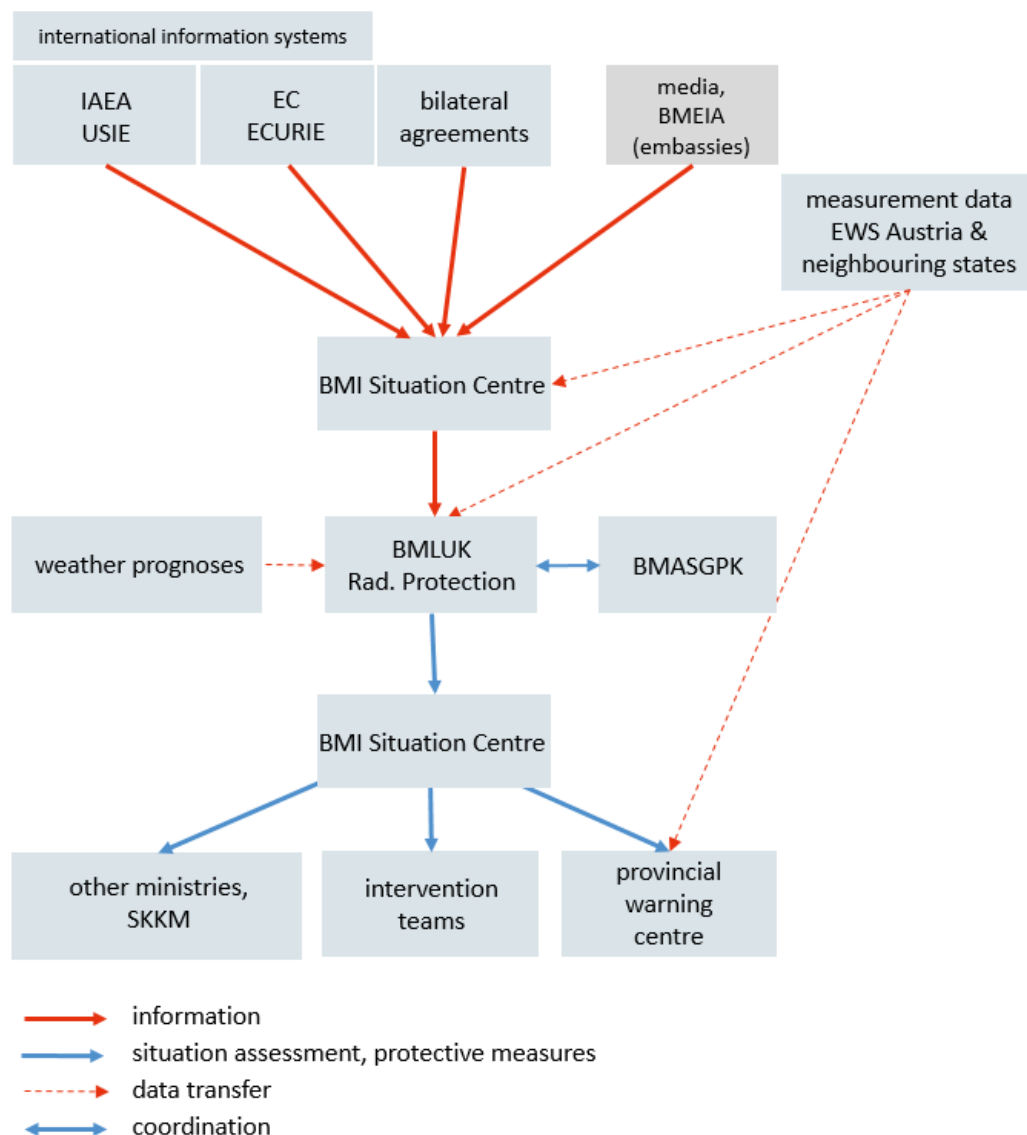
The **procedures in the late phase** as an existing exposure situation after a radiological emergency are no longer part of this National Emergency Response Plan.

3 Emergency response

3.1 Reporting and alert channels

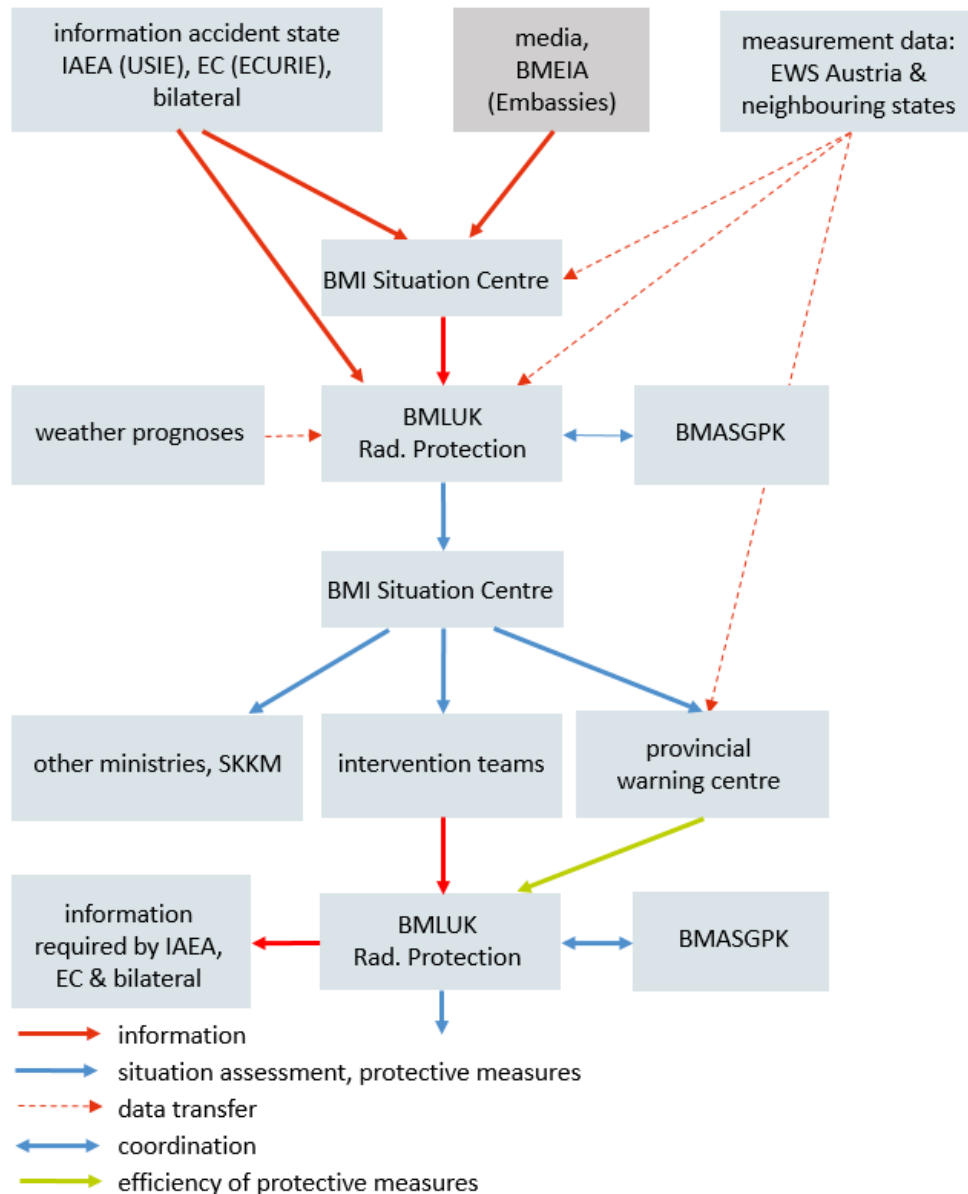
3.1.1 Reporting channels for accidents in nuclear power plants and other nuclear facilities in other countries - warning phase

Figure 2: Reporting channels warning phase (Source: BMLUK, Radiation Protection Directorate)



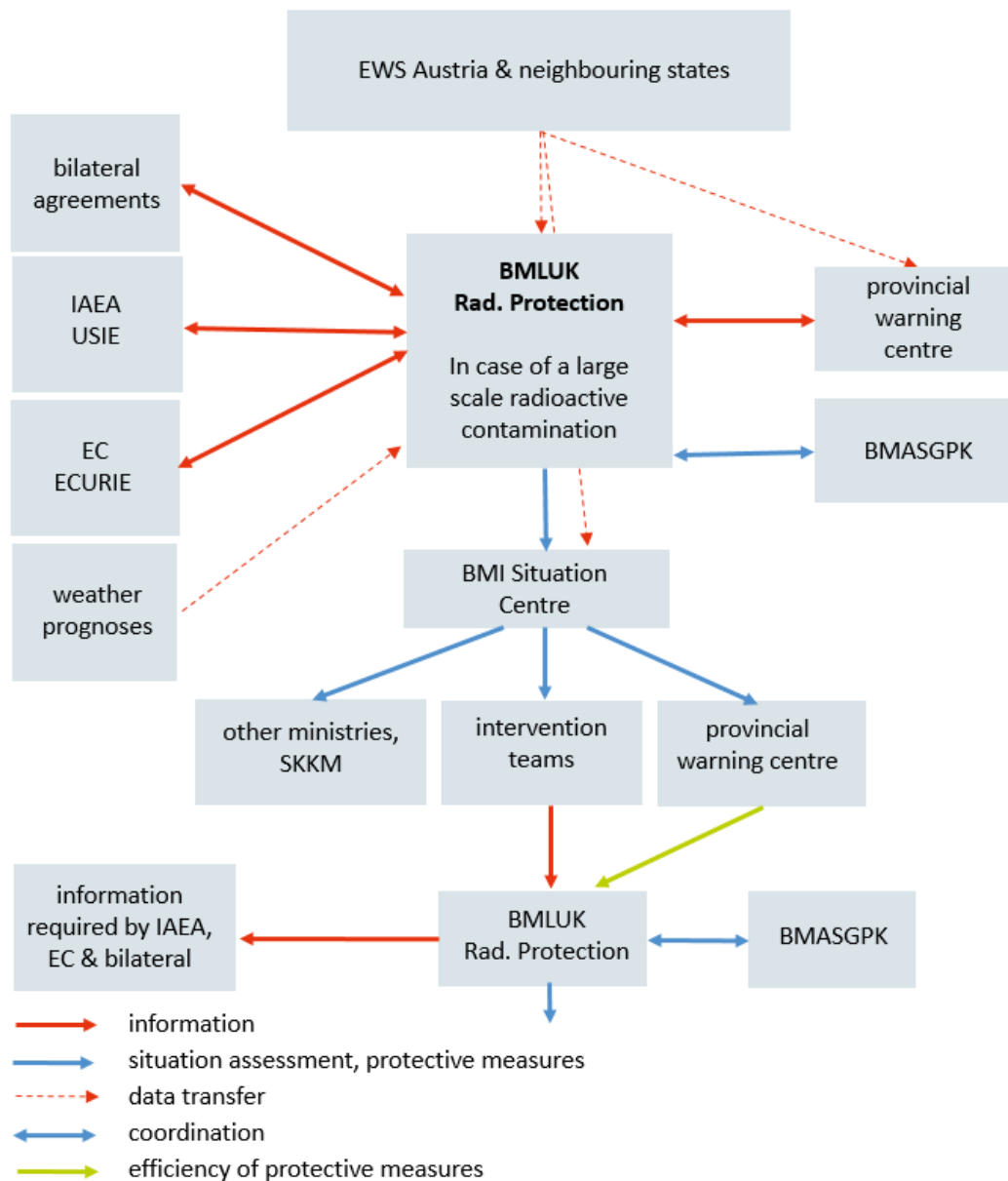
3.1.2 Reporting channels for accidents in nuclear power plants and other nuclear facilities in other countries - from the contamination phase onwards

Figure 3: Reporting channels from the contamination phase (Source: BMLUK, Radiation Protection Directorate)



3.1.3 Reporting channels for the occurrence of elevated measured values at several measuring stations in Austria or in automatic measuring networks in other countries

Figure 4: Reporting channels in the event of elevated measured values (source: BMLUK, Radiation Protection Directorate)



3.2 Assessment of the emergency exposure situation

In accordance with StrSchG 2020, the BMLUK, with the involvement of the BMASGPK, must, in the event of a radiological emergency resulting from an accident at a nuclear facility

- **assess the situation**,
- on the basis of this assessment, determine **protective measures** where necessary and implement them by means of **official orders or recommendations to the affected population**, and
- **reassess** the situation in the event of significant changes and, if necessary, adapt or cancel the protective measures.

In accordance with the provisions of the StrSchG 2020, in the event of a radiological emergency that is likely to have radiological consequences for Austria or that occurs in Austria, the BMLUK must immediately contact the competent authorities of all other states that may be involved or are likely to be affected in order to

- exchange views on the assessment of the exposure situation,
- coordinate protective measures and public information, and
- cooperate in the transition from an emergency exposure situation to an existing exposure situation.

Coordination is carried out by the BMLUK via the bilateral exchange of information and via international reporting/information systems of the IAEA and the EU (see Chapter 3.2.2).

3.2.1 Evaluation criteria

IAEA classification of emergencies

According to the IAEA [IAEA, GSR Part 7], radiological emergencies (in the event of accidents in nuclear facilities) are classified as **Alert**, **Facility Emergency**, **Site Emergency** or **General Emergency**. While protective measures (in all phases) are limited to the site of the nuclear facility in the case of an **Alert** and **Facility Emergency**, in the case of a **Site Emergency** these

are also necessary in the immediate vicinity of the facility and in the case of a **General Emergency** they are far-reaching. In the case of a General Emergency, a large release of radioactive substances is very likely or has already occurred. Events in this category always represent a transnational radiological emergency for which there is an **obligation to provide information at an early stage**.

Another category of radiological emergency is the occurrence of elevated dose rate or contamination levels of unknown origin in the environment or in imported goods (**Elevated Radiation Levels of Unknown Origin**).

ECURIE evaluation criteria

Alert notifications [ECURIE Instructions 2022]

- In the event of a radiological emergency, if urgent large-scale measures to protect the population such as evacuations, sheltering and ITB are considered or implemented, or
- EC maximum levels for food and feed could be exceeded in a larger area or
- there are significantly elevated radiation levels (due to an event outside the EU or of unknown origin)

Alert notifications are based on criteria laid down in Council Decision 87/600/EURATOM on community arrangements for the accelerated exchange of information in the event of a radiological emergency.

Advisory notifications and messages

Events for which it is advantageous for authorities in other countries to be informed. The events are listed in the instructions for the ECURIE system [ECURIE Instructions 2022]. These reports are not subject to Council Decision 87/600/EURATOM and are only submitted on a voluntary basis.

INES classification

The **International Nuclear and Radiological Event Scale (INES)** was developed by the IAEA for the assessment and communication of events in nuclear facilities and other activities

involving radioactive sources. **This is not an emergency assessment**, as much of the information for a (final) INES classification is not available until later. The INES scale comprises levels 1 (Anomaly) to 7 (Major accident). Events with no safety significance are often summarised as INES level 0 (below the INES scale). The various assessment criteria can be found in Annex 6.

National evaluation criteria

The central criterion for the assessment of a radiological emergency is whether or to what extent protective measures are required in Austria. The **general and operational criteria** set out in Annex 11 and the **reference values** set out in the IntV 2020 form the basis for determining protective measures. The criterion for banning the placing on the market of food and animal feed is that the maximum levels specified by the EC are reached or exceeded (see Annex 10).

Based on these criteria, the following four scenarios can be distinguished with regard to the effects of radiological emergencies in Austria:

1. From a radiological point of view, **no measures are necessary to protect the population in Austria. The planned EC maximum levels for food and animal feed and the general and operational criteria for protective measures**, such as sheltering and ITB, **are far from being achieved**. Important measures to be implemented are regular public information and further monitoring of the situation.
2. The envisaged EC maximum levels could be achieved for at least some food and feed, which is why **measures in the agricultural and food sectors** should be considered. Protective measures such as sheltering and ITB are not necessary (even in the event of serious accidents at nuclear power plants further away from Austria).
3. In addition to point 2, the general and operational criteria for protective measures for persons under 18 years of age and pregnant women could be achieved by **sheltering and/or ITB. Measures in the fields of agriculture and food as well as measures to protect the critical population group** should therefore be considered.
4. In addition to point 3, the general and operational criteria set for adults for the protective measures of sheltering and/or ITB could also be exceeded. Therefore, all **measures provided for the protection of the population** must be taken into account.

In the assessment of an event that has occurred, subsequent information and emergency systems are important tools. Annex 7 provides a schematic representation of the timeline for the deployment of these emergency systems.

3.2.2 Alarming/information systems, data exchange

For radiological events, international alert and information systems enable international agencies and potentially affected countries to be alerted and informed at an early stage.

ECURIE (EC)

The ECURIE system (European Community Urgent Radiological Information Exchange) is the technical implementation of Council Decision 87/600/EURATOM on the accelerated exchange of information in the event of a radiological emergency. The reporting channels for ECURIE notifications are as follows:

- The state concerned submits an initial notification and subsequent information on the radiological emergency to the ECURIE headquarters in Brussels and Luxembourg, as well as to the permanently staffed national contact points of all ECURIE member states (in Austria, the BMI (Situation Centre)).
- The national contact point alerts the competent authority (in Austria the BMLUK) and forwards the transmitted information to it for evaluation (in some states, the contact point is also the competent authority).

USIE (IAEA)

The IAEA's information system is based on the 1986 Convention on Early Notification of a Nuclear Accident. Emergency-related information from the accident country and other affected states is distributed via USIE (Unified System for Information Exchange in Incidents and Emergencies) or FAX (EMERCON forms). **The reports are verified in advance by the IAEA.** USIE **has automatic interfaces to ECURIE** and can also be used for the bilateral exchange of information. The reporting channels are analogue to ECURIE reports.

Bilateral exchange of information

In the event of a (media-relevant) incident at a nuclear power plant in neighbouring countries, the Austrian authorities receive additional information to that exchanged via the IAEA and the EU on the basis of the bilateral agreements (see Annex 1). Based on the bilateral agreements, the BMLUK has access to the following emergency-relevant information from neighbouring countries:

Switzerland

Access to Swiss electronic situation reporting system (ELD), automatic transmission of measured values from the automatic monitoring network (ambient dose rate – ADR) and the ADR measuring rings around the nuclear power plants.

Germany

Access to the situation reporting system of the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) (ELAN), automatic transmission of the measured values of the ambient dose rate (ADR) automatic monitoring network.

Czech Republic

ESTE exchange, automatic transmission of measured values from the ADR automatic monitoring network and the AMS station in Ceske Budejovice, Temelin information (quick info and daily routine reports from Temelin operators), ADR measuring rings around the nuclear power plants (internet).

Slovak Republic

Automatic transmission of measured values from the ADR automatic monitoring network and the Bohunice AMS station.

Hungary

Access to Emergency Web, automatic transmission of measured values from the ADR automatic monitoring network, the AMS stations and the ADR measuring ring of the Paks nuclear power plant.

Slovenia

Automatic transmission of measured values from the ADR automatic monitoring network, the ADR measuring ring of the Krsko nuclear power plant and the AMS stations.

3.2.3 Prognoses and decision support systems

Based on information on the (possible) release of radioactive substances into the environment and the weather forecast, initial estimates of the consequences of an accident can be made at an early stage with prognoses and decision support systems. On the basis of these assessments, appropriate protective measures for the population are then be prepared or taken if necessary.

TAMOS

The forecasting system TAMOS was developed by GeoSphere Austria. Immediately after reporting an accident and alerting the BMLUK, the BMLUK can use TAMOS to carry out initial atmospheric transport and deposition calculations. These calculations are based on current weather forecasts (from the European Centre for Medium-Range Weather Forecasts in Bologna/Italy). TAMOS can be used to quickly estimate **whether Austria could be affected by the impact of the event**. If necessary, the precipitation forecast can be used to determine the regions of Austria that are potentially more affected. If the BMLUK remote access to the TAMOS system is not available due to technical problems, TAMOS calculations can also be carried out directly by the permanent GeoSphere Austria service and the results transmitted to the BMLUK.

RODOS

The integrated decision support system RODOS (Realtime Online Decision Support System) was developed as part of EC research programmes. Based on information on the (possible) release of radioactive substances by the affected state and current weather forecasts (from the European Centre for Medium-Range Weather Forecasts in Bologna/Italy), RODOS can be used to carry out atmospheric transport and deposition calculations. Furthermore, the contamination of food and feed and the dose for the affected population can be estimated. Based on these dose estimates, RODOS identifies the areas for which protective measures should be considered.

ESTE

Based on a bilateral agreement with the Czech nuclear regulatory authority, the BMLUK has been operating the decision support system ESTE since 2005. In the event of an accident at the Dukovany or Temelin nuclear power plants, the ESTE system in Prague transmits emergency-relevant information to the ESTE system at BMLUK in order to assess the effects outside the plant (in particular source terms). Based on this data and the current weather forecast (from the European Centre for Medium-Range Weather Forecasts in Bologna/Italy), the regions likely to be affected are determined and dose estimates carried out in a similar way to the ESTE system in Prague. This provides the Czech nuclear regulatory authority and the Austrian authorities with the same decision-making basis for emergency management outside the plants. In addition, ESTE can be used to carry out source term estimates, dispersion calculations and dose estimates for all nuclear power plants in Europe.

Weather bulletin of GeoSphere Austria

In order to assess the reliability of the weather forecasts used in the forecasting and decision making support systems, the BMLUK can request a weather bulletin from the permanent service of GeoSphere Austria (24/7). This allows the forecast results of the BMLUK to be validated by a meteorological expert assessment.

Predetermined emergency procedures

The possible radiological effects of severe accidents in nearby nuclear power plants on Austria were systematically analysed for various accident scenarios and weather conditions. Based on these investigations, emergency procedures were drawn up as guidelines for efficient emergency management at federal level. These procedures are available in paper and electronic form at the BMLUK. **Even if the event of a failure of the electronically supported emergency systems, these emergency procedures make it possible to estimate the effects of nuclear power plant accidents on Austria.**

3.2.4 Automatic measuring systems

Radiation Early Warning System - automatic data exchange (coupled measuring networks)

On the basis of bilateral agreements (see Annex 1), there is a constant exchange of data between the Austrian Radiation Early Warning System and the automatic monitoring networks of all neighbouring states with the exception of the Italian monitoring network. The measured values of the Italian monitoring network are available via the European data platform EURDEP. The following table summarises the data exchanged with the individual states and the European data platform EURDEP.

Table 6: Automatic data exchange between Radiation Early Warning System / automatic monitoring networks (Source: BMLUK, Radiation Protection Directorate)

Country/institution	Austria supplies	Austria receives	Start
Switzerland	ADR 1-h mean value (MV), all measuring points (via ISPRA)	ADR 1-h-MV approx. 60 measuring points per hour	2009
Germany	ADR 10-min-MV, all measuring points	ADR 10-min-MV, approx. 600 measuring points (in Bavaria and Baden-Württemberg), once a day, increased measured values immediately	2006
Czech Republic	ADR 10-min-MV all measuring points	ADR 10-min/1-h-MV, approx. 25 measuring points per hour	2001
Slovak Republic	ADR 10-min-MV, all measuring points	ADR 10-min-MV, approx. 20 measuring points per hour	1994

Country/institution	Austria supplies	Austria receives	Start
Hungary	ADR 10-min-MV, all measuring points	ADR 1-h MV, approx. 40 measuring per hour (measuring ring around Paks NPP and some other stations); remaining stations: ADR 6-h-MV	2004
Slovenia	ADR 1-h-MV, all measuring points	ADR 30-min-MV, (5-min-MV if required), approx. 50 measuring points	1999
European Data Platform EURDEP	ADR 1-h-MV, all measuring points	European states different mean value class, different transmission frequency	1995

The European Commission has set up a "data platform" for the measured values of the Austrian Radiation Early Warning System in order to be able to record the situation throughout Europe in the event of an incident with large-scale contamination. A headquarter for this platform is located in an EC research facility in Ispra, Italy. Almost all European states as well as some states outside Europe with radiation early warning systems - including Austria - exchange their measurements via this data platform. The measured values are also publicly accessible at the Internet address remap.jrc.ec.europa.eu. A comparable global data platform (IRMIS) is being set up by the IAEA.

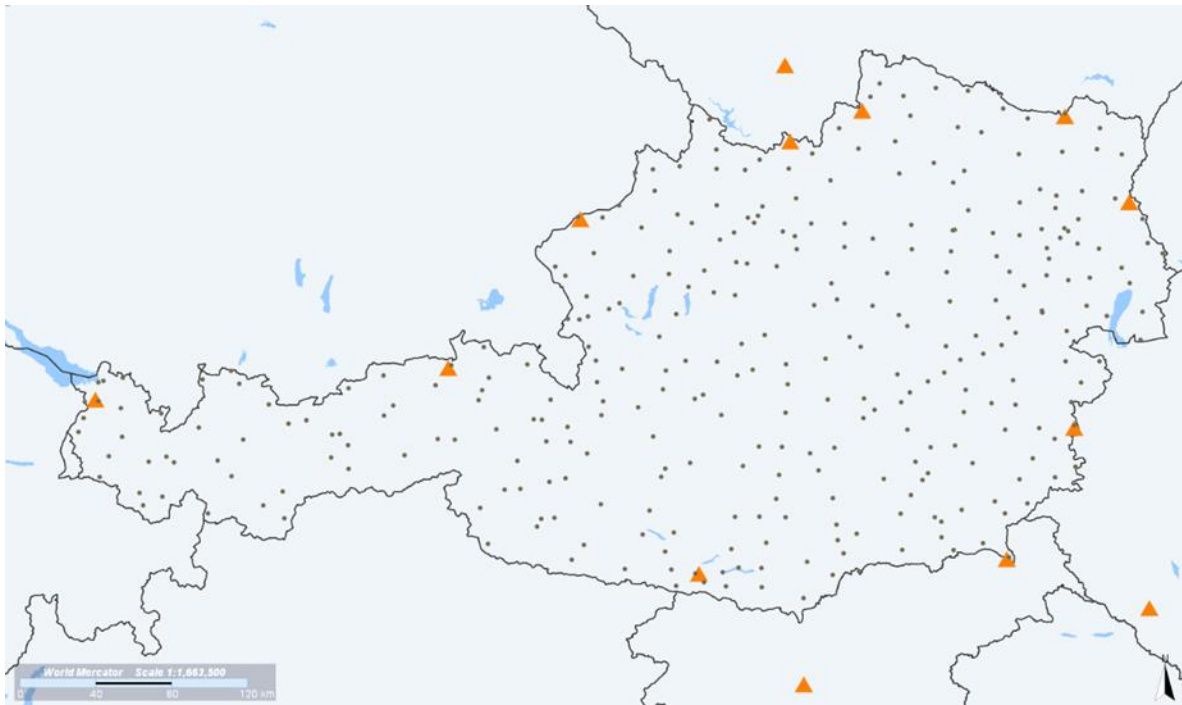
Figure 5: Automatic data exchange between radiation early warning systems / automatic monitoring networks (Source: BMLUK, Radiation Protection Directorate)



Radiation Early Warning System - Ambient Dose Rate Monitoring Network

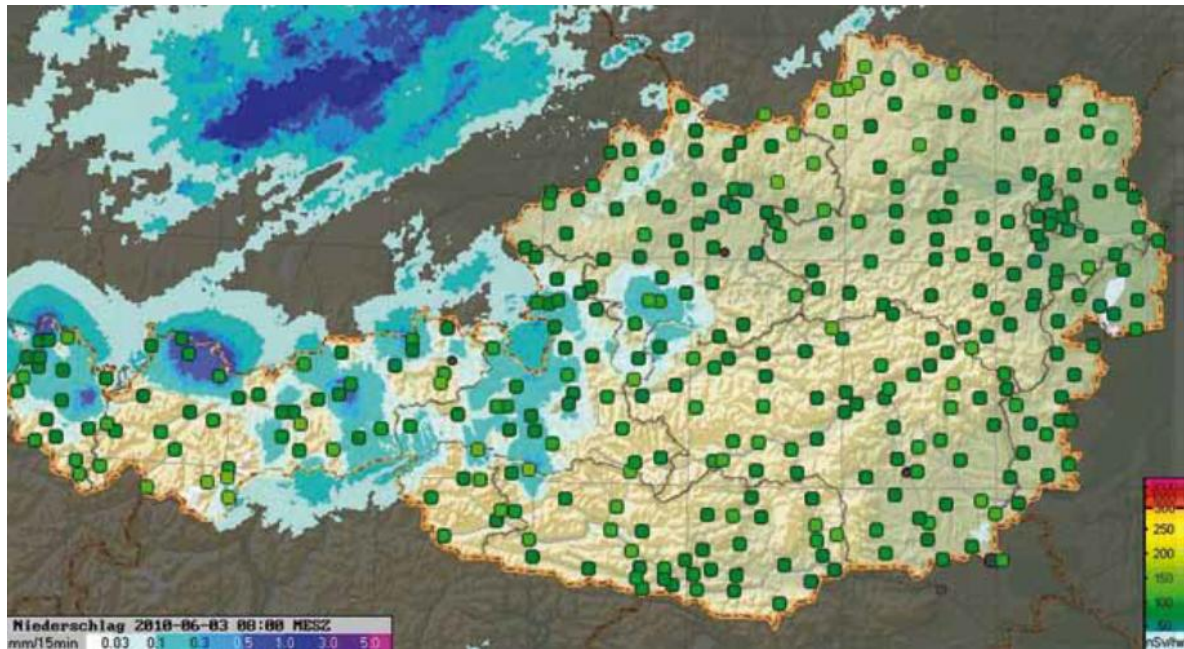
More than 300 ambient dose rate meters installed in Austria (see Figure 6) operate fully automatically. Essentially, they measure the intensity of gamma radiation at the installation site and send the measured values and status messages to the data centres of the Austrian Radiation Early Warning System (SFWS). The measured values are 10-minute average values or, after a significant change in the measured values of the ambient dose rate (ADR), 1-minute averages. The changeover is automatic at most SFWS measuring stations. The majority of the locations of the ADR probes comply with international recommendations: installation of the measuring probes one metre above ground on untreated permanent meadows or on flat roofs. The SFWS data centre is located in Vienna in the BMLUK, Radiation Protection Directorate. A backup centre for the redundant systems has been set up in military buildings in Korneuburg.

Figure 6: Austrian Radiation Early Warning System (black dots: ambient dose rate meters, orange triangles: air monitor stations) (Source: BMLUK, Radiation Protection Directorate)



A web-based "reporting screen" has been set up for mobile access to the data. The BMLUK, the LWZ and the BMI (Situation Centre) have access to it. Meteorological data from GeoSphere Austria is also integrated into the "reporting screen" to make it easier to recognise increases in measured values due to heavy rainfall events.

Figure 7: Measurement data representation in the "Reporting screen" (Source: BMLUK, Radiation Protection Directorate)



A so-called "alarm level" of 300 nSv/h was defined for alerting the on-call service of the radiation protection directorate at the BMLUK and the SFWS management at the Federal Environment Agency. In the event of alarms due to increases in measured values, the SFWS management (Umweltbundesamt GmbH) sends information to the BMI (Situation Centre) and to all LWZs during working hours or the on-call service of the Radiation Protection Directorate at the BMLUK (Radiation Protection Directorate) outside working hours to assess and explain the increase in measured values.

Radiation Early Warning System - Air Monitoring Network

The ADR measuring devices only determine the gamma dose rate at the installation site. For this reason, the SFWS also operates so-called air monitor stations, which enable nuclide-specific air concentration measurements (AMS stations). The air monitors are preferably located in the meteorological catchment area of nuclear power plants close to the Austrian border. The air monitoring stations continuously suck in air, whereby aerosol-bound radioactive substances are deposited on a filter. The filters are permanently examined directly at the measuring point for the presence of alpha, beta and gamma radiation. The use of germanium or sodium iodide detectors enables nuclide-specific determination of gamma-emitting radionuclides. If radioactive substances are detected, an activated carbon filter is also vacuumed and analysed for the presence of gaseous iodine isotopes. The systems are

also equipped with a weather station. **Ten air monitoring stations** are currently in operation in **Austria**.

In addition to the installations in Austria, **four air monitoring stations** have also been set up abroad in the vicinity of nuclear power plants close to the border on the basis of bilateral agreements. The data from these stations is automatically transmitted to the data centre of the Austrian SFWS.

Table 7: Air monitor stations in Austria and neighbouring states. HPGe (High Purity Germanium), NaI (sodium iodide) (Source: BMLUK, Radiation Protection Directorate)

Province/neighbouring state	Station name	Start of operations	Gamma detector
B	Rechnitz	2004	HPGe
K	Villach	1998	NaI
Lower Austria	Gmünd	1996	HPGe
Lower Austria	Laa/Thaya	1996	HPGe
Lower Austria	Zwerndorf	1996	HPGe
Upper Austria	Braunau	2000	NaI
Upper Austria	Leopoldschlag	1999	HPGe
ST	Bad Radkersburg	1998	HPGe
T	Kufstein	1998	NaI
V	Dornbirn	2001	HPGe
CZ	Ceske Budejovice (near Temelin NPP)	2001	HPGe
HU	Gerjen (near Paks NPP)	2006	HPGe
SK	Jaslovske Bohunice (near Bohunice NPP)	2001	HPGe
SLO	Krsko 2, Drnovo (near NPP Krsko)	1999	HPGe

From the bilateral data exchange, the Austrian data centre also receives measurement data from **three Hungarian** (Napkor, Tesa and Nagykanizsa) and **two Slovenian** (Krsko and Brinje nuclear power plants) **air monitor stations**.

Laboratory-based monitoring system

Laboratory-based radioactivity monitoring is carried out in Austria in the event of a radiological emergency in order to comprehensively assess Austria's impact in the event of large-scale contamination and to define or adapt protective measures. The monitoring system consists of the specialised measurement laboratories of the Austrian Agency for Health and Food Safety (AGES) at four locations (Innsbruck, Linz, Vienna and Graz). Sampling, measurement and transmission of the measurement results in the event of a radiological emergency are described in Chapter 3.3.

Dose estimation based on measurement data from RODOS/OECOSYS

The computer simulation model OECOSYS allows the estimation of activity concentrations in certain foods and the corresponding ingestion dose after accidents in nuclear power plants close to the border. Both the results of the dispersion forecasts of the RODOS/ESTE/TAMOS decision support systems and existing measured values can be used as input data for OECOSYS. In future, RODOS will be used instead of OECOSYS. An interface to the measurement data in RODOS is currently being developed.

3.3 Radiation monitoring, sampling, sample transport and measurement

3.3.1 Mobile radiation detection units

Federal and provincial authorities can request radiation detection missions via the BMI (situation centre). These missions are carried out by 500 emergency workers of the radiation detection units of the police (intervention teams). Annex 5 contains a request form for an official radiation detection mission. The form must include the authority requestion, the transmission of the measuring results, the radiological situation including the suspected radionuclides, the area of measurements, the detection target and the implementation including type of measurement (flight, car, ground). In the event of large-scale contamination, several Austrian provinces also provide additional ambient dose rate measurement data through the rapid measurement at pre-defined measuring points. In the event of possible failures of parts of the Austrian Radiation Early Warning System, for example due to natural disasters, radiation detection missions are important redundant measurement procedures.

Procedure

- **Alerting and coordination of the radiation detection units** via the Provincial Control Centres (LLZ) set up at the Provincial Police Directorates. The Provincial Control Centres are permanently staffed by on-call services.
- **Transmission of the measurement data** (counts per second or ambient dose rate, geographical coordinates) to the client.
- **Display of the measurement data** at BMLUK: Integration into the reporting image to display of the measurement data of the SFWS; display in Google Earth or in QGIS or RODOS.

3.3.2 Sampling plan for large-scale contamination

The SKKM working group "AG Proben", which is made up of representatives of the responsible federal ministries, the provinces, AGES and first responder organisations, has drawn up a sampling plan "Organisation and implementation of sampling, sample transport, measurements and transmission of measurement data in the event of large and small-scale radioactive contamination" and updates it regularly [AG Proben 2023].

The sampling plan defines, among other things, the sample media (various environmental, feed and food samples), the respective number of samples and the sampling procedures. Other topics include sample transport, measurement capacities of AGES, presentation of measurement results and their communication. The sampling plan, which is part of the National Emergency Response Plan, ensures that the data required in the event of a radiological emergency is available for decisions on measures to protect the population (after the end of contamination). The measurement results (nuclide-specific concentrations) of various environmental, feed and food samples allow protective measures to be optimised based on forecast or measurement results from the Austrian Radiation Early Warning System. This is particularly important for protective measures in the agricultural and food sectors.

Sampling and sample transport to AGES is carried out by the respective province in accordance with the provisions of the emergency response plan of that province.

Procedures for activating the sampling plan

- **BMLUK with involvement of BMASGPK:** Activation of the sampling plan (as an intervention measure), categorisation of the affected districts in radiological emergency categories (0 to 2) according to the sampling plan [AG Proben 2023]
- **Austrian Province:** Order for sampling to the sampling organisations in the province
- **Sampling organisations:** Implementation of sampling according to the sampling plan [AG Proben 2023]
- **Transport organisation:** Transport of the samples
- **Laboratory measuring stations of AGES (Vienna, Linz, Graz, Innsbruck):** Measurement results (presentation and transmission to the provinces and BMLUK, upload to the radiological situation reporting system)
- **BMLUK:** Release of the measurement results in the radiological situation reporting system

3.4 Catalogue of measures

According to StrSchG 2020, the National Emergency Response Plan must contain a catalogue of measures with a compilation of intervention measures including optimised protection strategies. In accordance with IntV 2020, this catalogue of measures serves as the basis for determining protective measures in the event of a radiological emergency and protective and remediation measures in the late phase. A list of all intervention measures contained in the catalogue of measures [Catalogue of Measures 2022] that are to be considered in the various phases of a radiological emergency and the late phase due to large-scale radioactive contamination can be found in Annex 12.

3.5 Protective measures

The intervention measures contained in the catalogue of measures form the basis for the definition of protective measures. General and specific provisions for protective measures are set out below.

3.5.1 General provisions in accordance with StrSchG 2020

The BMLUK, including the BMASGPK, has

- to assess the **situation**,
- to define **protective measures** on the basis of this assessment, if necessary and to implement these by means of **official orders or recommendations** to the affected population,
- **reassess** the situation in the event of significant changes and, if necessary, **adapt or cancel** the protective measures,
- review the **effectiveness** of the protective measures being implemented and adjust them if necessary, and
- if necessary, to issue **ordinances** to ensure the implementation of protective measures. These ordinances **shall be announced** in an appropriate manner, such as on the **radio or television**, and shall enter into force immediately after their announcement. They must be cancelled if the protective measures in question are no longer required.

The provincial governors have

- to implement the established protective measures and
- to inform the BMLUK about **the status and effectiveness** of the protective measures implemented.

International cooperation

The BMLUK must immediately contact the competent authorities of all other states that may be involved or are likely to be affected, in order to

- exchange views on **the assessment of the exposure situation** and
- coordinate **protective measures** and **public information**.

Working groups at European level (HERCA-WENRA) have drawn up recommendations for better coordination of protective measures between neighbouring countries during the early phase of a nuclear power plant accident. These are summarised in the Technical Annex.

3.5.2 Pre-distribution of potassium iodide tablets, monitoring of foodstuffs - BMASGPK

Annex 13 provides an overview of the Austrian stockpiling concept. According to StrSchG 2020, the BMASGPK is responsible

- for the procurement of potassium iodide tablets and
- with the cooperation of the provinces, for the establishment of a suitable pre-distribution, storage and delivery system for the timely provision of care in the event of a radiological emergency, and
- for the radioactivity monitoring of foodstuffs in accordance with the specifications of the sampling plan [AG Proben 2023].

3.5.3 Protective measures in schools - Federal Ministry of Education, (BMB)

The BMB has issued a new circular 18/2023 "Step-by-step instructions for radiological emergencies - radiation protection in schools" [Circular 18/2023]. The aim of the circular is to prepare schools to ensure that all necessary measures are carried out in a regulated and safe manner in the event of a radiological emergency. A significant change in this circular is as follows: On the basis of information from the federal radiation protection authorities about a radiological emergency via ORF (TV, Radio Ö3 and [orf.at](https://www.orf.at)), the pupil may be given potassium iodide tablets and a letter to parents to take home. However, the tablets may only be taken if expressly instructed to do so by the radiation protection authorities. The circular was coordinated with the BMLUK and BMASGPK.

Comparable provisions for kindergartens and other childcare facilities have yet to be developed.

3.5.4 Protective measures for Austrian citizens in countries affected by radiological emergencies

In particular, the following measures can be considered:

- Follow the recommendations of the competent authorities in the states affected (state of accident or neighbouring countries affected)
- Travel recommendations and warnings by the BMEIA

- Information and, if necessary, measures for Austrian citizens in the states concerned (including Austrian embassy staff and their relatives)
- Information for relatives of Austrian citizens in the states concerned
- Information for Austrian citizens returning from affected countries

In order to be able to assess such events and their effects, Austria will primarily rely on the information provided by the local authorities via the international information systems (EC-URIE of the EC and USIE of the IAEA) or bilaterally.

Procedure

- Based on the assessment of the radiological emergency, protective measures are determined by the BMLUK with the involvement of the BMASGPK.
- The BMEIA is informed via the established reporting channel BMLUK - BMI (Situation Centre) - BMEIA with the corresponding report (measures for Austrian citizens in the affected countries, import control).

3.5.5 Measures to protect against contaminated imported goods or means of transport

Metrological checks may be required for

- Goods (especially food and feed) from the state of the accident and other affected states (in the case of third states through import controls) and
- Means of transport (aeroplanes, vehicles, trains) from the country of the accident and other affected countries.

Procedure

- Based on the assessment of the radiological emergency, the appropriate measures are determined by the **BMLUK with the involvement of the BMASGPK.**
- The implementation of these measures is generally the responsibility of the **provinces** (defined reporting channel: BMLUK - BMI (Situation Centre) - LWZ).

- The BMLUK can commission mobile intervention teams (e.g. emergency workers of the radiation detection units of the police) for this purpose.
- The BMASGPK is responsible for monitoring **foodstuffs**. This also applies to other goods subject to the Food Safety and Consumer Protection Act (LMSVG).
- The BMLUK is responsible for monitoring **feeding stuffs, other goods and products**.
- Monitoring is carried out by AGES (**laboratory-based monitoring system**).

3.5.6 Measures in the field of air transport – change of flight routes

If radioactive contaminated air masses are transported at higher altitudes, flight routes may have to be changed to prevent contamination of the aircraft and exposure of passengers and personnel.

Procedure

- Radiation Protection Directorate in the BMLUK carries out the TAMOS calculations based on the latest information from the accident state.
- GeoSphere Austria provides the results of these current TAMOS calculations (radionuclide concentrations at different flight altitudes) to Austro Control, the responsible supervisory authority (BMLUK), the Military Meteorological Service of the BMLV and Radiation Protection Directorate in the BMLUK (in implementation)
- If necessary, Austro Control decides on changes to the flight routes.

3.5.7 Request for Austrian assistance by severely affected states

The Convention on Assistance in the Case of a Nuclear Accident or Radiation-related Emergency entered into force in Austria on 22 December 1989. Article 2 of the Convention stipulates, inter alia, that in the event of a nuclear accident or radiation-related emergency, a State Party may request assistance from any other State Party directly or through the IAEA. A **Response and Assistance Network (RANET)** has been established by the IAEA for the practical implementation of the Convention.

In 2010, Austria registered resources in RANET that can be requested by other signatory states if necessary. The registration does not entail any specific obligation to permanently provide/reserve resources available, as the principle of voluntariness and a "case by case" decision is adhered to. Austrian resources have been registered for the following areas

- Radiation survey (without in-situ measurements): on-site measurement team and support from experts in Austria
- Source search/recovery: on-site measurement team and support from experts in Austria

Procedure

- The application is examined, answered and ultimately implemented by the BMI (the ministry responsible for international disaster relief in Austria) in consultation with the BMLUK as the responsible specialised authority.
- The request for assistance is received by the BMI (Situation Centre) via the IAEA.
- The BMI forwards the request for assistance to all relevant ministries, provinces and first responder organisations
- Ministries, provinces and first responder organisations inform the BMI of support options.
- The BMI bundles the information and forwards it to the IAEA as a coordinated Austrian offer of assistance following an internal decision and agreement with the BMLUK.
- Reporting channels: IAEA - BMI - relevant organisations - BMLUK (coordination)
- The state that submitted the request for assistance, the IAEA (IEC) and Austria (BMI/BMLUK) draw up an Assistance Action Plan (AAP). Details of the assistance, including the costs, are regulated in the AAP.

3.5.8 Requesting and receipt of assistance by Austria

Austria has the possibility to request international assistance via the Convention on Assistance in the Event of a Nuclear Accident or Radiation-Related Emergency and RANET. This could become necessary, for example, in the area of medical care for a large number of people suspected of having been exposed to very high levels of radiation. This can be ruled

out for the effects of nuclear power plant accidents on Austria. In other radiological emergencies (such as events involving hazardous radioactive sources), very high radiation exposures are possible, depending on the scenario.

Procedure

- The request for assistance is submitted to the IAEA by the BMLUK as the competent authority (request for Assistance via USIE).
- The BMLUK, the IAEA (IEC) and the competent authorities of the countries offering assistance are drawing up an Assistance Action Plan (AAP).
- Details of the assistance provided, including the costs, are regulated in the AAP.

3.5.9 Measures for large-scale elevated measured values

The increases in measured values can occur at several measuring stations in linked foreign monitoring networks, in the Austrian Radiation Early Warning System (ADR/AMS stations) or in the laboratory-based monitoring system.

The following measures are envisaged by the BMLUK

- Official enquiry by the on-call service of the Radiation Protection Directorate in the BMLUK to the IAEA (information request in USIE) on the possible cause of the increases in measured values
- Coordination with the competent authorities of other affected states, the EC and/or the IAEA (transmission of measurement results)
- In the case of **radiologically irrelevant concentrations** ("traces"): rapid information to the public to give the all-clear (in particular interpretation of the measured values)
- In the case of **radiologically relevant concentrations**, the measures correspond to those in the event of a radiological emergency

3.6 Informing the public

According to StrSchG 2020, the BMLUK must inform the public in an appropriate manner in preparation for a radiological emergency and, the event of a radiological emergency, as required by the situation. The contents listed in Annex XII of Directive 2013/59/Euratom must be taken into account.

3.6.1 Informing the public to prepare for a radiological emergency

The following sources of information are available to prepare the population:

- Emergency website of the BMLUK (notfallschutz.gv.at) and website of the BMLUK (strahlenschutz.gv.at) including the central official emergency documents, FAQs and publicly accessible measured values of the Austrian Radiation Early Warning System (from around 110 measuring stations)
- Brochure of the BMLUK: Emergency planning in Austria, radiological emergencies
- Brochure of the BMLUK: Agricultural measures (with the involvement of the Federal Ministry of Agriculture, Forestry, Regions and Water Management, the provinces and the Austrian Chamber of Agriculture)
- Brochure of the BMLUK: Deterministic radiation damage after high radiation exposure
- Website of the BMASGPK on potassium iodide tablets
- Radiation protection guide of the BMI (bmi.gv.at/civilprotection)
- Regular briefing of media by the BMLUK

3.6.2 Informing the public in the event of a radiological incident incident - national crisis communication

3.6.2.1 General requirements

Crisis communication is a central component of efficient emergency management. In the event of radiological events, particularly those at nuclear power plants, there is likely to be a very high demand for information from the public and the media. In the event of an incident, the affected population in particular must be warned quickly. If necessary, protective measures must be announced via the ORF.

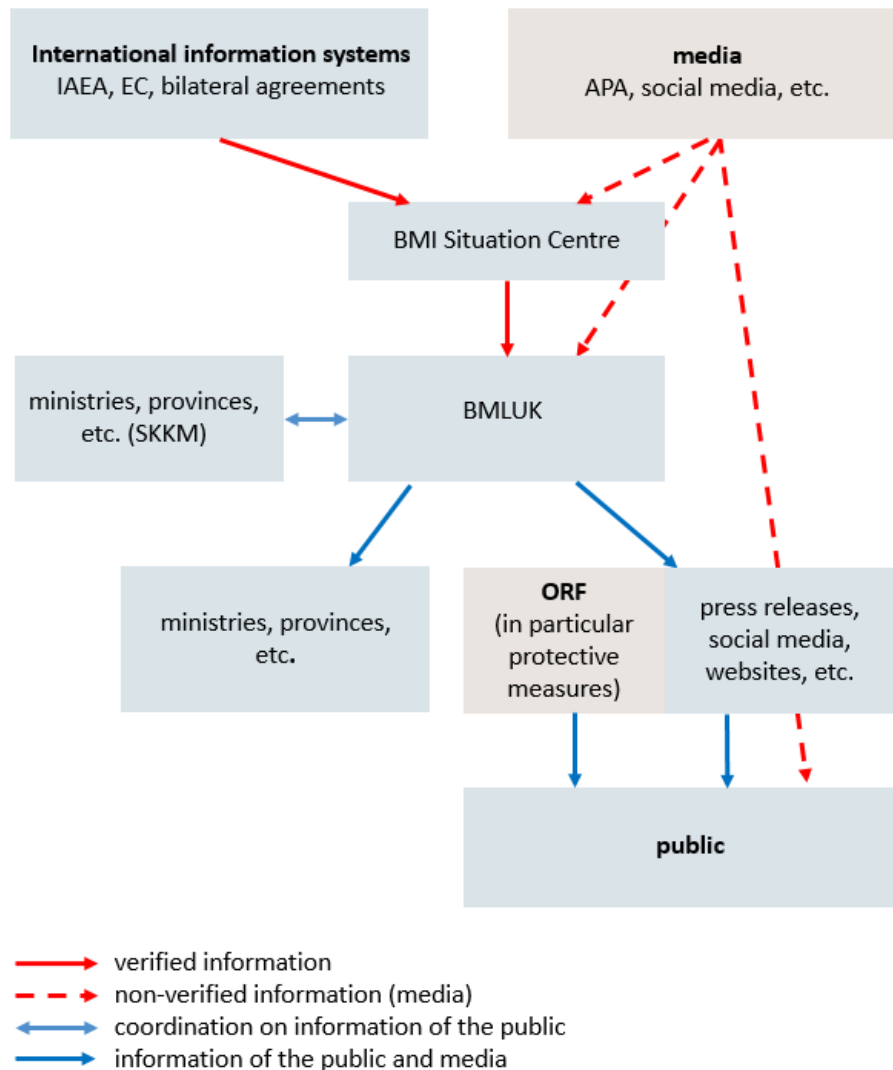
The information provided to the public must **be consistent, timely and comprehensible** in order to counteract uncertainty among the population or misinformations.

For this reason, the information activities of all authorities and organisations involved in the event of an incident must be closely coordinated right from the start. As there is little time available in the early phase of a radiological emergency, public information (e.g. procedures, prepared text templates) must already be defined or **closely coordinated** and regularly practised during emergency preparedness.

Voting mechanisms in Austria

The following illustration shows the procedure for informing the public in the event of a radiological emergency:

Figure 8: Information of the public in a radiological emergency (BMLUK, Radiation Protection Directorate)



As described in section 2.3.7, the following coordination mechanisms exist:

- Early involvement of the **BMASGPK** in the crisis team of the BMLUK;
- Rapid transfer of information in the **Radiological Situation Reporting System** to other ministries, provinces and first responder organisations. That enables the authorities and organisations involved to have access to all important information and the same level of knowledge; this also includes information for the media such as press releases and ORF announcements.
- Coordination in the **SKKM Coordination Board**, in which representatives of ORF and APA are also consulted on an ad hoc basis.

- Arrangements for harmonising the information provided to the public in the provinces with that provided at federal level must be included in the **emergency response plans of the provinces**.

International coordination

According to StrSchG 2020, the BMLUK must immediately contact the competent authorities of all other states that could be affected in order to

- exchange views on **the assessment of the exposure situation** and
- coordinate **protective measures** and **public information**.

Existing information and coordination systems should be utilised at bilateral or international level. These coordination activities shall not prevent or delay necessary measures to be taken at national level.

3.6.2.2 Public information channels

Various information channels are used to warn and inform the public in the event of an incident:

- Warning and alert system ("siren warning system")
- AT-Alert [AT-Alert]
- Press releases (APA)
- Information on ORF (radio, television and internet (ORF Online))
- Social media (X/Twitter and Facebook)
- Emergency website of the BMLUK and website of the BMLUK
- Call Center BMI

Warning and alert system

Austria has a nationwide acoustic warning and alert system (sirens), which is operated by the BMI together with the provinces. The acoustic warning and alarm system distinguishes between three different signals (see Annex 8).

In the event of a radiological emergency, the warning and alarm system is **only used** for warning/alerting **in those districts where it is necessary to prepare/implement the protective measures "sheltering" or "ITB"**. The all-clear is given at the end of the danger. The time schedule is shown in more detail in Annex 8. **If these two protective measures are not necessary, the population is alerted and informed directly via ORF (television, radio, internet).**

The specific information from the competent authorities is provided after the warning/alerting by the warning and alert system via radio and television. It is important that there is **no** time delay between the warning/alert and the official announcements via radio and television. This requires very **close coordination with the ORF in terms of timing and content. The BMLUK has created text templates for ORF announcements.**

Procedure

- If necessary, the BMLUK, with the involvement of the BMASGPK, determines the triggering of the warning and alarm system by the LWZ of the affected Austrian provinces (report).
- This definition includes the **time** and the **districts** in which the warning and alert system is triggered.
- In order to provide the official notifications simultaneously with the warning/alerting by the warning and alert system via radio and television, there must **be very close coordination between the BMLUK and the ORF**. At the same time, the information must be available on the **BMLUK emergency website** (notfallschutz.gv.at). The same applies to AT-Alert (see below).
- Once the warning and alert system has been triggered, the respective LWZ sends a corresponding message to the BMI (Situation Centre) and the BMLUK about the triggering. The same applies to AT-Alert.

If the warning and alert system cannot be triggered in one or more LWZs due to technical problems, it can also be triggered centrally by the BMI (Situation Centre) for the respective provinces or the affected districts or nationwide.

AT-Alert

AT-Alert [AT-Alert] is a population warning system that can reach as many affected people as possible directly via their mobile phones using "Cell Broadcast" mobile phone technology in order to transmit information and warnings based on location or occasion. AT-Alert thus supplements the existing warning options such as sirens, loudspeakers and media and is intended to inform and warn the population in the event of radiological emergencies.

In a radiological emergency, AT-Alert is **only used** for warning/alerting **in those districts in which the preparation/implementation of the protective measures "sheltering" or "ITB" are required**. The all-clear is given at the end of the danger. **If these two protective measures are not necessary, the population is alerted and informed directly via ORF (television, radio, internet).**

Procedure

- If necessary, the BMLUK, with the involvement of the BMASGPK, determines the triggering of AT-Alert by the LWZ of the provinces concerned (notification text).
- This definition includes the **time** (at the same time as the warning and alarm system is triggered), the **AT-Alert text** (including **warning level**) and the **districts** in which the AT-Alert is triggered.
- In order to provide the official notifications at the same time as the AT-Alert is triggered via ORF radio and television, there must **be very close coordination between the BMLUK and ORF**. At the same time, the information must be available on **the BMLUK emergency website** (notfallschutz.gv.at). The same applies to the warning and alarm system (see above).
- Once the AT-Alert has been triggered, the respective LWZ sends a corresponding message to the BMI (Situation Centre) and the BMLUK. The same applies to the warning and alert system.

If AT-Alert cannot be triggered in one or more LWZ's due to technical problems, it can also be triggered centrally by the BMI (Situation Centre) for the respective provinces or the affected districts or nationwide.

The AT-Alert texts and the districts in which AT-Alert have been triggered can be viewed on the website warnung.at-alert.at in an emergency.

Press releases (APA)

Press releases are prepared by the **BMLUK** at an early stage and distributed via APA. APA releases reach all media (e.g. print media, private television, online services) that can disseminate the information. The BMLUK **has created text templates for press releases** (see Annex 4).

Information for those affected via ORF (television, radio, internet)

As a **public broadcaster**, ORF plays a very central role.

Pursuant to § 5 of the ORF Act, ORF is obliged to

- Provincial and state authorities as well as the authorities of the municipalities located in the respective distribution area for appeals in the event of crises and disasters and other important notifications to the general public, and
- Private individuals for calls in justified and urgent emergencies to prevent danger to people's health and lives

to provide the necessary and appropriate broadcasting time free of charge at all times. The above provisions shall also apply to distribution in online offerings.

At the same time as the warning and alert system is triggered, the BMLUK must provide appropriate information on the type of danger, the affected districts and the necessary protective measures via ORF (radio and television). In the event of a crisis or disaster, it is possible to **broadcast regional or national information on all ORF stations** (radio and television) **at any time** via **the Ö3 radio station**

Procedure

- The **BMLUK** contacts the head of Ö3 directly or via the BMI (Situation Centre).
- The corresponding official notification from the BMLUK is sent regionally or nationally.
- At the same time, in accordance with ORF's internal procedures, the respective broadcasting line is used to arrange for the message to be broadcast on television and announced on the Ö1 radio station.

Once the warning and alert system has been triggered by the provinces (LWZ), the BMLUK must provide appropriate information on the type of danger and the correct behavioural measures via radio and television. **Templates for ORF announcements** for radio and television were developed by the BMLUK with the involvement of the ORF (see Annex 4).

Social media

The X/Twitter account and the BMLUK's Facebook page are used in the event of a radiological emergency. The Minister's Office, the press spokespersons and the BMLUK's public relations directorate communicate via social media. The BMLUK has prepared text templates for **X/Twitter** for the respective messages (see Annex 4).

Emergency website and BMLUK website

The BMLUK's emergency website (notfallschutz.gv.at) is intended for crisis communication in the event of a radiological emergency. The BMLUK's emergency website is highly available and, if necessary, scalable for a large number of simultaneous accesses to the website, easy and quick to activate or update and clearly structured. Information on radiological emergencies and relevant background information is made available on the emergency website.

Supplementary background information, in particular brochures from the BMLUK, are available on the **BMLUK website** (strahlenschutz.gv.at). The ADR measurement data from the Austrian Radiation Early Warning System (from around 100 sites) can also be accessed here. These are also made available via ORF Teletext, page 623 (teletext.orf.at).

Call centre

In the short term, a call centre can be put into operation in the BMI/Situation Centre, which operates under the content requirements of the responsible department. The call centre is intended to handle the large number of calls and questions from the public. The procedures for activating and operating the call centre will be defined in an agreement between the BMI and BMLUK.

Other communication channels

Other information channels in the event of a radiological emergency are

- Press conferences
- Interviews
- Expert panels on ORF

3.7 Protection of persons carrying out interventions

3.7.1 Intervention Teams (emergency workers)

The protection of persons carrying out interventions is regulated by the StrSchG 2020 and the IntV 2020. This includes requirements for intervention teams (emergency workers), in particular with regard to training and further training, reference values for interventions, provision of personal protective equipment, provision of information necessary for the specific operation, dose determination (personal dosimeters, use of warning dosimeters if necessary), immediate medical examinations if the dose values specified for occupational exposures are exceeded and determination of the effective dose in the event of suspected incorporation of radioactive substances.

Corresponding information for the federal intervention teams can be found in Annex 3.

- **AGES intervention teams (emergency workers)** (Vienna, Linz),
- **Radiation detection units of the police** and
- **Mobile Task Force (MoEG)** Nuclear Engineering Seibersdorf

Note: Special units of the CBRN defense are not considered as intervention teams, but are deployed as part of an assistance service provided by the Austrian Armed Forces.

3.7.2 Helpers in radiological emergencies

Helpers are persons who are not emergency workers and who carry out interventions. The competent authority may call on persons as helpers who are not emergency workers, provided that this **significantly optimises** the implementation of protective measures (see emergency response plans of the provinces). The prerequisite for this is that

- their commitment is voluntary,
- they have the necessary knowledge or have received the appropriate instructions,
- they have been informed of the associated risk,
- except in justified exceptional cases, their use complies with the reference value specified in the IntV 2020,
- they are equipped with dosimeters if the exposure cannot be estimated in any other way, and
- they are equipped with suitable personal protective equipment.

Note: Samplers in the case of large-scale radioactive contamination may, for example, fall into this group of persons.

3.7.3 People who urgently carry out necessary work

For persons who have to urgently carry out necessary work in emergency exposure situations without protective measures being involved, the competent authority must define regulations for adequate protection. The reference values according to IntV 2020 can be found in Annex 11.

Examples of urgently required work that must be carried out during a radiological emergency but do not constitute interventions within the meaning of the StrSchG 2020 include extinguishing and rescue operations in contaminated areas, supplying the population with vital products, securing persons, objects and borders, maintaining vital services or maintaining the safe operation or shutting down a facility with potential hazards.

3.8 Medical assistance and control of non-radiological effects

3.8.1 Medical assistance

The key points for medical assistance in radiological emergencies can be found in the guideline on medical diagnostics and therapy in radiological emergencies [Guideline 2019]. The following applies to accidents in nuclear power plants and other nuclear facilities in Austria's neighbouring states:

- The occurrence of deterministic health damage in Austria due to an accident in a nuclear facility in Austria's neighbouring states can be ruled out.
- Decontamination or clarification for incorporation may be necessary for persons coming from a heavily contaminated area of the country of the accident (Emergency Planning Zones). These measures are usually carried out by the state of the accident itself. If necessary, contamination checks can be carried out by radiation detection units of the police.

3.8.2 Mitigation of non-radiological effects

In all radiological emergencies, non-radiological as well as radiological effects must be considered. There can be considerable economic effects, if only due to the enormous follow-up costs for agriculture, food producers, tourism and the public sector, as well as negative psychological and social effects. The nuclear power plant accidents in Chernobyl and Fukushima have highlighted the major psychological and social consequences [WHO 2020], [NEA 2024]. In the event of radiological emergencies, it is therefore very important to provide the population with comprehensive information to mitigate possible psychological and social effects (see Chapter 3.6)

If psychosocial support is required, specially trained professionals in various organisations are available in all provinces. The organisations active throughout Austria in the field of psychosocial acute care and crisis intervention are brought together on the "Crisis Intervention - Acute Care" platform. The following organisations are currently part of the platform:

- Crisis Intervention Team of the province of Styria
- Crisis Intervention Team of the province of Vorarlberg
- Acute CareVienna
- Austrian Red Cross

- Catholic Emergency Pastoral Care Austria
- Evangelical Emergency Pastoral Care Austria
- Crisis Aid Upper Austria
- Crisis Intervention Team of the Association Arbeiter-Samariter-Bund
- AKUTteam Lower Austria
- Army Psychological Service

In addition, it is possible to set up a nationwide counselling hotline in cooperation with the ORF, which is available around the clock every day. The staff on the advice hotline can be supported by psychosocial specialists from the member organisations of the Austrian "Crisis Intervention - Acute Care" platform. A study on measures to reduce the non-radiological effects of radiological emergencies in Austria was carried out by the Red Cross Research Institute in 2009 and is available at the BMLUK [FRK 2009].

Details, in particular on reporting channels, procedures and the implementation of the planned measures to contain psychological and social effects, are to be regulated in the emergency response plans of the provinces.

3.9 Records and data management

The radiological situation reporting system described in chapter 2.3 is used for chronological logging and data management, among other things. It is used during exercises, for events that are relevant from a radiation protection perspective or purely medically relevant, and when a radiological emergency occurs. Information on completed events and exercises is stored and can be accessed by all registered users at any time. This enables systematic documentation and evaluation of the course of events, including the response of the authorities and organisations involved.

4 Maintaining emergency preparedness

4.1 Authorities and their responsibilities

The responsibilities and tasks of the organisations involved in the emergency management system for emergency preparedness and response are defined in accordance with the StrSchG 2020 and the present National Emergency Response Plan (see Section 2.2).

The organisations involved are responsible for maintaining emergency preparedness in their area of responsibility and for fulfilling their emergency response tasks.

The operational readiness and functionality of the entire emergency management system or parts of it must be checked in regular emergency exercises. If necessary, improvements and adjustments must be made.

4.2 Resources

The organisations involved in the emergency management system have an obligation to provide the **necessary resources** to maintain **emergency preparedness** in their area of responsibility and to fulfil their **emergency response** tasks.

4.3 Training and emergency exercises

According to StrSchG 2020, the authorities responsible for drawing up emergency response plans must hold, evaluate and document emergency exercises at appropriate intervals.

When conducting emergency exercises, the requirements of IntV 2020 must be observed in accordance with the recommendations of the IAEA [EPRExercise2005] in the following areas:

- Exercise objectives and scope
- Preparation, implementation and follow-up
- Exercise organisation
- Exercise scenario and exercise instructions
- Exercise documentation

For the practical implementation of these requirements, the SKKM working group "Emergency Exercises" has developed a guideline for the organisation of emergency exercises [Exercise Planning Guideline]. The emergency exercises regularly carried out at federal level are shown in Annex 9.

4.4 Quality assurance and updating the National Emergency Response Plan

4.4.1 Preparation of the National Emergency Response Plan

According to StrSchG 2020, general quality requirements apply to the emergency management system in accordance with international standards. Among other things, the emergency management system must be reviewed at appropriate intervals, including international peer reviews.

Emergency response plans are an important cornerstone of this emergency management system. This National Emergency Response Plan was drawn up by the BMLUK in accordance with StrSchG 2020 **with the involvement of all federal ministries concerned**. It contains the content required in Annex 1 of the IntV 2020, which is primarily based on the requirements of the European Union's Basic Safety Standards Directive for protection against ionising radiation [EURATOM 59/2013], the **general safety standards for emergency preparedness**

and response of the IAEA [GSR Part 7] and the recommendations of the IAEA [EPR-METHOD-2003].

The National Emergency Response Plan was brought to the attention of all those involved in interventions in the event of radiological emergencies (see distribution list).

4.4.2 Regular updating of the National Emergency Response Plan

In accordance with StrSchG 2020, the National Emergency Response Plan must be reviewed at appropriate intervals to ensure that it is up to date and updated if necessary, taking into account in particular experience from past emergency exposure situations and from national and international emergency exercises.

A prerequisite for this is that the BMLUK is informed by the participating organisations of any changes in their area. To this end, the BMLUK will send the National Emergency Response Plan to all participating organisations once it has been checked to ensure that it is up to date.

Explanation of terms

General criteria: Dose values defined in the National Emergency Response Plan at which protective measures are to be considered. In the event of a radiological emergency, the general criteria form the basis for determining protective measures.

Occupational emergency exposure: Exposure of emergency workers in an emergency exposure situation [StrSchG 2020].

Existing exposure situation: Exposure situation that already exists when a decision on its control must be made and that does not or no longer requires immediate action [StrSchG 2020].

Effective dose: the sum of the weighted organ equivalent doses in all tissues and organs of the body from internal and external exposure; Annex 21 [AllgStrSchV 2020].

Expected dose: dose to be expected from single or multiple exposure pathways in the event of an emergency exposure situation or an existing exposure situation.

Exposure: Any exposure of the human body to ionising radiation [StrSchG 2020].

Hazardous radioactive sources: A radioactive source that contains a radionuclide whose current activity is equal to or higher than the value specified by ordinance in accordance with § 43 Z 5 (StrSchG 2020) [StrSchG 2020].

In order to be able to characterise the danger of radioactive sources, the IAEA has defined two threshold values ("D-values") and specified nuclide-specific activity values for them [EPR-D-Values 2006]:

- D1 for handling **sealed radioactive sources** (excluding combustion of radioactive materials)
- D2 in the event of a **release of the radioactive inventory of a radioactive source** due to various causes (e.g. fire)

The D-value is determined by the **lower of the two values D1 and D2**.

According to the IAEA [EPRMETHOD2003], radioactive sources are classified in terms of their **hazard** according to the ratio of their activity (A) to the above-mentioned D-values:

- **$A/D < 0.01$** : Handling of sealed radioactive source (D1) and release of radioactive source inventory (D2) not hazardous (no deterministic health effects)
- **$0.01 \leq A/D < 1$** : Handling of sealed radioactive source (D1) and release of source inventory (D2) probably harmless
- **$1 \leq A/D < 10$** : Handling of sealed radioactive source (D1) dangerous for individuals and release of radioactive source inventory (D2) dangerous in the immediate vicinity
- **$10 \leq A/D < 1,000$** : Handling of sealed radioactive source (D1) very dangerous for individuals and release of radioactive source inventory very dangerous in the immediate vicinity
- **$1,000 \leq A/D$** : Handling of sealed radioactive source (D1) extremely dangerous for individuals and release of radioactive source inventory (D2) extremely dangerous in the immediate vicinity

According to this classification, radioactive sources with $A/D \geq 1$ are designated as **hazardous**.

Large-scale radioactive contamination: Contamination of a large area by radioactive substances. As a rule, several regions of a country (in Austria several political districts) or several states are affected. The transitions from small-scale to large-scale contamination are fluid and are determined on a case-by-case basis.

Helpers in radiological emergencies: Persons who are not emergency workers and who carry out interventions. The competent authority may call on persons as helpers if this significantly optimises the implementation of protective measures. The requirements for this are set out in the StrSchG 2020 and the IntV 2020.

Highly radioactive sealed source: A hazardous radioactive source that is enclosed [StrSchG 2020].

Intervention: The implementation of intervention measures [StrSchG 2020].

Intervention measures: The protective measures in an emergency exposure situation or the protective and remediation measures in an existing exposure situation [StrSchG 2020].

Nuclear facility: A nuclear power plant, an enrichment facility, a nuclear fuel fabrication facility, a reprocessing facility, a research reactor, an interim storage facility for spent fuel elements and an interim storage facility for radioactive waste that is directly related to the listed nuclear facilities and is located on the site of these facilities [StrSchG 2020].

Small-scale radioactive contamination: Contamination of a small area by radioactive substances. In practice, small-scale contamination is defined as contamination that affects only one or a few political districts. The transitions from small-scale to large-scale contamination are fluid and are determined on a case-by-case basis.

Laboratory-based monitoring system: The laboratory-based monitoring system is used to determine radioactivity in the environment (e.g. air, precipitation, water, soil), in food, drinking water, animal feed and agricultural and forestry products. It consists of four measuring laboratories of the Austrian Agency for Health and Food Safety - AGES (locations: Vienna, Linz, Graz and Innsbruck). There are sampling plans for routine cases, which are regularly updated, and for radiological emergencies, in particular for large-scale radioactive contamination.

Catalogue of measures: The compilation of intervention measures including optimised protection strategies [StrSchG 2020].

Emergency worker: A specially trained person with a defined role in a radiological emergency who may be exposed to radiation during their deployment in the emergency [StrSchG 2020].

Emergency exposure situation: An exposure situation resulting from a radiological emergency [StrSchG 2020].

Emergency management system: The legal or administrative framework that defines the responsibilities for emergency preparedness and response and arrangements for decision-making in an emergency exposure situation [StrSchG 2020].

Emergency response plan: A plan that contains appropriate responses to an emergency exposure situation for specific events and corresponding scenarios [StrSchG 2020].

Operational criteria: Criteria, such as measures and indicators of conditions on the ground, to be used in deciding on intervention measures if the general criteria for protective measures are not applicable.

Optimised protection strategy: Coordinated intervention measures that enable compliance with the defined reference value and aim to optimise protection below the reference value [StrSchG 2020].

Phases of a radiological emergency exposure situation:

- **Warning phase:** Phase that begins with the occurrence of a radiological emergency and ends as soon as contamination of the area under consideration begins [IntV 2020].
- **Contamination phase:** Phase in which dispersion and deposition procedures of radioactive substances take place in the area under consideration [IntV 2020].
- **Intermediate phase:** Phase that begins at the end of the contamination phase and ends at the beginning of the late phase [IntV 2020].

Radioactive contamination: The unintentional or unwanted contamination of materials, surfaces, the environment or a person by radioactive substances [StrSchG 2020].

Radiological emergency: A non-routine situation or event in which a radiation source is present and which requires immediate action to mitigate serious adverse consequences for the health, safety, quality of life and property of people and for the environment, or a hazard that could result in such serious adverse consequences [StrSchG 2020].

Radiological Dispersion Device (RDD): Devices for dispersing radioactive substances in the environment, whereby other dispersal mechanisms, such as spraying radioactive liquids, can be used in addition to the detonation of a conventional explosive. These are always events involving the deliberate release of radioactive substances with a terrorist or criminal background. Other terms commonly used in specialised literature or in the media are "dirty bomb" (explosive detonation as a delivery mechanism) and "unconventional explosive and incendiary device for the dissemination of radioactive substances" – USBV-A (explosive detonation or fire as a delivery mechanism).

Radiological Exposure Device (RED): Devices for the intentional external irradiation of persons by hidden, unshielded radioactive sources.

Reference value: In an emergency exposure situation or existing exposure situation, the value of the effective dose or organ equivalent dose or the activity concentration above which exposures are considered inappropriate, even if it is not a limit value that must not be exceeded [StrSchG 2020].

Remedial action: The elimination of a radiation source or reduction of its strength (activity or quantity) or interruption of exposure pathways or reduction of its effects for the purpose

of avoiding or reducing the doses that could otherwise be received in an existing exposure situation [StrSchG 2020].

Protective measures: The measures, other than remedial measures, for the purpose of avoiding or reducing the doses that could otherwise be received in an emergency exposure situation or existing exposure situation [StrSchG 2020].

Urgent protective measures: Those protective measures that must be implemented immediately after the occurrence of an emergency exposure situation for reasons of effectiveness [StrSchG 2020].

Late phase: An existing exposure situation after a radiological emergency [StrSchG 2020].

Transnational emergency: Radiological emergency of actual or potential radiological significance for more than one state [IAEA, GSR Part 7]. This includes:

- a significant transboundary release of radioactive substances (whereby a transboundary emergency does not necessarily require a significant transboundary release of radioactive substances),
- a general emergency at a facility or other event that may lead to a significant transboundary (atmospheric or aquatic) release of radioactive substances,
- the detection of the loss or unlawful removal of a dangerous source that has been transported across a national border or whose transport across a national border cannot be ruled out,
- a radiological emergency leading to a significant disruption of international trade or travel,
- a radiological emergency that requires the implementation of protective measures for foreign citizens or embassies in the state in which the radiological emergency occurs and other affected countries,
- a radiological emergency that actually or potentially leads to serious deterministic consequences or occurs as a result of a malfunction and/or problem (e.g. of equipment or software) with potentially serious international consequences for security,
- a radiological emergency that causes great concern among the population of more than one state due to an actual or suspected radiological hazard.

Austrian Radiation Early Warning System: Comprehensive automatic measurement system for radioactivity in the environment in Austria. It currently consists of more than 300 dose rate measuring points and 10 air monitors for recording the activity concentration in the air close to the ground. The measured values of the Radiation Early Warning System are available online in the alarm centres of the BMLUK, the BMI and the provinces.

Strategic nuclear weapons: Nuclear weapons with an explosive force of more than 150 kt TNT equivalent that are primarily used for nuclear deterrence.

Tactical nuclear weapons: Nuclear weapons with an explosive yield of less than 150 kt TNT equivalent, usually used to gain a military advantage when conventional weapons are no longer sufficient or as a warning.

Environmental monitoring: The measurement of the external dose rate due to radioactive substances in the environment or from radioactive substances in the environment [IntV 2020].

Avoidable dose: Dose that can be avoided by an intervention measure.

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StrSchG 2020: Federal Act on Measures for Protection against Dangers from Ionising Radiation (Radiation Protection Act 2020 - StrSchG 2020), Federal Law Gazette I No. 50/2020.

WHO 2020: A Framework for Mental Health and Psychosocial Support in Radiological and Nuclear Emergencies, World Health Organisation, 2020.

Distribution list

- Austrian Agency for Health and Food Safety
- Federal Environment Agency GmbH
- Federal Ministry Agriculture and Forestry, Climate and Environmental Protection, Regions and Water Management
- Federal Ministry of Defence
- Federal Ministry of Education
- Federal Ministry for European and International Affairs
- Federal Ministry of Innovation, Mobility and Infrastructure
- Federal Ministry of the Interior
- Federal Ministry of Labour, Social Affairs, Health, Care and Consumer Protection
- GeoSphere Austria - Federal Institute for Geology, Geophysics, Climatology and Meteorology
- Mobile Task Force, Nuclear Engineering Seibersdorf GmbH
- Offices of the State Governments

List of abbreviations

AAP	Assistance Action Plan
ABCabwZ	CBRN Defence Centre
ADR	Ambient Dose Rate
AGES	Austrian Agency for Health and Food Safety GmbH
AllgStrSchV 2020	Ordinance on General Measures for Protection against Dangers from Ionising Radiation (General Radiation Protection Ordinance 2020 - AllgStrSchV 2020)
AMS	Aerosol Monitoring System
APA	Austria Press Agency
approx.	approximately
BMB	Federal Ministry of Education
BMEIA	Federal Ministry of European and International Affairs
BMI	Federal Ministry of the Interior
BMK	Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology
BMLUK	Federal Ministry of Agriculture and Forestry, Climate and Environmental Protection, Regions and Water Management
BMLV	Federal Ministry of Defence
BMASGPK	Federal Ministry of Labour, Social Affairs, Health, Care and Consumer Protection
Bq/l, Bq/kg	Becquerel per litre, Becquerel per kilogramme
CBRN	Chemical, biological, radiological and nuclear
CTBTO	Comprehensive Nuclear Test Ban Treaty Organisation
CONVEX	Convention Exercise
DhO	Duty officer
EC	European Commission
ECMWF	European Centre for Medium-Range Weather Forecasts

ECURIE	European Community Urgent Radiological Information Exchange
EMERCON	Emergency Convention (forms for passing on information)
EPD	Electronic personal dosimeter
ESTE	Emergency Source Term Evaluation
EU	European Union
EURDEP	European Radioactivity Data Exchange Platform
FFP3	Filtering Face Piece, protection level 3
GAMS rule	Recognising danger - investigating, cordoning off - securing, rescuing people, requesting special forces
GeoSphere Austria	GeoSphere Austria - Federal Institute for Geology, Geophysics, Climatology and Meteorology (formerly Central Institute for Meteorology and Geodynamics)
GKO	Hazardous materials experts within the police
GPS	Global Positioning System
HPGe	High Purity Germanium
HERCA	Heads of the Europe2an Radiological Protection Competent Authorities
IAEA	International Atomic Energy Agency
IEC	IAEA Incident and Emergency Centre
INES	International Nuclear and Radiological Event Scale
INEX	International Nuclear Emergency Exercise
IntV 2020	Ordinance on Interventions in Emergency Exposure Situations and in Existing Exposure Situations Following a Radiological Emergency or Due to Contaminated Goods or Due to Contaminated Radioactive Sites (Intervention Ordinance 2020 - IntV 2020)
IRMIS	International Radiation Monitoring Information System of the IAEA
ITB	Iodine Thyroid Blocking
NPP	Nuclear power plant
kt	Explosive force in kilotons of TNT equivalent
LLZ	Provincial Control Centre
LSC	Liquid Scintillation Counting

LWZ	Provincial Warning Centre
MoEG	Mobile Task Force of the NES
MW	Mean value
NATO	North Atlantic Treaty Organisation
NEA	Nuclear Energy Agency of the Organisation for Economic Cooperation and Development (OECD)
NES	Nuclear Engineering Seibersdorf GmbH
OECOSYS	Radioecological model adapted to Austrian conditions for the prediction of contamination in food and radiation exposure following the release of radioactive substances
PPE	Personal protective equipment
PRIS	Power Reactor Information System of the IAEA
psi	Pond per square inch (https://de.wikipedia.org/wiki/Avoirdupoisangloamerikanische pressure unit)
RANET	IAEA Response and Assistance Network
RARA	Radon and radioecology
RDD	Radiological Dispersion Device
RED	Radiological Exposure Device
resp.	respectively
RODOS	Realtime Online Decision Support System
SFWS	Austrian Radiation Early Warning System
SKKM	State Crisis and Disaster Management
Situation Centre	Situation Centre in the BMI (former EKC)
Sv, mSv, µSv/h	Sievert, millisievert, microsievert per hour
StrSchG 2020	Federal Act on Measures for Protection against Dangers from Ionising Radiation (Radiation Protection Act 2020 - StrSchG 2020)
TAMOS	Austrian emergency system for trajectories and dispersion calculation
TLD	Thermoluminescence dosimeter
USBV-A	Unconventional blasting and incendiary device for the dissemination of radioactive substances

USIE	Unified System for Information Exchange in Incidents and Emergencies of the IAEA
UTC	Universal Time Coordinated
UTM	Universal Transverse Mercator (global coordinate system)
WENRA	Western European Nuclear Regulators Association
WGS 84	World Geodetic System 1984
24/7	Permanent availability (24 hours a day, 7 days a week)

Attachments

Annex 1: Legal basis

Austria

- Federal Act on Measures to Protect against Dangers from Ionising Radiation (Radiation Protection Act 2020 - StrSchG 2020), Federal Law Gazette I No. 50/2020.
- Ordinance of the Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology, the Federal Minister for Social Affairs, Health, Care and Consumer Protection and the Federal Minister for Digital and Economic Affairs on General Measures for Protection against Dangers from Ionising Radiation (General Radiation Protection Ordinance 2020 - AllgStrSchV 2020), Federal Law Gazette II No. 339/2020.
- Ordinance of the Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology on interventions in emergency exposure situations and in existing exposure situations following a radiological emergency or due to contaminated goods or due to radioactive contaminated sites (Intervention Ordinance 2020 - IntV 2020), Federal Law Gazette II No. 343/2020.
- Ordinance of the Federal Minister for the Environment, Youth and Family Affairs concerning information on the risk of major accidents (Major Accidents Information Ordinance - StIV), Federal Law Gazette No. 391/1994 (as amended).
- Federal Act enacting the Federal Act on Ensuring State Resilience and Coordination in Crises (Federal Crisis Security Act - B-KSG) and amending the Reporting Act 1991, Federal Law Gazette I No. 89/2023.

EC law

- Council Decision on Community arrangements for the accelerated exchange of information in the event of a radiological emergency, 87/600/EURATOM.
- Council Regulation laying down maximum permitted levels of radioactive contamination of food and feed following a nuclear accident or any other case of radiological emergency, and repealing Council Regulation 87/3954/EURATOM and Commission Regulations 89/944/EURATOM and 90/770/EURATOM, 2016/52/EURATOM.

- Council Directive laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation and repealing Directives 89/618/EURATOM, 90/641/EURATOM, 96/29/EURATOM, 97/43/EURATOM and 2003/122/EURATOM, 2013/59/EURATOM.

International agreements (IAEA)

- Convention on Early Notification of a Nuclear Accident, Federal Law Gazette No. 186/1988.
- Convention on Assistance in the Case of a Nuclear Accident or Radiation-related Emergency, Federal Law Gazette No. 87/1990.

Bilateral agreements

- Agreement between the Government of the Republic of Austria and the Government of the Republic of Belarus on the exchange of information in the field of nuclear safety and radiation protection, Federal Law Gazette III No. 175/2005 of 19 September 2005, which was signed on 9 June 2000 and entered into force on 13 September 2005.
- Agreement between the Government of the Republic of Austria and the Government of the Federal Republic of Germany on the exchange of information and experience in the field of radiation protection, Federal Law Gazette No. 892/1994 of 17 November 1994. The exchange of notes on the continued application of the former DDR Agreement (Federal Law Gazette No. 128/1989) entered into force on 1 December 1994.
- Agreement between the Government of the Republic of Austria and the Government of the Republic of Poland on the exchange of information and cooperation in the field of nuclear safety and radiation protection, Federal Law Gazette No. 643/1990 of 12 October 1990. The agreement was signed on 15 December 1989 and entered into force on 1 December 1990.
- Agreement between the Government of the Republic of Austria and the Government of the Union of Soviet Socialist Republics on the Early Notification of a Nuclear Accident and the Exchange of Information on Nuclear Installations, Federal Law Gazette No. 130/1990 of 8 March 1990. The agreement was signed on 12 September 1988 and entered into force on 26 March 1990. Explanatory Notes Federal Law Gazette No. 257/1994 of 31 March 1994. The exchange of notes concerning the continued application of the above-mentioned USSR Agreement with the Russian Federation entered into force on 9 March 1994.

- Agreement between the Government of the Republic of Austria and the Swiss Federal Council on the Early Exchange of Information in the Field of Nuclear Safety and Radiation Protection ("Nuclear Information Agreement" Austria-Switzerland) including Annex and Joint Declaration, Federal Law Gazette III No. 201/2000 of 23 November 2000. The Agreement was signed on 19 March 1999 and entered into force on 1 January 2001.
- Agreement between the Government of the Republic of Austria and the Government of the Slovak Republic on the regulation of issues of common interest in connection with nuclear safety and radiation protection, Federal Law Gazette No. 1046/1994 of 28 December 1994. The exchange of notes concerning the continued application of the above-mentioned CSSR Agreement entered into force on 1 January 1995.
- Agreement between the Republic of Austria and the Republic of Slovenia on the early exchange of information in the event of radiological hazards and on issues of common interest in the field of nuclear safety and radiation protection, Federal Law Gazette III No. 176/1998 of 11 November 1998. The agreement was signed on 19 April 1996 and entered into force on 1 December 1998.
- Agreement between the Government of the Republic of Austria and the Government of the Republic of Tajikistan on Early Notification of a Nuclear Accident and the Exchange of Information on Nuclear Facilities, Federal Law Gazette III No. 4/1998 of 12 January 1998. According to this announcement, the above-mentioned USSR Agreement has remained in force since 9 September 1991.
- Agreement between the Government of the Republic of Austria and the Government of the Czechoslovak Socialist Republic on the regulation of issues of common interest in connection with nuclear safety and radiation protection, Federal Law Gazette No. 565/1990 of 5 September 1990. The agreement was signed on 25 October 1989 and entered into force on 23 July 1990. (Federal Law Gazette No. 123/1997 of 31 July 1997, announcement concerning valid bilateral treaties with the Czech Republic).
- Agreement between Austria and the Czech Republic on the conclusions of the Melk process and follow-up, Federal Law Gazette No. 266/2001 of 28 December 2001, which was signed on 29 November 2001 and has entered into force.
- Agreement between the Government of the Republic of Austria and the Government of Ukraine on the exchange of information and cooperation in the field of nuclear safety and radiation protection, Federal Law Gazette III No. 152/1998 of 30 September 1998. The agreement was signed on 8 November 1996 and entered into force on 18 August 1998.
- Agreement between the Government of the Republic of Austria and the Government of the Hungarian People's Republic on the settlement of issues of common interest in

connection with nuclear facilities, Federal Law Gazette No. 454/1987 of 22 September 1987, which was signed on 29 April 1987 and entered into force on 1 November 1987.

Annex 2: Contact Addresses

(not intended for publication)

(not intended for publication)

(not intended for publication)

Annex 3: Intervention Teams (emergency workers) at federal level

The resources of the intervention teams at federal level are listed here.

Radiation detection units of the police

Police radiation detection units (as of May 2024) (source: BMI)

Areas and procedures	Data
Protective measures that can be implemented by the organisation concerned in the event of radiological emergencies	• Radiation detection (for open radioactive substances and sealed radioactive sources) • Radiation measurement (shut-off at a specified shut-off dose rate, detection of locations with the highest dose rate) • Contamination controls (conversion factor for limit value determination is required) • Nuclide identification (by means of gamma spectrometry; exclusively by bodies specialised in hazardous substances)
Cooperation with other organisations if support from other organisations is required for the implementation of the protective measures	The following support may be required depending on the occasion: Decontamination (fire brigade, armed forces), illumination of emergency sites (fire brigade)
Intervention teams (emergency workers) (total number of people, number of people who can be deployed at short notice, location)	• Austria-wide total (actual/target): 429/515 trained emergency workers of the police (B: 31/36, K: 45/48, NÖ: 101/126, OÖ: 80/88, S: 30/34, ST: 60/86, T: 32/41, V: 14/20, W: 36/36); • Due to holidays, illness and time off work, it can realistically be assumed that around 30-40 per cent of them can be deployed at short notice. It is possible to shift staff around the country at short notice. • In principle, it can be assumed that there are at least 4 trained radiation detectors working in each administrative district. In the provincial capitals there are between 6 and 12, in the federal capital Vienna 36 radiation detectors. • Approximately 53 persons of these radiation detection units of the police are also trained as hazardous substance experts
Procedure: 1. alerting the emergency workers (reporting channels, contact addresses, on-call service)	• The intervention teams are primarily alerted and coordinated by the provincial control centres (LLZ) set up at the detection units of the police.

Areas and procedures	Data
	The provincial control centres are permanently staffed by an on-call service.
Procedure: 2. indication of the period of time in which the emergency workers are ready for action after the alarm has been raised	They can usually be ready for use within an hour.
Procedure: 3. transmission of the measurement data to the BMLUK	The measurement data is sent to the Federal Ministry of Agriculture and Forestry, Climate and Environmental Protection, Regions and Water Management (BMLUK) by e-mail as standard, but can also be sent by telephone or fax in exceptional cases (date, time, detection location [either as a UTM coordinate or as a GPS coordinate], dose rate value [at a height of 1 metre]).
Training and further education according to IntV 2020	The training takes place in accordance with IntV 2020 and ÖNORM S 5207 (three-stage training of emergency workers in radiological emergencies) at the ÖNORM-certified training centre of Division II/DSE/2.6 CBRN Competence Center of the Federal Ministry of the Interior (BMI). 1. basic training 2. advanced training I (with radiation protection performance competition in bronze) 3. advanced training II (with silver level radiation protection competition) After successfully completing all 3 training stages, police officers of the radiation detection units are considered fully trained, can be deployed independently and autonomously in radiation detection operations and thus fulfil the requirements for working as an emergency worker.
Training and exercises	A two-day training event (16 hours) with practical operational exercises is held annually under the direction of staff from Division II/DSE/2.6 CBRN Competence Centre of the Federal Ministry of the Interior. In addition, a one-day training course (8 hours) in relevant areas takes place once a year under the responsibility of the radiation protection officer of the provincial police directorate. Participation in exercises (national and international) is planned.
Records of the person responsible for the intervention team	Radiation passports are available for emergency workers in the event of radiological emergencies.

Areas and procedures	Data
Personal protective equipment available for emergency workers (protective clothing, respiratory protection, etc.) and dosimeters (personal and warning dosimeters)	• Disposable protective suit (3 pieces/person) • Safety boots • Protective gloves • Full-face respirator with combination filter and additional FFP3 protective mask • Personal thermoluminescence dosimeter (evaluation annually or after use) • One directly readable digital warning dosimeter per radiation detection team

AGES Vienna

Department of Radiation Protection and Radiochemistry & Department of Technical Radiation Protection and Technical Quality Assurance, Spargelfeldstraße 191, 1220 Vienna (as of June 2024) (Source: AGES)

Areas and procedures	Intensified measurement programme in the laboratory according to the sampling plan for large-scale contamination	Intervention team (emergency workers)
Protective measures that can be implemented by the relevant organisation in the event of radiological emergencies	Intensified measurement programme in the laboratory according to the sampling plan (drawn up by the Samples Working Group of the State Crisis and Disaster Management (SKKM))	Provision of measurement capacity and expertise for evaluation. On site: • Sampling • In-situ measurements using HPGe detector • Mobile aerosol collector • Contamination measurements (wipe tests alpha/beta-total; handheld contamination monitor) • Nuclide identifier • Operation of a mobile radioactivity measurement laboratory (min. 24h self-sufficient)
Cooperation with other organisations if support from other organisations is required for the implementation of the protective measures	Provinces: Provision of samples	• Emergency workers: communication regarding the contaminated area • Provinces: Provision of samples

Areas and procedures	Intensified measurement programme in the laboratory according to the sampling plan for large-scale contamination	Intervention team (emergency workers)
Emergency workers (total number of persons, number of persons who can be deployed at short notice, location)	• Permanent staff: 20 • Support staff: 6 • Location: AGES Vienna, Spargelfeldstraße 191, 1220 Vienna	• 5 emergency workers • Location: AGES Vienna, Spargelfeldstraße 191, 1220 Vienna
Procedure 1 Alerting the intervention team (reporting channels, contact addresses, on-call service)	• Telephone numbers according to the alarm list (see contact addresses in Appendix 2) • Private telephone numbers are available at the place of work	• Telephone numbers according to the alarm list (see contact addresses in Annex 2) • Private telephone numbers are available at the place of work
Procedure 2. indication of the period of time in which the emergency workers are ready for action after the alarm has been raised	• On-call duty: max. 1.5 h between alert and deployment at the place of duty • Emergency workers: 1 person ready for action within 1.5 hours (sampling & gamma measurement, other persons no later than the following working day)	• Deployment at the place of work in max. 1.5 h after alerting • In-situ measurement team or mobile radioactivity measurement laboratory (24 h self-sufficient), no later than the following working day
Procedure 3. transmission of the measurement data to the BMLUK	• Database extract by e-mail • Upload the database extract (RAMSESALL) to the BMLUK radiological situation reporting system	In-situ: by telephone, e-mail
Training and further education according to IntV 2020	• 20 specialists • 6 Auxiliary staff • The professional qualification required in accordance with § 114 StrSchG 2020 is fulfilled through training and regular further training.	5 persons (emergency workers) in accordance with ÖNORM S 5207. Annual training in accordance with IntV 2020
Training and exercises	• Internal exercises for measurements in the event of large-scale contamination (including a functional test of the devices) • Measuring devices in permanent accredited measurement use, regular participation in in-situ round robin tests (comparative measurements)	• Internal and external exercises for intervention teams • Measuring devices in permanent accredited use in the laboratory, regular participation in in-situ round robin tests (comparative measurements) and internal exercises

Areas and procedures	Intensified measurement programme in the laboratory according to the sampling plan for large-scale contamination	Intervention team (emergency workers)
Records of the person responsible for the intervention team	The recording obligations pursuant to IntV 2020 are fulfilled.	Recording obligations according to IntV 2020 are fulfilled
Personal protective equipment available for emergency workers (protective clothing, respiratory protection, etc.) and dosimeters (personal and warning dosimeters)	• Protective clothing: disposable overalls with hood, gloves, overshoes; respiratory protection (filtering half masks), safety goggles • Dosimeters: TLD for all permanent staff, as well as directly readable warning and alarm dosimeters for auxiliary staff	• Protective clothing: disposable coveralls with hood, gloves, overshoes; respiratory protection (filtering half masks), as well as full-face masks with combination filter, safety goggles • Dosimeter: TLD and direct-reading warning and alarm dosimeters

AGES Linz

Radon and Radioecology Department, Wieningerstraße 8, 4020 Linz (as of May 2024)

(Source: AGES)

Areas and procedures	Intensified measurement programme in the laboratory according to the sampling plan for large-scale contamination	Intervention team (emergency workers)
Protective measures that can be implemented by the relevant body in the event of radiological emergencies	Intensified measurement programme in the laboratory according to the sampling plan (drawn up by the Samples Working Group of the State Crisis and Disaster Management (SKKM))	Provision of measurement capacity and expertise for evaluation. On site: • Sampling • In-situ measurements using HPGe detector • Mobile aerosol collector • Contamination measurements (wipe tests alpha/beta-total; handheld contamination monitor) • Nuclide identifier • Operation of a mobile radioactivity measurement laboratory (min. 24h self-sufficient)
Cooperation with other organisations if support from other organisations is required for the implementation of the protective measures	Provinces: Provision of samples	• Radiation detectors: Communication regarding the contaminated area • Provinces: Provision of samples
Emergency workers (total number of persons, number of persons who can be deployed at short notice, location)	• Permanent staff: 14 • Additional support staff: 8 • Location: Wieningerstraße 8, 4020 Linz	• 6 emergency workers • Location: Wieningerstraße 8, 4020 Linz
Procedure: 1. alerting the intervention teams (reporting channels, contact addresses, on-call service)	• Telephone numbers according to the alarm list (see contact addresses in Annex 2) • Private telephone numbers are available at the place of work and at the BMLUK	• Telephone numbers according to the alarm list (see contact addresses in Annex 2) • Private telephone numbers are available at the place of work

Areas and procedures	Intensified measurement programme in the laboratory according to the sampling plan for large-scale contamination	Intervention team (emergency workers)
Procedure: 2. indication of the period of time in which the emergency workers are ready for action after the alarm has been raised	- On-call duty: max. 1.5 h between alert and deployment at the place of duty - Emergency workers: 1 person ready for action within 1.5 hours (sampling & gamma measurement, other persons no later than the following working day)	- Deployment at the place of work in max. 1.5 h after alerting - In-situ measurement team or mobile radioactivity measurement laboratory (24 h self-sufficient), no later than the following working day
Procedure: 3. transmission of the measurement data to the BMLUK	Database extract centralised via AGES Vienna (RAMSESALL), representation by AGES Linz	In-situ: by telephone, e-mail
Training and further education according to IntV 2020	8 Specialists 8 Auxiliary staff - The professional qualification required in accordance with § 114 StrSchG 2020 is fulfilled through training and regular further training.	6 people (emergency workers) in accordance with ÖNORM S 5207. - Annual training in accordance with IntV 2020
Training and exercises	- Internal exercises for measurements in the event of large-scale contamination (including a functional test of the devices) - Measuring devices in permanent accredited measurement use, regular participation in in-situ round robin tests (comparative measurements)	- Internal and external exercises for intervention teams - Measuring devices in permanent accredited use in the laboratory, regular participation in in-situ round robin tests (comparative measurements) and internal exercises
Records of the person responsible for the intervention team	The recording obligations pursuant to IntV 2020 are fulfilled.	The recording obligations pursuant to IntV 2020 are fulfilled.
Personal protective equipment available for emergency workers (protective clothing, respiratory protection, etc.) and dosimeters (personal and warning dosimeters).	- Protective clothing: disposable overalls with hood, gloves, overshoes; respiratory protection (filtering half masks), safety goggles - Dosimeters: TLD for permanent staff, as well as direct-reading warning and alarm dosimeters for auxiliary staff	- Protective clothing: disposable overalls with hood, gloves, overshoes; respiratory protection (filtering half masks), as well as full-face masks with combination filter, safety goggles - Dosimeter: TLD and direct-reading warning and alarm dosimeters

AGES Graz

Institute for Food Analysis, Beethovenstraße 6, 8010 Graz (as of May 2024) (Source: AGES)

Areas and procedures	Data
Protective measures that can be implemented by the organisation concerned in the event of radiological emergencies	Intensified measurement programme in the laboratory according to the sampling plan (drawn up by the SKKM samples working group)
Cooperation with other organisations if support from other organisations is required for the implementation of the protective measures	Provinces: Provision of samples
Emergency workers (total number of persons, number of persons who can be deployed at short notice, location)	• Number of people: 3 (permanent staff) • Number of additional persons who can be deployed at short notice: 3 (support staff) • Location: AGES, Institute for Food Analysis, Beethovenstraße 6, 8010 Graz
Procedure: 1. alerting the intervention teams (reporting channels, contact addresses, on-call service)	Telephone numbers according to the alarm list Private telephone numbers are available at the place of work and at the BMLUK
Procedure: 2. indication of the period of time after the alarm is raised in which the emergency workers are ready for action	Time from alarm: max. 1.5 h (during regular working hours)
Procedure: 3. transmission of the measurement data to BMLUK	Database extract centrally via AGES Vienna (RAMSESALL) or AGES Linz
Training and further education according to IntV 2020	No special training of permanent staff is required for increased measuring activities in the event of large-scale contamination. The technical qualification is also provided by the regular measuring activities The auxiliary staff are mainly involved in sample preparation and receive brief training every year.
Training and exercises	The AGES radiation protection laboratories are regularly exercised.
Records of the person responsible for the intervention team	Not necessary for the increased measurement activity in the laboratory in the event of large-scale contamination, as the (core) emergency workers are monitored dosimetrically
Personal protective equipment available for emergency workers and dosimeters (personal and warning dosimeters)	• Protective clothing: disposable overalls with hood, gloves, overshoes; respiratory protection (filtering half masks), safety goggles • Dosimeters: TLD for all persons, electronic warning dosimeters, dose rate measuring devices, contamination detection devices

AGES Innsbruck

Radiation Protection Business Unit, Innsbruck Measuring Centre Technikerstraße 70, 6020 Innsbruck (as of May 2024) (Source: AGES)

Areas and procedures	Intensified measurement programme in the laboratory according to the sampling plan for large-scale contamination
Protective measures that can be implemented by the organisation concerned in the event of radiological emergencies	Intensified measurement programme in the laboratory according to the sampling plan (drawn up by the SKKM samples working group)
Cooperation with other organisations if support from other organisations is required for the implementation of the protective measures	Provinces: Provision of samples
Emergency workers (total number of persons, number of persons who can be deployed at short notice, location)	• Number of people: 3 (permanent staff) • Number of additional persons who can be deployed at short notice: 3 (support staff) • Location: AGES, Radiation Protection Department, Innsbruck Measuring Centre Technikerstraße 70, 6020 Innsbruck
Procedure: 1. alerting the intervention teams (reporting channels, contact addresses, on-call service)	• Telephone numbers according to alarm list • Private telephone numbers are available at the place of work and at the BMLUK
Procedure: 2. indication of the period of time after the alarm is raised in which the emergency workers are ready for action	Time span from alarm: max. 1.5 h (during regular working hours)
Procedure: 3. transmission of the measurement data to the BMLUK	Database extract centrally via AGES Vienna (RAMSESALL) or AGES Linz
Training and further education according to IntV 2020	No special training of permanent staff is required for increased measurement activities in the case of large-scale contamination. The technical qualification is also provided by the regular measuring activities. The auxiliary staff are mainly involved in sample preparation and receive short annual training sessions.
Training and exercises	The AGES radiation protection laboratories are regularly exercised.
Records of the person responsible for the intervention team (emergency workers)	Not necessary for the increased measurement activity in the laboratory in the event of large-scale contamination, as the (core) emergency workers are monitored dosimetrically.

Areas and procedures	Intensified measurement programme in the laboratory according to the sampling plan for large-scale contamination
Personal protective equipment available for emergency workers (protective clothing, respiratory protection, etc.) and dosimeters (personal and warning dosimeters).	- Protective clothing: disposable overalls with hood, gloves, overshoes; respiratory protection (filtering half masks), safety goggles - Dosimeters: TLD for all persons, directly readable warning and alarm dosimeters (if necessary for helpers), dose rate measuring devices, contamination detection devices

Mobile Task Force (MoEG)

Nuclear Engineering Seibersdorf GmbH, 2444 Seibersdorf, Austria (as at May 2024)

(Source: NES)

Areas and procedures	Data
Protective measures that can be implemented by the organisation concerned in the event of radiological emergencies	- Telephone support and advice on topics relating to radioactive sources and/or radioactive substances - For on-site use: measurement of ambient dose rate, contamination, identification of radionuclides (gamma emitters), sampling (wipe test samples, material samples) - Laboratory analyses: surface contamination (alpha/beta total), identification of alpha, beta and gamma emitters (spectrometric and LSC measurements) - Securing and/or recovering radioactive sources
Cooperation with other organisations if support from other organisations is required for the implementation of the protective measures	Contacts to: - ABCAbwZ (Austrian Armed Forces) - IAEA - Atomic Institute of the Austrian Universities - Austrian Institute of Technology GmbH / Seibersdorf Labor GmbH
Intervention teams (total number of persons, number of persons who can be deployed at short notice, location)	- A total of at least 8 persons, in the event of departure (retirement, voluntary departure) early replacement to maintain the knowledge base and operational readiness; currently 13 people ready for deployment - Unconditional call availability for 1 person 24 hours a day, 365 days a year; in addition, statistical call availability of the other members of the Mobile Task Force (MoEG); based on the experience of other emergency services (e.g. fire brigade), it can

Areas and procedures	Data
	be assumed that around 1/3 of this number of people are available at all times • SEIBERSDORF site; for alerts outside normal working hours (Mon-Thu: 08:30-17:30, Fri: 08:30-13:30) Travel time to the site < 1 h • Additional specialised emergency workers (approx. 15 people) available on the next working day
Procedure: 1. alerting the intervention teams (reporting channels, contact addresses, on-call service)	Head of the Mobile Task Force (MoEG) NES, for alerting see contact addresses in Annex 2
Procedure: 2. indication of the period of time in which the emergency workers are ready for action after the alarm has been raised	Staff can be reached immediately; telephone support provided without delay. Ready for use in 1.5 hours if measuring equipment is required
Training and further education according to IntV 2020	Training as emergency worker according to AllgStrSchV 2020: • Basic training • Specialised training: Operation of radiation facilities and use of sealed radioactive substances • Special training: Use of open radioactive substances • Special training: Handling enclosed hazardous radioactive sources • Radiation protection performance badge bronze • Radiation protection performance badge silver • Basic training for qualified dangerous goods drivers
Training and exercises	Internal training and practice about 10 times a year, 20 hours in total
Records of the person responsible for the intervention team	Members of the MoEG are occupationally exposed persons in categories A and B: • Physical monitoring, • Category A persons are also subject to regular medical monitoring
Personal protective equipment available for emergency workers (protective clothing, respiratory protection, etc.) and dosimeters (personal and warning dosimeters)	Personal protective equipment (disposable gloves, boots, disposable overalls, respiratory protection), TLD and directly readable warning and alarm dosimeters available, collection of personal protective equipment at the SEIBERSDORF site necessary

Annex 4: Text templates for informing authorities and the public about events in nuclear facilities

Templates for notification texts to inform all involved authorities in Austria and text templates to inform the public (press release, X/Twitter message, ORF announcement) were prepared for the following scenarios for events in nuclear power plants and other nuclear facilities and are available at the BMLUK, Radiation Protection Directorate (Source: BMLUK, Radiation Protection Directorate).

Templates for message texts, press releases, X/Twitter messages and ORF announcements

Text templates	Description of the event / its effects
Initial information	Unverified information / official information: Information or situation assessment after more reliable / precise information is available
Information BMLUK	Media-relevant event, e.g. APA report without "emergency potential"

(Currently) no impact on Austria

Text templates	Description of the event / its effects
All-clear rumour	Information turned out to be false
Incident (ended)	No effects outside the plant
Incident (not determined)	Currently no impact outside the plant
Before release	No risk for / no impact on Austria predicted
After release	No risk for / no impact on Austria

Effects on Austria predicted / existing

Text templates	Description of the event / its effects
Warning phase	Low impact forecast
	Impact on agriculture and food predicted
	Exceedance the criteria for ITB / sheltering predicted
Contamination phase	Low impact
	Impact on agriculture and food
	Exceedance the criteria for ITB/ sheltering

Definition of protective measures

Text templates	Description of the event / its effects
Accident with consequences for Austrian citizens abroad	Measures: Austrian citizens in the country where the accident occurred, import controls
Warning phase	Measures: Effects on agriculture and food predicted
	Exceedance of criteria for ITB / sheltering predicted
Contamination phase	Measures: Existing effects on agriculture and food
	Exceedance of criteria for ITB / sheltering
Intermediate phase	Measures: After removal of the radioactively contaminated air masses

Cancellation of protective measures

Text templates	Description of the event / its effects
Cancellation of protective measures from warning phase	Release of radioactive substances was prevented: All-clear and cancellation of the measures from the warning phase
Cancellation of protective measures after contamination phase	All-clear population and cancellation of individual measures from the warning/contamination phase

Note: The basic information needs of the population are summarised in the following six questions [SSK 2007]:

- What happened?
- What does this mean for me?
- What about my family and friends?
- How long will it take?
- When will help arrive?
- What can I do myself?

Similar key questions on radiological events can be found in a publication by the US Environmental Protection Agency [EPA 2007], which recommends limiting media information to three central statements.

Annex 5: Official radiation detection order

Figure 9: Official radiation detection order (Source: BMI)

Behördlicher Strahlenspürauftrag

(Gemäß gesamtstaatlichem Notfallplan)

An die Landesleitzentrale der Landespolizeidirektion ☐ B ☐ K ☐ N ☐ O ☐ S ☐ St ☐ T ☐ V ☐ W
im Wege des Lagezentrums des BMI (E-Mail: lagezentrum@bmi.gv.at)

Gelb hinterlegte Felder sind jedenfalls auszufüllen!

Auftrag durch

Organisationseinheit	
Ansprechperson/-stelle	
E-Mail	
Telefon	

Übermittlung der Spürergebnisse

Übermittlung an	☐ Auftraggeber/-in (wie oben) ☐ Abteilung Strahlenschutz des BMLUK (alarm@strahlenschutz.gv.at) ☐ Lagezentrum des BMI (lagezentrum@bmi.gv.at) ☐ Weitere:		
	Organisationseinheit		
	E-Mail		
	Telefon		

Schadenslage

Art des Ereignisses			
☐ Ereignis in kerntechnischer Anlage	☐ Ereignis in österreichischer Anlage		
☐ Absturz von Satellit mit radioaktivem Inventar	☐ Ereignis mit gefährlicher radioaktiver Quelle		
---	☐ Radiologischer Terror		
☐ Sonstiges: Klicken Sie hier, um Text einzugeben.			

Radioaktive Quelle(n)	☐ Offen ☐ Umschlossen ☐ Unbekannt ☐ N/A		
Radionuklid(e)			
Aktivität(en)			

Figure 10: Official radiation detection order page 2

Spürziel

Spürziel	☐ <u>Rascher Überblick</u> über die radiologische Situation... ☐ im angegebenen Spürgebiet ☐ an den angeführten Spürpunkten ☐ entlang der vorgegebenen Wegstrecken ☐ <u>Gründliche Suche</u> nach radioaktiven Quellen ☐ sowie Ermittlung der höchsten Dosisleistung in 1 m Entfernung
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Durchführung

Spürbeginn	☐ Sofort ☐ Am Klicken Sie hier, um ein Datum einzugeben. um Wählen Sie ein Element aus.		☐ Hohe Priorität!
Spürart	☐ Zu Fuß ☐ Mit dem Kraftfahrzeug („Autospüren“) mit max. 30 km/h ☐ Mit dem Luftfahrzeug („Luftspüren“) mit ca. 80 km/h in ca. 80 m Flughöhe mit ca. 150 m Spürbreite ☐ Abweichende Geschwindigkeitsvorgabe: Wählen Sie ein Element aus. ☐ Abweichende Vorgabe für die Flughöhe: Wählen Sie ein Element aus. ☐ Abweichende Vorgabe für die Spürbreite: Wählen Sie ein Element aus.		
Spürgebiet	Bundesland	☐ B ☐ K ☐ N ☐ O ☐ S ☐ St ☐ T ☐ V ☐ W	
	Bezirk(e)		
	PLZ und Ort(e)		
	Beschreibung		
Koordinaten (UTM, WGS 84)	Eckpunkt links unten		
	Eckpunkt rechts oben		
Zusatzangaben	☐ Karte des Spürgebiets beiliegend ☐ Karte mit abzuspürenden Wegstrecken beiliegend ☐ Liste der Spürpunkte beiliegend		
Weitere Hinweise	☐ Markieren bei ☐ Sonstige:	☐ Wählen Sie ein Element aus. ☐ Höchste Dosisleistung in 1 m Entfernung ☐ Dreifacher Leerwert	
Beilagen			

Datum, Uhrzeit	
Name	

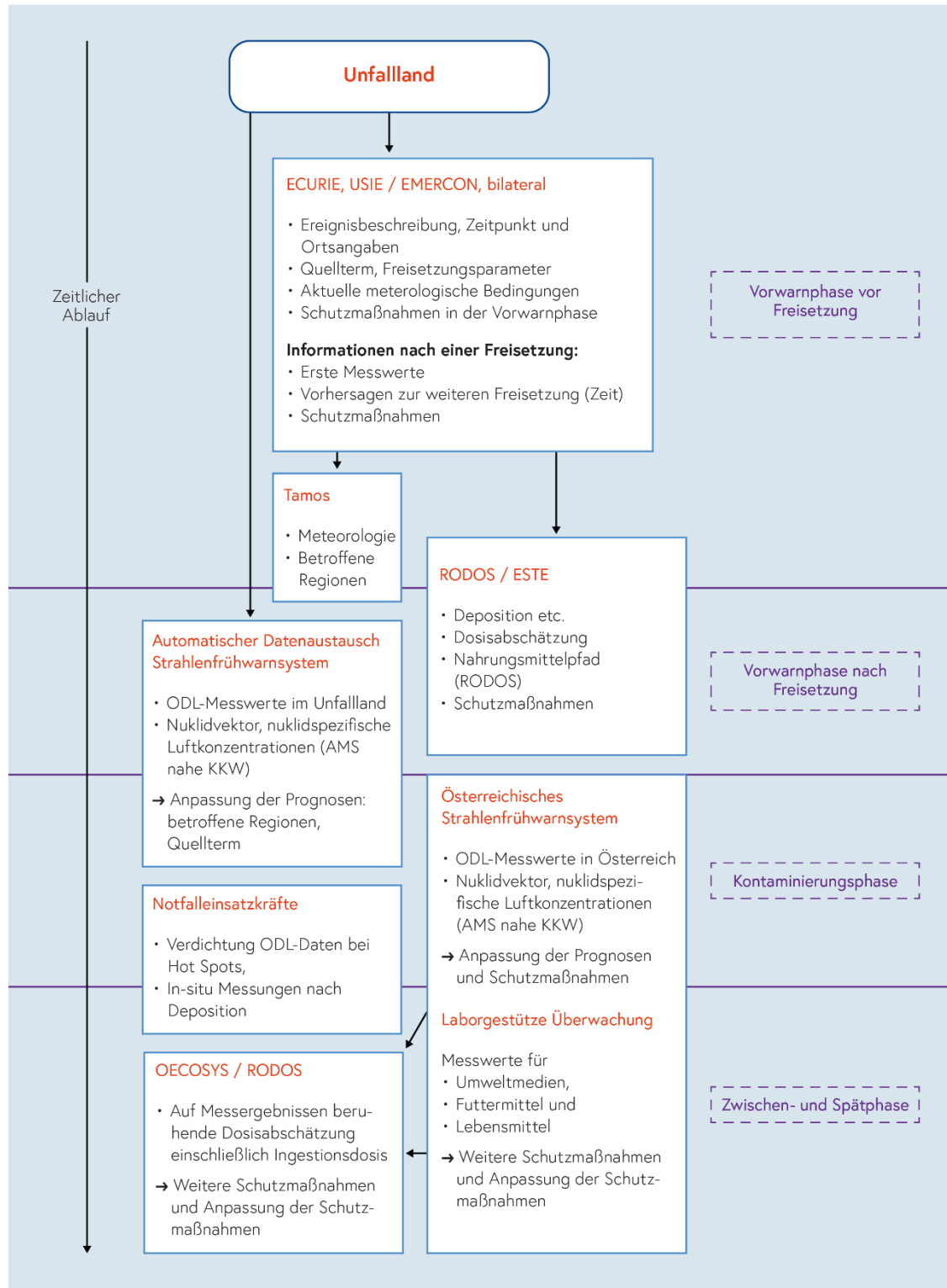
Annex 6: INES scale for events in nuclear facilities

Level Abbreviation	Radiological effects outside the plant	Radiological effects within the plant	Impairment of safety precautions
7: Major accident	Most severe release: effects on health and the environment in a wide area	-	-
6: Serious accident	Significant release: full deployment of civil protection measures	-	-
5: Accident with wider consequences	Limited release: use of individual civil protection measures	Severe damage to the reactor core / radiological barriers	-
4: Accident with local consequences	Low release: Radiation exposure of the population approximately at the level of natural radiation exposure	Limited damage to the reactor core / radiological barriers; radiation exposure of personnel with fatal consequences	-
3: Serious incident	Very low release: Radiation exposure of the population amounting to a fraction of the natural radiation exposure	Serious contamination: Acute health damage to workers	Near-accident: Extensive failure of the staggered safety precautions
2: Incident	-	Significant contamination: Unacceptably high radiation exposure of workers	Incident: Limited failure of the graduated safety precautions
1: Anomaly	-	-	Deviation from the permissible ranges for the safe operation of the system
0: Below Scale	-	-	No or very low safety significance

Note: Radiological effects on Austrian territory can **only** occur from level 4 or 5 upwards in the case of nuclear power plant accidents close to the border.

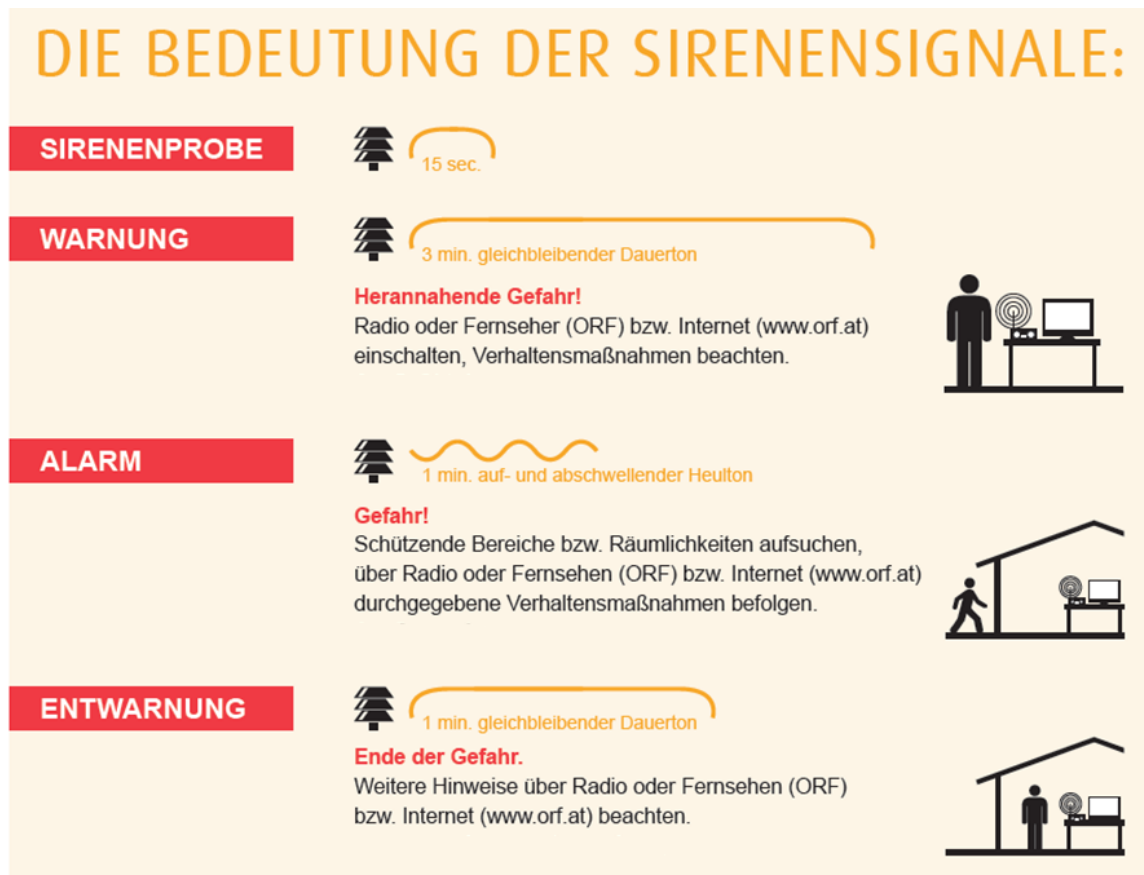
Annex 7: Basis for decision-making

Figure 11: Schematic representation of decision bases in different phases of a radiological emergency (Source: BMLUK, Radiation Protection Directorate)



Annex 8: Warning and alarm signals

Figure 12: Warning and alarm signals (Austria-wide warning and alert system) (Source: BMI)



Austria has a nationwide acoustic warning and alarm system (sirens), which is operated by the Federal Ministry of the Interior together with the provinces. The acoustic warning and alarm system distinguishes between three different signals:

Warning

A **constant continuous tone of 3 minutes** means "Warning". Approaching danger. Information on further behavioural measures is provided via radio or television (ORF) or Internet (orf.at).

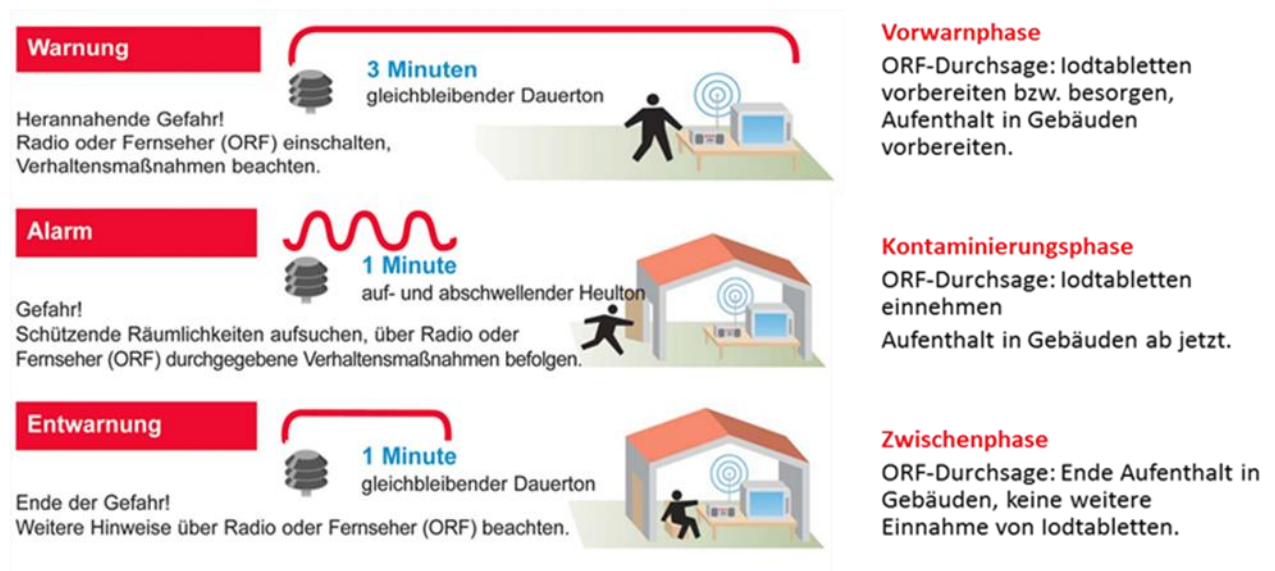
Alarm

An **ascending and descending wailing tone lasting 1 minute** signifies "Alarm". Move to protected areas or premises. Information on further behavioural measures (protective measures) is provided via radio or television (ORF) or the Internet (orf.at).

All-clear

A **constant continuous tone of 1 minute** means "all-clear". End of the danger. Further information via radio or television (ORF) or internet (orf.at).

Figure 13: Meaning of the warning and alarm signals in a radiological emergency (Source: BMLUK, Radiation Protection Directorate; BMI)



Annex 9: Emergency Exercises

The following table provides an overview of regularly organised emergency exercises and the Austrian participants (Source: BMLUK, Radiation Protection Directorate)

Exercise name	Exercise organisation	Exercise type / exercise objective	Austrian participants	Frequency
CONVEX (Convention Exercise)	IAEA	Unannounced test of the availability of the national contact point	BMI (Situation Centre)	several times a year
CONVEX 2	IAEA	Announced exercise (e.g. transmission of messages to USIE or activation of RANET)	BMI (Situation Centre), BMLUK	2a, 2b: several times a year, 2c-2g: every 2 to 3 years
2a USIE communication				
2b RANET				
2c Transnational emergency				
2d Fuse-relevant event				
2e Assessment & Prognosis System				
2g Communication with the public				
CONVEX 3	IAEA in co-operation with BMLUK	Announced emergency exercise (tabletop or partial emergency exercise) to test the international reporting channels; can be used as a basis for national emergency exercises	BMI (Situation Centre), BMLUK, possibly also other federal ministries and provinces	every 3 years
ECUREX (ECURIE)	EC in cooperation with BMLUK	Announced emergency exercise (tabletop or partial emergency exercise) to test reporting channels at EC level; can be used as a basis for national emergency exercises	BMI (Situation Centre), BMLUK, possibly also other federal ministries and provinces	on average once a year
INEX	NEA/OECD in co-operation with BMLUK	Announced emergency exercise (tabletop or partial emergency exercise) in accordance with international standards	BMI (Situation Centre), BMLUK, possibly also other federal ministries and provinces	every 4 to 5 years

Exercise name	Exercise organisation	Exercise type / exercise objective	Austrian participants	Frequency
Bilateral exercises	with authorities in neighbouring countries, partly in cooperation with Austrian authorities (BMLUK)	Announced or unannounced emergency exercises (tabletop or partial emergency exercise) that test the bilateral exchange of information and bilateral cooperation in the event of cross-border radiological emergencies	BMI (Situation Centre), BMLUK, possibly also other federal ministries and provinces	different (depending on the occasion)
National emergency exercises Partial and full emergency exercises	BMLUK	Announced or unannounced partial and full-scale emergency exercises; Coordination and cooperation between the organisations involved; in full-scale emergency exercises, all organisations involved are included, in a partial emergency exercise only those affected, depending on the exercise objective	BMI (Situation Centre), BMLUK, possibly also other federal ministries and provinces as well as first responder organisations and intervention teams	every 2 to 3 years
Disaster relief exercises	NATO/PfP (Partnership for Peace)	Announced disaster relief exercises, some with radiological exercise scenarios	BMI (Situation Centre), federal authorities, intervention teams, first responder organisations	yearly
Disaster relief exercises	EC	Announced disaster relief exercises, some with radiological exercise scenarios	BMI, BMI (Situation Centre), federal authorities, intervention teams, first responder organisations	yearly

Exercise name	Exercise organisation	Exercise type / exercise objective	Austrian participants	Frequency
Sampling exercises	Provinces, AGES, BMLUK	Announced partial emergency exercises, sampling, transport, measurement, distribution of measurement results	Provinces, AGES, BMLUK	regularly
Training, intervention teams	Training centre CBRN Competence Centre BMI, AGES	see annex 3	Radiation detection units of the police, AGES	in accordance with StrSchG 2020 and IntV 2020

Annex 10: EC maximum levels for food and feed

In accordance with Council Regulation 2016/52/Euratom laying down maximum permitted levels of radioactive contamination of food and feed following a nuclear accident or any other case of radiological emergency, the following maximum levels for food and feed (Bq/kg or Bq/l) are provided for:

Figure 14: Maximum levels of radioactive contamination of food (Bq/kg) (source: <https://eur-lex.europa.eu/legal-content/DE/TXT/?uri=celex%3A32016R0052> Council Regulation 2016/52/Euratom)

HÖCHSTWERTE RADIOAKTIVER KONTAMINATION VON LEBENSMITTELN

Die für Lebensmittel verbindlich festzulegenden Höchstwerte dürfen folgende Werte nicht überschreiten:

Isotopengruppe/Lebensmittelgruppe	Lebensmittel (Bq/kg) ⁽¹⁾			
	Lebensmittel für Säuglinge ⁽²⁾	Milcherzeugnisse ⁽³⁾	Sonstige Lebensmittel (sofern nicht von geringerer Bedeutung) ⁽⁴⁾	Flüssige Lebensmittel ⁽⁵⁾
Summe der Strontium-Isotope, insbesondere Sr-90	75	125	750	125
Summe der Jod-Isotope, insbesondere I-131	150	500	2 000	500
Summe der Alpha-teilchen emittierenden Plutonium-Isotope und Transplutonium-elemente, insbesondere Pu-239 und Am-241	1	20	80	20
Summe aller übrigen Nuklide mit einer Halbwertszeit von mehr als 10 Tagen, insbesondere Cs-134 und Cs-137 ⁽⁶⁾	400	1 000	1 250	1 000

⁽¹⁾ Der Wert für konzentrierte Erzeugnisse und Trockenerzeugnisse wird auf der Grundlage des für den unmittelbaren Verbrauch rekonstituierten Erzeugnisses berechnet. Die Mitgliedstaaten können Empfehlungen hinsichtlich der Verdünnungsbedingungen abgeben, um die Einhaltung der in dieser Verordnung festgelegten Höchstwerte zu gewährleisten.

⁽²⁾ Lebensmittel für Säuglinge sind Lebensmittel für die Ernährung von Säuglingen während der ersten zwölf Lebensmonate, die für sich genommen deren Nahrungsbedarf decken und in Packungen für den Einzelhandel dargeboten werden, die eindeutig als ein derartiges Lebensmittel gekennzeichnet und etikettiert sind.

⁽³⁾ Milcherzeugnisse sind die Erzeugnisse folgender KN-Codes einschließlich späterer Anpassungen: 0401 und 0402 (außer 0402 29 11).

⁽⁴⁾ Lebensmittel von geringerer Bedeutung und die für diese Lebensmittel jeweils geltenden Höchstwerte sind in Anhang II aufgeführt.

⁽⁵⁾ Flüssige Lebensmittel sind Erzeugnisse gemäß Code 2009 und Kapitel 22 der Kombinierten Nomenklatur. Die Werte werden unter Berücksichtigung des Verbrauchs von Leitungswasser berechnet; für die Trinkwasserversorgungssysteme könnten nach dem Ermessen der zuständigen Behörden der Mitgliedstaaten identische Werte gelten.

⁽⁶⁾ Diese Gruppe umfasst nicht Kohlenstoff-14, Tritium und Kalium-40.

Figure 15: Maximum levels of radioactive contamination of minor foodstuffs (Bq/kg)
(Source: [Council Regulation 2016/52/Euratom](#))

Die für die in Nummer 1 genannten Lebensmittel von geringerer Bedeutung verbindlich festzulegenden Höchstwerte dürfen folgende Werte nicht überschreiten:

Isotopengruppe	(Bq/kg)
Summe der Strontium-Isotope, insbesondere Sr-90	7 500
Summe der Iod-Isotope, insbesondere I-131	20 000
Summe der Alphateilchen emittierenden Plutonium-Isotope und Transplutoniumelemente, insbesondere Pu-239 und Am-241	800
Summe aller übrigen Nuklide mit einer Halbwertszeit von mehr als 10 Tagen, insbesondere Cs-134 und Cs-137 ⁽¹⁾	12 500
⁽¹⁾ Diese Gruppe umfasst nicht Kohlenstoff-14, Tritium und Kalium-40.	

Figure 16: Maximum levels of radioactive contamination of feed (Bq/kg) (source: [Council Regulation 2016/52/Euratom](#))

HÖCHSTWERTE RADIOAKTIVER KONTAMINATION VON FUTTERMITTELN

Die für die Summe von Cäsium-134 und Cäsium-137 verbindlich festzulegenden Höchstwerte dürfen folgende Werte nicht überschreiten:

Futtermittel für	Bq/kg ⁽¹⁾ ⁽²⁾
Schweine	1 250
Geflügel, Lamm, Kalb	2 500
Sonstige	5 000
⁽¹⁾ Mit diesen Werten soll zur Einhaltung der zulässigen Höchstwerte für Lebensmittel beigetragen werden; sie allein gewährleisten jedoch nicht unter allen Umständen eine Einhaltung der Höchstwerte und schmälern auch nicht die Verpflichtung, die Radioaktivitätswerte in Erzeugnissen tierischen Ursprungs, die für den menschlichen Verzehr bestimmt sind, zu kontrollieren.	
⁽²⁾ Diese Werte gelten für zum unmittelbaren Verbrauch bestimmte Futtermittel.	

Applicable maximum values according to 2016/52/Euratom

(1.) Where the commission receives an official notification of a nuclear accident, in particular under the Community system for the rapid exchange of information in the event of a radiological emergency or under the IAEA Convention on the rapid notification of nuclear accidents of 26 September 1986, it shall adopt an implementing decision. Where the competent authority of a Member State issues an official notification of a nuclear accident or

other radiological emergency which has led or is likely to lead to significant radioactive contamination of food and feed on 26 September 1986, it shall adopt an implementing regulation establishing maximum permitted levels for the potentially contaminated food or feed that could be placed on the market. Without prejudice to Article 3(4), the applicable maximum levels laid down in such an implementing regulation shall not exceed the maximum levels laid down in Annexes I, II and III. This implementing regulation shall be adopted in accordance with the examination procedure referred to in Article 5(2). The Commission shall, in accordance with the procedure referred to in Article 5(3), adopt an immediately applicable implementing regulation where, in duly justified cases of extreme urgency relating to the circumstances of the nuclear accident or other radiological emergency, it is imperative to do so.

(2.) The period of validity of the implementing regulations adopted pursuant to paragraph 1 shall be as short as possible. The duration of the first implementing regulation in the event of a nuclear accident or other radiological emergency shall not exceed three months. The implementing regulations shall be regularly reviewed by the Commission and, if necessary, amended on the basis of the nature and location of the accident and the evolution of the levels of radioactive contamination actually measured.

(3.) When drafting or reviewing implementing regulations, the Commission shall take into account the basic standards established in accordance with Articles 30 and 31 of the Treaty, including the principle of justification and the principle of optimisation, in order to keep the level of individual doses, the probability of exposure and the number of persons exposed as low as reasonably achievable, taking into account current technical knowledge and economic and societal factors.

When reviewing the implementing regulations, the Commission shall consult the expert group referred to in Article 31 of the Treaty in the event of a nuclear accident or other radiological emergency causing such extensive contamination of food or feed consumed in the community that the considerations and assumptions underlying the maximum levels laid down in Annexes I, II and III to this regulation are no longer valid. The Commission may seek the opinion of this expert group in any other case of contamination of food or feed consumed in the community.

(4.) Without prejudice to the objective of protecting public health pursued by this regulation, the Commission may, at the request of a Member State and in view of the exceptional

circumstances prevailing in that Member State, authorise, by means of implementing regulations, temporary derogations from the maximum levels for certain food and feed consumed in its territory. These derogations must be based on scientific evidence and duly justified by the circumstances prevailing in the Member State concerned, in particular social factors.

Annex 11: Reference values, general and operational criteria for protective measures

The StrSchG 2020 and the IntV 2020 define the following reference values.

Reference value for the population

The reference level for exposure of the population in emergency exposure situations is: **100 mSv effective dose per year**. When optimising protection, priority must be given to exposures above the reference level and optimisation must also be continued below the reference level.

Reference values for emergency workers (intervention teams)

The reference value for the occupational emergency exposure of emergency workers is as follows

- the saving of human life **250 mSv** effective dose;
- **100 mSv** effective dose to avert an acute danger to persons or to prevent a significant increase in damage;
- **20 mSv** effective dose for the protection of material assets;
- the total lifetime dose is **250 mSv** effective dose.

Reference value for helpers

The reference value for the exposure of persons who carry out protective measures in emergency exposure situations but are not emergency workers is **20 mSv** effective dose.

Reference value for urgently required work

The reference value for the exposure of persons carrying out urgent work in an emergency exposure situation is as follows

- the saving of human life **250 mSv** effective dose;
- the acute protection of the population **20 mSv** effective dose;
- other urgently required work **10 mSv** effective dose.

According to StrSchG 2020 and IntV 2020, general and operational criteria for protective measures must be defined in the National Emergency Response Plan.

General criteria for protective measures

The following table contains dose values for various protective measures and the basis for their calculation (Source: BMLUK, Radiation Protection Directorate). In the event of an emergency exposure situation, these general criteria form the basis for determining protective measures.

Protective measure	Population group	General criterion	Type of dose	Exposure paths	Integration time respective exposure path	Integration time Follow-up dose
Sheltering	Persons under the age of 18 and pregnant women	1 mSv	Effective expected dose	Cloud radiation	max. 2 days	-
-	-	-	-	Ground radiation	2 days	-
-	-	-	-	Inhalation	max. 2 days	70 years
-	Adults	10 mSv	Effective expected dose	Cloud radiation	max. 2 days	-
-	-	-	-	Ground radiation	2 days	-
-	-	-	-	Inhalation	max. 2 days	50 years
ITB	Persons under the age of 18 and pregnant women	10 mSv	Expected thyroid gland dose	Inhalation	max. 2 days	70 years
-	Adults under 40 and breastfeeding women	100 mSv	Expected thyroid gland dose	Inhalation	max. 2 days	50 years
Evacuation	All population groups	50 mSv	Avoidable dose	Cloud radiation	max. 2 days	-

Protective measure	Population group	General criterion	Type of dose	Exposure paths	Integration time respective exposure path	Integration time Follow-up dose
-	-	-	-	Ground radiation	2 days	-
-	-	-	-	Inhalation	max. 2 days	50 years
Temporary relocation	All population groups	30 mSv	Effective expected dose	Ground radiation	1 month (30 days)	-
Long-term resettle-ment	All population groups	100 mSv	Effective expected dose	Ground radiation	1 year	-

In the case of the "evacuation" measure, the effect of other protective measures must be taken into account when estimating the avoidable dose. For the measures "temporary relocation" and "long-term relocation", realistic outdoor exposure times and the effect of protective and remediation measures must be taken into account when estimating the expected dose.

Operational criteria for protective measures

In addition to the general criteria, the BMLUK must define operational criteria such as metrics and indicators of local conditions (source: BMLUK, Radiation Protection Directorate). These are to be used when deciding on protective measures if the general criteria for protective measures are not applicable. In the case of the accident at the Fukushima nuclear power plant, the extent of the release of radioactive substances (source term) could only be estimated after weeks.

Measure	Population group	Ambient dose rate
Sheltering	Persons under the age of 18, pregnant women	10 $\mu\text{Sv/h}$
	Adults	100 $\mu\text{Sv/h}$
ITB	Persons under the age of 18, pregnant women	10 $\mu\text{Sv/h}$
	Adults < 40 and breastfeeding women	100 $\mu\text{Sv/h}$
Evacuation	All population groups	1 000 $\mu\text{Sv/h}$

Annex 12: Extract from the catalogue of measures

Annex 12 lists intervention measures in the event of large-scale contamination following a nuclear power plant accident from the 2022 catalogue of measures.

Intervention measures in the warning phase

- Activation of emergency management (V01)
- Regular provision of information to the public (V02)
- Warning of the affected population (V03)
- Announcement of sheltering (V04)
- Preparation of administration of potassium iodide tablets (V05)
- Prompt harvest of marketable products, especially of storable products (V06)
- Closure of greenhouses (V07)
- Sheltering of farm animals in stables (V08)
- Closure of stables, forecourt extensions and covering of open fronts (V09)
- Prevention of access to cisterns and water reservoir containers (V10)

Intervention measures in the contamination phase

- Regular public information (K01)
- Alerting the affected population (K02)
- Enhanced measurement and sampling programme (K03)
- Sheltering (K04)
- Administration of potassium iodide tablets (ITB) (K05)
- Closure of windows and doors, shut-off of ventilation and air-conditioning systems (K06)
- Recommendation not to consume contaminated food (from own supplies), particularly field-grown vegetables (K07)
- Recommendation to keep out of risk areas – access restriction (K08)
- Limitations on time spent outdoors, e.g., cancellation of outdoor events (K09)
- Restriction on outdoor work (K10)
- Use of personal protective equipment during interventions and urgently required work (K11)
- Recommendation of special hygiene procedures (K12)
- Protection against outdoor skin contamination (K13)
- Decontamination of individuals and pets prior to entering the home (K14)

- Medical counselling and psychosocial care (K15)
- Travel recommendations and restrictions (K16)
- Grazing ban for farm animals (K17)
- Restrictions on the use of feedstuff (K18)
- Restriction on placing feedstuff on the market (K19)
- Abstaining from storage and use of contaminated water (K20)
- Restrictions on placing food on the market (K21)

Intervention measures in the intermediate and late phases

- Verification of the intervention measures in the warning and contamination phase (ZS01)
- Provision of information to the affected population on the potential health risks and on the means available to reduce their exposure (ZS02)
- Intensified sampling programme, monitoring of food and feed, environmental monitoring (system to monitor radiation exposure, long-term monitoring) (ZS03)
- Travel recommendations and restrictions (ZS04)
- Avoidance and/or restriction of outdoor sports in highly contaminated areas (ZS05)
- Replacement of air filters in installations and vehicles (ZS06)
- Protective measures in the case of intervention measures and urgently needed work (ZS07)
- Restrictions on the use of feedstuff (ZS08)
- Restriction on placing feedstuff on the market (ZS09)
- Preferential use of uncontaminated feedstuff in the final weeks before slaughter (ZS10)
- Restrictions on the spreading of sewage sludge (ZS11)
- Measures for the management of contaminated food and feedstuff of vegetable origin – in-situ management (ZS12)
- Measures to avoid additional contamination by contaminated water (ZS13)
- Bringing forward the time of farm animal slaughter (ZS14)
- Delaying the harvest to allow for the decay of short-lived radionuclides (ZS15)
- Storage of feed to allow for the decay of short-lived radionuclides (ZS16)
- Management of contaminated food of animal origin: milk (ZS17)
- Management of contaminated food of animal origin, especially meat (ZS18)
- Adequate industrial processing of food to reduce contamination (ZS19)
- Storage and preservation of food to allow for the decay of short-lived radionuclides (ZS20)

- Treatment of food in the household (ZS21)
- Decontamination measures for earth, grassland and plants (ZS22)
- Decontamination measures in buildings (ZS23)
- Decontamination measures for indoor surfaces and objects in buildings (ZS24)
- Decontamination measures in streets and squares (ZS25)
- Decontamination measures in children's playgrounds (ZS26)
- Protective measures for the management of contaminated waste and sewage sludge (ZS27)
- Transport and incineration of sewage sludge in waste incineration plants (ZS28)
- Treatment of contaminated air filters (ZS29)
- Registration, health screening and long-term medical monitoring (ZS30)

Measures that are very unlikely to become necessary in Austria

- Cleaning contaminated vehicles (ZS31)
- Restrictions on access to and/or prevention of access to highly contaminated areas: (ZS32)
 - Delineation of the affected areas
 - Identification of affected members of the public
 - Controlled access and/or prevention of access to the affected areas
 - Restrictions on living conditions in these areas
- Temporary relocation (ZS33)
- Long-term relocation (ZS34)
- Measures for the decontamination of agricultural areas (ZS35)
- Establishment of an infrastructure to support self-help protection measures in the affected areas (ZS36)

Many intervention measures - especially in the warning phase - are **communicated to the population via television and radio**. Corresponding speech text templates have been prepared and are available at the BMLUK.

For other intervention measures, the Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology must issue **ordinances** in accordance with the StrSchG 2020 to ensure the implementation of protective measures. With the amendment to the Federal Ministries Act 1986 (BMG), Federal Law Gazette I No. 10/2025, responsibility for the National Emergency Response Plans was transferred to the Federal Minister of Agriculture, Forestry, Climate and Environmental Protection, Regions and Water Management

(BMLUK). These ordinances must be publicised in an appropriate manner, such as on radio or television, and enter into force immediately after their announcement. They must be repealed if the protective measures in question are no longer required.

Model ordinances are currently being drafted.

Annex 13: Austrian stockpiling concept for potassium iodide tablets

The Chernobyl reactor accident has led to a sharp increase in radiation-induced thyroid cancer in children and adolescents in the heavily contaminated areas of Ukraine, Belarus and Russia. The cause of this is radioactive iodine, which is released in large quantities during severe reactor accidents. After being absorbed by the body, it is stored in the thyroid gland, where it leads to high localised radiation exposure.

Iodine thyroid blocking (ITB) protects the thyroid gland

Iodine thyroid blocking in good time offers very effective protection against radiation-induced thyroid cancer. The stable iodine in these tablets temporarily saturates the thyroid gland with iodine ("iodine blockade"). The inhaled radioactive iodine is therefore no longer absorbed by the thyroid gland, but is quickly excreted by the body. This means that high doses of radiation to the thyroid gland can be avoided and the incidence of radiation-induced thyroid cancer can be reduced to practically zero. However, in order for the tablets to be fully effective, they must be taken before the radioactive air masses arrive.

Only effective if taken in good time

Potassium iodide tablets are most effective if they are taken shortly before the radioactive air masses arrive. Delayed intake in particular greatly reduces the effectiveness. Just a few hours after the radioactively contaminated air masses have passed through, ITB is practically ineffective. In the event of a reactor accident near the border and unfavourable wind conditions, the radioactively contaminated air masses can reach Austria within a few hours. It is therefore important that tablets are available quickly in such cases.

Stockpiling enables timely intake

The Federal Ministry of Labour, Social Affairs, Health, Care and Consumer Protection has been procuring potassium iodide tablets for the population for around 30 years. In order to ensure that the tablets are taken in good time, a stockpiling concept has been drawn up that essentially consists of two tracks:

1. Stockpiling in schools and childcare centres so that tablets can be taken in good time if radioactive air masses pass through during school hours.
2. Personal stockpiling at home for people under 40 so that the tablets are available at all times. The most important target groups (under 18s, pregnant women and breastfeeding mothers) can obtain the tablets free of charge from pharmacies.

People aged 18 to 40 can buy potassium iodide tablets from pharmacies at a low price. People over the age of 40 should no longer take potassium iodide tablets, as their risk of developing radiation-induced thyroid cancer is very low, but the risk of serious side effects from iodine supplementation is high.

Use only after express request by the radiation protection authorities

In the event of a reactor accident, the radiation protection authorities immediately assess the possible effects on Austria. In particular, the expected thyroid dose for children and adults is also estimated. Only if these doses exceed certain values recommended by the WHO will the radiation protection authorities recommend taking potassium iodide tablets.

Potassium iodide tablets may only be taken on the express request of the radiation protection authorities.

People under the age of 18 have a higher risk of developing radiation-induced thyroid cancer than adults. Therefore, under-18s should take the tablets at lower expected thyroid doses than adults.

In all probability, there is no need to take potassium iodide tablets throughout Austria, even in the event of a severe reactor accident near the border. Even in the event of such accidents, it will only be necessary to take them in the most severely affected areas.

In the event of a reactor accident, the radiation protection authorities will announce which people should take potassium iodide tablets and in which regions it is necessary to take them.

Potassium iodide tablets do not offer comprehensive protection against radiation

Potassium iodide tablets protect the thyroid gland very effectively against the absorption of radioactive iodine and thus against radiation-induced thyroid cancer. However, they offer no protection against the absorption of other radionuclides into the body or against external radiation from radioactive substances in the air and on the ground. In order to minimise radiation exposure from these pathways in the event of a reactor accident, other measures are recommended or ordered by the radiation protection authorities (e.g. outdoor restrictions, marketing bans on contaminated food).

Annex 14: Criteria for termination of an emergency exposure situation and transition to an existing exposure situation after a radiological emergency

Based on the IAEA document: "Arrangements for the Termination of a Nuclear or Radiological Emergency" [IAEA, GSG 11], the following criteria for the termination of an emergency exposure situation and the transition to an existing exposure situation were developed:

- All protective measures required in the event of a radiological emergency have already been implemented.
- The situation is stable:
 - In particular, the nuclear power plant/nuclear facility was brought back under control and
 - No further significant releases of radioactive substances are to be expected.
- The radiological situation is essentially recorded:
 - the main exposure pathways have been identified and dose assessments for those affected (including critical population groups) have been carried out, and
 - the effects on the expected dose for the population due to the cancellation of protective measures can be estimated.
- A hazard analysis of the current situation and its further development is available (including further possible protective measures if the situation deteriorates).
- The reference values for a planned exposure situation of workers (20 mSv effective dose) during the clean-up work are not exceeded.
- The estimated residual dose for the affected population is below the specified reference values for an existing exposure situation (20 mSv effective dose per year) following a radiological emergency.
- The non-radiological effects of the radiological emergency (e.g. psychological, economic, social), which are relevant for the termination of the radiological emergency, were recorded and taken into account.
- A registration of patients who require further medical examinations or medical follow-up is available.
- A strategy for the management of (partially radioactive) waste has been developed.
- A discussion with and involvement of stakeholder has taken place.
- The public was informed about the following topics:
 - Decision-making basis for the termination of the radiological emergency,
 - Adaptation or cancellation of protective measures,
 - Introduction of new protective measures,

- Adaptation of behaviour in affected areas (if necessary),
- Long-term monitoring of the environment and the dose of those affected and
- Assessment of the health effects.

Annex 15: Resources of the Austrian Armed Forces for assistance in radiological emergencies

(not intended for publication)

(not intended for publication)

(not intended for publication)

Annex 16: Interfaces to the provinces

The following chapters of the National Emergency Response Plan contain interfaces to the provinces (in addition, the requirements of the IntV 2020 (Annex 1) apply to the contents of the emergency response plans of the provinces, including the interfaces contained therein).

Chapter	Interfaces to provinces
1.2	Scope
2.2.2	Provincial authorities and offices
2.3.5	BMI (Situation Centre) - LWZ/Provinces, Federal Ministries
2.3.6	Feedback from LWZ/provinces - Federal Government
2.3.7	Further arrangements for cooperation and coordination at federal level
2.4	Procedures
3.3.1	Mobile radiation detection units
3.3.2	Sampling plan for large-scale contamination
3.5.2	Pre-distribution of potassium iodide tablets, monitoring of foodstuffs - BMASGPK
3.5.5	Measures to protect against contaminated imported goods or means of transport
3.6.2	Informing the public in the event of a radiological incident
3.7	Protection of persons carrying out interventions
3.8.2	Containment of non-radiological effects
Annex 9	Emergency exercises

Technical Annex

Systematic hazard analysis: scenario calculations

In order to be able to assess which protective measures might be necessary in the event of accidents in nuclear power plants, the possible radiological effects of such accidents on Austria were systematically analysed. Nuclear power plants up to 400 kilometres away from Austria were included in this study:

Country	Nuclear power plants
Switzerland	Beznau 1, 2
	Gösgen
	Leibstadt
	Mühleberg (no longer in operation)
France	Bugey 2, 3,4,5
	Cattenom 1-4
	Fessenheim 1.2 (no longer in operation)
Germany	Biblis, Grafenrheinfeld, Grohnde, Grundremmingen Isar, Neckarwestheim, (all NPPs no longer in operation)
Czech Republic	Dukovany 1-4
	Temelin 1.2
Slovak Republic	Bohunice 3,4
	Mochovce 1,2
Hungary	Paks 1-4
Slovenia	Krsko

Note: Mochovce 3 was not yet in operation at the time of the scenario calculations and was therefore not included in the scenario calculations. However, the possible scenarios and impacts are identical to those for Mochovce 1 and 2, which were taken into account.

Figure 17: Nuclear power plants included in the systematic hazard analysis (Source: BMLUK, Radiation Protection Directorate)



The radiation exposure for the Austrian population was estimated for various accident scenarios using very conservative assumptions. Regardless of the probability of occurrence, "worst-case" conditions for the course of the accident, the release of radioactivity and the weather conditions were also taken into account.

Results of the scenario calculations

- The decisive factor for the radiological effects of severe accidents is whether the containment or confinement of the affected plant remains intact as the last containment barrier to the environment.

- Even under very conservative assumptions, evacuations are not necessary in Austria, even for nuclear power plant accidents close to the border, **as the protective measures "sheltering" and "ITB" provided for in the National Emergency Response Plan are sufficient**. However, it is crucial that these protective measures are implemented in good time.
 - "Evacuation" is a rapid and organised temporary evacuation of a potentially or actually highly contaminated area for a period of several days. Evacuations serve to reduce or avoid high exposures during the contamination phase and at the beginning of the intermediate phase. Evacuations should therefore be carried out in good time before the radioactively contaminated air masses arrive [Catalogue of measures 2022].
- Depending on weather conditions and the time of year, measures in **the area of agriculture and food** may also be necessary in Austria in the event of serious accidents in more distant nuclear power plants in Europe or minor accidents in nuclear power plants in Austria's neighbouring countries.

Accidents in other nuclear facilities outside Austria certainly have less radiological impact on Austria than the "worst-case" accidents in nuclear power plants considered in these studies.

IAEA emergency preparedness categories

In accordance with the IAEA safety standards [IAEA, GSR Part 7], the categorisation of possible emergency exposure situations in the National Emergency Response Plan forms the **basis for a graded approach to emergency preparedness and response in Austria**.

The IAEA's Emergency Preparedness Categories [IAEA, GSR Part 7] for activities were used in particular to categorise the possible emergency exposure situations in Austria. These are defined below in abbreviated form:

Emergency preparedness category I

- **Severe deterministic health effects outside the plant are possible.**
- This category includes nuclear reactors with a capacity of more than 100 MW_{th} , spent fuel pools in nuclear power plants with freshly discharged fuel elements and an inventory of more than $1\text{E}+17$ Bq caesium-137 as well as facilities with hazardous

radioactive sources (ratio $10,000 \leq A/D2$, see definitions of hazardous radioactive sources).

Emergency preparedness category II

- **Urgent protective measures to protect the population outside the plant may be necessary.**
- This category includes nuclear reactors with a capacity of more than 2 MW_{th} and less than 100 MW_{th} , spent fuel pools that still require active cooling, and facilities with hazardous radioactive sources (ratio $10 \leq A/D2 < 10,000$).

Emergency preparedness category III

- **Urgent protective measures may be necessary to protect people inside the plant.**
- This category includes nuclear reactors with a capacity of less than 2 MW_{th} and installations with hazardous radioactive sources (ratio $0.01 \leq A/D2 < 10$).

Emergency preparedness category IV

- **Urgent protective measures to protect the population may be necessary in an unexpected location.**
- This category includes the handling of mobile hazardous radioactive sources, orphan hazardous radioactive sources and satellites with radioactive inventory.

Emergency preparedness category V

- **Urgent protective measures** to protect the population such as sheltering, taking potassium iodide tablets and/or protective measures in the areas of agriculture and food production may be necessary.
- This is not an activity in the strict sense, but rather products or areas that are contaminated as a result of serious accidents in Category I or II emergency preparedness facilities.

In Austria, emergency exposure situations of emergency preparedness categories III, IV and V are possible. The requirements for emergency preparedness and response, graded according to emergency preparedness category, were taken into account in the various parts of the National Emergency Response Plan.

HERCA-WENRA Approach for a better cross-border coordination of protective actions during the early phase of a nuclear accident

The HERCA-WENRA Approach [HWA 2014] is divided into 3 steps: the preparedness phase, the early phase and the late phase. The approach contains the main principles and leaves necessary margins of freedom for detailed implementation:

Step 1

In **preparedness** the aim is to achieve and maintain a shared understanding of the existing national emergency arrangements through the improvement of bilateral or multilateral arrangements, the testing of these arrangements and the implementation of improvements.

Step 2

In the **early phase** of an accident, the proposed HERCA-WENRA Approach foresees rapid information exchanges by using existing dedicated bilateral and international arrangements, including the exchange of liaison officers as appropriate. If the response is thought consistent, the neighbouring countries can recommend to their governments to follow these recommendations, i.e. adopt the principle "**We do the same as the accident country**" in the first hours of the accident.

Step 3

In the **later phase** a common situation report, accepted by all impacted countries, will further support coordinated protective actions.

For the initial stage of a highly improbable severe accident (i.e. Fukushima-like), requiring rapid decisions for protective actions while very little is known about the situation, simplified schemes for protective actions are needed.

Fukushima has shown again that a severe nuclear accident anywhere in the world, including Europe, cannot be completely excluded. Considering the safety level of European nuclear power plants and their improvements resulting from the lessons learned from various

events (including the Fukushima disaster), it is estimated that the probability of such a severe accident is very low. But, as improbable as such an accident might be, EP&R arrangements must be prepared for such cases, too.

According to the current studies, international standards and methods used for emergency preparedness and response, an accident comparable to Fukushima would require protective actions such as evacuation to around 20 km and sheltering to around 100 km. These actions would be combined with the intake of stable iodine.

In this framework, HERCA and WENRA propose a methodology for a common European approach allowing to recommend urgent protective actions as well as a minimum common level of preparation for these actions.

HERCA and WENRA consider that in Europe

- **Evacuation** should be prepared **up to 5 km** around nuclear power plants, and **sheltering and ITB up to 20 km**;
- A general strategy should be defined in order to be able to extend **evacuation up to 20 km and sheltering and ITB up to 100 km**;
- Nuclear and radiation safety authorities in Europe should continue attempts to promote compatible response arrangements and protection strategies among the European countries.

The HERCA-WENRA approach confirms the results of the systematic hazard analysis

- In Austria, no evacuations are necessary even in the event of serious nuclear power plant accidents (Dukovany, the nearest nuclear power plant, is 30 kilometres from the Austrian border).
- The measures "sheltering and "taking potassium iodide tablets" may be necessary in the worst case up to 100 km away from the plant.

