

**The Nordic Manual (NORMAN):  
Co-operation between the Nordic Authorities in  
Response to and Preparedness for  
Nuclear and Radiological  
Emergencies and Incidents**

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Denmark:	Danish Emergency Management Agency (DEMA) National Institute of Radiation Protection (SIS)
Finland:	Radiation and Nuclear Safety Authority (STUK)
Iceland:	Icelandic Radiation Safety Authority (GR)
Norway:	Norwegian Radiation and Nuclear Safety Authority (DSA)
Sweden:	Swedish Radiation Safety Authority (SSM)

# The Nordic Manual (NORMAN): Co-operation between the Nordic Authorities in Response to and Preparedness for Nuclear and Radiological Emergencies and Incidents

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## 1 SCOPE AND BACKGROUND

This document describes practical arrangements and co-operation to fulfil obligations stated in bilateral agreements between the Nordic states. These arrangements also apply to response for events or threats of malicious use of radioactive material and threats or malevolent acts concerning nuclear facilities. Furthermore, small scale events, such as rumours and minor incidents, with consequences limited to a public concern and interest by the media, and/or a need for exchange of technical information between nuclear and radiation safety regulatory bodies, have been included. The arrangements in this document include all phases of events, including intermediate and recovery phases.

Bilateral agreements between the Nordic states contain obligations regarding early notification of abnormal events or detection of abnormal levels of radiation and exchange of information. The Nordic states have also ratified the IAEA Early Notification and Assistance Conventions. Denmark, Finland and Sweden, as members of the European Union, are part of the EC communication system (ECURIE). Norway has also joined ECURIE. In addition, the Nordic states have also bilateral agreements with other neighbouring countries that define obligations of communication and co-operation outside the Nordic arrangements.

This document takes into consideration the current international development concerning response to and preparedness for nuclear and radiological incidents and emergencies as well as other important relevant international aspects. Since late 1980s, when the international conventions and bilateral agreements were signed, international guidelines<sup>1</sup> issued by the IAEA have extended the scope for notification and the nature of events concerned. Today regulatory bodies are expected to notify international counterparts not only of emergencies that lead, or may lead, to transnational radiological consequences, but of any event that has implications for another state or its interests independent of the cause of the event (accident, negligence or deliberate act).

The international developments considered include IAEA guides on protective measures during emergencies and first responders and medical response and documents by Heads of the European Radiological Competent Authorities (HERCA) for improvement of compatible response in European countries and increase of mutual understanding between neighbouring countries.

There is a long history of the Nordic countries to develop joint approaches. The latest is the generic guide of the Nordic countries concerning population and functions of society in case of nuclear or radiological emergencies. The guide includes jointly agreed criteria for different protective actions during nuclear or radiological emergencies.

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<sup>1</sup> Especially IAEA Safety Standard series No GSR Part 7 Preparedness and Response for a Nuclear or Radiological Emergency; Safety Requirements and EPR-IEComm 2019 Operations Manual for Incident and Emergency Communication.

## 2 CO-OPERATION IN RESPONSE PHASE

### 2.1 Communication policy between the Nordic authorities during emergencies

Taking into account the bilateral and multilateral agreements between the Nordic states, to improve information flow between the Nordic authorities<sup>2</sup> and to harmonise the Nordic policy with the IAEA guidelines, in particular the Operations Manual for Incident and Emergency Communication (IEComm), the IAEA Safety Requirements for Preparedness and Response for a Nuclear or Radiological Emergency (GSR Part 7) and the IAEA Safety Guide on Arrangements for Preparedness for a Nuclear or Radiological Emergency (GS-G-2.1), the following principles are highly recommended when communicating during incidents and emergencies:

1. To make information flow more efficient, information is communicated to all Nordic authorities
  - simultaneously, indicating that the authorities of other than the states involved are also informed,
  - without prior request.
2. To institutionalise notification and exchange of information
  - communication is not dependent on “personal” contacts but on official emergency contact points,
  - it is the responsibility of each authority to communicate any change of contact information details without delay,
  - contact information and means of communication as described in chapter 2.2.2. in this document are used.
3. To make contacts of urgent information quick and simple
  - procedures for informing the Nordic authorities is independent of the time of day,
  - the methods for contacting any Nordic authority are compatible.
4. To avoid misunderstanding and misinterpretations
  - relevant and important information is delivered in writing; the use of video conference technique, telephone or other means of communication are only complementary,
  - information delivered to the other authorities are processed, focusing on conclusions and decisions; detailed information is made available,
  - the language used in communication between the authorities regarding incidents and emergencies is English. Supplementary information such as press releases and summary reports may be submitted in other languages.
5. Confidentiality
  - information marked by the sender as “authority use only” shall not be made available to a third party without the consent of the originator.
  - unverified data is declared as such, and parties receiving unverified data and information shall not make these data available to a third party without the consent of the originator.

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<sup>2</sup> The term “Nordic authorities” covers all authorities within the NEP group. This should not be confused with the term NCA as defined in the IAEA IEComm.

## 2.2 Notification and exchange of information

### 2.2.1 Threshold of dissemination of information

The principles for when to exchange information and notify other Nordic authorities are specified in the IAEA Convention on early notification and bilateral agreements between the Nordic states as:

1. in case of a transnational emergency, see IAEA safety standards requirements (GSR Part7) and guides (IEComm).

*Transnational emergency, as defined in the IAEA safety standards requirements, is a nuclear or radiological emergency of actual, potential or perceived radiological significance for more than one state. This includes:*

- *a significant transboundary release of radioactive material (however, a transnational emergency does not necessarily imply a significant transboundary release of radioactive material)*
- *a general emergency at a facility or other event that could result in a significant transboundary release (atmospheric or aquatic)*
- *discovery of the loss or illicit removal of a dangerous source that has been transported across or is suspected of having been transported across a national border*
- *an emergency resulting in significant disruption to international trade or travel*
- *an emergency warranting the taking of protective actions for foreign citizens or embassies in the state in which it occurs*
- *an emergency resulting in or potentially resulting in severe deterministic effects and involving a fault and/or problem (such as in equipment or software) that could have serious implications for international safety*
- *an emergency resulting in, or potentially resulting in, great concern among the population of more than one state owing to the actual or perceived radiological hazard.*

2. in case of an alert or advisory level communication as defined in the ECURIE Communication Instructions

Alert level, in case of

- *an actual emergency exposure situation is being managed, and urgent protective actions are being considered or implemented (i.e. evacuation, sheltering, issue of stable iodine)*
- *maximum permitted levels in food/animal feeds are liable to be exceeded over an extended area*
- *abnormal significantly raised levels of radiation are measured in the environment (in the case of an event situated outside the Member State or of unknown origin)*

Advisory level

- *cases of malicious or criminal use of radioactive material*
- *loss of theft of high-activity radiation sources or nuclear material*
- *unexpected finding of high-activity radiation sources or nuclear material*
- *transport incident involving radioactivity*
- *major radiation incidents in medical establishments, including unintended exposures in radiation therapy*
- *information necessary for rumour control, including any events (and non-events) which receive excessive media coverage*
- *information necessary to the protection of the EU internal market (i.e. detection in customs offices of consumer goods not suitable for the market due to high level of radioactivity)*
- *Any other incident qualifying for an Advisory, as discussed in chapter 2.3 of ECURIE Communication Instructions*
- *Elevated levels of radiation that could be of safety significance at the origin of the release.*

### 3. in case of

- an abnormal safety related event at a nuclear facility which could have offsite impact

In addition to these principles, the Nordic authorities have, under the framework of the NEP-co-operation, agreed to notify each other

### 4. whenever a Nordic authority receives/has information which is considered to be of urgent interest to the other Nordic authorities.

Examples of situations when information should also be exchanged between the Nordic authorities include:

- events not defined in agreements and conventions (e.g. threats or rumours of malevolent acts)
- incidents below agreement notification level but of media interest
- detection of minor amounts of fresh fallout indicating exceptional releases
- rumours, verified to be rumours, of a radiation or nuclear event

Naturally, situations will occur when it is not clear whether it is appropriate to notify other Nordic authorities or not. In those cases, the philosophy should be *“it is better to notify one time too often than the other way around”*.

## **2.2.2 Communication means**

National Warning Points as defined in the IAEA IECOMM, ECURIE and bilateral agreements shall be used during initial notification of situations described in 2.2.1. Each state should operate at least two diverse communication channels for a 24-hour contact point.

### 1. Initial notification

Initial notification to Nordic countries follows the IAEA guidelines. USIE alerting capabilities are used for initial notification. The forms to be used for this initial communication are as defined in the IAEA IECComm. Notifications are sent to National Warning Points (NWP) in all Nordic states.

2. Follow up information and other information of potential interest

A non-personal e-mail address, primary contact email, is used for exchange of follow up information during emergency situations except when the response organization has provided non-personal contact details to be used for the duration of the incident. Preferentially information will be made available on USIE.

3. Audio/videoconferencing

The Nordic authorities may during an emergency organise audio/video conferences among themselves or take part in conferences organised by the Commission or the IAEA. The main objective is to agree upon joint approach of actions, share information of national response and expert discussions on assessments, prognosis, etc.

4. Public communication

When exchanging information on public communication, authorities should use the non-personal email addresses of the information units in order to ensure that communication is independent of the presence of specific individuals.

All updated news items will be issued on ordinary web pages of the authorities. All authorities should subscribe to the other authorities' news distribution systems. News can also be made available on protected websites dedicated to be used during incidents and emergencies.

5. Liaison experts

It is possible, upon mutual agreement, for each Nordic authority to send liaison experts to the authority in a Nordic accident state in order to improve the understanding of the situation and to assist in communication and transmission of emergency information and data to home base. Details will be agreed on before deployment.

When Nordic countries send experts to embassies in accident country, whether in Nordic country or outside, authorities should aim to cooperate and exchange information.

### **2.2.3 Public communication**

Besides news items subjected to the media and public, exchange of information on public communication between the Nordic authorities should comprise information about how and when other news related products are issued. It would be beneficial to alert Nordic countries on relevant media and social media issues, i.e. false rumours.

## 2.3 Co-operation and co-ordination of actions

### 2.3.1 Exchange of information and co-operation regarding safety assessments and protective actions

In cases of serious emergencies or situations with any kind of possible transboundary impact, it is important that authorities deal with the situation in co-operation with the authorities in neighbouring states. Below are some examples:

- Assessments of the situation and decisions regarding protective actions may affect decisions in another state. It is therefore important that such decisions are communicated among the neighbouring states.
- When it comes to definition of risk areas, different states use different models and input parameters for dispersion calculations. This, in turn, may lead to slightly different results from the calculations. Therefore, it is valuable, if time allows, to compare the calculations made by other authorities before decisions are being made regarding protective actions and information is disseminated to the general public.
- All severe accidents and incidents have international implications in a sense that all states have interests almost anywhere in the world and an ambition to protect these interests. These include citizens living in the accident state, tourism, trade, transport, travel and production. If an incident or emergency takes place in a far-off country from the Nordic states' point of view, the decisions should be harmonised in the Nordic states when the expected consequences are similar.

To meet the above-mentioned expectations, the Nordic authorities should strive for compatible decisions. The responsible authorities in a state should be able to explain what decisions other Nordic states have made and the reasons why. The Nordic authorities have agreed the following:

- Promptly and without prior request inform other Nordic authorities of recommendations on actions or non-actions. The information should be accompanied by relevant assessment results.
- If decisions on e.g. protective actions are made based on other factors than radiation consequences and without prior recommendation from the competent authority in that state, other Nordic authorities should be informed as soon as the competent authority in that state becomes aware of actions decided. This might especially be the case with actions related to tourism, trade, transport, travel and production.
- Information and advice delivered to the own embassy(ies) in the affected country(ies) should be shared among the Nordic authorities and, if time allows, there should be an attempt to coordinate the information content.
- Information regarding events in nuclear facilities close to Nordic countries, obtained through bilateral or other means will be shared with all Nordic authorities.

- If any Nordic authority gets new information directly from affected countries by e.g. communicating with competent authorities of those countries by sending experts to the affected countries this information should be shared to other Nordic authorities.
- If no information is distributed, the other Nordic authorities should rely on there having been no new information available or no recommendations regarding protection of own citizens, production and trade in a potential hazard area.

## **2.4 Assistance**

All states are required to prepare and dedicate resources to respond to the consequences of a nuclear or radiological incident/emergency. When the resources and capabilities required to respond to a nuclear or radiological incident/emergency are beyond the capacity of a state, international assistance may be requested. In October 1963, Nordic countries signed an agreement to assist each other in case of radiological hazards. In addition, all Nordic states have ratified the Convention on Assistance in the case of a Nuclear Accident or a Radiological Emergency.

Requests for assistance can be made directly from one Nordic state to another on the basis of the Nordic mutual assistance agreement. Requests for assistance can also be made directly from one state to another or to IAEA, on the basis of the Assistance Convention. The Nordic states follow the international procedures as described in the document IAEA Response Assistance Network, EPR-RANET 2018 and there is no need for additional Nordic ones.

## **3 CO-OPERATION IN EMERGENCY PREPAREDNESS PHASE**

### **3.1 Nordic Working Group of Emergency Preparedness (NEP)**

Chiefs of the Nordic radiation protection and nuclear safety authorities established in 1993 a work group (NEP) for co-operation, co-ordination, exchange of information and assistance in the field of emergency preparedness and response. NEP's tasks are:

- To exchange information, experience and good practice between the Nordic nuclear and radiation safety authorities on ongoing and planned projects and work in the field of nuclear and radiological emergency preparedness and response.
- To take initiatives and make proposals to Chiefs Meeting<sup>3</sup> when NEP finds that joint projects related to emergency matters should be carried out. To carry out approved tasks by itself or follow up on initialised and finalised projects.

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<sup>3</sup> Regular meeting of the chiefs of the Nordic radiation protection and nuclear safety authorities.

- To co-ordinate and improve mechanisms and arrangements for notification, information exchange, coordination of protective actions and assistance between the Nordic authorities<sup>4</sup> involved in emergency situations.
- To follow and cooperate in the implementation of Nordic and international policies and guidance in Nordic countries.
- To review the use of communication tools for emergency situations and carry out tests on a regular basis.
- To follow and, when beneficial and possible, coordinate participation in and positions related to actively taking part in the Nordic and international development in the field of nuclear and radiological emergency preparedness and response.
- To communicate, co-operate and co-ordinate, where appropriate, the implementation of international standards and guidelines into national arrangements in the Nordic states.

A work plan is made for a two-year period and given for approval to the Chiefs Meeting.

Emergency contact information details are kept continuously up-to-date by NEP members. Even temporary short-term changes shall be communicated. Updates shall be made also in the USIE system.

The members of NEP consist of representatives from all Nordic radiation protection and nuclear safety authorities which are centrally involved during relevant incidents or emergencies. Each authority nominates its representative(s). The participating authorities are:

Denmark:	Danish Emergency Management Agency (DEMA) National Institute of Radiation Protection (SIS)
Finland:	Radiation and Nuclear Safety Authority (STUK)
Iceland:	Icelandic Radiation Safety Authority (GR)
Norway:	Norwegian Radiation and Nuclear Safety Authority (DSA)
Sweden:	Swedish Radiation Safety Authority (SSM)

The entire NEP group typically meets twice a year, in spring and in autumn. At the meetings, ad hoc groups may be formed and tasked to carry out specific projects or assignments.

The chairmanship and secretariat follow a country wise rotation regime<sup>5</sup>. The chairman and secretary serve for two years and the term begins on first of January.

The representatives in NEP are nominated by the participating authorities. The general objective is continuity, but individual representatives may be replaced during the terms as deemed appropriate by the authorities.

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<sup>4</sup> The term “Nordic authorities” covers all authorities within the NEP group.

<sup>5</sup> Finland, Norway, Sweden, Denmark and Iceland.

There is a strong will for improving consistent response, co-ordination and co-operation on an international level of emergency related issues. Nordic authorities actively take part in work carried out in several work groups/committees at an international level and form and promote Nordic positions and perspectives when appropriate. The Nordic members of work groups/committees keep other Nordic authorities informed through NEP on the progress of the work. Furthermore, the Nordic authorities make, where relevant, joint statements on the outcomes of the work. As practical examples:

- IAEA Guidance (safety requirements, safety guides, technical documents)
- IAEA and EU guidance (IEComm, ECURIE) for fulfilling obligations set by the international conventions and for the EU member states set by the Council Decisions.

NEP follows closely the work carried out in international forums, e.g. by the HERCA-WGE, OECD/NEA, EU (in particular non-EU member states are regularly informed about the status and development), WHO and the EU research projects. Information on Nordic co-operation with the Baltic States, Russia, Belarus, Ukraine, as well as NATO is regularly updated during NEP meetings.

### **3.2 Exercises and drills**

The Nordic authorities have agreed on the following:

- To communicate the national exercise schedules between each other.
- To invite other Nordic authorities to participate in exercises that may be of interest for other Nordic countries. The participation may happen either by sending observers or by activating their own response organisation.
- Other Nordic authorities may assist in the preparation of exercises and also assist during exercises by actively interacting with the “exercise country”. The Nordic authorities may assist in evaluation of national exercises.
- Exercise scenarios and other relevant material from both national and international exercises will be exchanged between the Nordic authorities when beneficial.
- Nordic authorities may also consider, when relevant, establishing specific joint Nordic objectives, in addition to international and national objectives.

Details regarding Nordic participation will be agreed prior to exercise. If Nordic participation is part of the exercise, Nordic objectives will be agreed upon and exercise guides will be written for players and evaluators prior to exercise. The NEP group publishes evaluation report of all exercises with specific Nordic objectives and organises follow-up of improvement of findings gained through exercises.

NEP will follow international guidance regarding conducting exercises, as well as following results and experiences gained during national, multinational and international exercises and taking into consideration lessons identified at national and Nordic levels.

NEP also organises regular, unannounced communication exercises (NEPEX) to test duty systems of the Nordic authorities. NEP has a document (“NEPEX – Nordic Communication Exercises – Guidelines”) for detailed instructions.

### **3.3 Exchange of background information regarding emergency arrangements**

Ideally all states should make the same decisions regarding the protection of their citizens if they are exposed to same type of hazard. But since this is not always the case, one should at least be able to explain the differences. In any emergency it is of outmost importance that the responsible authorities have a clear understanding of the situation and its development, and also have an ability to communicate decisions being made in order to protect the public and to minimise the consequences of the emergency. This holds true not only for domestic emergencies but also for emergencies taking place in neighbouring states or even more remote states.

The Nordic authorities share information regarding emergency planning under the frame of the NEP co-operation. HERCA Country Fact Sheets summarize the most important parts of background information. More detailed information on national emergency arrangements is available in IAEA EPRIMS.

The Nordic guidelines and recommendations for protective actions have been published in a separate document (“the Nordic Flag Book”).

Each state is also obliged under bilateral agreements to exchange information about nuclear installations (general information about construction, safety systems, operation, radiation protection, consequence mitigating actions and onsite and offsite emergency arrangements). This also includes consultations (cf. Article 3 in the bilateral agreements) in order to clarify the risk of incidents and emergencies.

### **3.4 Public communication**

The Nordic authorities benefit from co-operation regarding public communication issues. This co-operation promotes harmonisation on how the media and the public are informed. The Nordic authorities should keep each other informed of the public communication activities during incidents and emergencies with the aim of harmonising information, including timing, when possible. Active exchange of public communication topics during incidents and emergencies helps the authorities to detect contradictory information issued in various states. The public communication units of the Nordic nuclear and radiation safety authorities keep regular contact with each other.

#### **4 REVISION OF THIS DOCUMENT**

NEP will assess the need for revision of this document every second year and update the necessary details. Essential changes in NORMAN will be presented to the Chiefs Meeting for approval. Updated versions of this document will be distributed to all organisations.