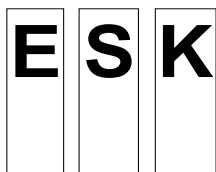


Note:

This is a translation of the ESK document entitled  
“Erläuterungen zu Anhang 1 der Empfehlung der Entsorgungskommission vom 01.03.2018”  
In case of discrepancies between the English translation and the German original, the original shall prevail.



## **Explanatory notes on Annex 1 to the recommendation of the Nuclear Waste Management Commission of 1 March 2018:**

### **A. General explanations**

#### **A.1 Reporting procedures**

The classification of reportable events into the reporting categories is based on the urgency of the information to the supervisory authority and the safety significance of the events.

The different categories can be described as follows:

##### Category S:

Events that reveal acute safety-related deficiencies and must be reported to the supervisory authority immediately in order to enable the latter to launch an investigation or to prompt measures at very short notice, if necessary.

##### Category E:

Events that must be reported to the supervisory authority within 24 hours in order to enable the latter to launch an investigation or to prompt measures at short notice, if necessary. This also includes those events whose cause must be clarified within a short period of time for safety reasons and, if necessary, rectified within a reasonable period of time. Generally, these events are potentially – but not directly – significant in terms of safety.

##### Category N:

Events that must be reported to the supervisory authority within 5 working days in order to be able to identify and eliminate possible safety-related weaknesses without requiring short-term measures by the supervisory authority. Generally, these are events of minor safety significance which, however, go beyond routine operational events during specified state and operation of the facility for handling other radioactive material.

For the submission of the provisional report to the supervisory authority, the presentation of the facts in the official reporting form within the prescribed reporting period is sufficient.

## **A.2 Safety-relevant systems and components**

The safety-relevant systems and components ensure the achievement and maintaining of proper operating conditions, the prevention of accidents and the mitigation of accident consequences so that life, health and property are protected against the harmful effects of ionising radiation.

The systems and components which are to be considered as safety-relevant when handling other radioactive materials are specified, where applicable, in the approved operating procedures. If existing, at least the following is to be counted among the safety-relevant systems and components:

- emergency power supply, systems for uninterruptible power supply (UPS),
- technical and structural fire protection equipment,
- ventilation systems for maintaining subatmospheric pressure, retention and discharge of radioactive substances,
- structural installations for the retention of radioactive substances,
- radiation protection monitoring systems,
- alarm systems,
- structures in which safety-relevant systems are installed or whose failure may endanger safety-relevant systems, and
- safety-relevant components of the control system of lifting devices.

## **A.3 Events during functional tests after maintenance and repair**

If, after completion of maintenance and repair work on safety-relevant systems and components, functional tests are performed, any failures or malfunctions of the tested systems and components are generally not subject to reporting,

with the exception of

- damages caused by maintenance or repair work as well as newly occurred damage to essential system components,
- indications of systematic faults,
- events that lead to retroactive effects on other safety-relevant systems and components.

## **A.4 Events from special examinations**

Findings or functional losses found as a result of a test or inspection and which meet the criteria for the obligation to report are also to be reported.

## **A.5 Reporting of multiple failures or similar findings**

It is possible to indicate several malfunctions in one report if, for example,

- the similar findings are established within a test, inspection/walk-down or special examination,
- similar findings are established for comparable components within the prescribed reporting period.

This procedure is not applicable to events that have recurred, e.g. occurrence of the same phenomena after a longer period of time, where the processing of the first event has already been concluded by a final report.

## **B. Explanations on individual reporting criteria**

### **B.1 Explanatory notes on the criteria S 1.1.1, S 1.2.1 and E 1.2.1**

Body doses are to be determined in accordance with the simplified assessment procedures laid down for emergencies.

### **B.2 Explanatory notes on the criteria S 1.2.1 and E 1.2.1**

For the classification according to Category S, it is first of all decisive that it is suspected that limits according to § 47 of the Radiation Protection Ordinance (StrlSchV) could be exceeded in the population due to an increased release of radioactive substances.

### **B.3 Explanatory notes on criterion E 1.2.2**

This criterion is intended to cover events in which an unplanned or unforeseen release of radioactive substances occurs, e.g. due to container failure or human error.

2<sup>nd</sup> indent:

A reporting obligation according to E 1.2.2 is only given if the criteria for the establishment of a controlled area pursuant to § 36 StrlSchV are fulfilled.

### **B.4 Explanatory notes on the criteria E 1.3.1 and N 1.3.1**

These criteria are intended to cover events that lead to unintentional or unforeseen contamination, for example due to container failure or human error.

Within the meaning of criterion N 1.3.1, an area can be contaminated during specified normal operation if the operating procedures are complied with, technical defects are excluded and the contamination is caused by a necessary action within an operational process.

#### **B.5 Explanatory notes on criteria S 1.4.1 and E 1.4.1**

Possible sources of radioactive material that may be carried over are e.g. waste packages. Radioactive material carried over due to deficiencies in the clearance procedure is also covered by criteria S 1.4.1 and E 1.4.1.

In addition, these criteria are intended to cover events where radioactive substances were spread from the facility by deliberate carry-over, e.g. by intentional misappropriation of radioactive material, and where the available means of radiation protection monitoring had not been effective.

#### **B.6 Explanatory notes on criterion N 2.1.1**

Failures of rectifiers resulting in significant battery discharges as well as significant battery discharges of the UPS systems due to malfunctions are to be reported. A significant battery discharge means more than 20% of its nominal capacity.

Minor damage to fire protection equipment may be, for example,

- the self-reporting failure of individual fire or smoke detectors without affecting fire detection,
- damage to structural fire protection equipment without any effect on the fire resistance and/or the retention of smoke gases (e.g. bulge in a fire protection door, fire damper fails to open again after closure),
- failure of the remote control of an individual fire damper without affecting the fusible actuation mechanism.

Criterion N 2.1.1 covers single failures. Events indicating systematic faults are covered by criterion N 2.1.2.

#### **B.7 Explanatory notes on criterion N 2.1.2**

Examples which can generally be assumed to be indicative of systematic faults are events whose cause can be found in

- deficiencies of the quality system,
- inadequate assembly, maintenance, testing and other operating instructions and procedures,
- deficiencies in design or manufacturing, and
- specification errors, programme errors and errors caused by peripherals (service and diagnostic tools) in digital instrumentation and control of safety-relevant systems,

or which have the following effects:

- significantly increased failure frequency or increased wear compared to the specification,
- unusually early end of service life ahead of life expectancy of components, and
- types of faults that have not been taken into account or whose effects have not been adequately considered.

Indications of systematic faults are also:

- findings that indicate systematic faulty manufacturing or maintenance but did not yet cause an immediate loss of function of the component of the safety-relevant system,
- findings on parts that indicate systematic faults and that have either been removed from safety-relevant systems within the framework of maintenance measures or that are intended for use in safety-relevant systems, held in stock and have passed the necessary quality assurance (incoming inspection).

If an event was initially regarded as a single failure based on the knowledge gained at the time of the event and detailed investigations carried out subsequently show that there is an indication of a systematic cause, the event is to be reported according to Category N 2.1.2 once these results are available or the report already submitted is to be supplemented accordingly.

## **B.8 Explanatory notes on criterion N 2.2.1**

Examples of technical and operational limits and conditions defined by the regulatory body are

- the total activity and nuclide-specific activities at storage or conditioning facilities,
- permissible operating parameters of conditioning facilities, and
- permissible floor loading/stacking height.

## **B.9 Explanatory notes on criterion N 2.2.3**

Examples:

- load drop with potential for contamination of the affected room areas by damage to waste packages, and
- load drop as a result of which activity was released.

## **B.10 Explanatory notes on the criteria S/E 3.1.1 and S/E/N 3.2.1**

The events listed under criteria S/E 3.1.1 and S/E/N 3.2.1 is only exemplary.

The formulation of the criteria is based on the urgency with which the competent supervisory authority must be informed in the event of internal and external hazards. Classification due to other impacts, in particular the impacts on the safety-relevant systems and components (criterion N 2.1.1), remains unaffected by it.

N 3.2.1 is intended to cover incipient fires which, in particular, reveal deficiencies in preventive fire protection and which have not yet led to a loss of function of safety-relevant systems and components. This also includes incipient fires during waste handling, e.g. during waste sorting and conditioning processes.