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In the event of any differences in interpretation of this guide the Finnish version shall take precedence over this translation.

REPORTING RADIOLOGICAL CONTROL OF THE ENVIRONS OF NUCLEAR POWER PLANTS TO THE INSTITUTE OF RADIATION PROTECTION

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1 GENERAL

The radiological control of the environment comprises:

- measurement of the releases of radioactive substances (see Guide YVL 7.6)
- local meteorological measurements (see Guide YVL 7.5)
- local hydrographic measurements as far as they serve the assessment of the dispersion of radioactive releases in liquid effluents
- calculation of the radiation doses that the population in the environment is exposed to (see Guide YVL 7.2)
- measurements made in connection with the radiation monitoring of the environment (see Guide YVL 7.7)
- control of other activities relative to the operation of the nuclear power plant and transports of radioactive materials with the purpose of finding out the doses induced to the population in the environment.

2 SCOPE

This guide provides requirements for the reporting of the radiological control conducted in the environment of a nuclear power plant.

3 ANNUAL REPORT

The annual report of the radiological control of the environment shall be submitted to the Institute of Radiation Protection by May 1st of the following year. The report shall comprise the following sections:

1 General
2 Release data
3 Dispersion data
4 Dose calculations
5 Environmental monitoring
6 Other data to be reported

3.1 General

The general part of the report shall present a short summary of the operation of each nuclear power plant unit in the report year. The summary includes the essential operating data with respect to releases, such as the times for annual maintenances and other longer shutdowns and the data on electrical energy produced in the year. All essential changes that have taken place in discharge paths, measuring equipment, sampling, analysis methods or performance of dose calculations shall also be mentioned in this part of the report.

3.2 Release data

The release data are presented in three-month periods for each plant unit and they are specified according to each discharge path.

The released quantities of all atmospheric releases of radioactive substances shall be given - with the groups of substances specified - using the following division:

- fission and activation gases
- iodines
- radioactive substances in particulate form
- tritium
- carbon-14
- α- active substances

In addition, the radionuclide composition of the released quantities shall be specified separately.

The released quantities of all radioactive releases in liquid effluents shall be given - with the groups of substances specified - using the following division:

- fission and activation products
- tritium
- carbon-14
- α-active substances

In addition, the radionuclide composition of the released quantities shall be specified separately. Also the volumes of the releases and the coolant flow volume shall be reported.

3.3 Dispersion data

The duration of meteorological conditions is reported as annual averages in accordance with Table 1.

The dispersion factors are reported as annual averages, calculated for each sector (12 sectors) and for the following distances: 2, 5, 10, 20, 30, 40, 60 and 80 km.

The hydrographic data that can be used in dose calculations are also reported in this section.

3.4 Dose calculations

The power companies shall calculate the radiation doses caused by the releases in the report year, i.e. the dose for an individual in the critical group and the collective dose for the population up to a distance of about 100 km. The doses are calculated for the added up releases of all units at the plant site following the general principles presented in Guide YVL 7.2. The results are given as effective dose equivalents.

In the annual report, the individual dose is specified according to the significant exposure pathways and their significant nuclides.

The collective dose is specified according to the significant exposure pathways.

3.5 Environmental monitoring

The purpose of the annual report is to give an overall picture of the effects of the plant on the environment by means of general conclusions and comparisons. However, consideration must be given to individual exceptional measurement results, and reasons for these shall be found out.

Table 2 shows a list of the results and supplementary data that shall be given of the exposure and activity measurements for each monitoring object.

3.6 Other data to be reported

This section gives information that is distinctly separate from the data provided by the previous sections concerning the radiological control of the environment, e.g. the transports of radioactive substances. Descriptions of significant exceptional situations are also given in this section.

4 QUARTERLY SUBMITTED DATA

The IRP shall be provided with data on releases, dispersion conditions, and radiation monitoring of the environment within on month after each quarter of a year.

4.1 Release data

All results of release measurements shall be given to the IRP for information every three months. They contain the following data:

- the plant unit which is represented by the release measurements
- quantities of radionuclides contained in the sample and released amounts calculated on the basis of these (all radionuclides that are detected shall be reported, also concentrations that are below the limits set in Guide YVL 7.6)
- in case of atmospheric releases, time of sampling and the corresponding amount of air released into the environment
- in case of releases in liquid effluents, the volume of the amount of water released.

4.2 Dispersion data

Every three months the IRP shall be provided with data on the average dispersion factors and duration of meteorological conditions following the reporting procedures mentioned in sub-section 3.3.

4.3 Environmental monitoring

The results given by dosimeter stations and radiation exposure rate meters shall be sent to the IRP every three months.

As regards other data, the IRP, as the regulatory authority, uses the results of environmental radiation monitoring programmes performed in accordance with Guide YVL 7.7 without a separate report

Table 1. Duration of Meteorological Conditions

Stability Class:
Recording Time:

Wind Direction	Speed (m/s) at highest level 0-1	1-3	3-5	5-8	8-12	12-16	16-20	>20	Total	Average speed m/s
1 - 30										
31 - 60										
61 - 90										
91 - 120										
121 - 150										
151 - 180										
181 - 210										
211 - 240										
241 - 270										
271 - 300										
301 - 330										
331 - 360										
Total										

Periods of calm (h and %): Missing data (h and%):
Tables are prepared for stability classes A, B, C, D, E, F and G

Table 2. Data on Environmental Radiation Monitoring to Be Presented in the Annual Report

Object to be monitored	Data to be reported
1 External radiation	The observation results of supplementary monitoring are compared with the results given by dosimeter stations and radiation exposure rate meters.
2 Airborne radioactive particulates and iodine	A graphic presentation of the monthly averages of ^{137}Cs concentrations in various sampling places. The results of supplementary monitoring and continuous collection are compared.
3 Deposition	0.05 m^2 collectors: a table of the annual deposition of all nuclides, a graphic presentation of the concentrations of ^{3}H, ^{90}Sr and ^{137}Cs. 1 m^2 collector: Exceptional observations are investigated.
4a Soil 4b Indicator organisms 5 Grazing grass	Results are compared with concentrations in air and in deposition.
6 Milk	A graphic presentation of the monthly averages of the ^{90}Sr and ^{137}Cs concentrations. A separate account is given of the ^{131}I observations.
7 Garden produce 8 Grain 9 Meat 10 Drinking water	Exceptional observations are investigated.

11 Discharge water body	A graphic presentation of the concentrations of ^{3}H, ^{90}Sr and ^{137}Cs near the discharge outlet and further away in the discharge water body, four times a year.
12a Sediments 12b Sedimenting matter 12c Indicator organisms	Exceptional observations are investigated and concentrations of radionuclides are compared with the concentrations in sea water.
13 Fish	A graphic presentation of the concentrations of ^{137}Cs in various species of fish and in various fishing areas.