

Table D_0: Overview of networks and respective areas of procedures

Networks		Areas of procedures under normal and emergency monitoring	Note
For external exposure	Early Warning Network	<ul style="list-style-type: none"> • Procedures for direct measurement • Procedures for evaluating the results • Procedures for data transmission 	Stationary measuring device at the measuring site, on-line data transmission
	Network of integral measurement		Location of passive dosimeters at the measuring site, exchange and handover for evaluation and transfer of data after evaluation
	Network of monitoring routes	<ul style="list-style-type: none"> • Procedures for mobile measurements • Procedures for evaluating the results • Procedures for data transmission 	Portable measuring device in the vehicle, transfer of data after completed monitoring along the route
	Network of instantaneous measurement	<ul style="list-style-type: none"> • Procedures for direct measurement • Procedures for evaluating the results • Procedures for data transmission 	Portable measuring device at the specified measuring site, transfer of data after measurement
	Network of spectrometry measurement		
External and internal	Network of environmental sampling including discharges	<ul style="list-style-type: none"> • Sampling procedures • Procedures for sample processing • Sample measurement procedures • Procedures for evaluating the results • Procedures for data transmission • Procedures for the retention, archiving and destruction of samples 	Sampling at the specified sampling site by means of stationary sampling devices or without such devices, handover of samples to the measurement laboratory for processing, measurement and evaluation, transfer of data after measurement
	Network of food chain sampling		
Internal	Network of human body measurement	<ul style="list-style-type: none"> • Procedures for human body measurement • Procedures for evaluating the results • Procedures for data transmission 	If samples of excreta are taken, the procedures regarding the collection, processing and measurement of samples are used
Networks		Specific procedures in an emergency exposure situation	
External	Closure	<ul style="list-style-type: none"> • Procedure for sorting by contamination and dose rates • Procedure for the measurement of surface contamination of 	

		objects	
Internal	Network of human body measurement	<ul style="list-style-type: none">• Procedure for the measurement of thyroid gland (mass)• Procedure for the measurement of surface contamination of persons	

Table D_1: Overview of certified methodologies applicable to radiation situation monitoring

Year of publication	Identification	Title of the certified methodology	Area
2013	CM2013_1	Determination of H*(10) and H'(0.07) by means of an EPD system	Direct measurement
2013	CM2013_2 (CM TLD)	Determination of H*(10) by means of integral dosimeters within the Radiation Monitoring Network	Direct measurement, evaluation of results
2014	CM2014_1 (CM SVZ)	Methodology for Early Warning Network: Operation of the Early Warning Network as part of the Radiation Monitoring Network.	Direct measurement, data transmission
2014	CM2014_2	Estimate of internal contamination with transuranium elements from the standby concentration measurement in the lungs and skeleton in vivo	Human body measurement
2014	CM2014_3	Methodology for mass measurement of radioiodine in the thyroid and estimate of doses for the population	Human body measurement
2014	CM2014_4	Retrospective dosimetry - estimate of personal dose using Al ₂ O ₃ samples from a mobile phone	Specific
2015	CM2015_1 (CM MS)	Methodology for the detection of radioactive substances in the affected area – Operation of mobile groups in radiation accident monitoring	Mobile measurement, sampling, evaluation of results
2015	CM2015_2	Detection and determination of the concentration of ⁹⁰ Sr in environmental samples by measuring the bremsstrahlung (braking radiation)	Measurement of samples
2015	CM2015_3	Methodology for testing the response of the detection systems of mobile groups in the field of the real fission spectrum of radionuclides generated by the VR-1 experimental training reactor with low power output	Specific
2015	CM2015_4	Screening method for the determination of total alpha concentration in water	Measurement of samples
2015	CM2015_5	Methodology for the assessment of the level of contamination of crops and the risk of contaminated waste	Specific
2015	CM2015_6	Methodology for the determination of the prognostic model of contamination of crops (in the first and subsequent years after the accident)	Specific
2015	CM2015_7	Methodology for the disposal of waste from animal production in the event of a radiation extraordinary event	Destruction of samples
2015	CM2015_8	Methodology for sampling system of animal products in terms of radioactive contamination for radiation extraordinary events, including the collection of critical information for the draft measure	Sampling

Year of publication	Identification	Title of the certified methodology	Area
2015	CM2015_9	Methodology for the risk assessment of contaminated waste	Specific
2015	CM2015_10	Rapid determination of Pu, Am and Cm isotopes in samples of soil, flora and food	Measurement of samples
2015	CM2015_11	Rapid determination of ⁸⁹ Sr and ⁹⁰ Sr side by side in food and flora	Measurement of samples, sample processing
2015	CM2015_12	Methodology for the rapid measurement of the contaminated land cover by means of modern technologies	Specific
2016	CM2016_1	Deployment of the system for internal contamination monitoring of thyroid with radioiodine after the accident of a nuclear power installation	Human body measurement
2016	CM2016_2	Determination of the dose from external exposure on the basis of the OSL of common salt (NaCl)	Specific
2017	CM2017_1	Measurement of radiation quantities using low-flying multicopters (drone) in areas affected by mining activities associated with the extraction and treatment of uranium ores (measurement is performed by the National Institute for Nuclear, Chemical and Biological Protection)	Specific

Note:

Certified methods (CM) are published on the website of the State Office for Nuclear Safety www.sujb.cz and can be used by all persons involved in radiation situation monitoring on the territory of the Czech Republic.

Table D_2: Overview of the procedures used in radiation situation monitoring under the NMP including frequency of practising procedures in the framework of drills

(Used abbreviations: CM – certified methodology; VDS, VDI – internal documentation of the State Office for Nuclear Safety; ČSN – Czech national standard; P – procedure)

Overview of sampling procedures¹⁾

Identification	Title of procedure	Persons or entities who use the procedure	Frequency of ²⁾ drills
CM2015_1/P3 (CM MS/P3)	CM MS; Procedure 3. Environmental sampling (carried out by mobile groups)	State Office for Nuclear Safety, National Radiation Protection Institute	Once a year
		Fire Rescue Service of the Czech Republic, customs offices, Police of the Czech Republic, Armed Forces of the Czech Republic	Every two years
VDI - Sampling	VDI: Sampling of the environment, food chain, discharges and excreta carried out within the State Office for Nuclear Safety (except mobile group)	State Office for Nuclear Safety, National Radiation Protection Institute	
SVÚ		State Veterinary Institute	
VÚV	Sampling is ensured by individual Povodí s.p., the profile of Vltava Podolí is taken by the T. G. Masaryk Water Research Institute under SOP	T. G. Masaryk Water Research Institute	
SZPI 1	Guideline for the monitoring of radioactive contamination in food intended for direct consumption on the territory of the Czech Republic	Agricultural and Food Inspection Authority	
SZPI 2	Internal regulation OS 012/2004 Principles for filling of control documents drawn up according to the requirements of Decree No. 231/2016 Coll.		

¹⁾ This is an overview of the procedures for sampling or processing or preparation for measurement; sample processing procedures are generally not drawn up separately, they are part of the sampling procedure or measurement procedure as preparation for measurement.

²⁾ The frequencies of individual activities under normal and emergency monitoring are given in the tables in Annex 3 to Decree No. 360/2016 Coll.; under emergency monitoring, the frequency may change at the instruction of the SÚJB. The frequency of conducting drills for the given procedure is shown only for the relevant procedures, which are mainly used in an emergency exposure situation and under normal monitoring, their use should be practised.

VÚLHM 1		Forestry and Game Management Research Institute	
ÚKZÚZ 1	Guideline No. 26/SZV "Monitoring of radioactive contamination in feed intended for direct feeding of animals on the territory of the Czech Republic"	Central Institute for Supervising and Testing in Agriculture	
DIAMO		DIAMO	

Overview of sample measurement procedures³⁾

Identification	Title of procedure	Persons or entities who use the procedure	Frequency of drills
VDI - G	VDI: Determination of the concentration of radionuclides in samples of the environment, food chains, discharges and in biological samples by means of gamma spectrometry	National Radiation Protection Institute	
VDI - TRU	Determination of the concentration of transuranium elements in samples of the environment, food chains, discharges and in biological samples	National Radiation Protection Institute	
VDI - Sr	Determination of the concentration of Sr in samples of the environment, food chains, discharges and in biological samples	National Radiation Protection Institute	
VDI - H	Determination of the concentration of ³ H in samples of the environment, food chains, discharges and in biological samples	National Radiation Protection Institute	
VDI - C	Determination of the concentration of ¹⁴ C in samples of the environment, food chains and discharges	National Radiation Protection Institute	
VDI - Kr	Determination of the concentration of ⁸⁵ Kr in samples of air and discharges to the air	National Radiation Protection Institute	
Method V.9.70; SOP 70.70	Determination of the concentration of gamma sources using the gamma-ray spectrometry method	State Veterinary Institute	
SOP CHE 7/99 Part b	Determination of the specific activity of ¹³⁴ Cs and ¹³⁷ Cs using high-resolution gamma spectrometry	State Veterinary Institute	
SOP RA6	Determination of gamma-emitting radionuclides (drinking water, surface water, sediment, sludge, water biomass)	T. G. Masaryk Water Research Institute	
SOP RA7	Determination of the activity concentration of tritium (drinking water, surface water)		
SOP RA9	Determination of Strontium-90 (drinking water, surface water, sediments, water biomass)		
SOP RA2	Determination of the total beta activity concentration (drinking water, surface water)		
ALS	Determination of the activity concentration of uranium in air	DIAMO	
SÚJCHBO 1	Determination of the activity concentration of the mixture of long-lived gamma-emitting radionuclides of uranium-radium series	National Institute for Nuclear, Chemical and Biological Protection	
GEAM o.z. 1	Determination of the activity concentration of ²²⁶ Ra in waters	DIAMO	

³⁾ The measurement procedures usually include the procedure for sample processing before the measurement and evaluation of the results or data transmission.

GEAM o.z. 2	Determination of the activity concentration of uranium in waters	DIAMO	
COAB	ČSN 75 7612 (BETA)		
COAA	ČSN 75 7611 (ALPHA)		

Overview of the procedures for human body measurement

Identification	Title of procedure	Persons or entities who use the procedure	Frequency of drills
VDI - VK	Determination of the effective dose from internal contamination, determination of the content of RN in the body or parts thereof by means of in vivo measurement including measurement of iodine in the thyroid gland	National Radiation Protection Institute	Once a year
CM2016_1	Deployment of the system for internal contamination monitoring of thyroid with radioiodine after the accident of a nuclear power installation	National Radiation Protection Institute	Once a year

Overview of the procedures for direct measurement

Identification	Title of procedure	Persons or entities who use the procedure	Frequency of drills
CM2014_1 (CM SVZ)	CM2014_1: Methodology for Early Warning Network: Operation of the Early Warning Network as part of the Radiation Monitoring Network	State Office for Nuclear Safety, National Radiation Protection Institute, Armed Forces of the Czech Republic, Czech Hydrometeorological Institute	
CM2013_2 (CM TLD)	Determination of H*(10) by means of integral dosimeters within the Radiation Monitoring Network	National Radiation Protection Institute	
SÚJCHBO 2	Determination of the PFDE by means of the thermoluminescent dosimeter	National Institute for Nuclear, Chemical and Biological Protection, DIAMO	
SÚJCHBO 3	Determination of EOAR	National Institute for Nuclear, Chemical and Biological Protection, DIAMO	

Overview of the procedures for mobile measurements

Identification	Title of procedure	Persons or entities who use the procedure	Frequency of drills
CM2015_1 (CM MS)	CM2015_1: Methodology for the detection of radioactive substances in the affected area - Operation of mobile groups in radiation accident monitoring	All mobile groups	Every two years
CM MS/P1	Procedure 1. Measurement of ambient dose rate equivalent	All mobile groups	Once a month
CM MS/P2	Procedure 2. Determination of the surface (specific) activity of radionuclides in soil by means of in situ spectrometry, qualitative determination of the content of radionuclides in the air	Mobile groups of the State Office for Nuclear Safety, National Radiation Protection Institute, Fire Rescue Service of the Czech Republic	Once a year
CM MS/P5	Procedure 5. Assessment of the radiation situation in the site using the DC-3E dose rate detector	State Office for Nuclear Safety, National Radiation Protection Institute	Once a month
		Czech Hydrometeorological Institute	Once a year
CM MS/P6	Procedure 6. Collection/distribution of TLD	Mobile groups of the State Office for Nuclear Safety, National Radiation Protection Institute	Quarterly
CM MS/P4	Procedure 4. Measurement of surface contamination	All mobile groups	Once a year
VDI MS	VDMI 061 Radiation Monitoring Network – Mobile groups	Mobile groups of the State Office for Nuclear Safety, National Radiation Protection Institute	According to the CM MS procedures
LeS	VDMI 091 LeS	National Radiation Protection Institute, Armed Forces of the Czech Republic, Police of the Czech Republic	Twice a year

Overview of the procedures for the retention, archiving and destruction of samples

Identification	Title of procedure	Persons or entities who use the procedure	Frequency of drills
CM2015_7	CM2015_7: Methodology for the disposal of waste from animal production in the event of a radiation extraordinary event	State Veterinary Institute	

CM2015_5	CM2015_5: Methodology for the assessment of the level of contamination of crops and the risk of contaminated waste	National Radiation Protection Institute	
CM2015_9	CM2015_9: Methodology for the risk assessment of contaminated waste	National Radiation Protection Institute	

Overview of specific procedures

Identification	Title of procedure	Persons or entities who use the procedure	Frequency of drills
CM2015_1 (CM MS)	CM2015_1; Methodology for the detection of radioactive substances in the affected area - Operation of mobile groups in radiation accident monitoring	All mobile groups	Every two years
CM MS/P7	Procedure 7. Estimates of radionuclide concentration in bulk samples in field conditions	Mobile groups of the State Office for Nuclear Safety, National Radiation Protection Institute	Every four years
VDI – Lab for RaMS	Operation of the gamma spectrometry laboratory in a radiation extraordinary situation	Measurement laboratories	Every three years

Table D_3: Overview of the procedures practised under comparative measurements in accordance with Annex 7 to Decree No. 360/2016 Coll.

Order pursuant to Annex 7 to Decree No. 360/2016 Coll.	Comparative measurement – name	Practised procedure used	Note
1	Comparative measurement – TLD	Thermoluminescent measurement	CM TLD
2	Comparative measurement – rapid gamma determination	Gamma spectrometry	VDI gamma
3	Comparative measurement – Sr and Pu in aerosols	Radiochemistry, alpha spectrometry	VDI Sr, VDI alpha
4	Comparative measurement – ⁹⁰ Sr in milk	Radiochemistry, beta spectrometry, summary beta	VDI Sr
5	Comparative measurement – radionuclides in soil and ground cover	Gamma spectrometry	VDI gamma, SOP RA6
6	Comparative measurement – ⁹⁰ Sr in water	Radiochemistry, beta spectrometry, summary beta	VDI Sr, SOP RA9
7	Comparative measurement – ³ H in water	Liquid scintillation spectrometry	VDI H3, SOP RA7
8	Comparative measurement – rapid beta determination	Proportional detector of beta radiation	ČSN 75 7613
9	Comparative measurement – measurement laboratory capacity	Gamma spectrometry	VDI gamma, VDI – capacity, SOP RA6