

THE NATIONAL CENTRAL REGISTRIES OF OCCUPATIONAL AND MEDICAL EXPOSURES IN THE CZECH REPUBLIC

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ABSTRACT - This paper describes recent situation in the Czech Republic concerning the registration and evaluation of occupational and medical radiation exposures. Since 1993 the creation of the Central (national) Registries of Occupational (CROE) and Medical Exposure (CRME) has been started. One of the main functions of these registries will be to provide statistics to guide policy making on a national basis. Authors give more detailed information on the structure of creating programs and discuss some actual arising problems.

INTRODUCTION

The actions leading to the creation of CROE and CRME were opened in 1993 by Radiation Hygiene Centre of National Institute of Public Health under the financial participation of the Ministry of Industry and Trade and Ministry of Health. In accordance with the changes in the structure of radiation protection in our republic this year, registries are now created in new National Institute of Radiation Protection which is supervised by State Office of Nuclear Safety (Fig.1).

Creating central registries, the Czech Republic (CZ) follows an international recommendation and world-wide trends in this field. CROE enable us to follow and control not only the individual doses of workers, but also to follow a radiation history of workers, estimate collective doses and time trends in different occupational categories, evaluate the efficiency of ALARA methods applied into the practice, help to find groups of workers significant from the point of view of radiation protection and collect data for epidemiological studies.

The survey and evaluation of medical radiation exposure (MRE) exists as a part of all reports of UNSCEAR from 1958. The aim of these world-wide studies is an estimation of world-wide dose, analyse of frequencies and dose distributions also in relation to age and sex of patients and determination of time trends in this area. Results of these studies help to find reasons for regional differences in doses for the same procedures, search the way for decreasing patient's exposure and to evaluate their effectiveness.

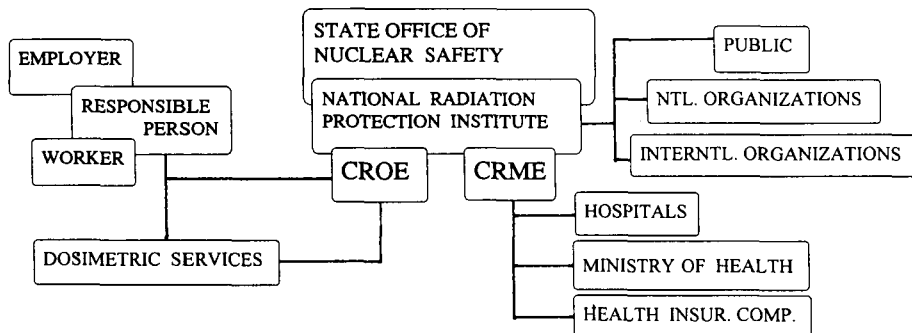


Fig.1: Organizational scheme of CROE and CRME in the Czech Republic

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The base of a registration and evaluation of OE is an individual monitoring of classified workers. The employer's duty, covered by the Regulation No.59 / 1972 in CZ, is to secure individual monitoring of radiation workers and record results of this monitoring. There is also legal duty of licensee to provide CROE with data in new prepared law on Peaceful Use of Nuclear Energy and Ionizing Radiation (e.g. " Atomic Act "). Dosimetric provision and evaluation of OE in CZ is the subject of a separate report to be presented at IRPA 9 Congress by Prouza , Petrová .

Databases of CROE contain detailed identification of employers including their activity categories (Tab.1) and the dose records for all monitored workers with details of their age , sex, occupational category (Tab.2), type of handling radiation source. The data will be reorganized annually and individual dose assessment will be maintain for the current year and previous five years. Earlier data will be archived. The system use special identification number for workers (birth number) and employer (random number) and all data are treated as confidential. Recently the registration cards serving for a contact between CROE and dosimetric services and employers are distributed. The cards will provide for CROE entrance data of all radiation workers in CZ and any changes in their registration. The database system is using ORACLE and operating in HP computers.

The contact with the International System on Occupational Exposure (ISOE/OECD) was opened up in 1994 and the created national system of ORE registration is built in the harmony with the recommendations and demands of this international system. This is a reason for instance for such detailed structure of occupational categories in NPP.

Tab.1: Employer's activity categories in CROE

1.0. health service (3)	6.0. defence
2.0. education, research	7.0. agriculture, food
3.0. energetics (3)	8.0. transport
4.0. general industry (4)	9.0. specialized facility (2)
5.0. uranium industry	

The start of operation of CROE is planned for 1996 . CROE will provide the new employer with summarized information of an individual's dose history, to guarantee a right annual dose calculation for workers with two or more employers, to provide statistics to national regulatory authorities and also another subjects interested in, according to CROE statute.

Tab.2: Occupational categories in CROE (the number of items for each category in parentheses)

1.0. Defectoscopy (2)	5.0.0. NPP (6)	6.0.0. Medicine (4)
2.0. Well logging (2)	5.1.0. Inspection, control (3)	6.1.0. Radiodiagnostics (4)
3.0. Radioisotopes (7)	5.2.0. Radiation protection (3)	6.2.0. Nuclear medicine (3)
4.0. Uranium industry (5)	5.3.0. Operation, maintenance (8)	6.3.0. Radiotherapy (5)
	5.4.0. Chemistry (3)	6.4.0. Veterinary medicine (1)
	5.5.0. Fuel handling (1)	7.0. The others specialized
	5.6.0. Waste disposal (1)	workers (4)

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In CZ (10 mil.inhabitants) there are recently 350 radiodiagnostic, 52 nuclear medicine and 40 radiotherapy workplaces. There was performed about 9.5 mil radiodiagnostic, 250 ths

nuclear medicine and 22 ths radiotherapy procedures per year (numbers from Institute of Health Information Systems of Ministry of Health of CZ, in1993). This is big amount of data and it is impossible to sort all of them according to all demanded parameters . There are three main sources of data :

- the regular annual statistic survey of Ministry of Health which is managed by Institute of Health Information Systems (IHIS), but there is no possibility to sort patients according to their age and sex ,and there is also problem with clear definition of individual examinations,
- the organization of a national survey and use of information systems of individual health utilities - there is problem with co-operation and organization of this survey,
- the co-operation with health insurance companies - there are twenty companies in CZ now, but one of them - General Health Insurance Comp. (GHIC) is the biggest one which cover recently about 80 % of our population.

Database GHIC obtains birth number of each patient from that it is possible to determine age and sex of patient and there is unified list of all examination. CRME is operating only with a part of birth number of patient, the system will not operate with confidential personal data. In principle we would like to collect data by both way in co-operation with GHIC and with selected representatives health utilities. The data from IHIS will serve for better approximation of collected data to a national level.

GHIC provided CRME with first data which are related to the region with 1,2 mil. inhabitants for 1994. The first results for nuclear medicine procedures are showed in Tab.3 .

Tab.3: Sex and age distribution of the patients undergoing a nuclear medicine procedures in 1994 in the Czech Republic - first results of CRME

females	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	90+	total
bone	85	600	1417	1071	960	213	69	138	154	42	4749 (34%)
renal	16	156	418	363	353	235	132	467	710	216	3066 (22%)
thyroid	28	93	254	207	313	169	133	67	4	1	1269 (9%)
liver+gb	8	63	161	106	192	115	49	127	56	21	898 (6%)
brain	14	64	113	72	105	54	30	55	21	2	530 (4%)
lung	167	503	598	265	288	90	42	44	18	9	2024 (15%)
heart	3	14	64	73	163	100	33	66	35	5	556 (4%)
tomo sci	4	20	120	120	181	60	13	10	0	3	531 (4%)
other	1	18	43	33	40	36	14	21	13	0	219 (1.5%)
total	326	1 531	3 188	2 310	2 595	1 072	515	995	1 011	299	13 842 100 %

males	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	90+	total
bone	64	402	826	441	273	100	54	145	135	69	2509 (26%)
renal	22	129	371	466	369	208	163	453	434	271	2886 (30%)
thyroid	4	16	108	143	91	106	57	52	175	138	890 (9.3%)
liver+gb	7	20	81	118	114	68	47	109	62	13	639 (6.7%)
brain	1	37	91	92	79	53	49	62	67	30	561 (6%)
lung	60	197	382	228	218	125	51	22	35	13	1331 (14%)
heart	0	25	140	219	214	104	59	90	50	4	905 (9.3%)
tomo sci	4	16	121	144	168	102	45	11	43	41	695 (7.3%)
other	1	2	31	57	58	92	48	13	7	0	309 (3.2%)
total	163	844	2 151	1 908	1 584	958	573	957	1 008	579	9 525 100 %

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