

3.5. Belarus cases (a & b): Radiation protection knowledge and culture in

- a) *Education* (state higher, primary and secondary schools education) &
- b) *Public Information - mass media* in Belarus after the Chernobyl accident

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Characterization of case study including type of actions and processes

Both, ***education*** and ***mass media information*** are primary players in formation of radiation protection knowledge and culture.

For these reason, both issues are presented here on the case of Belarus, the most contaminated country after the Chernobyl accident in a brief review.

BELARUS cases / Education & mass media

In **Education** the *main stream* or flow of dissemination goes from a *core of professionals to other stakeholders* (students and general public).

Sometimes, in cases of information provided in **mass media** (not main newspapers, principally in journals) the *questions were rosen from general public to professionals to reply.*

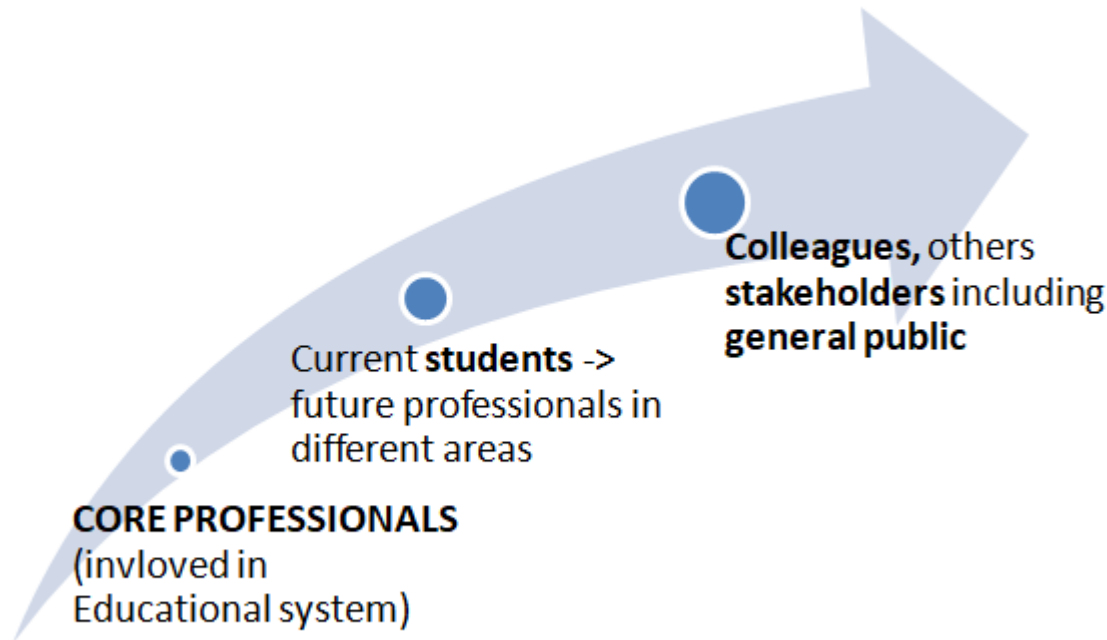


Figure 1. RP knowledge and culture dissemination process

Highlighting the role of RP culture

The increasing role of RP culture was a crucial issue due to the faced reality in the aftermath of the Chernobyl accident. With help of professionals who started to work on it and those who contributed later (also with a foreign help via international projects as CORE, ETHOS and *d*-shuttle) Belarusian population had opportunities to acquire it both theoretically, and, what it is most important, on a practice in their daily life.

*“The Chernobyl disaster ... will have to be considered both by the present and future generations. Therefore, **radiation culture should become an integral part of human culture.** This can be achieved only when people learn the skills of living in a polluted area, the rules of nutrition, behavior.”*

(translated from the book of “Chernobyl: A chance to survive” from Russian; Lutsko et al., 1996).

Training of specialists in radioecology and radiation safety, as well as upgrading of skills in radiation monitoring system workers were extremely important for the Republic of Belarus.

Before the Chernobyl disaster, such work was not conducted in the country.

(Department for Liquidation of the consequences of the Chernobyl accident in Belarus, 2017)

- ***Systematic work on organization of radioecological education began in 1989, when a decision of the Ministry of Education and Science introduced separate courses on radiation safety for all contingents trained at all levels (secondary school, secondary special and higher educational institutions).***
- ***In 1996, the “Concept of Radioecological Education in the Republic of Belarus” was developed, approved by the National Commission on Radiation Protection and the Ministry of Education.***
- ***Purposeful training of necessary specialists with higher education is conducted today by the International State Ecological Institute (ISEU) named after Sakharov, and for the needs of agriculture - the Belarusian State Agricultural Academy (BSGA). In some universities (Belarusian National Technical University, Belarusian State Agrarian Technical University, etc.), the departments of relevant profiles have been created.***
- ***Systematic training of personnel of the highest scientific qualification for work on Chernobyl-related issues is conducted in the postgraduate course of the Institute of Radiology, the postgraduate study of the Institute of Radiobiology of the National Academy of Sciences of Belarus, as well as through a degree.***

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*In the Belarusian Medical Academy of Postgraduate Education, **advanced training and retraining of personnel in the field of radiology and radiation safety are carried out in the framework of two-week courses at the departments of hygiene and medical ecology, radiology, oncology, emergency medical care and disaster medicine.***

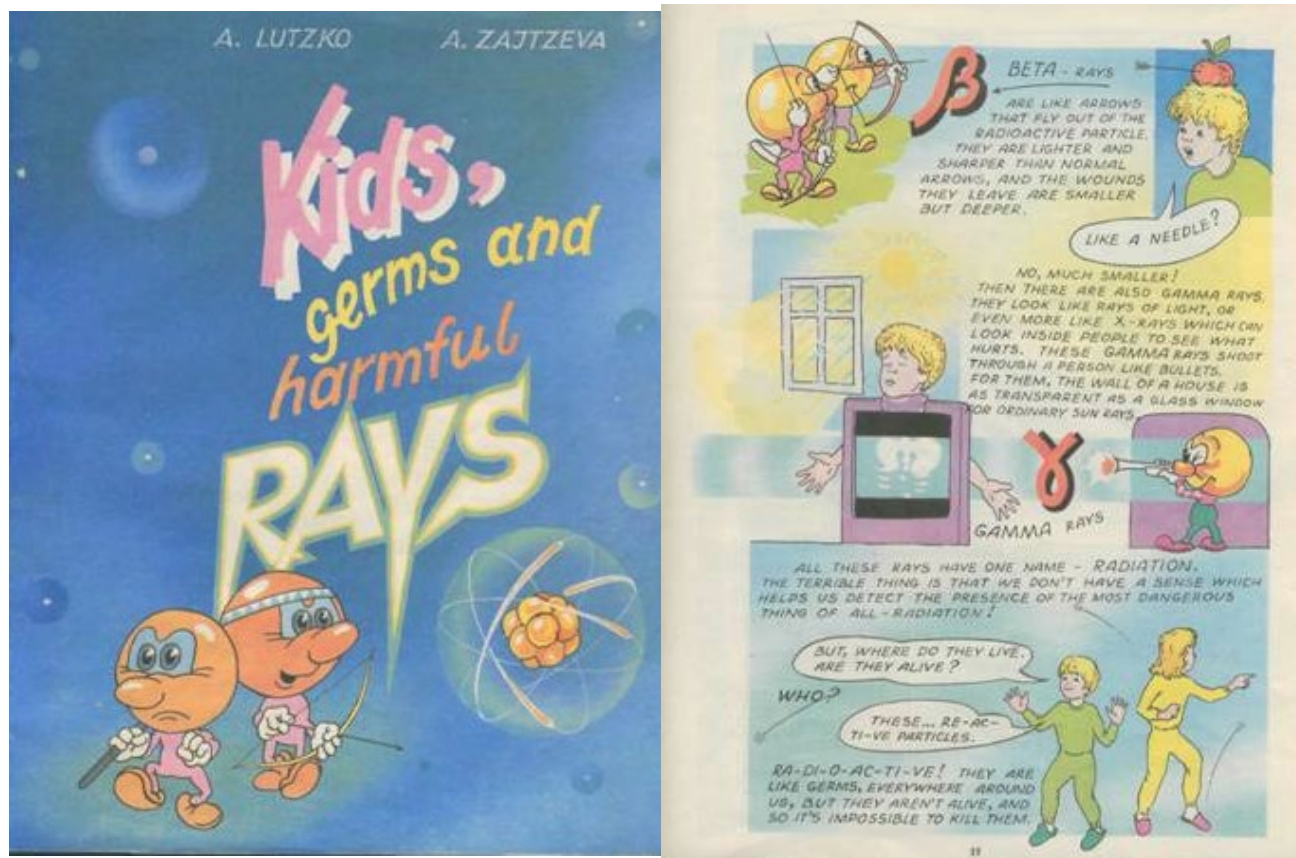
*In the Republic of Belarus, an order has been established according to which **employees of radiation monitoring units are required to undergo further training every 5 years.***

*The following educational institutions **provide advanced training and retraining of specialists** in the republic:*

- The Institute for Advanced Studies and Retraining of the Agro-Industrial Complex in the Belarusian State Agrarian Technical University. Radiologists have been trained here since 1990, and over 350 radiation monitoring specialists are trained annually. During the period 1990–2015, 11,600 radiologists were trained.*
- Institute for Advanced Studies and Retraining of the Gomel State University. F. Skaryna (GGU) - annually about 200 specialists of the Ministry of Forestry, Ministry of Housing and Communal Services and other ministries and departments. Over the period 2011–2015, 974 specialists have been trained.*

(translated from the web of the Department for Liquidation of the consequences of the Chernobyl accident in Belarus, 2017)

Other activities contributing to RP safety and culture by professors and students of ISEU:



The manual for the 1st grade pupils (accredited by Ministry of Education in Belarus).
In Russian, Belarusian and English.

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Figure 5. “Big secrets of a small world” for pupils of the 2nd grade, primary school [In Russian] (on the left) and “Radiation Safety” for pupils of 5-9 and 10-11 Grades [In Belarussian] (accredited by Ministry of Education in Belarus).

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Facultative classes on radiation protection at schools

Facultative courses on “Radiation Safety” were also later proved by Ministry of Education of Belarus in 2 blocks: for primary school pupils (1-4 Grades) and for obligatory secondary school level (5-9th Grades).

The program of the first cycle (children of 7-10 years old) is of more basic content and includes:

- the formation of pupils' **primary knowledge about radiation, effects of ionizing radiation** on humans, as well **protective measures** against these emissions;
- **mastering knowledge and practical skills** of safe life in the living conditions on the territory contaminated with radio nuclides;
- **upbringing a basis of radioecological culture**, formation of value orientations in the field of preserving and strengthening their health.

The programme also included :

- a wide range of issues of a **healthy lifestyle**, since it is at this age that kids need to form an idea of the close relationship of lifestyle **with safety measures when living in conditions of radiation risk**
- **practical (laboratory) work and excursions** that are recommended subject to the availability of facilities and conditions (*Bases of Radiation Safety*, 1-4th grades, 2011).

The program of the 2nd cycle (children 11-15 years old) includes:

- sources of cosmic radiation; solar radiation and solar activity, radiation of radionuclides of the earth's crust; natural and artificially created sources of ionizing radiation; external and internal exposure of the human body; main types of radiation.
- role of solar radiation in maintaining life on Earth; sources of non-ionizing radiation used in everyday life; man-made sources of ionizing radiation and how they serve to people; nuclear energy prospects; modern radioecological problems;
- to expand students' knowledge of the biological effects of radiation on the human body; about doses of radiation, principles of radiation safety; ways to reduce dose loads on the human body, preserve and strengthen their own health when living in conditions with a higher radiation risk;
- to master the rules of organization of safe life in conditions with a higher radiation risk (contaminated areas by the accident).

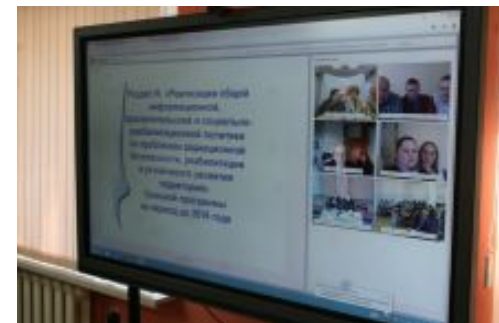
Classes on the fundamentals of radiation safety in grades 5-9 are held for 8 training hours in each class (*Bases of Radiation Safety, 5-9th grades, 2011*).

Internet courses or seminars on radiation protection

The use *of new technologies* allows to organise *successfully on-line courses*.

Example: an on-line seminar “*Modern technologies in the field of developing a culture of life safety of the population, within the framework of a system of remote consulting and informing population residing on contaminated territories of Russia and Belarus*” was performed in Belarus.

Representatives from the Belarusian and Russian branches of the Russian-Belarusian Information Center on the problems of the consequences of the Chernobyl nuclear power plant, Bryansk State University named after academician IG Petrovsky, Institute of Radiology, and Svenskaya secondary school in Slavgorod district.



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Pupils' ideas about radioactivity were related to mass media publications ->

importance of mass media role in information on radiation protection knowledge & culture

To study pupils' ideas about radioactivity, in relation to the information presented in the mass-media has been used with relation to the Chernobyl accident.

The study produced a detailed picture of pupils' ideas about the accident, spreading of radioactive materials resulted from it, danger arising from the radioactive materials and what to expect from possible safety measures.

“The correspondence between pupils' ideas and mass-media information appears to be striking. It is argued that information derived from the mass-media is particularly important as a starting point for science education topics that relate to the life-world domain.”

(Lijnse, P. L., et al., 1990).

Lessons and recommendations

In case of Belarus (similar to Ukraine, Russia, Japan), ***the reality of the occurrence of nuclear accident pushed and speeded up the development of Radiation Protection, radiation safety*** first at university level, later also at primary and secondary schools and for general public.

??? – Would be such educational programs and courses (obligatory and/or facultative) proposed by somebody in the countries that were not affected ever by a nuclear accident? Will they have competent professionals to create such programmes, manuals, books or at least translated from other languages? Is the current Ministry of Education or Ministry of Health in those countries are motivated, support and competent to check, prove and adapt to a local country level Radiation Safety programs? Who should support such type of activities (Radiation protection associations?)

The experience of other countries, which passed through nuclear accidents and a huge amount of work that was done already, ***should be studied and transferred with adaptation*** to other countries in order not to create something from zero.

Education is an important channel together with mass media information to disseminate the radiation protection culture among people. Mass media representatives should have at least basic specific formation on RP & RPC in order to represent information more coherently and should be free of any political and economic state or others interests.

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THANK YOU FOR YOUR ATTENTION!!!

??? Questions

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