

# **RADIATION PROTECTION COMMUNICATION STRATEGY FOR PUPILS, STUDENTS AND THE PUBLIC**

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**Abstract.** The importance of the communication with the public in radiation protection is playing the role not only in emergencies but also in daily life. The problems which are important for professionals as radon, medical exposure, consumer products, emergency management and other problems related to radiation protection are also essential for the public. The communication strategy is based on radiation protection information dissemination for pupils, students and the public.

Very often there is a lack of understanding, that radioactivity is the part of our environment, and the use of ionizing radiation is very various and wide – not only for atomic energy, but also in X-ray diagnostics, nuclear medicine, brachytherapy, industry, science etc. For the purpose that pupils would gain the knowledge of safe use of ionizing radiation, by the initiative of European Commission, it was prepared the methodological publication “Radiation and Radiation Protection” (a course for Primary and Secondary Schools, where the radiation protection topics are included in adequate educational programs (like civil protection etc.). Radiation Protection Centre had translated the above mentioned methodological publication into Lithuanian language and had adapted it for the high schools in Lithuania. The Ministry of Education and Science of the Republic of Lithuania had approved this methodological publication as a suitable informative publication for teaching the different age pupils of radiation protection topics.

The students from the various universities and high schools, who are not directly related to radiation protection (physics, public health, kinesitherapy, ergotherapy students), also students from foreign countries who are studying in Lithuania by the ERASMUS program, are familiarized with the functions of Radiation Protection Centre. Some of the students according to a bilateral cooperation contracts between Radiation Protection Centre and universities or high schools have possibilities to make a practice in different field, related to public exposure (such as threat of radon gasses to public health, measurements of building materials etc.).

In order to actively and successfully spread the knowledge of radiation protection and to promote development of radiation

protection culture in Lithuania, the specialists of Radiation Protection Centre collaborate with specialists from the Public Health Bureaus and organize meetings with the public. The people' communities of different regions of Lithuania are attending the meetings where presentations on popular topics in radiation protection are discussed. The cooperation between Radiation Protection Centre and the National Public Health Bureaus is strengthening by the annual radiation protection informative workshops for bureaus specialists, who are as the main players in dissemination of knowledge for public in field of dangerous factors to the human health and healthy life style.

This strategic approach of communication between regulatory authority and public help to improve the better understanding that every member of the public is able to take the responsibility of communities' radiation protection.

## **Introduction**

Radiation protection is a very specific topic for communication with the public. Although there is a relation between the public age, profession, educational level, working area and experience, but the most important task in communication with public in general is how to present this topic in easy understanding way for everyone. The other very important aspect is the presenter – on his preparedness, experience, finally personal characteristics depends how well the public will understand the radiation topics. Communication with the public on the topics related to radiation protection could be divided to communication in daily circumstances and communication in a nuclear or radiological emergency. Although there is a lot of information, which is good material for preparing the communication material with the public, but it would be difficult to say the same about the methodology of public communication with the public. The International Atomic Energy Agency has officially published the publications<sup>1,2</sup> for communication with the public in a nuclear or radiological emergency, which are very useful for preparing the specialists to be ready to communicate with the public during the real emergencies. However, we should agree that there is still a lack of professional literature or training material, which could serve as a methodological material to prepare the specialists for communication with the public in daily circumstances.

## **Radiation Protection Communication with the Pupils**

The communication strategy is based on radiation protection information dissemination for pupils, students and the public. There is not approved a separate legal act as official strategy of radiation protection communication with the public in Lithuania, but the strategic statements of communication are clearly determined in differenet legislations. There was approved the Radiation Protection Training Development Programme

(Strategy) by the Radiation Protection Center Director's Order in 2008 (the document was reviewed and renewed in 2014), where is clearly stated: "In order to provide the necessary knowledge on radiation protection, there are events organized for various public groups – pupils, students, journalists, students <...> – during the seminars, lectures and conferences. Information regarding the radiation protection and the latest developments in the field of radiation protection is also published on the Radiation Protection Centre's official website and regularly disseminating through national media channels."<sup>3</sup> The European Commission took into account the importance of public knowledge of ionizing radiation, and initiated the release of methodological publication (a course for Primary and Secondary Schools)<sup>4</sup> for teachers on the relevant issues of ionizing radiation and radiation protection. In 2000 with professional support of Swedish Radiation Protection Institute, this publication was translated into Lithuanian language and has reached the teachers, students and other public groups, which are interested in ionizing radiation and radiation protection issues in Lithuania. The pupils for whom this coursebook is intended constitute a remarkably heterogeneous group in which cognitive abilities may vary considerably, because of this the items recur in a gradually more complex form. The selected material is divided into five age levels. The first three levels are designed for use in primary education while the last two levels are aimed at secondary education. Each level can be taught as a self-contained unit, although the teacher is free to use material from previous or subsequent levels. The course may therefore be regarded as a source of reference material with which the teacher can construct his own lessons. In the first three levels emphasis is put on relating radiation to pupils' personal and everyday experiences and observations. Pupils are made aware of the risks and benefits of ionizing and non-ionizing radiation. In the final two levels, a more detailed examination is made of the subject from both the technical and social points of view, the aim being to enable pupils to develop an informed and balanced view of radiation. The Ministry of Education and Science of the Republic of Lithuania had officially approved the mentioned methodological publication "Radiation and Radiation Protection" as a suitable informative publication for teaching the different age pupils of radiation protection topics. As it was mentioned already, many copies of this methodological publication in Lithuanian language were provided for schools and gymnasiums in Lithuania. For the effective learning and to improve the teachers skills, competence and knowledge in radiation protection, Radiation Protection Centre at least once per year is organizing the meetings with the teachers from different areas of a country. During that meetings Radiation Protection Centre's specialists sharing their experience on how to provide the difficult radiation protection topics for different age of pupils in understandable way. This kind of meetings between the professional radiation protection specialists and the teachers are bringing the best possibilities for the teachers to receive the alive answers and professional consultations from the radiation protection

specialists. Also the radiation protection specialists, participating at these meetings, are gaining the useful advices from the teachers how to commincate with the different age auditorium, what should be the main points of this communication. Also radiation protection communication with pupils and their teachers as well time to time is strengthening by the common projects, mostly initiated by the schools. In these projects Radiation Protection Centre is participating as Technical Support Organization, which provides the necessary equipment, consulations, meetings with the radiation protection specialists and simmilar issues. The often the results of the common projects are presented in the conferences, organized by the schools, which initiating the projects. At these conferences the results of the projects are presented by the pupils and also by the specialists from Radiation Protection Centre. It should be mentioned that the Government of the Republic of Lithuania more than ten years initiated the national project “Pupils – to Government” (picture No 1). During this project, the selected pupils from different schools of Lithuania have a chance one week to “work” in the Government of the Republic of Lithuania in a role of the ministers. The pupils, who are selected by their grades and invited to participate at this project, have the right to choose at which Ministry he or she will spend a week in a role of the minister. According to this project Radiation Protection Centre every year accept the pupils – ministers from the Ministry of Health of The Republic of Lithuania. During the visit at Radiation Protection Centre these pupils have a chance to watch the work at laboratories, to discuss with the specialists on various radiation protection topics, to try to use the equipment for the detection of orphan ionizing radiation sources and to be involved in other activities, during which they receive all the necessary information of radiation protection.



**Picture No 1.** *The moment of the project “Pupils – to Government” pupils visit at Radiation Protection Centre*

## **Radiation Protection Communication with the Students**

In Lithuania there is no separately taught in such specialty as radiation protection, however, the specific topics are included in several other specialties (radioecology, medical physics, public health, etc.). The basic knowledge in radiation protection is received by students of other specialties as well – radiologists (physicians), dentists, radiology technologists, veterinary physicians and others. The students from the various universities and high schools, who are not directly related to radiation protection (compared to the students mentioned above), also students from foreign countries who are studying in Lithuania by the ERASMUS program, are familiarized with the functions of Radiation Protection Centre. During this kind of the meeting Radiation Protection Centre's specialists are presenting the radiation protection infrastructure in Lithuania, the State Register of Sources of Ionizing Radiation and Occupational Exposure, authorization of activities with ionizing radiation sources, radiation protection supervision and control, preparedness for radiological and nuclear emergencies, monitoring system of population, occupational and patient radiation exposure, organization of high-level activity regulatory and orphan sources detection. Radiation Protection Centre is signed several bilateral agreements with different universities of a country. According to these cooperation contracts Radiation Protection Centre creates the conditions for the students to perform their scientific practice there and also support the students Final Thesis (for Bachelor or Master degree) projects (the students are available to use the laboratories or the necessary equipment or data for preparing their Final Thesis). For example, according to the cooperation contract with the Utena University of Applied Sciences, Radiation Protection Centre provided an opportunity for Environmental Protection Engineering student to make a practice on threat of radon gasses to public health.

## **Radiation Protection Communication with the Public**

In order to spread the knowledge of radiation protection actively and successfully and to develop the radiation protection culture in Lithuania, Radiation Protection Centre's specialists collaborate with the specialists from the Public Health Bureaus and time to time organize meetings with the public (picture No 2). At these meetings radiation protection specialists are presenting the popular topics of radiation protection like:

- ✓ what is ionizing radiation and why it can be dangerous?
- ✓ how to identify the source of ionizing radiation?
- ✓ is there any exposure in our dwellings?
- ✓ can daily used food or water be contaminated with radionuclides?
- ✓ what is the radiological emergency and how to act during it?

Participants of these meetings are wondering if household appliances can emit ionizing radiation, what radiation effects on humans and plants are, what actions were taken during radiological accidents in Ukraine (Chernobyl) and Japan (Fukushima). Participants also are bringing their old watches or other things which according to their understanding might be radioactive. The radiation protection specialists are measuring the radioactivity of these items and informing the people about the results.

At the recent time, the public is more interested in radiation protection and its importance in our daily life. Although the accident at the Fukushima Daiichi nuclear power plant did not affect Lithuania directly, but the publications on newspapers and the readers' comments on them, also the questions, which were received by the radiation protection specialists after the Fukushima accident, just proved that the communication with the public on radiation protection topics should be permanent.



*Picture No 2. The moment of the meeting with the public*

Radiation Protection Centre is always seeking for more successful and fruitful collaboration with the Public Health Bureaus and annually is organizing the seminars for the Public Health Bureaus specialists (picture No 3). During these seminars radiation protection specialists are presenting the topics like:

- ✓ radon problems in the home,
- ✓ radiation protection of patients (special attention to the children and pregnant women),
- ✓ nuclear emergency preparedness and response,
- ✓ Chernobyl accident and its consequences for Lithuanians,
- ✓ the areas and possibilities of collaboration between the Radiation Protection Centre and the Public Health Bureaus.

Radiation Protection Centre, as the partners, is also participating at the public events, organized by the Public Health Bureaus (as an example: "October – the Month of Health Improvement in Panevėžys"). During these events the people can have the direct communication with radiation protection specialists,

to ask the actual questions and to receive the professional answers.



**Picture No 3.** *The moment of the meeting with the Public Health Bureaus specialists at the Radiation Protection Centre*

### **Conclusions**

1. There is still a lack of professional methodological information how to communicate with the public (taking into account the differences of the age, status, working experience, educational level etc.) in a daily circumstances, because the for nowadays still more attention is paid for the risk communication with the public during nuclear or radiological emergency.
2. Bilateral friendly collaboration between teachers and radiation protection specialists are useful for both sides – in a way by teaching each other the teachers are gaining the specific information of radiation protection and the radiation protection specialists are gaining the experience on how to communicate with the public.
3. Radiation protection communication with the pupils, students and the public is helping to form the right understanding of the the safe use and dangers of ionizing radiation. Also radiation protection communication is improving the public skills to choose the trustable information (social media, newspapers, journals, scientific and popular literature etc.).
4. Seeking to educate Lithuanians on radiation protection topics, the Radiation Protection Centre started the successful cooperation with the Public Health Bureaus since 2013. Although the period of this fruitful collaboration is still very short, but during the meetings with the public it is already possible to notice the positive changes in understanding of radiation protection.

## References

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