

Mini Encyclopaedia of Nuclear Energy - an Important Tool for Public Information – 14124

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ABSTRACT

Mini Encyclopaedia of Nuclear Energy is a bilingual (Slovene – English) illustrated booklet covering all aspects of nuclear science and technology, including radioactive waste. Its primary mission is informing general public about nuclear energy and the target audience are teenagers. The Second edition of Mini Encyclopaedia was published in the summer of 2013. It is thoroughly revised and expanded with respect to first edition. It has 72 pages (8 pages more than before) and new illustrations throughout the book. Major points now include concepts of energy, power, efficient energy use, electricity, climate change, carbon capture and sequestration before coming to nuclear technology in more detail. It has been expanded with brief description of Gen III/III+ and Gen IV reactors, fusion technology, and also Fukushima accident. The last chapter of Mini Encyclopaedia deals with radioactive waste, describing sources of radioactive waste, its classification, current status in Slovenia, technologies for radioactive waste disposal, and also partitioning and transmutation. Radioactive waste remains one of the major obstacles in public perception of nuclear energy. We believe that the general public not only needs to be informed about basic principles of radioactive waste management, it also needs to understand the context, the origins of waste, and the benefits of technologies that produce radioactive waste. Mini Encyclopaedia proved to contribute substantially to achieving this goal and we believe that the new, second edition will serve as an excellent public information tool in coming years.

INTRODUCTION

Nuclear Training Centre (in Slovenian language **Izobraževalni Center za Jedrsko Tehnologijo** or ICJT) is an organizational unit of Jožef Stefan Institute, the largest research organization in Slovenia. The main mission of ICJT is training of nuclear professionals, but in addition it is extensively involved in public information about nuclear energy, radioactivity and radioactive waste. Lecturers of ICJT possess necessary skills to explain the relatively complex phenomena of nuclear energy in an understandable way also to general public. In 20 years since Nuclear Information Centre has been established within the ICJT, it has had 150.000 visitors. This is almost one half of school-age generation and 7.5 % of total population of Slovenia. This broad coverage of population reflects also in relatively good acceptance of nuclear in Slovenia. The results of several independent polls show that this good public acceptance can be directly linked to the activity of Nuclear Information Center.

From the very beginning the mainstays of ICJT's public information activity were a live lecture and a permanent exhibition about nuclear energy. To provide public with information that can be accessed also beyond the time of visit of Nuclear Information Center, ICJT maintains a web site www.icjt.org and also publishes several publications. All this has contributed that ICJT is regarded a respected source of information on nuclear issues for the media and the general public in Slovenia.

Among printed publications of ICJT, the most popular is Mini Encyclopaedia of Nuclear Energy. This bilingual (Slovene – English) booklet evolved from Illustrated Atlas of Nuclear Energy, which was basically a collection of posters from ICJT's permanent exhibition. The first edition of Mini

Encyclopaedia had more structured and focused contents than the old Atlas and was published in 2005. It was accepted very well, and also translated into Croatian, Romanian and Polish language.

In summer of 2013, the Second edition of Mini Encyclopaedia of Nuclear Energy was published. It is thoroughly revised and expanded with respect to first edition. It has 72 pages (8 pages more than before) and new illustrations throughout the book.

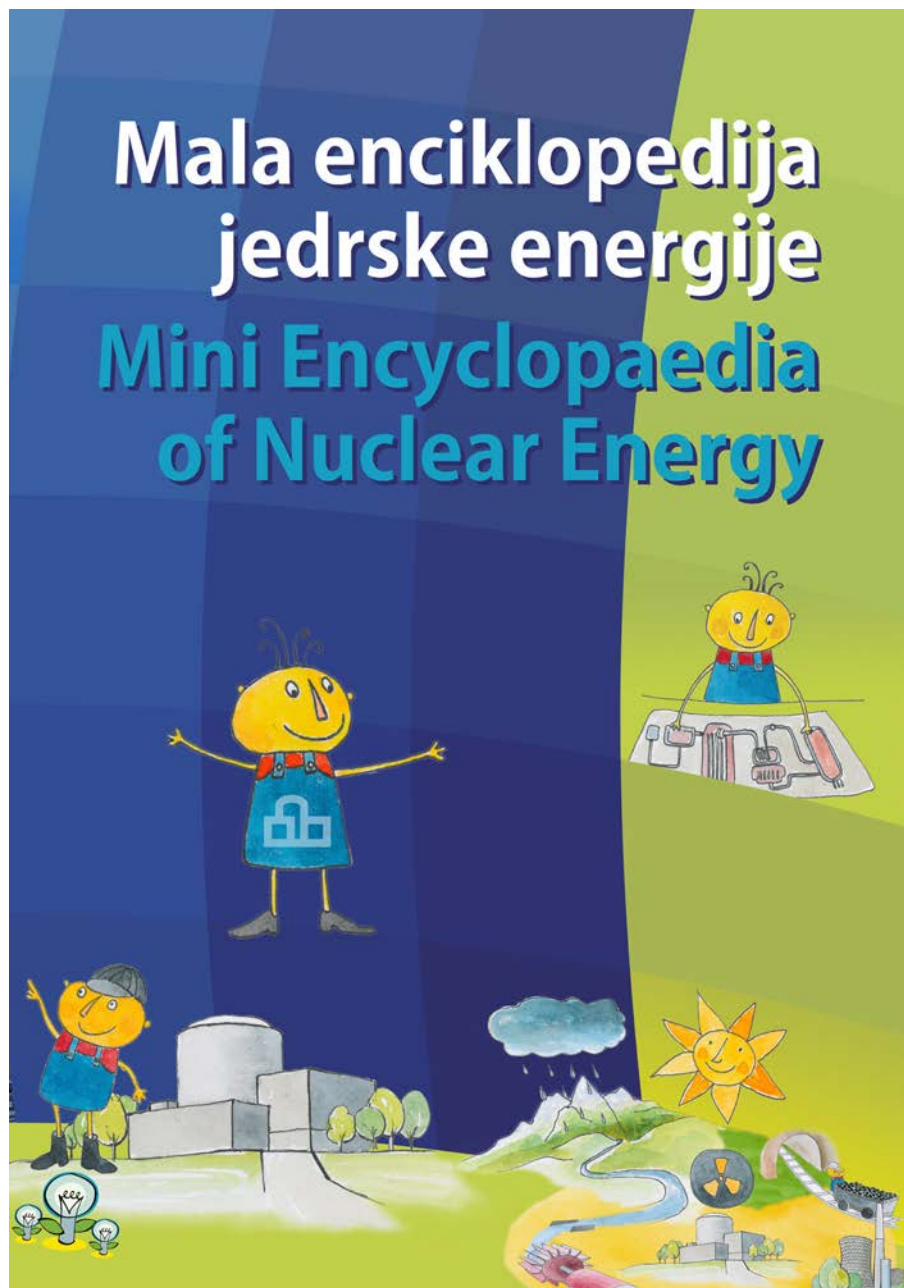


Fig. 1. Cover page of Mini Encyclopaedia

THE CONTENTS OF MINI ENCYCLOPAEDIA OF NUCLEAR ENERGY

The Mini Encyclopaedia has the following main chapters:

- Energy
- The greenhouse effect
- The basic physics
- Nuclear power plants
- Fusion
- Radiation and the environment
- Waste and radioactive waste

In these chapters, the concepts of different types of energy and electricity production are discussed and the importance of climate change is highlighted. The discussion is then narrowed down to basics of nuclear physics and nuclear power plant operation. The booklet furthermore discusses the environmental impact of nuclear technology, including the three major accidents: Three Mile Island, Chernobyl and Fukushima.

There is as little text as possible, and it is rather replaced by graphs, diagrams, photographs and illustrations. A couple of pages from Mini Encyclopaedia is shown on Fig. 2 as example.

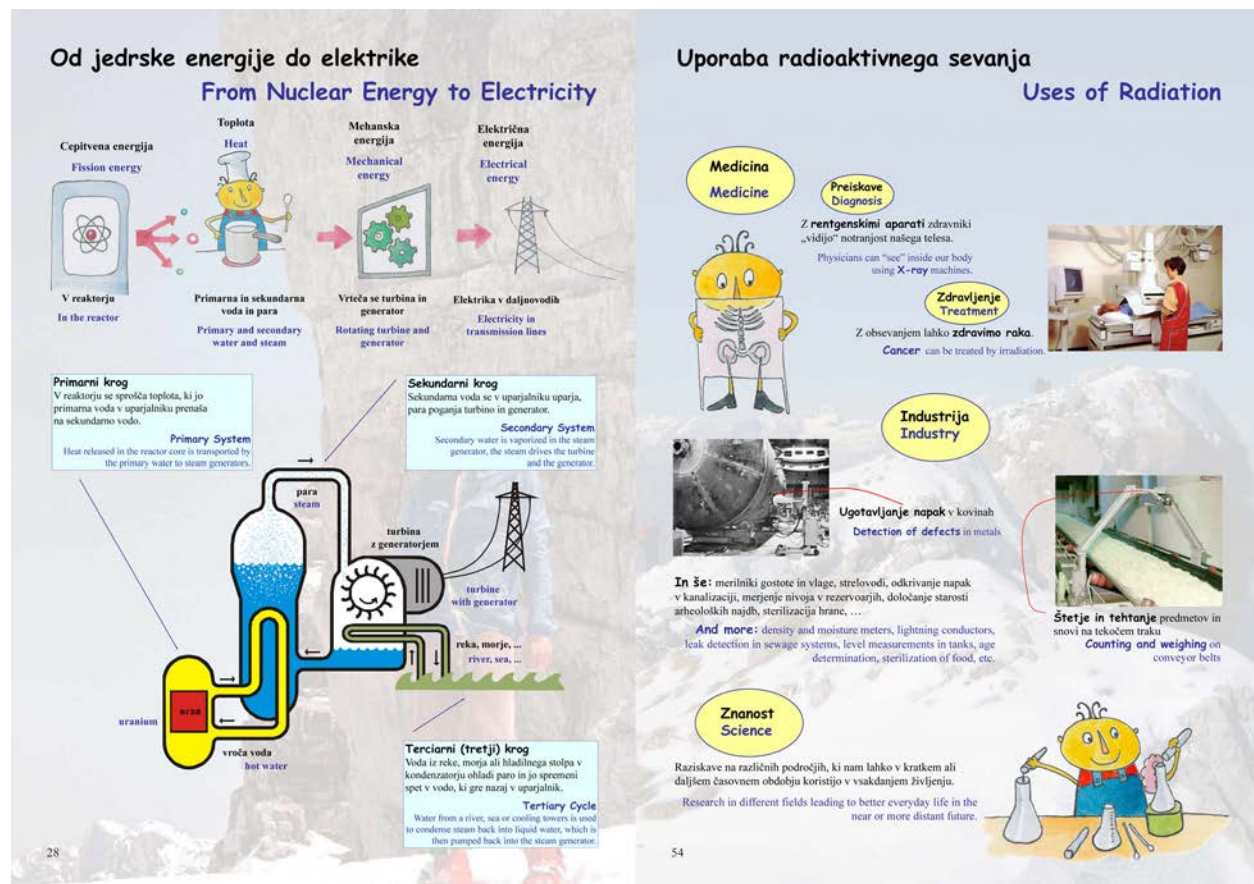


Fig. 2. Two examples of pages from Mini Encyclopaedia

RADIOACTIVE WASTE

The last chapter of Mini Encyclopaedia deals with radioactive waste. It first stresses, that waste is generated in (almost) every human activity. Moreover, the quantities of waste are usually substantially larger than in the case of nuclear technology. Indeed, radioactive waste is dangerous waste and it cannot be treated the same way as we deal with ordinary waste. On the other hand, there are also other types of dangerous waste – originating from other activities or industries – not only radioactive waste.

After this introduction, sources of radioactive waste in Slovenia are described and the types of waste generated in the nuclear power plant are specified in more detail (Fig. 3).

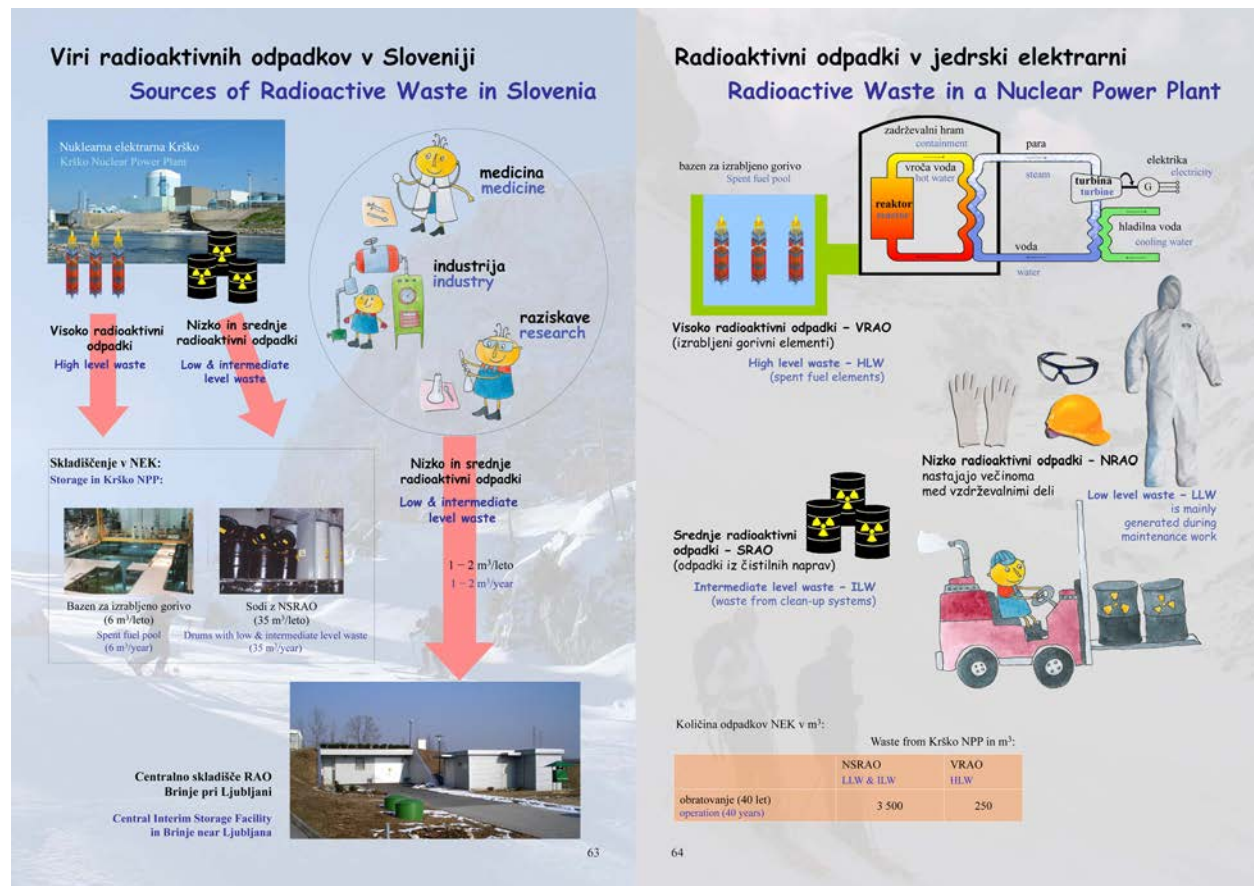


Fig. 3. Two pages explaining the sources and the types of radioactive waste

The booklet then continues with the design of planned repository for low and intermediate level waste in Slovenia and with international examples of high level waste management. The final page is devoted to description and perspectives for partitioning and transmutation of high level waste.

There is also a subject index for easier and faster orientation through the booklet.

CONCLUSIONS

Despite not being very technical, Mini Encyclopaedia of Nuclear Energy proved to be a valuable source of information, not only for youngsters and general public, but even some professionals found it useful for areas that they were not familiar with. The second enlarged edition puts more emphasis on explaining the importance of energy in our daily life, and the role of nuclear energy in the general energy mix. In the area of radioactive waste, new developments in Slovenia are described and also some perspectives like partitioning and transmutation are covered. We believe that this publication will serve as an important communication tool in the years to come.