

Transports of Radioactive Materials in Belgium: Interfacing with the Public

Rony Dresselaers, Céline Faidherbe, Guy Lourtie, Nele Scheerlinck (FANC, Belgium)

ABSTRACT

In June 2011, legal appeals were filed against some transports of spent fuel, running between the Netherlands and France through Belgian territory. The case generated a lot of media attention, especially after some local politicians expressed their concern over the perceived public health and safety risks of these transports. In reaction to this, the Belgian competent authority FANC (Federal Agency for Nuclear Control) identified the need to inform the public, the media, politicians and other stakeholders on the safety and security of transports of radioactive materials in Belgium.

To this end, the FANC joined forces with the Federal Police and the Crisis Centre of the Ministry of Home Affairs and drafted an information file on the transport of radioactive materials.

The objective of this information file was threefold: 1) to shed some light on the broader context of national and international transports of radioactive materials in Belgium, 2) to show exactly how the safety and security of these transports is guaranteed, and 3) to explain in which ways the FANC fulfils its mission of protecting the population, the workers and the environment against the hazards of ionizing radiation, both in normal conditions and in case of an incident or accident.

The information file was first presented in September 2011 at a conference of the Governors of the Belgian provinces, organized by the Ministry of Home Affairs. Next followed a press conference at the FANC's Brussels headquarters, and in the last months of 2011, a series of information sessions was organized in each of the Belgian provinces. Invited to these information sessions were local politicians and local emergency workers (police and fire brigade) as well as representatives of the municipal and provincial authorities.

Feedback from the participants was very positive, and the FANC received some suggestions for further improvement. These included requests for a better exchange of information between the involved authorities, requests for additional training on the topic of radiation and its risks, and some specific points concerning emergency preparedness and response.

In 2014, there will be a new series of information sessions in every Belgian province.

CONTENT OF THIS PAPER

1. Introduction: the Belgian context
2. The need for demystification
3. The information file and its contents
 - 3.1. The many uses of radioactive materials
 - 3.2. Transports of radioactive materials in Belgium: facts and figures
 - 3.3. Guaranteeing the safety and security of transports of radioactive materials
 - 3.4. Communicating on transports of radioactive materials
 - 3.5. The annexes
4. Interfacing with the public
5. Conclusion

1. INTRODUCTION: THE BELGIAN CONTEXT

The objective of this paper is to provide an overview of the efforts made by the Belgian competent authorities to inform the public and the media on the numerous transports of radioactive materials that take place in Belgium every year.

Worldwide, approximately 10 million packages containing radioactive materials are transported annually. That is less than 3% of all transports of dangerous goods worldwide. With 2.5 million packages per year, Europe represents about one quarter of the total number of radioactive transports. 1 to 5% of these packages contain fissile or high-activity material. Excepted packages represent 15 to 30%.

Within Europe, Belgium is an important player in the field of transports of radioactive materials. Every year, more than 400,000 packages containing radioactive materials are transported over Belgian territory, amounting to a total number of approximately 40,000 shipments. For comparison: France – a country 18 times the size of Belgium – has 900,000 packages containing radioactive materials transported through its territory per year, so only 2.25 times more than Belgium.

How to explain this discrepancy? First of all, about half of the 400,000 packages annually transported through Belgian territory are destined for non-domestic use (transit or export). Located centrally in Europe and sitting at the crossroads of several international highways, Belgium has always been an important transit country, and this is no less the case for radioactive materials. Another contributing factor is the fact that Belgium houses many production facilities, such as the IRE (National Institute for Radioelements), which is one of the biggest producers of radioelements for medical purposes worldwide.

Apart from an important transit country, however, Belgium is also a small and densely populated country, with approximately 11 million people inhabiting an area roughly the size of Maryland. This means that any transport of radioactive materials will have to pass through or near populous areas, regardless of the chosen route or mode of transport. Add to this the fact that nuclear energy remains a highly debated issue - especially now, in the wake of

Fukushima - and you get a situation where transports of nuclear materials like spent fuel have the potential to spark public and political controversy.

2. THE NEED FOR DEMYSTIFICATION

That is also exactly what happened in Belgium in June 2011, when legal appeals were filed against some rail transports of spent fuel between the Netherlands and France through Belgian territory. The case generated a lot of media attention, especially after several local politicians expressed their concern over the perceived public health and safety risks. It quickly became clear that there still existed a lot of misconceptions and that it was necessary to demystify and put into context the transport of radioactive and nuclear materials.

To this end, the Federal Agency for Nuclear Control joined forces with the Federal Police and the Crisis Centre of the Ministry of Home Affairs and drafted an elaborate, 23-page information file on the transport of radioactive materials in Belgium. The objective was to develop an unbiased, clear and widely usable communication tool for explaining to anyone interested the nature, context and procedures of transports of radioactive materials. This objective fits in directly with our values and mission statement. As a federal regulatory body, the FANC is not only responsible for guaranteeing the protection of the population, the workers and the environment against the hazards of ionizing radiation, but also for informing the public in a proactive, neutral and transparent way.

3. THE INFORMATION FILE AND ITS CONTENTS

In drafting our information file, we faced two challenges. First, finding the right balance between the need to inform the public and the confidential character of some aspects of the transport of nuclear materials; and second, finding the right tone and level of detail for a text targeting the general public as well as journalists, politicians and other stakeholders.

3.1. The many uses of radioactive materials

The first thing we tried to explain in our information file was the fact that radioactive materials have many different uses, of which generating electricity in nuclear power plants is only one example. An important part of the demystification of transports of radioactive materials can be achieved by shedding light on the numerous and valuable applications of radioactive materials. Such applications include the deployment of radiation sources for industrial radiography and for the manufacturing and use of various measuring instruments. In scientific research, radioactive materials are exploited for tracing and dating purposes. In the food industry, irradiation is used to kill microorganisms or to inhibit the growth of germs in certain crop products, such as potatoes, onions or garlic. Most importantly, however, radioactivity has many medical applications, including several medical imaging techniques, the sterilization of medical instruments and supplies, and various methods of treatment.

3.2. Transports of radioactive materials in Belgium: facts and figures

Of course, in order to be used, radioactive materials need to get to those who rely on them. As any other product, they require transport at various stages in their life cycle: from the site where the raw materials are extracted to the processing and manufacturing facilities, from there onwards to the place where they will be used, and finally to the facilities for the recovery or management of nuclear waste and residue. It is necessary to point this out, because it is always the transports of spent fuel that generate media interest. This creates a distorted image among the public, because these transports of highly radioactive materials represent only a very small fraction of the total number of transports of radioactive materials.

Therefore we included in our information file a chapter on the national and international transports of radioactive materials in Belgium, featuring the number of transports per category (medical applications, fuel, waste...) and per mode of transport. Of the 400,000 packages transported over Belgian territory per year, no less than 350,000 (or 87.5 %) are destined for medical use. These packages are transported primarily by road (>100 transports per week) and by air (>10 transports per week). Transports of materials linked to the nuclear fuel cycle, including the much contested transports of spent fuel and highly radioactive waste, amount to some 20,000 packages, which represents only 5 % of the grand total. These transports are conducted by ship (3 to 4 transports per week) or by train (1 transport per week). Finally, with some 3,000 transports per year, the shipment of radioactive materials for industrial, agronomic and research applications, primarily by road and by air, represents 7,5%.

The message that these numbers convey is important: the vast majority of transports of radioactive materials in Belgium do not involve nuclear fuel or waste but radioisotopes destined for use in medical facilities.

3.3. Guaranteeing the safety and security of transports of radioactive materials

Of course, having such a great number of transports of radioactive materials on your roads every day requires strict monitoring, and that is where the Federal Agency for Nuclear Control comes in. In the fifth chapter of our information file, we explain in detail how the FANC protects the population, the workers and the environment against the potential hazards of radioactive materials, and how it interfaces with the other competent authorities.

First, we explain the difference between safety and security and identify the potential risks related to the transportation of radioactive materials. Next, we explain precisely how we make sure that the safety and security of transports of radioactive materials are guaranteed. The key element here is the packaging. Every package is designed to provide maximum protection for people and the environment in both normal and accidental situations and has to comply with national and international regulations. In addition, both the package and the vehicle have to be marked and labelled with signs indicating the nature and characteristics of the radioactive materials they contain.

Sometimes, transports of radioactive materials may be provided with a police escort. Therefore the information file also sheds some light on the role of the police, because their presence is easily misinterpreted as a sign that the transport involves great safety and security risks, whereas in reality, their role consists mainly in ensuring that the transport may proceed in a swift and orderly manner.

The sixth chapter is dedicated to the prevention and management of incidents and accidents. It describes all the measures that are taken by the sender, the carrier, the dangerous goods safety advisor and the health physics department of the carrier to prevent any incident or accident from happening, or any loss or theft of radioactive materials. Furthermore, this chapter also gives an overview of the existing procedures and explains what the FANC would do and how it would collaborate with the other competent authorities in case of an emergency situation.

3.4. Communicating on transports of radioactive materials

In the final chapters of the information file, we provide a list of all future transports of spent fuel and nuclear waste that have already been planned and give an outline of our communication strategy.

This strategy can be summarized as follows: seeing as there are hundreds of packages containing medical radioisotopes or other radioactive materials traveling our roads, ports and airports every day, it would be impossible for the FANC to inform the public on each and every individual transport. Therefore we limit our communication efforts on this subject to those exceptional transports that involve spent fuel and nuclear waste. The local authorities are of course notified in advance by the Crisis Centre of any exceptional transport crossing their territory, and afterwards we always publish a report on our website. The general public can also consult our website for a list of all planned future transports of spent fuel and nuclear waste. However, for reasons of security and order, these lists or reports not provide any exact details on the date, time and route of the transports concerned.

3.5. The annexes

For those interested, we attached to our information file some annexes with more detailed information on several topics already sketched in broad outlines in earlier chapters. The first annex gives an overview of the rules and regulations applicable to the transportation of radioactive materials. This includes both international and European regulations and Belgian legislation. The second annex explains in detail which types of packages are used and which criteria have to be met by the packages. Annex three provides some more information on the radiation exposure limit and puts it into context by comparing it to the radiation doses that an average person receives during e.g. a transatlantic flight or a CT scan. The fourth annex consists of a list of the 9 classes of dangerous goods.

4. INTERFACING WITH THE PUBLIC

Finishing the information file was step one. Step two consisted in publishing it and trying to reach the people it was intended for in the first place: local politicians, journalists, and the general public. One special target audience were the Governors of the ten Belgian provinces and the administrative district of Brussels, who are responsible for maintaining safety and for managing emergency situations in their respective province or district. In September 2011, the Ministry of Home Affairs organized a conference for the Governors, where the FANC presented its information file for the first time. Next, a press release summarizing the main points of the information file was issued and a press conference was held in the FANC's Brussels office. In the following months, we also organized information sessions in each of the Belgian provinces and in the district of Brussels, to which we invited local politicians, local emergency workers (police and fire brigade) and representatives of the municipal and provincial authorities. Also present were representatives of the Federal Police and the Crisis Centre, so as to ensure that the audience would get expert answers to any questions they might have.

The attendance rate at these information sessions was high and we had to answer many questions, which demonstrates that our efforts to communicate actively on this topic were much needed. Afterwards we received much positive feedback from the participants, as well as some suggestions for further improvement. These included requests for a better exchange of information between the involved authorities, requests for additional training on the topic of radiation and its risks, and some specific points concerning emergency preparedness and response.

These suggestions have been taken into account and are now gradually being implemented. In the meantime we keep on updating our information file on a regular basis, as it has already proven its use more than once. The latest version can always be downloaded from our website (www.fanc.fgov.be), where it is available in Dutch and French.

The last time we used our information file was in the context of the train accident that occurred quite recently in Wetteren, Belgium. In the night of May 4th 2013, a freight train carrying class 3 goods derailed and caught fire, thereby releasing highly toxic fumes. In the following days, the question was raised in the press whether or not it is safe to have freight trains carrying such dangerous goods running through densely populated areas. As you would expect, the FANC also received questions from journalists asking what the consequences would be of a similar incident with a nuclear transport. We invited them to read our information file and provided them with some video footage of tests being run on containers destined for the transport of spent fuel. Afterwards we received no additional questions, nor were there any negative mentions of transports of radioactive materials in the newspaper articles on the Wetteren accident. In other words, our information file proved very successful in demystifying transports of radioactive materials and in providing a satisfactory answer to the questions raised.

5. CONCLUSION

However, that does not mean that we consider our task completed. We will continue updating our website with reports on past transports, and we have plans to organize a new series of information sessions in the 10 Belgian province and in the administrative district of Brussels in 2014. If experience has taught us anything, it is that it is important to keep interacting with the public and with your stakeholders. By drafting an information file and by communicating more actively on the topic of transports of radioactive materials, we managed to contribute to their demystification and to clear up some widely-held misunderstandings.

ACKNOWLEDGEMENTS

We wish to thank everyone who contributed to this paper and who was involved in the writing and editing process. Special thanks go to the Federal Police and to the Crisis Centre of the Ministry of Home Affairs for their valuable input and cooperation.

REFERENCES

[1] Federal Agency for Nuclear Control, Information File on the Transport of Radioactive Materials. Available in Dutch on <http://www.fanc.fgov.be/GED/00000000/2800/2890.pdf> and in French on <http://www.fanc.fgov.be/GED/00000000/2800/2891.pdf>.