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Revision of the Belgian Legislation for the Transport of Radioactive Material

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Abstract

Currently, the transport of radioactive material in Belgium is governed by chapter VII of the GRR [1]. This current license-based system, dating from 1963, has contributed to the safe and secure record that we have achieved in Belgium so far but we are convinced that a simplification of the current system is necessary.

The main goal of the revision of the Belgian legislation for the transport of radioactive material is to evolve from a license-based system combining reporting and notification with inspections toward a new system mainly based on registration with limited reporting and notifications and only a limited number of licenses being required after registration. This new system will focus on inspections and compliance audits in order to ensure compliance with the national and international regulations for the safe transport of radioactive material. It should reduce the administrative burden for the FANC (Federal Agency for Nuclear Control) and its stakeholders involved in the transport of radioactive material on the Belgian territory (designers and manufacturers of packages, organizations in charge of the maintenance and repair of packaging, consignors, carriers, consignees).

On the other hand, it is of crucial importance that this change in our way of working does not affect the safe, secure and sustainable transport of all radioactive material throughout our territory. Furthermore, this new legislation should not impact our knowledge of who is carrying what, when and under which conditions within the Belgian borders.

The project started up in January 2013 and consists of 2 subprojects: on the one hand the drafting of the new legislation and the preparation for the implementation, and on the other hand the new organization of the Import & Transport Section within the FANC, the Belgian regulator. We chose for an integrated project dealing with all aspects related to the development and implementation of a new regulatory framework. One senior expert, within the Import & Transport Section, was assigned as Project Manager for this ambitious project.

This paper will discuss the most important aspects considered in this challenging project as well as the stakeholder involvement process, with the sector, during the draft and development stage including the operationalisation, and the lessons learned from this project. We will also detail the content of the new Belgian legislation for the transport of radioactive material and the new organisation of the FANC's Import & Transport Section within the Nuclear Security & Transport Department.

Introduction

Currently, the transport of radioactive material in Belgium is governed by Chapter VII of the GRR [1]. This current license-based system has not been fundamentally reviewed since 1963, except some minor amendments.

Since 1963, the transport of radioactive material has evolved into a European and international driven context. The Belgian legislation is no longer adapted to the actual practices in the sector.

Moreover, not every stakeholder involved in the transport chain of radioactive material is addressed in the current Belgian legislation.

These are the main reasons why the FANC decided to start up a project in January 2013 to review the actual regulations on the transport of radioactive material in Belgium. The purpose of the project was not only to prepare and draft the new regulations taking into account the identified issues, but more generally to simplify our current licensing system and to reduce the administrative burden resulting from the current shipment notification system. We have prepared not only the implementation of this new legal framework for the stakeholders, but also the changes in the organization of the Import & Transport Section within the FANC, the Belgian regulator.

The current license-based system has contributed to the safe and secure record that we have achieved in Belgium so far but, we are convinced that a simplification in the current system is necessary. On the other hand, it is of crucial importance that this change in our way of working does not affect the safe, secure and sustainable transport of all radioactive material throughout our territory.

The new legislation should:

- 1) be adapted to the European and international context for the transport of radioactive material and cover all stakeholders involved in the radioactive material logistic transport chain;
- 2) reduce the administrative burden for the FANC (Federal Agency for Nuclear Control) and its stakeholders involved in the transport of radioactive material on the Belgian territory (designers and manufacturers of packages, organizations in charge of the maintenance and repair of packaging, consignors, carriers, consignees, handlers at airports and ports);
- 3) transpose into Belgian legislation the aspects for the transport of dangerous goods of class 7, Directive 2008/68/EC of the European Parliament and of the Council of 24 September 2008

on the inland transport of dangerous goods, and partially Council Directive 2013/59/EURATOM of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom;

- 4) take into account the recommendation from the IRRS mission in December 2013 to extend the FANC's competence to issue technical guides as well as the suggestion for a better application of the graded approach in the license system for the transport of low risk radioactive material.

Approach and project management

Before starting up the project in different steering committees the main goals and principles were discussed and approved by the FANC's management:

- 1) new system mainly based on a simplified licence system focusing on inspections and audits in order to ensure compliance with the (inter)national regulations on the transport of radioactive material;
- 2) focus on continuous improvement;
- 3) taking into account the graded approach;
- 4) transition without affecting the safe, secure and sustainable transport of radioactive material;
- 5) no impact on our knowledge of who is carrying what, when and in which conditions within the Belgian borders;
- 6) taking into account the whole transport logistic chain of radioactive material;
- 7) involvement and participation of all stakeholders in the development and drafting of the legislation with respect for the principles defined by the FANC;
- 8) adapting the organisation of the Import & Transport Section within the FANC, the Belgian regulator, in order to efficiently implement the new legislation.

Since the start-up of the project in January 2013, the management and the complete staff (inspectors-experts, administrative support) of the Import & Transport Section, have been involved in and have contributed to all stages of the project. This with the support of a FANC's legal advisor and colleagues from other departments within the FANC.

Given the whole range of various topics, we decided to create subprojects within the main project. This also gives the opportunity to work simultaneously on different issues and subjects. Sometimes the results of a subproject were used as input for another subproject.

This approach was very rigorous and time consuming but gave us the opportunity to consider our decisions from different points of view. Another advantage of this approach was that changes and the impact of certain decisions could be immediately identified and addressed.

The main steps of the project were divided into 3 stages:

a) Draft stage:

- 1) Define the principles of the new legislation. For this purpose, we used the “brown paper method” combined with a SWOT analyse of the current legislation and processes within the Import & Transport Section. Crucial were the answers to the question why do we do it this way and what is the added value for the mission of the FANC;
- 2) Submit the draft to the stakeholders. Different methods and communication tools were used to achieve an interactive communication with our main stakeholders;
- 3) Receive the feedback from the stakeholders and adapt the draft to their comments or suggestions when accepted, using a transparent and objective method to analyse the suggestions, and communicate subsequently the result from this analysis to the stakeholders (i.e. whether their comments or suggestions have been accepted or rejected);
- 4) Draft the legal framework and in parallel develop all processes and procedures including all related documents (for example templates, etc.), special attention had to be given to the new approach at what level of legal binding document the requirements needed to be addressed;
- 5) Consult the stakeholders each time the project was adapted to have continuous feedback from them.

b) Administrative stage:

- 6) Submit the draft legal framework to the Minister of Security and Home Affairs;
- 7) Publish the draft legal framework on the FANC website for a “last” review and possible comments by the stakeholders;
- 8) Submit the draft legal framework to the different advisory commissions;
- 9) Get the Government’s formal approval on the draft legal framework ;
- 10) Publish the legal framework in the Belgian Official Journal;

c) Implementation and operationalization:

- 11) In parallel with the draft and administrative stage, adapt the organization of the Import & Transport Section within the FANC in order to implement the new legal framework;
- 12) Communicate the new legal framework to all stakeholders involved and support its implementation;
- 13) Complete the modification of the structure and organisation of the Import & Transport Section within the FANC to be ready on time to implement the new legal framework.

Stakeholder’s involvement

The stakeholder involvement, as already mentioned, has taken different forms and ways. In chronological order:

- 1) We presented for the first time the principles of the new regulatory framework during the annual round table conference dedicated to Transport in December 2012. In particular, we

explained the reason why and what we identified as possible ways to improve the existing regulations. We also announced that, on a regular base, all stakeholders would be informed and consulted in order to have their input. At that moment, there were not so many reactions in the audience except the acknowledgment that it was time for a change.

- 2) In the summer of 2013, the stakeholders were asked for input on the first thoughts about the new legislation through a web survey. Although this survey took place during the summer holidays, the participation rate was very high. This convinced us that all our stakeholders were eager to participate. After considering the suggestions and remarks received, we realized that they were agreeing on the main principles of the new legislation. Also at that stage, they gave us some comments on the implementation. Issues were identified and some of them needed further consideration by the FANC.
- 3) During the annual round table conference in February 2014, the new draft was presented to the stakeholders with consideration for the remarks and suggestions that we obtained in the web survey. In order to address some open issues, we organized workshops during the round table conference. We divided the stakeholders respectively by sectors and/or transport modes. We asked them to address 4 open questions that each working group should discuss and answer. These questions were related to the effective administrative simplification of the new draft legal framework, their comments on the compliance audits by the FANC and influence on their organization, the benefit of registration of non-approved packages for the safety of the transport of radioactive material, and the impacts and/or risks of the draft legal framework on their organization. A brief feedback was given at the end of the workshops. When dividing the stakeholders by sectors and/or transport modes, we noted that the stakeholders were speaking a common language and this approach facilitates the spontaneous emergence of comments. We concluded from other meetings with our stakeholders that not all subjects could be discussed and that bringing those stakeholders together with possibly the same questions, issues or suggestions would be more productive.
- 4) This gave us the idea to organise in the spring of 2015 specific stakeholders information meetings by sectors and/or transport modes on the revised draft. A total of 5 information meetings were organised with representatives of maritime transport, air transport, road transport of radioactive material, road and rail transport of fissile material, and a specific additional meeting for the port terminal operators. The reason for these separate meeting per sector and or transport modes was to be sure that all issues, specific to the sector or transport mode could be discussed. All remarks and suggestions were recorded and later reviewed.
- 5) Some issues need to be reviewed and discussed with other authorities. Therefore, meetings were organised in the spring and summer of 2015 with the other Federal competent authorities for the transport of dangerous goods, the port and airport operators and representatives of the Ministry of Defence. Again with the same purpose of collecting ideas and suggestions to improve our new draft regulatory framework.

- 6) Then finally, at the annual round table conference in February 2016, a presentation was made to all involved stakeholders with the following topics:
 - had the FANC taken into account - and why if not - the remarks and suggestions made during the previous consultations;
 - the final draft of the new regulation;
 - the structure and content of the new legislation (Royal Decree);
 - the structure and content of FANC decrees.
- 7) In July 2016, the new regulatory framework, i.e. the draft legal texts (the royal decree regulating the transport of dangerous goods of class 7 and related FANC decrees), were published on the FANC website. The stakeholders were informed by email of this publication and invited to give the last remarks on the new legal framework before mid-September 2016.

We have scheduled in the autumn of 2016 specific information meetings with all involved stakeholders by sectors and/or transport modes with the purpose to explain the new legal framework and support them with the practical aspects related to the implementation.

Principles of the new legal texts

The new Belgian legislation is not limited to the movement of radioactive material but also involves the transport of radioactive material as defined in the international regulations for the safe transport of radioactive material [2]. In this international context, the transport comprises all operations and conditions associated with, and involved in, the movement of radioactive material; these include the design, manufacture, maintenance and repair of packaging, and the preparation, consigning, loading, carriage including transport interruptions, transit storage, unloading and receipt at the final destination of radioactive material.

Moreover, the new Belgian legal framework will:

- 1) clearly appoint the FANC as the competent authority for the different approvals foreseen in the international regulations for the safe transport of radioactive material [2] and for the follow-up of non-approved packages including the fabrication and maintenance of packages;
- 2) use the terminology and definitions of international regulations and European Directive [3] for the transport of dangerous goods;
- 3) address and regulate radiation protection based on 2 principles - justification of a practice and optimization of the protection (ALARA principle) - from the European Basic Safety Standards [4], taking into account that the transport of radioactive material has established itself as necessary in national and international programmes for the use of radioactive material in medicine, agriculture, industry, research and generation of nuclear power, and thus, generally agreed as amply justified.

Registration of carriers and associated organisations – licence and notification requirements

The new Belgian legislation applies not only to carriers but also to all organizations involved in the transport logistic chain of radioactive material, i.e. the port terminal operators, the handling operators in airports, the transit storage sites (less than 24 hours for airports and 48 hours for ports) and the sites where transports can be interrupted temporarily (less than 72 hours or maximum 15 days).

Each organisations involved in the transport of radioactive material should be registered by the FANC for a period of maximum 5 years.

The graded approach is based on 4 UN groups determined by the risk inherent to the transported material. The UN groups consolidate the UN numbers assigned to radioactive material by the international regulations [2]:

- UN-group 1 : limited radiological risk (excepted packages: UN2908, UN2909, UN2910, UN2911 and UN3507);
- UN-group 2: radiological risk (radioactive material, non-fissile or fissile-excepted: UN2912, UN3321, UN3322, UN2913, UN2915, UN3332, UN2916, UN2917, UN3323 and UN2919);
- UN-group 3: radiological and criticality risks (fissile material: UN3324, UN3325, UN3326, UN3327, UN3333, UN3328, UN3329, UN3330 and UN3331);
- UN-group 4: radiological, criticality and chemical risks (uranium hexafluoride: UN2978 and UN2977).

The carriers can be registered for one or more UN groups.

It is possible that organisations involved in the transport chain of radioactive material - excluding carriers - can handle all UN groups. Therefore, they should not be registered for one or more specific UN groups but exclusively for the operations and handlings that they perform. A specific approach has been established for these organisations.

We cannot avoid that a single transport or a limited number of handlings take place in a port or airport. Therefore, this carrier or handling/terminal operator can be licensed for a single transport (1 transport on 12 straight months) or for sporadic handlings in a port/airport (maximum 4 handling on 12 straight months) without going through a complete registration process.

In addition to the registration for carriers for a specific UN group(s) some shipments need to be licenced prior to shipment:

- as foreseen in the international regulations [2], for shipment approvals:
 - o the shipment of Type B(M) packages containing radioactive material with an activity greater than 3000A1 or 3000A2, or 1000 TBq;
 - o the shipment of Type B(M) packages designed to allow controlled intermittent

- venting;
- the shipment of Type B(M) packages designed outside the temperatures ranging from -40°C to $+70^{\circ}\text{C}$;
- the shipment of packages containing fissile material if the sum of the CSIs of the packages in a single freight container or in a single conveyance exceeds 50;
- the shipment under special arrangement;
- the shipment requiring a radiation protection programmes for special use vessels;
- other shipments defined by the FANC taking into account radiation protection, security or other specific regulations:
 - the shipment of nuclear material from the physical protection group A and in accordance with the Royal Decree of 17 October 2011 on physical protection;
 - the shipment of radioactive waste and of spent fuel in accordance with the Royal Decree of 24 March 2009 regulating import, transit and export of radioactive substances, transposing the European Directive 2006/117 on the supervision and control of shipments of radioactive waste and spent fuel;
 - the shipment of other than Type B(M) packages containing radioactive material with an activity greater than 3000A1 or 3000A2, or 1000 TBq;
 - the shipment of packages containing dangerous goods of class 7 with a transport index exceeding 200 per shipment;
 - the shipment of large containers containing dangerous goods of class 7 with a total criticality safety index exceeding 200 per vessel;
 - the single shipment of dangerous goods of class 7.

According to the graded approach, some shipments should be notified to the FANC prior to taking place. This is based on radiation protection, security or other regulations:

- the shipment of Category 1 radioactive sources in accordance with the “Code of conduct on the safety and security of radioactive sources” published by IAEA;
- the shipment of at least one package containing dangerous goods of class 7 for which the transport index exceeds 10 per package;
- the shipment of packages containing dangerous goods of class 7 for which the sum of the transport indexes from the packages on board of the vehicle require a shipment by exclusive use;
- the shipment of radioactive material from the UN-groups 3 and 4;
- the shipment of Type B(M) packages;

and the shipments licensed by the FANC (see above).

Monthly reporting

Each carrier should provide the FANC with a list of the performed shipments within 21 days after the end of the month so that it know what and when radioactive material is transported on the Belgian territory.

This monthly reporting will be simplified and become leaner.

Compliance and inspection

According to its preventive versus repressive approach to identify and share the best practices, the FANC will ensure that all stakeholders comply with the relevant regulations by implementing an inspection program including 2 types of inspection:

- one-off inspections: inspections of a specific shipment at the loading or unloading site, or during transport. An inspection program is established each year and each organisation is inspected at a frequency determined by different criteria, i.e. the quantities and types of packages being transported or handled, the nature and extent of the transport operations (e.g. percentage and frequency of transports involving radioactive material), the incidents and accidents in the past, the documented results and findings from previous inspections, the size, complexity and activities of the industry for which it has responsibility;
- management system inspections (compliance audits): inspections to ensure that the registered organization has implemented a management system for assuring compliance with the applicable national regulations and international dangerous goods regulations and Agreements relating to the safe transport of radioactive material with a special attention to radiation protection programmes.

We hope that this preventive approach will result in a continuous improvement of the safe and secure transport of radioactive material on the Belgian territory.

We will also share with all our stakeholders the best practices that we will identify during the inspections.

If necessary, a repressive approach and enforcement will be applied.

Structure of the new legal texts

Royal Decree regulating the transport of dangerous goods of class 7

The FANC has decided that the Royal Decree should first summarize the general provisions and subsequently set forth the specific provisions for each stakeholders group. This structure in 12 chapters and sections should ensure the readability and functionality of the legal text.

The 12 chapters of the Royal Decree are:

- Chapter 1: Scope
- Chapter 2: Definitions
- Chapter 3: General Provisions
- Chapter 4: Obligations for carriers
- Chapter 5: Obligations during interruptions of transport
- Chapter 6: Obligations for the organisations involved in multimodal transport
- Chapter 7: Obligations for package design approval applicants
- Chapter 8: Obligations for other approvals specified in chapter 7
- Chapter 9: Various obligations for package design and packaging
- Chapter 10: External advice
- Chapter 11: Notification of events with potential impact on the safe transport
- Chapter 12: Final provisions (appeal, transitional arrangements, financial aspects, ...).

FANC Decrees regulating the transport of dangerous goods of class 7

The FANC issued 4 specific decrees to complement the Royal Decree and specify some practical issues:

- FANC Decree in relation with Chapter 4 of the Royal Decree on the obligations for carriers
- FANC Decree in relation with Chapter 5 of the Royal Decree on the obligations during interruptions of transport
- FANC Decree in relation with Chapter 6 of the Royal Decree on the obligations for the organisations involved in multimodal transport
- FANC Decree in relation with Chapters 7, 8 and 9 of the Royal Decree on the obligations for packages and packaging.

Organisation of the FANC's Import & Transport Section

One major objective of the revision of the Belgian legislation for the transport of radioactive material consists more specifically in reducing the administrative burden resulting from the current license-based system associated with a complex shipment notification and reporting system.

With the new registration system for carriers and other organizations, with a limited number of shipment licenses and with a leaner notification and reporting system, the FANC expects to reduce the number of inspectors-experts in charge of the review and assessment of transport license applications and to allocate these resources to inspections and compliance audits.

In the new organization, the Import & Transport Section will be composed of 2 teams:

- Licensing & Inspection team with 5 inspectors-experts in charge of the registration process and the implementation of the new inspection program;
- Approvals teams with 3 inspectors-experts in charge of the approvals of i.e. package design,

special form radioactive material, shipment (a.o. special arrangement), the follow up of the registration of non-approved packages. They will also perform the inspections related to design, fabrication, repair and maintenance of packages.

A dedicated administrative support will assist both teams.

With this new organisation of 10 persons, 1 administrative assistant and 8 inspectors-experts under the responsibility of 1 section head, the FANC expects to take responsibility for assuring compliance with the applicable national regulations and international dangerous goods regulations and agreements relating to the safe transport of radioactive material. As a result, new processes and ways of working should be developed within the Import & Transport Section.

As far as human resources are concerned, new skills have been identified and training programmes have been started up.

We also need to adapt our processes and supporting ICT tool (CRM).

Conclusions

The project aiming at the revision of the Belgian legislation started in January 2013 and is still on-going. However, the main objectives have been achieved:

- involvement and participation of the stakeholders through different processes to involve all relevant stakeholders;
- development of a system for continuous feedback to stakeholders on acceptance - or not - of suggestions, and on the progress made;
- simplification and decrease of the administrative burden resulting from the existing license system without impact on our knowledge of who is carrying what, when and under which conditions within the Belgian borders;
- creation of a transition phase without affecting the safe, secure and sustainable transport of radioactive material on Belgian territory.

The next step is the approval of the drafted legal text by the Belgian Government.

We expect that the legal framework will be published in the Belgian Official Journal by mid-2017.

The new legal framework for the safe transport of radioactive material comes into forces in the autumn 2017.

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References

- [1] Royal Decree of 20 July 2001 laying down the *General Regulation for the Protection of the Public, Workers and the Environment against the Hazards of Ionising Radiation*.
- [2] Regulations for the Safe Transport of Radioactive Material – 2012 Edition, SSR-6, International Atomic Energy Agency, Vienna, Austria.
- [3] Directive 2008/68/EC of the European Parliament and of the Council of 24 September 2008 on the inland transport of dangerous goods.
- [4] Council Directive 2013/59/EURATOM of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom.