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**Lessons learned from the project concerning the revision of the Belgian legislation for
the transport of radioactive material and from the first year of implementation of the
new regulatory framework**

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ABSTRACT

In January 2013, the Federal Agency for Nuclear Control (FANC) started a project to revise the Belgian legislation for the transport of radioactive material taking into account a large involvement of stakeholders of the sector [1].

The Royal Decree of 22 October 2017 on the transport of class 7 dangerous goods was published in the Belgian Official Journal on 30 October 2017 and came into force on 1 January 2018, together with the 4 FANC regulations of 13 December 2017. Those were published in the Belgian Official Journal on 18 May 2018.

After one year of implementation of the new regulatory framework, the FANC has reviewed if we have achieved the main goals and principles set out at the start of the project.

These principles were:

- a) simplify licence system focusing on inspections and compliance audits;
- b) focus on continuous improvement;
- c) take into account the graded approach;
- d) no impact on our knowledge of transport of class 7 dangerous goods in Belgium;
- e) take into account the whole transport logistics chain;
- f) involvement and participation of all stakeholders;
- g) adapt the organisation of the Import & Transport Section.

The paper will discuss the feedback and lessons learned from the FANC as well as from the stakeholders, both on the process followed to review the legislation and on the first year of implementation of the regulatory framework (Royal Decree of 22 October 2017 and the 4 FANC regulations).

INTRODUCTION

Until 2017, the transport of radioactive material in Belgium was governed by Chapter VII of the General Regulation for the protection of the public, workers and the environment against the hazards of ionizing radiation [2]. This licence-based system had not been fundamentally reviewed since 1963, except for some minor amendments.

The licence-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 of the current system was necessary.

On the other hand, the transport of radioactive material has evolved into a European and internationally driven context. The Belgian legislation was no longer adapted to the actual practices in the sector.

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

These are the main reasons why the Federal Agency for Nuclear Control (FANC) defined in 2012 the scope of the project to review the actual regulations on the transport of radioactive material in Belgium and started up this project in January 2013.

The expectations and main goals of the new legal framework were discussed and approved by the FANC's management:

1) Licences:

- new system mainly based on a simplified licence system with fewer types, taking into account the graded approach and focusing on inspections and audits in order to ensure compliance with the (inter)national regulations on the transport of radioactive material;
- taking into account the whole transport logistics chain of radioactive material;

2) Approvals:

- to clearly appoint the FANC as the competent authority for the different approvals foreseen in the international regulations for the safe transport of radioactive material [3] and for the follow-up of non-approved packages, including the manufacturing and maintenance of packages;
- to complete the FANC's inspections programme with a systematic inspections programme for Belgian non-approved package designs and for packagings conform to approved package designs;

3) Inspections:

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

- one-off inspections: inspections of a specific shipment at the loading or unloading site, or during transport;
- management system inspections (compliance audits): inspections to ensure that the recognized organisation has implemented a management system to assure compliance with the applicable national regulations and international dangerous goods regulations with a special attention to radiation protection programmes;

4) Administration and financial aspects:

- reduce the administrative burden for the FANC and the stakeholders involved in the transport of radioactive material on the Belgian territory (designers and manufacturers of packages, organisations in charge of the maintenance and repair of packaging, consignors, carriers, consignees, handlers at airports and ports);
- adapt the tax and fees system;

5) Transition:

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 affect our knowledge of who is carrying what, when and under which conditions within the Belgian borders.

REGULATORY PROCESS AND STAKEHOLDER'S INVOLVEMENT

The stakeholder involvement has taken different forms and ways.

After the first evaluations and assessments, 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 the summer of 2013, the stakeholders were asked for input on the first thoughts about the new legislation through a web survey.

Pleased with and surprised by the participation rate for the survey, we used the input for our first proposal presented during the annual round table conference in February 2014. In order to address some open issues, we organised workshops during this round table conference. We divided the stakeholders respectively by sector and/or transport mode. We asked them to address 4 open questions that each working group had to discuss and answer. We noted that, by dividing the stakeholders by sector and/or transport mode, the stakeholders were speaking a common language and that this approach facilitated the spontaneous emergence of comments.

This gave us the idea to organise in the spring of 2015 specific stakeholders information meetings by sector and/or transport mode 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 meetings per sector and/or transport mode 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.

Some issues needed 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.

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 if not, why - 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 the FANC regulations.

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 regulations), 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.

Finally, we organised in the autumn of 2016 specific information meetings with all involved stakeholders by sector and/or transport mode with the purpose to explain the new legal framework and support them with the practical aspects related to the implementation.

During the winter 2016-2017, all the legal advices were requested and, in May 2017, the final legal text was submitted for approval to the Belgian Government.

The Royal Decree on the transport of class 7 dangerous goods [4] was signed by the King on 22 October 2017, published in the Belgian Official Journal on 30 October 2017 and came into force on 1 January 2018. The 4 related FANC regulations [5, 6, 7 and 8] were signed by the FANC General Director on 13 December 2017 and were published in the Belgian Official Journal on 18 May 2018.

PRINCIPLES OF THE NEW REGULATION

The new Belgian legislation applies not only to carriers but also to all organisations involved in the transport logistics 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 organisation involved in the transport of radioactive material should be recognized 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:

- 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 recognized 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 recognized for one or more specific UN groups but exclusively for the operations and handlings they perform. A specific approach is 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 handlings on 12 straight months) without going through a complete recognition process.

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

- as foreseen in the international regulations, for shipment approvals;
- other shipments defined by the FANC taking into account radiation protection, security or other specific regulations.

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 and also for the shipments licensed by the FANC.

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 knows what and when radioactive material is transported on the Belgian territory. This monthly reporting has been simplified and becomes leaner.

SELF-ASSESSMENT, LESSONS LEARNED AND FANC FEEDBACK

From the FANC's point of view, the transition went smoothly and the main goals are achieved.

The whole transport chain is covered:

- the organisation involved in the multimodal transport (handling operators at the airport and terminal operators at the seaport) should be recognized;
- the interruption of transport may only take place at a location (less than 72 hours) or an interruption site (more than 72 hours but less than 15 days) known to or recognized by the FANC;
- the FANC is clearly appointed as the competent authority for the different approvals foreseen in the international regulations for the safe transport of radioactive material and for the follow-up of non-approved packages.

For the administrative aspects, there are less licences and notifications with the new legislation implementing a recognition system based on the 4 UN groups.

Under the previous legislation (before December 2017), the FANC granted on a yearly basis approximately 150 transport licences.

Since the entry into force of the new legislation (January 2018), the FANC granted (i) 49 recognitions in 2018 and 9 from January to May 2019, and (ii) 28 licences in 2018 and 11 from January to May 2019.

Until December 2017, the carriers sent and the FANC processed yearly approximately 3500 notifications of shipment.

In 2018, there were 988 notifications and for the first five months of 2019 a total of 214.

The administrative burden for the FANC and the carriers is significantly reduced.

The new inspections system has been set up combining one-off inspections and management system inspections of stakeholders involved in the transport of radioactive material on the Belgian territory, without forgetting a systematic inspections programme for Belgian non-approved package designs and for packagings conform to approved package designs [9].

Some improvements are already identified and communicated during the stakeholders' meeting held on 28 February 2019.

Modifications and clarifications of the regulatory texts (royal decree and 4 FANC regulations) are proposed and we expect a publication by end 2019.

The application forms (attachments to the FANC regulations) will also be revised.

We have also detected a need of more guidance. We had already published guidance on the radioprotection programme and the emergency procedure, that will be reviewed. Some other guidance will be issued, for example on the management system.

STAKEHOLDERS' FEEDBACK

At the annual round table conference in February 2019, the FANC presented the self-assessment and lessons learned after one year of implementation of the new transport regulation.

To get the feedback of the stakeholders, and taking into account our experience of previous meetings, we decided to organise workshops where the participants were divided in 4 groups without attendance of FANC representatives. We asked them to address 4 questions that each working group had to discuss and answer on flip charts:

- In one keyword, how did you experience the process of establishing the transport regulations?
- Has the objective of administrative simplification (less administrative burden) been successful?
- Can you describe in one or some keywords the quality of the information and the forms?
- Can you describe the new regulation in one key word?

With this approach, we noted intense discussions within the working groups.

A lot of comments were positive, but some improvements were identified by the stakeholders.

We asked also some volunteers to be interviewed.

The main results and comments from the stakeholders are:

- feedback on the process:
 - + interactive,
 - + step-by-step,
 - + constructive,
 - + structured,
 - + rigorous,
 - + educational,
 - long process,
 - slow;
- feedback on administrative simplification:
 - + less documents,
 - + more harmonised,
 - + recognition is general,
 - + FAQ support,
 - mode dependant,
 - less harmonisation for air transport,
 - more documents for new stakeholders,
 - language barrier;
- feedback on information and forms:
 - + contact with the FANC (SPOC per organisation)
 - + availability of information and documents
 - + clear
 - + well thought-out
 - not enough digitalisation
 - no online platform
 - no alert when modification on the FANC website
 - complex structure of the royal decree
 - rigid legislation
 - no list of recognized organisations (carriers and handlers)

- general feedback:
 - + clear,
 - + applicable,
 - + improvement,
 - + structured,
 - + compromise,
 - + comprehensive,
 - + innovative,
 - + hopeful,
 - + complete,
 - bigger workload,
 - belgo-belge,
 - complex,
 - bureaucratic,
 - more expensive,
 - internationally difficult,
 - more stringent than neighbouring countries.

CONCLUSIONS

With the involvement and participation of the stakeholders through different processes and at different steps, the new legal framework is practical and has been smoothly implemented.

The acceptance by the stakeholders is also easier.

The main goals – less administrative burden, simplified system based on inspections and focusing on continuous improvement, taking into account the graded approach, covering the whole transport logistics chain - are also achieved.

Nevertheless, the FANC and the stakeholders have identified some ways for improvement.

In the coming months, the FANC will take into account the results of its self-assessment and the feedback from the stakeholders.

We have already put in place a specific action plan. Some actions are already taken or started. The revision of the legal texts (royal decree and FANC regulations) and the associated forms is on-going.

ACKNOWLEDGMENTS

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