

Capturing Over 50 Years of Industry Experience in Good Practices

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Abstract

While the safety record for the transport of radioactive materials is exemplary, and has been so for over 50 years, it is very important that this is not taken for granted. For that purpose, industry practices are exchanged and, from those, good practices developed.

The World Nuclear Transport Institute (WNTI) was created to represent the interests of all parties connected to packaging and transport of radioactive materials. From the start, the institute has recognised the value of sharing the experience gained, by its members and others. This has resulted in the creation of working groups in many fields of transport, producing Information Papers, and more significantly Good Practice Guides.

Most of these documents are intended to become de facto standards, as they are industry generated based on operational feedback. Making available our good practices is not a loss of our members' valuable know-how. It is an investment in safety, security and sustainability of our activity, not to mention that of the industry that we serve. There is, admittedly, another motive. While most regulations for safety and security are established by international consensus, there are in some instances variations, local additions and conflicting interpretations.

Industry-prepared standards and good practices are a way to reach a unified understanding and implementation of regulations. The dissemination of industry good practice ensures that responsible players take the necessary measures to reduce the risk of any incidents. All players in the transport community will benefit from this effort. They are welcome to participate in establishing and spreading these good practices, and to suggest new topics.

1. Introduction

The transport of radioactive materials is extremely sensitive to public acceptance. While the safety record for the transport of radioactive materials is exemplary, and has been so for over 50 years, it is very important that this is not taken for granted. For that purpose, industry practices are exchanged and, from those, good practices developed.

2. Sharing the wealth of accumulated experience

The World Nuclear Transport Institute (WNTI) was created to represent the interests of all parties connected to packaging and transport of radioactive materials. From the start, the institute has recognised the value of sharing the experience gained, by its members and others. This has resulted in the creation of working groups in many fields of transport, producing Fact Sheets, Information Papers, and more significantly, Good Practice Guides and Standards. Most of these documents are intended to become de facto standards, as they are industry-generated based on operational feedback.

Such WNTI documents are available freely from the WNTI website (www.wnti.co.uk). Making available our good practices is not a loss of our Members' valuable know-how. It is an investment in safety, security and sustainability of our activity, not to mention that of the industry that we serve.

Consideration is given here on good practice as opposed to best practice. This is a way to recognise that there may be several good ways to carry out the operations for the safe packaging and transport of radioactive materials, but it must be recognised that the good practice proposed by the WNTI has been consensually agreed by all the members of the WNTI, who are almost fifty organisations involved in the safe transport of radioactive materials.

There is, admittedly, another motive. While most regulations for safety and security are established by international consensus, there are in some instances variations, local additions and conflicting interpretations. Industry-prepared standards and good practices are a way to reach a unified understanding and implementation of regulations.

It is to be noted that some of the WNTI good practices are now commonly used as standards in the industry. In addition, the US Department of Energy has asked the WNTI to use parts of a WNTI standard document "Uranium Concentrates - Industry Good Practices for ISO Containers in Multimodal Transports" in their own documentation.

Work continues, with the potential to eventually turn some documents into ISO international standards. However that is a longer process.

3. Process for the elaboration of good practice documents within WNTI

The concept of Good Practice Guide is deemed to improve safety, performance and confidence to all parties involved from the relevant jurisdictions to the service provides and hopefully to all stakeholders.

Through the meetings of the WNTI Industry Working Groups, themes are discussed and feedback on members' practices are exchanged. By sharing and documenting good practices, the industry is contributing to the continuous improvement in safety and robustness of the radioactive materials transport and packaging, improving processes, and working methods. Fact Sheets, Information Papers, Good Practice Guides and WNTI Standards are developed by consensus by WNTI industry members, before being published and being made freely available on the WNTI website (www.wnti.co.uk/media-centre/publications.aspx).

These documents are regularly reviewed by the appropriate working group or party, and new documents are frequently being issued. The documents are available in English, French, Spanish, Portuguese, Chinese, Russian and Korean.

4. Topics covered or intended to be covered by a Good Practice Guide document within WNTI

Below are examples of the Good Practice Guides readily available or considered to be issued by the WNTI.

4.1 Transport principles

The umbrella document is certainly the list of the general principles that should govern radioactive materials transport. The WNTI's "Transport Principles" summarise the commitments that any organisation involved in radioactive material transport should make. It is essentially common sense, and can be used as a broad check-list to ensure that such organisations do not overlook any major field needing control. Individual companies are invited to follow the rules that apply to their own activity, and to showcase their commitment to following the Principles in their commercial (and other) documents.

4.2 Check-lists before departure

There are a number of items to be inspected before departure, most of them critical for the implementation of regulations. Standard check-lists would go a long way in helping shippers check and record that all their obligations are fulfilled. Such check-lists could include documentation completeness, packaging maintenance status, vehicle and driver, tie-down and radiological measurements.

4.3 Risk Analysis

There is often a choice in the modes of transport, in the routes possible, in the conveyances (such as ships). A risk analysis enables the formal identification of any risk areas, the comparison of solutions, the mitigation of the risks identified. The criteria for risk analysis can be broken down into four main categories: safety, security, supply chain, communication.

One recommended methodology is to rate each risk factor to obtain a global grade, allowing comparisons between logistical solutions. The rating and the weight for each factor and category is company - and/or country - specific, because of, for instance, different policies and perceptions, local conditions such as accident statistics.

This control of risks is seen favourably by the insurers approached, and will facilitate the negotiation of premiums.

4.4 Crisis management

There is a need for an industry guide that would summarize in a user-friendly format the basics of emergency preparedness and of crisis management for companies.

Similarly, a guide for crisis exercises would be useful. It could for instance advise that table-top exercises are no substitute for field drills where equipment may or may not work as intended, where people may prove unavailable.

4.5 Radiological inspection

There are some unfortunate instances of radiological inspections where the values recorded by the shipper differ from those measured on arrival or en-route. There may be many reasons for this, including different measurement points and seepage. At the very least, procedures, equipment and personnel qualification could be standardised or their equivalences validated, so that these root causes could be discounted. Whenever possible, measuring sessions could be organised between consignors and consignees with a view to comparison and calibration. Such a document was published earlier this year in the form of “WNTI Good Practices for checking Shipping Containers Prior to Loading Drums of UOC and Before Dispatch”.

4.6 Packagings for uranium concentrates

Industrial steel drums have been here forever. Their main benefit is their cost; their operational use has its limits as these drums can carry relatively small amounts of uranium. They are usually transported in 20' ISO containers, making them basically round pegs in a square hole. This opens the door to two sorts of standardisation: methods for tie-down of the drums in the container; and search for a better packaging. The first aspect is now covered by two Good Practice Guides freely available from the WNTI. The second is under study by member companies of the WNTI.

4.7 Technical specifications for Subcontractors

There is a need to properly evaluate subcontractors (carriers, stevedores...) before placing orders. Evaluations should be based on adequate technical specifications. The current situation is that shippers and freight forwarders go to the same service providers with specifications that are not only complicated but also different. It would be a great improvement if common specifications were agreed upon, for example by mode of travel and by service type.

4.8 Tie-down: accelerations

Accelerations values used for the design of tie-down should be defined with common sense, meaning that tie-down systems are not expected to be more resistant than the package or the conveyance, as regrettably advised by some guidance documents. There are acceleration values defined by modal or national regulatory bodies, based on extensive experience; the WNTI is in the process of summarizing these values to recommend values that can be confidently used in multimodal, cross-border shipments.

4.9 Uranium hexafluoride cylinders

There are many different uranium hexafluoride (UF₆) product safety sheets for uranium hexafluoride. One format in a few languages should suffice for all shippers, facilitating the work of first responders the world over.

4.10 Tracking

Tracking of packages and/or vehicles, once the trademark of advanced players in radioactive material shipments, has become commonplace in all sorts of industries. However, there are many different technical solutions, and inter-operability is but a dream at this point in time. A promising

development is the recent issuance of a "best practice" document common to WNTI and WINS (World Institute for Nuclear Security).

5. Conclusion

As feedback gathered from our members suggested that some Good Practice Guides are appended to their contracts, as the US Department of Energy asked to use part of the WNTI Standard "Uranium Concentrates Industry Good Practices for ISO Containers in Multimodal Transports", and as the International Standards Organization (ISO) appears favourable to the development of an ISO standard based on the WNTI Good Practice and Standard for the transport of the uranium ore concentrates, it can be inferred that the WNTI Good Practice documents are recognised now as an industry reference for the packaging and transport of radioactive materials.

The dissemination of industry good practice is not a loss of technical or commercial know-how for companies. It ensures that responsible players take the necessary measures to improve the odds so that the risk of any incidents is reduced. All players in the transport community will benefit from this effort; they are welcome to participate in establishing and spreading these good practices, and to suggest new topics.

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