

THE NEED FOR IMPROVED CLARITY IN THE WRITING OF TRANSPORT REGULATIONS

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ABSTRACT

The IAEA Regulations for the Safe Transport of Radioactive Material have been developed over 50 years and provide a good basis for safe transport. The aim is for these regulations to provide a global standard for transport of radioactive material, particularly international transport. Differences in the application of the regulations may not directly lead to safety concerns, but can lead to problems with, inter-alia, transport documents, package marking and potentially with classification. The source of such differences can often be found in different interpretations of the text, particularly when translated. This paper examines the benefits of adopting a rigorous approach to clear text, both in vocabulary and structure and argues that a comprehensive review of the current requirements will aid the adoption of a common standard on a wider basis. Through specific examples it will demonstrate how a common interpretation can be better achieved in different languages through clear English text. In addition, because the goal for international regulations is universal adoption, which means a large number of users, the extent to which frequent redrafting of the regulatory text increases the risk of interpretation discrepancies, will also be discussed.

INTRODUCTION

Many people will know about the problems translating the words safety and security. In Spanish these two words are the same. Even in English these words can be confused, for example: you can *secure* packages to a vehicle for *safety* reasons. This may seem somewhat simple; however, there are ways of avoiding the problem – this is what this paper is about.

LOST IN TRANSLATION

Another problem that has sometimes been noted is that words can sometimes come with concepts that can cloud the interpretation of those words, especially in languages other than English. For example, the translation of the word “contamination” into Spanish brings a very negative connotation to something that may have a very small impact on safety.

In examining the use of the word contamination in the IAEA transport regulations [1] one could ask, why do we use it? We use it to describe the presence of a radioactive substance on a surface. So why do we not simply talk about a radioactive substance on a surface?

The *concept* of “contamination” suggests that the radioactive substance (whatever it might be) is added to a surface. Is this what we intend – or are we instead talking about the amount of the radioactive substance

on a surface? In this case, one could think of a “surface” of a package which consists of depleted uranium, for example. In truth, we *are* talking about the amount of radioactive substance on a surface; thus, the concept of contamination actually introduces a concept that is not necessarily needed and that can lead to confusion.

But it isn't just in introducing words we don't need that problems can arise. We also see cases in the regulations where there are multiple negatives, complex sentences, words used in a form that they are not intended (this can be a real problem for translation), and, of course, situations in which there is confused logic over the structure of a given provision.

REVIEW OF SSR-6

IAEA undertook a review of some paragraphs in their transport regulations (SSR-6) [1]. The choice of paragraphs came from several activities- looking at which paragraphs had suggestions for clarification during the review process, or where there was significant discussion over wording during review of the paragraphs. In addition, information available regarding the ease of translation was also considered.

All of these areas provided ideas as to which parts of SSR6 could be examined. The review was carried out on-line and while it was the intent to examine several aspects of the regulations, it was discovered that working with only one area offered a sufficient number of examples. It also proved to be enough to fill the time available.

This demonstrated that the discussion of clarity is not a simple process – it can be time consuming and costly. It also demonstrates something very significant – that it takes time for experts to agree on the meaning of the existing regulatory text – which suggests it is not as clear as it could be.

ASKING THE RIGHT QUESTIONS

The process used five questions to prompt discussion. These were used only to initiate the discussion, not as the discussion itself. These questions are:

- What is required to be done?
- What is it to be done to?
- What is it to be done with?
- Who would you normally expect to be responsible for doing it?
- Do they need to do it, or do they need to ensure it is done?

When considering a specific paragraph in the transport regulations, one should keep the following questions in mind:

- Could the paragraph mean something else (i.e., be misinterpreted)?
- Is the paragraph clear in what it requires?
- Do requirements use “shall”?
- Does guidance describe “how” something could be done?
- Is the basic requirement contained in the paragraph in question, or is it elsewhere?
- Is there an overarching (simple) requirement or does the paragraph present subsets of requirements that by following those you will meet the overarching requirement in an acceptable manner?

One could also ask, what would happen if a particular provision in question is *not* followed, but everything else was? What would the impact on safety be for that particular case? What else would need to happen before safety was compromised? Would this “missed” provision only be manifested in the case of an accident?

Considering potential “offences” with respect to the regulations, if you were to accuse someone in court, what would the accusation be? (i.e., “you have failed to comply with the requirement to...”). The way the provisions are written, who would most likely be accused?

While one could ask what these questions have to do with writing clear regulations, the authors maintain that where the writing of regulations is approached with these questions in mind, clearer regulations would most certainly result.

WORKING THROUGH AN EXAMPLE

As an example, we’ll take provision 403 (a) from the Transport Regulations [1].

403. *For individual radionuclides:*

(a) That are not listed in Table 2, the determination of the basic radionuclide values referred to in para. 402 shall require multilateral approval. For these radionuclides, activity concentrations for exempt material and activity limits for exempt consignments shall be calculated in accordance with the principles established in the BSS[2]. It is permissible to use an A_2 value calculated using a dose coefficient for the appropriate lung absorption type, as recommended by the International Commission on Radiological Protection, if the chemical forms of each radionuclide under both normal and accident conditions of transport are taken into consideration. Alternatively, the radionuclide values in Table 3 may be used without obtaining competent authority approval.

Reading this provision and breaking this down based on the colors used above we find, for the introductory text of this provision (in yellow) we need multilateral approval. The second sentence of the paragraph (in red) tells us the method to be used for calculating exemption values. The third sentence (in green) could be interpreted to tell us that we are permitted to use lung class – but nothing has told us what we are *not* permitted to do so far (there is no specification for how to do the calculation). Finally, the last sentence (in orange) gives us an alternative means of determining the values. But wait – is this alternative to the calculation method or an alternative to multilateral approval? Perhaps it is not completely clear.

Revisiting our questions, related to paragraph 403(a) above, what would our “accusation” be for not following this provision? Failure to determine radionuclide values would be a reasonable charge. Who would most likely be accused? That question cannot be determined as easily. Who determines the values? In the case of transport, the consignor would *apply*, the values, but many different people could determine them. There is no clear responsibility assigned in this provision.

ANALYSIS FOR CLARITY

What is at the core, the heart, of the transport regulations is the correct allocation at the start – the classification. The principle is that the person placing dangerous goods in the transport chain needs to be responsible for ensuring the classification of the material being transported is right. Does this mean that every consignor must be an expert in all aspects of materials and packaging that they consign? – of course

not. The consignor can only be responsible for things in their normal expertise, for areas outside their expertise; they need to rely on the expertise of others.

But this cascading system needs to be clearly set out in the regulations so the responsibility can be placed on the appropriate expert. The paragraph considered above does not separate the calculation of values from their use, and so the process of passing on information is missed.

So is this really that important? Quite simply, yes. The use of the correct A_2 or A_1 value is at the heart of the transport regulations – it determines everything else that follows. It affects routine, normal, and accident conditions of transport. Getting these values wrong is sufficient to cause a safety problem in itself, and is also capable of causing a safety problem in the event of an accident. It is therefore important that this paragraph is clear and correct.

Revisiting this paragraph, we notice that there is a requirement for multilateral approval, that is clear – and there is a lot of text on *how* to determine values, but the clarity that might be added by telling the reader that a value *shall be* determined is missing. Looking at the paragraph for potential ways that misunderstandings could occur, there seems, at least on the face of things, to be no potential for misunderstanding; however, one should consider some simple points, for one, what does the word “basic” mean? Also, why are some radionuclide values described as “basic” while others are not? In addition to adding words, we also have a tendency to use phrases in a shorthand form, such as “exempt consignment”. Most readers would know what this means, but writing it out in full helps clarity, particularly when translating.

While there are some issues that open the door to possible misunderstanding, the meaning of these paragraphs in the regulations is generally understood.

Going now to the questions of “Who”, “What” and “With What”, These questions are the crux of the discussion – and led to an exercise to rewrite this section from first principles.

REWRITE FOR CLARITY

Rewrite 1

So the first principle is to place a clear requirement on somebody. In this case we look at the operation of transport and the person that the prime requirement is placed upon is the consignor.

This could read as the following:

- A. *The consignor shall classify radioactive material in accordance with this section and shall assign radioactive materials to one of the UN numbers specified in Table 1.*

Rewrite 2

But remember we have said that the consignors cannot do things outside their expertise – so we need to go to a further layer of detail. First we tell the consignor where to find the values to use. This is the first “how” paragraph – here is where you look for the values. This section could read as the following:

- B. *The consignor, in classifying the radioactive material, shall use*
- (a) *the radionuclide values for radionuclides in Table 2 and Table 3*
- (i) *the A_1 value in column x*
- (ii) *the A_2 value in column y*

- (iii) the activity concentration below which the material is not classified as radioactive material in column z*
- (iv) the total activity in a consignment below which the material in the consignment is not classified as radioactive material in column zz*

or

(b) the values in the radionuclide approval certificate

Rewrite 3

The second part of the “how” is the rules on which of the sources for radionuclide values listed in the paragraph above should be used. This section could read as the following:

- C. The consignor, in classifying the radioactive material, shall use radionuclide values:*
 - (a) in Table 2, or*
 - (b) where the radionuclide is not in Table 2:*
 - (i) in Table 3 or*
 - (ii) in the radionuclide approval certificate, or*
 - (c) For manufactured articles a radionuclide value from a radionuclide approval certificate may be used*

Rewrite 4

The third part of the “how” is the supporting requirement. This gives a clear instruction of how to get a certificate and how to make sure it is available to the consignor.

- D. Any person may apply to a competent authority for a radionuclide value approval certificate*
 - (a) Calculations for radionuclide values shall be in accordance with....para XYZ*
 - (b) The format of application is set out in... para ZYX*
 - (c) The competent authority in receipt of the application is responsible for the assessment of it.*
 - (d) If the CA agrees then an approval certificate shall be issued by the competent authority in the format...*
 - (e) A copy of the certificate shall be given to the consignor by the certificate owner*

Thus this series of requirements would ensure that the consignor has classified the material to be shipped properly and has the appropriate documentation to support the classification.

This is one example of the link that is missing between the calculation of values and the use of these values in the regulations. This exercise in rewriting a section of the regulations provides an example of a thoughtful process that could, if employed appropriately, enhance the clarity of the current regulations.

CONCLUSIONS

International transport regulations for movement radioactive material must be understood by a wide range of users in many different languages. Clarity of writing in the regulations aids this understanding. It is possible to re-write the transport regulations to increase the clarity. While re-writing regulations adds up front cost, it may serve to reduce the long term costs of implementation of the regulations as interpretation

of the regulations becomes a much less challenging task for those who must implement them. In addition, as the IAEA assists Member States who are just building their infrastructure for transport, through Technical Cooperation projects and other methods, the ability to better understand the regulations greatly increases the chances for a successful implementation of those regulations.

REFERENCES

[1] INTERNATIONAL ATOMIC ENERGY AGENCY, Regulations for the Safe Transport of Radioactive Material, 2012 Edition, IAEA Safety Standards Series No. SSR-6, IAEA, Vienna (2012).

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