WNTI Position Paper - Human Factors in the Safe Transport of Radioactive Material

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WNTI's Position

The World Nuclear Transport Institute (WNTI) recognises that human and organisational factors are important to the safe transport of radioactive material. Package design, operating procedures, training and management systems should work together to support safe and reliable transport operations.

However, WNTI does not support the proposed introduction of additional explicit Human Factors Engineering (HFE) provisions into IAEA SSG-26 at this stage.

WNTI considers that the case for additional guidance has not yet been sufficiently demonstrated. Human and organisational factors are already addressed within the wider IAEA safety framework, including through management systems, safety assessment, training and operational controls. Introducing additional provisions into SSG-26 risks duplicating these arrangements and creating new expectations for package designers and competent authorities without clear evidence of an additional safety benefit.

WNTI therefore calls for a proportionate, evidence-based and internationally harmonised approach before any additional provisions are introduced.

The issue

During the development of SSR-6 (Rev. 2), proposals were made to introduce explicit requirements for the consideration of human factors in transport package design. These proposals evolved through several iterations but did not achieve consensus within TRANSSC.

A subsequent proposal has sought to introduce explicit Human Factors Engineering considerations through the revision of SSG-26. The proposed approach would extend consideration of human and organisational factors across package design, operation and transport activities, including operational and managerial requirements, physical and psychological characteristics, instructions and training.

WNTI supports the objective of reducing the potential for human error. However, the introduction of new guidance should respond to a clearly identified safety gap and should demonstrably improve safety.

At present, WNTI does not consider that this case has been established.

Four principles should guide the approach:

1. **Additional guidance should address a demonstrated safety need**

   Before introducing new expectations, there should be clear evidence of the problem that needs to be addressed, whether existing provisions are insufficient and how the proposed change would address identified deficiencies to deliver an additional safety benefit.

   Radioactive material transport already operates within a framework combining robust package design with management systems, operating procedures and personnel training. The proposed additional HFE provisions should therefore be supported by evidence demonstrating where this framework is insufficient and how additional guidance in SSG-26 would address that gap.

Adding regulatory guidance should not be an objective in itself. The test should be whether it delivers a measurable improvement in safety.

2. **Any approach must be proportionate to risk**

   Radioactive material transport encompasses a very wide range of packages and operations. The package types are graded to the risk associated with their contents, therefore the human factors considerations appropriate to a complex package and operation may be very different from those appropriate to a simple, routinely handled package.

   The proposed text does not currently establish a sufficiently clear graded approach. This creates a risk that broad HFE expectations could be applied in the same way to significantly different package types and operational circumstances.

   Any future approach should therefore be risk-informed and proportionate to the complexity and safety significance of the package and operation.

3. **International consistency must be maintained**

   International harmonisation is fundamental to the safe and efficient transport of radioactive material.

   Broad concepts such as usability, physical and psychological characteristics and reliable human action can be interpreted differently unless accompanied by clear and internationally agreed criteria. The absence of a harmonised methodology could lead applicants, technical support organisations and competent authorities in different Member States to reach different conclusions about what constitutes adequate consideration of human factors.

   This could create regulatory uncertainty without necessarily improving safety.

   Any future provisions should therefore have clear scope, internationally understood expectations and a consistent basis for implementation.

4. **The appropriate international framework should be used**

   Human factors are not unique to the transport of radioactive material.

   Where a human factors issue is common to the transport of dangerous goods more generally, WNTI considers that it should be considered within the wider international dangerous goods framework, including through the UN Subcommittee of Experts on the Transport of Dangerous Goods, rather than creating additional provisions applying only to Class 7 radioactive material.

   A Class 7-specific approach should only be adopted where there is a clearly demonstrated radioactive material specific safety issue that requires it.

   This is particularly important because unnecessary divergence between Class 7 and other dangerous goods requirements can add complexity to international transport and potentially contribute to barriers to shipment.

Avoiding unintended consequences

Although SSG-26 provides guidance rather than regulatory requirements, its recommendations can influence the expectations of competent authorities and applicants.

Introducing broad HFE provisions without agreed assessment criteria could therefore have practical consequences for package approvals and renewals. These could include additional documentation, divergent expectations between competent authorities and potential reconsideration of established package designs. The current proposal does not provide a clear approach for dealing with existing approvals.

WNTI believes additional regulatory or administrative burden should only be introduced where it is necessary, proportionate and supported by a demonstrable safety benefit.

WNTI's Ask

WNTI calls on the IAEA, TRANSSC and Member States to:

1. Not introduce the proposed explicit Human Factors Engineering provisions into SSG-26 at this stage.
2. First establish the safety need, including evidence of any gaps in the existing international framework and the contribution of those gaps to transport events.
3. Assess existing provisions within the IAEA safety framework before creating additional or potentially duplicative guidance.
4. Ensure that any future proposal is graded and risk-informed, reflecting the wide variation in package types and transport operations.
5. Develop internationally harmonised expectations and assessment criteria before introducing guidance that could influence package approval.
6. Consider human factors through the wider UN dangerous-goods framework where the issue is not specific to Class 7, avoiding unnecessary differences between radioactive material and other dangerous goods.

Conclusion

WNTI supports the effective consideration of human and organisational factors where they contribute to transport safety. The question is therefore not whether human factors matter, but how and where they should be addressed within the international regulatory framework.

For SSG-26, WNTI considers the proposed introduction of explicit HFE provisions to be premature. The immediate priority should be to establish the evidence for additional intervention, determine whether existing provisions adequately address the identified issues, and ensure that any future approach is proportionate, internationally harmonised and capable of delivering a demonstrable improvement in safety.

Good regulation should focus on outcomes: improving safety while maintaining clarity, proportionality and international consistency.

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