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Inland Transport Committee

Working Party on the Transport of Dangerous Goods

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Report on the 1st workshop on risk evaluation and assessment in the context of rail, road and inland waterways Transport of Dangerous Goods, 8 and 9 October 2013

Transmitted by the European Railway Agency (ERA)

Overview

The European Railway Agency (ERA) organized the 1st Workshop on Risk Evaluation and Assessment in the context of rail, road and inland waterways Transport of Dangerous Goods on 8 and 9 October 2013 in Valenciennes. Mr Emmanuel Ruffin, project officer in charge of transport of dangerous goods in ERA, chaired the meeting.

Several experts in the field of transport of dangerous goods, representatives of national administrations and the private sector, as well as of international organizations and the European Commission attended the workshop.

In total, 60 participants discussed the following items:

Risk assessment methods

Risk acceptance criteria

Use of risk assessment methods and acceptance criteria in decision-making processes

Data-bases and reporting systems enabling the use of risk-based decisions

Reconciliation of local and global safety levels objectives

Harmonized risk-based approach for all inland transport modes

A background document (Annex I) prepared by ERA and 14 presentations provided information to the audience on existing practices, on relevant EU legislation and related tasks of ERA. These documents are available here:

http://www.era.europa.eu/Document-Register/Pages/Presentations.aspx

Present report

The present report was drafted by the Agency and reviewed by the participants. It reflects the views expressed during the workshop and, where relevant, some conclusions from the meeting of the UNECE Joint Meeting Working Group on the multimodal database of transport of dangerous goods occurrences.

At the end of the workshop it was considered that the background document is covering the main key aspects of risk-based decision making and that the document could serve as a commonly agreed basis of information. This document is reported in annex.

In complement to the background document, key difficulties and potential solutions to the identified problems in using risk-based approach are listed in this report.

Both the background document reported in annex and the main workshop findings reported hereinafter should be considered as a common input to future work in the field of risk-based decision making for the transport of dangerous goods.

Main findings

Risk assessment method (models, calculations, experts…)

Issues:	***Potential solutions:***
Both qualitative and quantitative methods should be allowed	Different approach to assess the risks should be allowed including both qualitative or quantitative approaches, for example: - use of codes of practice, - comparison with a reference system, - explicit risk estimation Similar framework should be developed for all modes of transport

Lack of harmonized accident scenarios	There is a need to develop a common set of consequence scenarios on which harmonized assessments can be performed on the potential impact of loss of containment. The selection of scenarios to be evaluated should be justified by the risk analysis taking into account the local/global context and the potential hazardous impacts.
Contingency planning and rescue performance differs largely among countries; it has an impact on the estimation of the consequences.	In the justification of the selected scenarios there is need to take into account contingency planning. The correct estimation of the potential consequences (and of the risks) must take into account credible mitigating actions and the credible size of the loss of containment. The maximum physically possible scenario can also be a reference calculation which can however be far from the credible scenarios and their related impacts.
Lack of harmonized model(s)	There is a need to develop/complement mutually recognized detailed way(s) of calculating risks (consequences/probabilities), as well as a common set of methods/models. Once consequence scenarios have been defined, the detailed way to estimate the impact of the scenarios should be harmonized, the expected type of evaluation results should also been clarified, for example should the model calculate the size of the area exposed to a certain level of impact or the number of people exposed or the number of potential fatalities/injuries? A harmonized risk assessment method should clarify all these aspects and, in particular, which parameter should be used for which type of decision to be taken in relation with the applicable risk acceptance criteria.
Calibrating models	Using different models, the EU funded “Assurance” project demonstrated that risk estimations can vary significantly. It means that, for the results to be comparable, the use of different models in a harmonized risk-based decision framework would either require a calibration of the different models or using the same and unique model in the same way. It was reported that Netherlands has made mandatory the use of one model in risk assessment for elaborating decisions in the field of TDG. Maybe it is a way to follow at EU and international level to make risk-based decision mutually recognized.
Expertise is not always available to calculate risks correctly / Groups of experts often have several methodological approaches / it is difficult to have a common methodology accepted by all involved experts	Risk assessment experts needs to be carefully selected and trained. They shall also have no conflict of interest with the studied cases. A system of accreditation/certification could be developed (it has been developed in railways). This system would allow competent authorities to better rely on the results of the risk assessments performed by independent risk assessors even in the case competent authorities would not have all the necessary in-house competence to judge the quality of the provided results. The situation concerning the availability of the necessary expertise may differ from one category of stakeholder to another.

Uncertainties can be high in the calculation of both the estimation of consequences and probabilities	Uncertainties are certainly to be minimized as far as practicable with the help of harmonized practices and better input data. However it is also possible to take decision in uncertain environment as soon as the uncertainties and their potential impact on the decision are well identified and does not change the relevant decision (2^{nd} order influence in the decision taken).
Key success factor: ***As none of the currently existing models for calculating risks is directly applicable by other parties, every participant to an harmonization process should accept to change its current practice/rules in order to converge on mutually recognized data/methods/calculation tools.***	

Risk acceptance criteria

Issues:	***Potential solutions:***
Consistency of models calibration with the risk acceptance criteria.	Theoretically accurate models provide results which could directly be compared to values affected to risk acceptance criteria. However, as in practice there are quite large uncertainties in risk estimations models and data, it might be necessary to calibrate the models in order to be sure that their results can be assessed against established risk acceptance criteria.
Use of F/N curves, qualitative criteria	F/N curves could be used to assess the risks of the scenarios considered. However, these curves are not harmonized today. It should also be offered the possibility to use qualitative criteria.
Emotional perception of the risks is not always representative of the actual safety statistics	Better communication on the actual level of risks of all modes of transport should be promoted. An attempt to estimate EU risks levels in the carriage of dangerous goods is provided in the background document. Common risk acceptance criteria should be established on the basis of the actually achieved safety levels and improvement targets. The criteria and targets should be balanced for all modes of transport and should support the use of the less risky modes of transport. Transparency on actual safety level would facilitate the communication with the public.
Risk acceptance criteria are not used at all or not used in a harmonized way in risk-based decisions	A study on the feasibility to develop risk acceptance criteria has been launched by the European Commission. The results of this study should be considered as an input to future discussions/developments.
Key success factor: ***Better communication towards the public on continuous safety improvements in the field of transport of dangerous goods is necessary. Perception and emotional reaction cannot be the basis of a stable and robust policy on Transport of Dangerous Goods risk management.***	

Decision making

Issues:	***Potential solutions:***
Different objectives may require the use of different models and/or different types of risk acceptance criteria.	A harmonized framework should be able to take into account different decision type, with different objectives, for example: - maintaining the level of safety within established levels, - improving the safety levels toward agreed targets, - stating if a safety level is sufficient enough in order not to require further improvements.
Decisions on risk control measure are often obscure and complex to understand	A good decision framework should clearly show, with examples, how to use risk models in combination with risk acceptance criteria for different types of decision to be taken. The framework should be understandable by non-experts; the resulting decisions should be transparent and accessible to the concerned parties and the public.
Modes of transport have a different legal framework as regards risk acceptance criteria.	A harmonized decision making framework applicable to all modes of transport, assorted with the use of common risk acceptance criteria, seems necessary, to avoid uncontrolled risk shifting from one mode to another. The requirements in terms of risk assessment and evaluation should be the same for all transport modes, avoiding higher burdens on some of the modes. It would also facilitate the assessment of multimodal transport chain, which is nearly impossible today.
Decisions based on accidents probabilities and cost-benefit analysis are difficult to be communicated to the public	There is a common understanding that zero risk does not exist, therefore it would be useful for authorities to establish a harmonized risk level threshold in international laws below which it is commonly agreed that no additional risk reduction measure going beyond the agreed reference level can be requested.
Absence/lack of mutual recognition	A harmonized risk-based decision framework including common risk-acceptance criteria is the basis for the mutual recognition that a decision taken by a country/authority/company is acceptable for another country/authority/company.
Key success factor: ***Common understanding of risk-based decision's workflows, objectives, and criteria, as well as transparency of decisions, based on facts and risk-based approach.***	

Data Bases and Records

Issues:	***Potential solutions:***
Lack of harmonized input data suitable for risk calculation	In the future, access to general data on traffic could theoretically be obtained from statistical analysis of transport data conveyed in telematics applications. Before the telematics applications contribute to the data collection process

	some data are publicly available in already existing databases (e.g. Eurostat) with different levels of details following the considered mode of transport. A big effort must be given to the development of data collection and quality of data used in risk assessments.
Limited access to existing data / recognized analysis of data	Access to common interest statistics could be further developed but it should be based on clear and non-discriminating legal requirements. As soon as possible, a harmonized accident reporting system should be commonly used as recognized input to risk evaluation models The detailed analysis of the collected information will be a key step of any risk assessment. Therefore access to data and transparency of the analysis are important factors for recognizing the validity of the results provided by risk estimation tools.
To implement risk assessment based on probabilities, reliable figures are primarily necessary. The collection of reliable figures is a challenging task	A harmonized accident collection system is a major step in the process of defining probabilities. To be reliable the probabilities must be established on a sufficiently large number of events. Incidents and near misses contribute also the definition of robust probabilities, not only the catastrophic accidents. Therefore it is also necessary to consider non dangerous goods accidents in order to build reliable statistics and probabilities. *Note: on this aspect the ERA and UNECE secretariat agreed that a coordination of effort is necessary for further development of reporting databases on event involving transport of dangerous goods and general railway safety data-bases*.
Key success factor: ***Better reporting scheme and facilitated access to data is necessary. Data collected must be usable by risk models. Data concerning road transport shall contain the same level of details than railway data bases and should be accessible at the same level of details.***	

Reconciliation of local and global safety objectives

Issues:	***Potential solutions:***
The regulations governing the transport of dangerous goods are not perceived as sufficient to control the risks locally	The workshop was of the view that Seveso approach to the control of major hazards is not applicable to the transport modes and would not allow achieving a better control of risks related to the transport of dangerous goods. The main problem is that Seveso framework does not consider the transport activity as an entire system and thus cannot prevent unexpected impact of local decisions on the system. Risk shifting instead of risk reduction is one of the commonly agreed problems in using Seveso-based approach for transport activities. Clear examples were provided showing that some decisions (new rules) taken after accidents have had the impact to shift traffic and to increase the risks elsewhere instead of reducing the risk for citizens.

Applicable national rules are not always transparent and/or justified	It is noted that, while the Seveso directive does not apply to the transport modes, in many countries additional rules have been established following the approach of the Seveso directive. These additional rules needs to be transparent and should not contradict the international regulation on the transport of dangerous goods. It is also noted that, in principle, the international regulation already ensure the level of safety which is implicitly considered as sufficient by the States.
Different requirement levels in legislative frameworks	In the case of railways it is commonly agreed that the combination of RID and EU Railway Safety directive globally ensures a sufficient level of safety and that the Seveso directive is not adequate for managing the risks of transport of dangerous goods. Safety of road transport of dangerous goods is based on ADR regulation. General road safety improvement targets are part of the EU policy; however no targets are defined for the transport of dangerous goods by road. Road transport is also less affected by local safety decisions because the network is denser than for other inland transport modes. A way to solve the differences between modes in safety level requirements would be to establish a common risk management framework to all inland modes of transport with clear interface with local risk management requirements.
Nimby behavior/ individual interest/ societal interests	A clear, transparent and enforceable risk-based decision making framework applicable to the transport of dangerous goods and coordinated with the framework applicable to establishments (Seveso) would facilitate balancing individual and societal interest.
Key success factor: ***Making consistent the decisions made at local and global level is achievable under the condition that both local and global decision makers accept to establish a framework which will balance in a transparent and agreed manner the individual risks and societal risk levels.*** ***Another success factor is to increase the level and the maturity of the communication towards the public on potential catastrophic events.***	

Harmonized risk-based approach for all transport modes

Issues:	***Potential solutions:***
The existing modes of transport differ substantially, their current legal framework also differ from the major hazards management framework	The establishment of a harmonized risk management framework shall provide for high level principles and requirements concerning the way decisions makers establish the risk control measures. There must be a mutual recognition of the transports and Seveso-based decision framework with clear responsibility delimitations. It must be recognized and applied by all concerned actors.
"It is so complex that it will be impossible to develop such harmonized framework"	A step by step approach must be taken; sending human on the moon was not achieved the next day. A clear roadmap must be established and a strong coordination of the work is necessary. On that basis every concerned actors can bring in its experience

	and prepare for the future change towards a harmonized framework. It is also noted that some 'global companies' have been able to define and use risk management models on a worldwide scope for all transport modes. Even if challenging, the development of a harmonized framework is seen by the participants as the desirable future for solving many of the problems discussed during the two-days.
Key success factor: ***A clear roadmap and a strong/scientific coordination of the efforts. The involvement of all interested parties.***	

Conclusions

There was a general agreement that the discussions initiated in the workshop should continue in the future with the objective to gradually harmonize the risk evaluation, assessment and decision-making methods for the control of the risks related to the use and the inland transport of dangerous substances.

It was a common view that the set-up of a working group comprising representatives of all modes of transport and of establishments using/producing dangerous substances would be a necessary step for future discussions. This new group should have the objective to draft the definition of a harmonized risk-based decision-making framework and to take into account local and societal interests in the control of these risks.

Finally, the participants thanked the European Railway Agency for having organized this first workshop and agreed that it should continue organizing future discussions. The workshop asked the Agency to draft a roadmap towards the desirable decision-making framework taking into account the conclusions of the workshop.

Annex – Background document

http://www.era.europa.eu/Document-Register/Documents/Background%20discussion%20document.pdf