

RECOMMENDATION

of the Team for implementation of the action plan for improvement of the approach to risk-based safety management

on formulation of hazards and their origins in the hazard record

Date of issue

9 December 2022

The Recommendation is addressed to

Proposers within the meaning of Article 3(11) of Regulation 402/2013¹.

Content of the Recommendation²

The hazards in the hazard record must be formulated as a description of the condition that could lead to an accident, in compliance with Article 3(13) of Regulation 402/2013. The description of a condition that may lead to an accident should be understood as a description of a specific situation or specific factual circumstances the occurrence of which may lead to an accident. The origins of hazards must be always identified in the hazard record. Hazard origins should be formulated in such a way as to enable safety measures to be defined, implemented and monitored.

Related regulations

Article 3(13) and (16) as well as Point 4.1.2 of Annex I to Regulation 402/2013.

Issue description

The experience of the members of the Team shows that proposers often formulate the hazards improperly.

The method of formulating hazards and their origins is very important in the risk management process. Only properly formulated hazards and, thus, properly described origins thereof make planning appropriate and adequate safety measures possible. In addition, incorrectly describing hazards can lead to unnecessary complexity in the risk management process. The hazards should be formulated in such a way that the hazard is presented not only as the effects or origins of hazards which should be identified for each individual hazard. It is important that one hazard may have several potential origins, e.g., the origins of the hazard "lack of knowledge of equipment operation by

¹ Commission Implementing Regulation (EU) No 402/2013 of 30 April 2013 on the common safety method for risk evaluation and assessment and repealing Regulation (EC) No 352/2009 (O.J. EU L 121 of 03.05.2013, p. 8, as amended).

² This Recommendation applies to management of risk for railway traffic safety only. It does not apply to management of any other types of risk that may exist in railway transport operations (information security hazards, environmental hazards, etc.).

competent personnel" may be not only "training ineffectiveness" but also "failure to ensure the distribution of proper technical and operational documentation", or "errors in technical and operational documentation". However, it must be noted that, in compliance with Point 4 of Annex I to Regulation 402/2013, hazards must be managed. Proper description of hazards and identification of their origins makes it possible to aggregate seemingly different hazards, for example, in a situation where the same hazard - due to its focus on different causes - appeared in the hazard record multiple times. A lower number of hazards and higher level of their clarity contribute to a better understanding of the problem and more effective risk management. It should be considered whether in the case of identifying a "new hazard" we have not identified a new source to the hazard already entered in the hazard record.

For the proper management of hazards, it is necessary to also precisely indicate the actor(s) in charge of controlling each hazard, while remembering about the principle of not going beyond the domain of operation (control) of the given actor. However, it should be underlined that in certain specific cases - for example, when the origins of hazards lie in different areas and are controlled by different actors - it may be reasonable to include this in the hazard record adequately.

According to Article 3(13) of Regulation 402/2013, "hazard" is to be understood as a condition that could lead to an accident. The description of a condition that may lead to an accident should be understood as a description of a specific situation or specific factual circumstances the occurrence of which may lead to an accident.

Errors in the formulation of hazards most often come down to:

- 1) overly general formulation of hazards or their excessive fragmentation;
- 2) description of the process, not the state;
- 3) description of the accident (result of materialisation of the hazard);
- 4) inadequate description of the source of the hazard.

Re. 1 The hazard should be formulated in such a way that it is possible to effectively manage it (implementation of adequate safety measures that actually reduce the risk). At the same time, an unjustified breakdown of hazards (representing one hazard as multiple hazards described at a higher level of detail) should be avoided. This may lead to an underestimation of the level of risk associated with the given hazard. At the same time, the level of detail in the description of hazards may vary in relation to one change³.

Re. 2 This error consists in describing the process (sequence of events) that may lead to the materialization of the hazard.

Re. 3 This error consists in describing the accident that is the consequence of the hazard. This is, for example, the indication of "passenger falling off the train", and not, for example, "not closing the train door during travel".

³ For more information, see:

https://www.era.europa.eu/sites/default/files/activities/docs/guide_for_application_of_cms_en.pdf, p. 36 et seq.

Re. 4 This error consists in the failure to identify the real sources of the hazard which, in turn, may lead to determination of inadequate safety measures. Overly general definition of the sources of hazards (e.g. using the term "external factors") does not allow for identification of safety measures that will be actually effective and will allow to maintain an acceptable level of risk for the given hazard. In addition, cases are identified when entities register a hazard as the origin of this hazard, and the source as the hazard. Such an approach may lead to drawing incorrect conclusions from the risk assessment process and, consequently, to incorrect decisions in the risk management process.

For defined hazards, the potential effects of their materialization should be determined, e.g.: "derailment", "train collision", "fire".

If the proposer maintains one common hazard record to manage hazards that are also controlled by other management systems in place (e.g. quality management system, information security management system), safety-related hazards should be clearly identified. This criterion should be the leading one, i.e. if a given hazard can be treated as related to safety and, at the same time, to another management system (e.g. unauthorized access to the control - a hazard within the security management system and, at the same time, the information security management system), it should still be considered as relating to safety. The introduction of such a breakdown makes it easier to determine which requirements will apply to the management of given hazards and the subsequent monitoring of related control measures.

In summary, the origins of a given hazard are "guidelines" for the adequate assignment of security measures to mitigate the risk associated with that hazard. If the frequency of occurrence of a given hazard in the given unit of time decreases or increases, it means that the assigned safety measures are effective or not, respectively. The effectiveness of the safety measures will be determined in the process of their monitoring.

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