Report of the  
Federal Railway Authority

pursuant to Article 18 of the Directive   
on safety on the Community’s railways   
(Directive 2004/49/EC, ‘Railway Safety Directive’)  
on activities as the safety authority.



Competence and responsibility

**Reporting year 2016**

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# Introduction

The Federal Railway Authority (*Eisenbahn-Bundesamt*, EBA) is the safety authority for the railways in Germany and is responsible for carrying out the duties specified under Article 16 of Directive 2004/49/EC (the ‘Railway Safety Directive’):

* granting authorisations for the placing in service of structural subsystems in accordance with the directive on the interoperability of the rail system within the Community (2008/57/EC),
* supervising compliance with the essential requirements for operation and maintenance of the subsystems of the railway system and for interoperability constituents,
* granting authorisations for the placing in service of vehicles that are not yet covered by a TSI,
* issuing safety certificates for railway undertakings and safety authorisations for infrastructure managers,
* monitoring and developing the railway safety regulatory framework, including the system of national safety rules,
* registration of vehicles in the national vehicle register.

In addition, the EBA performs other tasks such as planning the federal railways’ operating facilities, awarding federal grants for investments in rail infrastructure, work in the field of dangerous goods, coordinating research, and acting as the implementation body of European passenger rights in bus and rail transport and shipping. The Federal Ministry for Transport and Digital Infrastructure (BMVI) is in charge of supervising technical and legal matters.

In accordance with Article 18 of the Railway Safety Directive, this report is limited to the EBA’s activities as a safety authority, in particular the development of:

* railway safety, including the common safety indicators (CSIs),
* the legal framework in the field of railway safety,
* safety certifications and safety authorisations, and
* the knowledge obtained from the supervision of railway undertakings.

The report is structured as recommended by the European Union Agency for Railways (ERA). Its target audience is primarily the rail sector in Germany and Europe, though it is also aimed at politicians, representatives of business and the press from other sectors, and interested members of the general public.

# Safety balance sheet and strategy

## Main conclusions for the reporting year

The high safety standards of rail transport in Germany are still ensured. This is also supported by the development of accident figures with consideration to rising transport performance and experience on safety-related defects from supervision. The EBA did not identify any fundamental structural deficits in the course of its supervisory work. As in previous years, it could be observed that the organisational requirements under EU law are highly demanding in particular for smaller railway operators. The high rate of defects observed in cross-border freight transport dropped in the year 2016. As a result, the Federal Railway Authority will largely maintain its strategy as regards the form and intensity of railway supervision.

The severe railway accident of Bad Aibling and certain other occurrences show that humans and their actions in the railway system as a factor have to be given more attention. The high number of cases involving signals passed at danger is also such a human factor. The Federal Railway Authority launched activities in the reporting year related to these, which should have an impact in the following years. The following sections contain more detailed information about this aspect.

## National safety strategies, programmes and initiatives

The following programmes were carried out in 2016, some extending over several years:

* programme of replacement of old safety technology at level crossings for the purposes of harmonisation with the current regulatory framework;
* Special programme to equip track stretches with intermittent automatic train control based on the amended requirements of the Railway Construction and Operation Order (*Eisenbahn-Bau- und Betriebsordnung*, EBO);
* programme for the complete assessment of all drainage systems and developing a draft inspection and maintenance plan for these systems;
* programme of measures for increasing the confidence of actions performed by the staff in the area of infrastructure (for more details see also B.3);
* concept for the lighting of shunting yard stations and storage sidings in accordance with workplace regulations;
* programme for the inspection and completion of the minimally required documentation for certain constructions;
* retrofitting of safety lighting systems as a hazard control measure at passenger stations with a high volume of passengers.

These programmes are largely implemented by the railways and monitored by the EBA via various procedures.

## Assessment of the reporting year

In 2016 there was a serious railway accident at Bad Aibling in which two passenger trains collided. Based on the circumstances, this accident can be considered an exceptional occurrence. However, the accident is related to further occurrences, which show anomalies concerning the confidence of actions performed by staff at infrastructure operators. For this reason, the Federal Railway Authority agreed on a comprehensive programme of measures with DB Netz AG, the biggest infrastructure operator. Important elements of this are related to the procedure of approving train movements without a main signal, the supervision of the performance of duties by control centre personnel, and also their training oriented towards risks and practical duties. The implementation of these measures should be concluded in the following years.

Due to the increasing number of signals passed at danger observed in the previous reporting year, the Federal Railway Authority assessed the approach and options for exerting influence of the biggest railway infrastructure manager in a targeted audit and acquired its technical evaluation of the increasingly frequent occurrences. This showed that infrastructural factors are rarely the cause of these occurrences. At the same time, the infrastructure operator investigates the occurrences very closely in cases where its own liability could potentially arise. The Federal Railway Authority therefore decided in 2016 to intensify its preventive supervision of how railway undertakings process halt signals passed at danger and what measures are taken by the management of these undertakings. This is intended to reverse the rising trend in the number of cases in the following years. This is aimed at supervising such and implementing the programme accordingly.

In addition, the EBA focused its supervision on the following points, some of which had already constituted focal points in previous years:

* enhanced supervision of consignments of dangerous goods originating from foreign countries by way of joint controls by employees from operational monitoring and from dangerous goods monitoring, since trains coming from foreign countries have a higher ratio of problems;
* targeted controls in the field of technical occupational safety as regards the safety plans of construction sites due to regionally different defect rates;
* focussing on the responsibility of the top management for the development of the SMS, the intentional and correct use of safety goals as an instrument, and the everyday supervision by the management on all levels;
* Controlling the existence and adaptation of industry regulations at the railway undertakings for performing operations based on the migration of operational regulations concerning railway undertakings at the end of 2015 from the infrastructure operator in accordance with the TSI 'Railway operations and control' (Verkehrsbetrieb und Verkehrssteuerung) of 2015;
* controlling whether there is suitable awareness at the railway undertakings of the importance of the appropriate training of train drivers, and of the evaluation of train movements as an instrument of supervision of the work of train drivers by the management of the railway undertaking;
* signals passed at danger due to the higher number of cases in 2015, with an emphasis on infrastructural factors;
* supervision of the implementation of the special programme to equip track stretches with intermittent automatic train control based on the amended requirements of the Railway Construction and Operation Code (*Eisenbahn-Bau- und Betriebsordnung* – EBO);
* supervision of the correct implementation of Directive  819.1701-1703 (Planning and installing control and safety equipment – Basics; here: Changes and amendments in accordance with the first update of the directive effective as of 1 December 2015);
* supervision of the implementation of the functional testing of catenary equipment.

When safety-related defects were identified, the EBA issued directives as necessary for the proper maintenance of track equipment and rolling stock, and for the safe running of operations. In addition, bilateral meetings are held at management level to discuss and agree on measures for resolving shortcomings. The EBA regularly monitors the implementation of its directives and the elimination of shortcomings. The focus on shortcomings related to the documentation of equipment data remains, track-related concepts for the elimination of shortcomings are being implemented.

The EBA conducted altogether around 12 270 checks at railway undertakings and infrastructure managers in 2016. These include on-site inspections and process audits. Furthermore, approximately 12 300 checks were carried out in the dangerous goods sector, focusing not only on the railways, but also on other providers such as forwarding agents, loaders or fillers. The rate of objections raised in relation to the checks in the dangerous goods sector was 7.4% overall (9.2% in the previous year), and specifically 11.2% in the case of cross-border transport (15.4% in the previous year).

For carrying out the supervision of railway undertakings and infrastructure managers, there are guidelines whereby the EBA implements the criteria of supervision under Commission Regulation (EU) No 1077/2012 on a common safety method for supervision.

## Priority areas for 2017

In addition to the previous priority areas, the majority of which will continue to be core elements of monitoring, the following topics can be mentioned in 2017:

* Developing equivalent conicity on vehicles by regularly measuring running surface parameters in order to take into account the prevention of wear and tear adjusted to the condition of the infrastructure;
* Quality-oriented selection of service providers for training and further training;
* Signals passed at danger with particular focus on the appropriate processing of signals passed at danger, and measures taken by the management of the railway undertakings;
* Regulations on working time and rest periods of railway employees in accordance with Section 47 paragraph 6 of the Railway Construction and Operation Code (EBO);
* Taking into account the recognised rules of the train drivers' route knowledge;
* Maintenance of deep drainage;
* Traceability of the scheduling of inspection orders in relation to infrastructure by improving and developing existing IT databases for the management and implementation of maintenance procedures;
* Stability of signals;
* Calculations of interference caused by traction currents;
* Closing times and approaching times of protective devices at level crossings.

# Development in the safety sector

## In-depth analysis of the trends noted in the recent past

The trend analysis relates to the categories of Common Safety Indicators (CSIs) listed in the Directive on safety on the Community’s railways (Directive 2004/49/EC).

Accident victims

The number of people seriously injured in railway accidents stood at 145 in 2016, higher than the level of the previous year (118 people seriously injured), and also above the average level for previous years. The number of train kilometres travelled rose slightly, however less significantly than the number of accidents. Accordingly, the number of seriously injured persons for train kilometres travelled is above the previous year at 0.136 seriously injured persons per one million train kilometres. The number of passengers seriously injured was up on the previous year, from 16 to 33. The main reason for this rise is the singleoccurrence of the serious rail accident at Bad Aibling, in which 27 passengers suffered serious injuries.[[1]](#footnote-1)1 The percentage of level crossing users or trespassers or others in the total amount of all people seriously injured decreased slightly as a result, and is now almost 70%. The number of seriously injured users of level crossings dropped slightly following a significant rise in the previous year. The number of persons seriously injured in railway accidents in each other group rose slightly.

The number of people killed in railway accidents rose from 130 in 2015 to 150 in 2016. Relative to train-kilometres travelled, this represents a significant rise, from 0.125 to 0.141 fatalities per million train-kilometres. Similarly to the case in previous years, around 85% of all deaths are attributable to the categories ‘level crossing users’ and ‘trespassers on railway premises’. Two thirds of the total fatalities are trespassers on railway premises, which after the significant decrease in the previous years represents a significant rise in both relative and absolute terms. In contrast, the number of fatalities in the category 'users of level crossings' decreased again. Seven passengers were killed in railway accidents in 2016, all of them in the accident at Bad Aibling.

Significant accidents[[2]](#footnote-2)

In 2016 a total of 310 significant railway accidents occurred on the rail network in Germany within the Safety Directive’s scope, which represents a slight rise against the previous year. This means that the average for the period 2007 to 2015 is slightly exceeded. Due to the rise of transport performance in the same period, only a marginal change can be observed relative to train kilometres. A detailed examination reveals that the increase observed mainly relates to the accident type ‘accidents with personal injury’ (+ 26 occurrences); this category already showed the most significant fluctuations in previous years. Also vehicle fires and other accidents were slightly more frequent, while derailments, accidents at level crossings and collisions occurred less frequently. Positive: Both derailments and accidents at level crossings show the lowest values since the recording of safety indicators began under Directive 2004/49/EC. The total of 29 collisions can be subdivided into two collisions of trains with a railway vehicle and 27 collisions of trains with an obstruction within the clearance gauge.

Accident precursors

The following precursors of accidents could be recorded in relation to safety indicators: broken rails, track buckles, signalling errors and signals passed at danger. The number of rail breakages rose slightly, but is still significantly under the average of many years at 292. The number of track buckles decreased significantly to only 15 occurrences. As in previous years, there were no signalling errors. As for the number of signals passed at danger, following the significant increase in 2014 (+25%) and the stagnation in the previous year, the number of occurrences rose further. The Federal Railway Authority will continue to closely focus on this issue; for measures please see sections B.3 and B.4.

Accident costs

Details of the economic consequences of accidents have also been included since 2010. Thus, in accordance with the requirements introduced under Directive 2009/149/EC, details are provided of the material and environmental damage and a calculation of the costs resulting from delays and the costs and societal losses resulting from victims of accidents. The base values used in the calculations were derived from the results of the ‘HEATCO’ Project that were recommended by the European Union Agency for Railways (an EU-sponsored project to work out principles for the economic evaluation of infrastructure projects; for further details, see [http://heatco.ier.uni-stuttgart.de](http://heatco.ier.uni-stuttgart.de/)). In accordance with this method of calculation, when deaths and severe injuries from railway accidents increase, there is also a rise in accident costs. For 2016, accident costs amounting to EUR 492 million were established. This total can be broken down as follows: EUR 429 million of ‘societal losses’ arising from accident victims; EUR 51 million of material and environmental damage; and EUR 12 million of costs due to accident-related delays. The costs due to accident-related delays have been significantly lower than the previous years since 2015, because delays caused by suicides have been separated out since then and have not been taken into account for the purposes of calculating the accident costs.

[**Annex A**](#_ANNEX_A:_Common) of this report contains the safety indicators.

## Results of the safety recommendations of the Federal Railway Accident Investigation Office (EUB) (Eisenbahn- Unfalluntersuchungsstelle des Bundes) [since 14 July 2017 Bundesstelle für Eisenbahnunfalluntersuchung (BEU)]

Table 1: Safety recommendations 2016

|  |  |  |  |
| --- | --- | --- | --- |
| Safety recommendation | | Safety measure | Implementation status |
| Occurrence: Vehicle fire at Wilhelmshaven on 25 April 2015 | | | |
| 1. | Aimed at the engine manufacturer:  Stipulating the use of non-flammable and wear-resistant material for the diesel leakage pipe and defining a maximum length of use.  Performing fire-prevention measures on the turbo charger and the exhaust pipe.  Performing the constructive adjustment of the fuel return system. | Even before the safety recommendation was announced, the EBA investigated this issue, also at the engine manufacturer. The EBA evaluated an expert opinion available on the issue. In the light of information available in relation that the contents of the safety recommendation cannot be directly implemented, or only with disproportionate costs/effort, while the cause of the vehicle fires can be prevented relatively easily by a timely replacement of the fuel leakage pipe. All owners of vehicles, which were equipped with the affected engine were informed about the issue. | The monitoring by the EBA of measures taken by the owners of affected vehicles based on the information note is planned for 2017.  The procedure has not yet been concluded. |
| 2. | Directed at railway undertakings:  Retrofitting of fire detectors with automatic engine cut-off in all diesel traction units of the type LINT | See 1. | The measure has not been implemented. The procedure has been closed. |

Table 2: Safety recommendations from previous years where changes have occurred in the reporting year

|  |  |  |  |
| --- | --- | --- | --- |
| Safety recommendation | | Safety measure | Implementation status |
| Occurrence: Train collision in Mannheim Central Station on 1 August 2014 | | | |
| 1. | Continuously strengthening the awareness and competence of traction vehicle crews when dealing with PZB (intermittent automatic train control) emergency braking of any kind by targeted training measures. | No change compared to the previous year. | The topic was addressed preventively by the majority of railway undertakings in audits. Operative personnel showed greater sensitivity for correct action during interviews.  The evaluation of train movement data as a valuable instrument of railway undertakings for the supervision of train drivers was also addressed more closely. The undertakings can use this to check whether correct actions are taken during train movements.  The safety recommendation can therefore be considered to be implemented. |
| Occurrence: Train derailments at Stuttgart Central Station on 24 July 2012 and 29 September 2012 | | | |
| 2. | Further investigations regarding the general examination of the unrestricted suitability of the type of buffer to long passenger coaches that are propelled with particular consideration of the twisting forces that occur and all possible conditions on the network. Should it not be possible to carry out this verification, it is recommended that this type of buffer should no longer be used on long passenger coaches that are propelled. | Taking the physical resilience of vehicle parts in consideration also depends on the impact of the characteristics of the network. The experience of the EBA was therefore also submitted to the working group of the EU's railway agency for the TSI 'Railway operations and control' (Verkehrsbetrieb und Verkehrssteuerung). The infrastructure register will be of greater significance in this context in the future. | The procedure has not yet been concluded. |

## Measures implemented without reference to safety recommendations

To comply with the statutory railway-related provisions in individual cases, the Federal Railway Authority carried out administrative proceedings also in 2016 aimed at organisational or technical/operational improvement in the undertakings’ safety organisation. The EBA also published technical notices on various cases. These are permanently available for download from the internet: <https://www.eba.bund.de/SiteGlobals/Forms/Suche/Expertensuche/FM_Expertensuche_Formular.html>

# Supervision

## Strategy and plan(s)

The EBA regularly monitors railway undertakings and infrastructure managers, and of the bodies responsible for the maintenance of other types of vehicles such as freight wagons. The monitoring is aimed at gathering information on

* the effectiveness of the safety management system and
* discharging safety responsibilities in railway operations, and also
* compliance with legal regulations on railways and
* generally accepted technical standards.

To this end, the EBA conducts audits and inspections and also uses information from other sources, such as for example the Federal Railway Accident Investigation Office. The EBA’s supervision work serves the purpose of maintaining the existing safety level within the scope of its legal responsibilities. The circle of undertakings concerned is permanently recorded, based on the legal requirements. The undertakings are informed of the scope and scheduling of the supervision, but unannounced inspections also make up a significant element of the supervision.

On the basis of Regulation (EU) No 1077/2012 on a common safety method for supervision by NSAs and of general administrative law, the EBA configures its supervisory procedures in accordance with the following basic criteria:

* proportionality,
* consistency,
* fitness for purpose,
* transparency,
* accountability and
* cooperation.

The supervision comprises systematic checking whether the railways consistently comply with the requirements that apply for the granting of a safety certificate or safety authorisation – defined in Annex II of Regulations (EU) No 1158/2010 for railway undertakings and, as applicable, 1169/2010 for infrastructure managers. The EBA continues to check whether the undertaking's processes and procedures contributing to a process of continuous improvement are being continued, if necessary, and whether the railways are applying the provisions of Regulation (EU) No 1078/2012 on a common safety method for internal monitoring to be applied by railway undertakings.

Supervision in the field of vehicles, operations and dangerous goods focuses on the provision of safe railway transport services on a permanent way safely operated for this purpose. The focus here is on safe organisation of the business activities of the railway undertakings and infrastructure undertakings in railway operations and technical matters, and also compliance with the general or special legal obligations of the undertakings. The strategy of preventive supervision by process audits of the maturity of the safety management systems, and of the supervision of the undertakings’ ‘safe journey’ product by product audits or inspections is now established as a result of the approaches introduced. In this context, it is evident in the case of many undertakings that a functioning safety management regulates itself, in the event that deviations from the targets set occur, with the aid of a corresponding control loop model.

The EBA also monitors permanent way operators based on the undertakings. The monitoring focuses on the fields of system installation, maintenance of systems and operations; generally, the general method of working and implementation of the safety management systems is checked. For this purpose, the EBA conducts process and object-related supervision and special supervision over the infrastructure managers. By these means, random checks are carried out as to whether the undertakings are in practice implementing the safety-related processes in a manner compliant with the requirements and whether, during the use of the approved systems, they are also complying with the General Railway Act [*Allgemeine Eisenbahngesetz*] (AEG) and the legal regulations based on it, and the recognised codes of engineering practice. A significant cornerstone of railway supervision is also the verification of the fulfilment of the railway safety obligations that are established in Section 4 paragraph 3 AEG. The principles are further specified in the Administrative Regulation on monitoring the installation and maintenance of systems. The Administrative Regulation is available via the following link: <https://www.eba.bund.de/DE/RechtRegelwerk/Verwaltungsvorschriften/VVEA/vvea_node.html>

The Federal Railway Authority monitors the undertakings mostly randomly. The random sample is established by the EBA at its own discretion in order to guarantee that a representative cross section is monitored. In doing so, the EBA proceeds in a risk-oriented manner, i.e. taking into account the respective potential for danger in the technical fields of infrastructure, rolling stock and operations. In all fields, there are annual/multi-year plans for supervising the railways; these are regularly reviewed and, if necessary, revised on the basis of the results of the ongoing supervision. Announced and unannounced supervision measures take place on the basis of the plans. The aim is to inspect every undertaking, irrespective of size, at least once a year in the form of a process audit. Larger railway undertakings and infrastructure managers are monitored more often, on a differential basis according to region. The specialists at Head Office establish the requirements for the supervision plans and regularly liaise on this with the divisions of the EBA external offices. If there are findings arising from dangerous occurrences or if there is a suspicion of systematic defects, the EBA conducts special and focused checks under certain circumstances. The results of the supervisory measures are recorded in special databases and are then available as the basis of evaluations, for setting future focuses, for adaptations of the supervision plans and for recertifications of the undertakings.

## Staff

A total of approximately 250 EBA employees are engaged in activities in the supervisory field.

## Skills

The sections of the EBA responsible for personnel and organisation implement skills management in cooperation with the respective specialist offices of the EBA. The components are as follows:

* Defining requirements

Job descriptions contain both necessary expert skills and general qualifications such as interpersonal or methodological skills. The EBA regularly revises service pose descriptions and professional profiles.

* Establishing fulfilment of requirements

When a new person is appointed, their skills are checked by way of a structured thematic interview and possible role plays. For higher grades, a potential analysis may additionally be used in order to establish potential specifically in terms of interdisciplinary skills. Special induction courses given by the respective specialist departments prepare new employees for their future activity.

* Continuing further training

The training needs of each employee and each organisational unit are established once a year. The EBA Further Training Office organises targeted coverage of these needs. Furthermore, there are training officers in the specialist departments, who liaise closely with the Further Training Office and hold specialist training courses annually, to keep the knowledge specific to a specialist area up to date. Every year, around 250 further training courses are held. The trend is rising. E-learning programmes are also offered, e.g. for the subject areas of occupational safety – in the office and on the track.

* Quality assurance in further training

At the end of each further training course, there is an anonymous evaluation sheet which can be completed. The Further Training Office evaluates these and passes them on to the respective event organisers. This makes it possible to constantly improve the targeted offer of available trainings.

* In-house training

The EBA offers career-oriented training courses in high-level and senior technical grades, in up to five different subjects, depending on the future field of activity. Following on from their regular studies, new employees are offered the best possible preparation, initially for one or two years, primarily in relation to their technical tasks. By observation and training courses, they can profit from the knowledge and skills of the existing experienced staff. This ensures retention of specialist knowledge at the EBA and task-specific training of new entrants. Furthermore, depending on need, the EBA offers dual vocational courses in various disciplines, for example for employees specialising in office communication or administrative staff.

## Decision-making

The EBA’s decision-making regarding its supervision of railway undertakings and infrastructure managers is governed by the applicable statutory provisions, made specific in administrative regulations. The EBA takes into account the fundamental principles of EU Regulation 1077/2012, such as proportionality, consistency and transparency.

The EBA draws on the following sources to determine the criteria of its supervision:

* information from the evaluation of the safety management system,
* results of past supervisory work, especially supervision of railways,
* accident reports and recommendations of the Federal Railway Accident Investigation Office,
* other reports or data on accidents or disruption,
* railway safety reports,
* information from authorisations for placing in service,
* communications from national safety authorities from other Member States,
* information from the European Union Agency for Railways,
* reports and complaints from the public and
* other resources.

Those affected by the decisions of the EBA can lodge objections to them by way of administrative proceedings, and can bring an action before the administrative courts against a rejected objection.

The enforcement by the authorities of organisational improvements in the undertakings’ safety management systems has proved to be a challenge for the EBA. Specifically, the underlying administrative procedure must include enforceability of official instructions, but the undertaking’s freedom to select suitable organisational solutions runs counter to this.

## Co-ordination and co-operation

The EBA co-operates with national safety authorities of other countries. This includes information exchange and the possibility of co-ordinating aspects of supervision (primarily the monitoring of railway undertakings working across borders and in relation to rolling stock). In 2016, joint supervision operations were occasionally carried out with the supervision authorities of neighbouring countries (especially Belgium, Switzerland and the Netherlands). Contacts are also maintained to the safety authorities in the Czech Republic, Poland and Italy in relation to dangerous goods. For the Fehmarn Belt Fixed Link, a cross-border project between Denmark and Germany, as in previous years, agreements are regularly made on supervisory and authorisation procedures between the Danish safety authority and the EBA. The first public hearings have been held in relation to the conclusion of co-operation agreements with the authorities of neighbouring countries, as envisaged in EU Directive 1077/2012. The aim is to achieve better coordination in the supervision of railway undertakings active in cross-border transport.

## Lessons learned from measures adopted

Both the supervision strategy and the measures adopted under it have proved to be fundamentally successful. With regard to internal measures, the measures to increase the use of databases have which particularly intensified in recent years proved to be an effective and valuable support for the proper supervision of railways. Focussed checks and the discussion of all technical topics with the affected railways, which particularly rely on new information and accumulated experience, are a suitable means to increase awareness for monitored topics at the railway undertakings.

# Safety certification and authorisation

## Guidelines

Those applying for safety certificates A/B can still rely on a guideline and related additional notes. The guideline has been in force unchanged since 24 August 2012. No updating was necessary in the reporting year. The guideline and notes are published on the EBA website. Link:

<https://www.eba.bund.de/DE/Themen/Eisenbahnunternehmen/SiBe/sibe_node.html>

Since 23 September 2009, the ‘Guideline on the Issue of Safety Authorisations’ (version 1.0) has applied to the granting of safety authorisations. This guideline is also available on the EBA website. Link:

[https://www.eba.bund.de/SharedDocs/Downloads/DE/Infrastruktur/SiGe/Leitfaden\_Si Ge\_23\_04\_2009.html](https://www.eba.bund.de/SharedDocs/Downloads/DE/Infrastruktur/SiGe/Leitfaden_SiGe_23_04_2009.html)

## Contacts with other national safety authorities

An increased cooperation with foreign safety authorities could be recorded in 2016, in particular on account of the re-certification of railway undertakings active cross-border transport. It would be desirable to have a unified cross-authority information system in the EU in the future for structured, clear and secure communication in such cases.

## Procedural aspects

No procedural anomalies can be reported for 2016. The differences in the processing of applications at individual undertakings are in every case caused by content-related aspects, or shortcomings of the application documentation or the procedure and processes themselves. As for safety authorisations, the situation can be presented as follows: On 31 December 2016, a total of six infrastructure managers held a safety authorisation under Section 7 Point c of the AEG and one infrastructure manager held a provisional safety authorisation pursuant to Section 38 paragraph 5 Point c of the AEG.

## Feedback

The general administrative procedure in Germany allows applicants the opportunity, after a decision (regarding grant, refusal, renewal, amendment or revocation of a safety certificate or authorisation), to lodge an objection or, in the further course of the proceedings, to file an action in the courts. Applicants also have the option of submitting observations at any time during the processing of their applications No such observations were received during 2016.

As railway undertakings present in the market for years have gone through certification repeatedly in the meanwhile, it can be observed in the actions of the undertakings that the procedures are well-established.

# Changes to statutes and regulations

## Railway Safety Directive

Directive 2004/49/EC on safety on the Community’s railways has been implemented into national law in Germany. The relevant legal acts implementing Directive 2004/49/EC were as follows:

* Fifth Act Amending the Statutory Provisions Governing Railways of 16 April 2007 (BGBl. I p. 522), containing:
* Amendment to the General Railway Act (AEG); and
* Amendment to the Federal Rail Traffic Management Act (BEVVG).
* Second Regulation on the Adoption and Amendment of the Statutory Provisions Governing Railways [Zweite Verordnung zum Erlass und zur Änderung eisenbahnrechtlicher Vorschriften] dated 5 July 2007 BGBl. I p. 1305), containing:
* Adoption of the Trans-European Railway Interoperability Regulation (TEIV),
* Adoption of the Railway Safety Regulation (ESiV),
* Adoption of the Railway Accident Investigation Regulation (EUV),
* Amendment to the Railway Operations Manager Regulation (EBV),
* Amendment to the Railway Operations Manager Examination Regulation (EBPV),
* Amendment to the Regulation on Access to the Occupation of Railway Entrepreneurs (EBZugV),
* Amendment to the Federal Railway Charges Regulation (BEGebv).

The same applies to the 2008, 2009 and 2014 amendments to this Directive, the implementation status of which appears in [Table 1 of Annex B.](#_Table_1:_Implementation)

## Changes in legislation and administrative regulations

[Table 2 of Annex B](#_Table_2:_Changes) contains all the amendments to the national legal framework relating to railway safety (legal acts and administrative regulations) that were made in the reporting year.

# The application of CSM to risk evaluation and assessment

## Experience of the safety authority

Commission Regulation (EC) No 352/2009 of 24 April 2009 on the adoption of a common safety method for risk evaluation and assessment, as referred to in Article 6(3)(a) of Directive 2004/49/EC of the European Parliament and of the Council, has had binding effect since 1 July 2012. This regulation was repealed as of 21 May 2015 and replaced by Regulation (EU) No 402/2013. The following areas already mentioned in the previous year show uncertainties from the point of view of the EBA:

* interpretation of the terms ‘change’ and ‘significance’, in particular assessment criteria for examining significance and relevance to safety;
* requirement for a reference system, possibly an explicit one, for risks identified in the simplified procedure.

Infrastructure

The federal railways usually applied their procedures for CSM risk evaluation and assessment in the reporting year and developed them further. The infrastructure managers submitted their documentations in relation to the application of the CSM procedure to the EBA for approval in individual cases, or as part of the construction of engineered structures, with consideration to stipulations such as exceptions and non-application in the case of insufficient significance.

The EBA does not perform a full review of all significance checks of the federal railways is not carried out, as a notification or submission obligation does not exist in all cases. As part of its supervision, the EBA rather monitors the application of the CSM risk assessment and evaluation by random sampling, including significance checks carried out.

Operations

It can also be noted generally that the criteria of ‘significance’ and ‘safety relevance,’ which are not specified more precisely in the CSM risk evaluation, leave the undertakings considerable leeway in their handling of the process. The Federal Railway Authority can also only intervene in rare cases to correct administrative action, because these two legal terms cannot be interpreted as they are not sufficiently unambiguous for enforcement. An example for this is the integration of new transport activities of an undertaking into the method including all possible scenarios for vehicle deployment, having them run on the network, and for operative duties during operation. Increasing practicability and confidence in actions e.g. by corresponding trainings for undertakings and the authorities should be in the focus of the activities of the European Union Agency for Railways in relation to CSM risk evaluation in the future.

Vehicle licensing

The situation has not changed as regards the licensing of vehicles. The framework is determined by the Administrative Regulation on Authorisation for Placing Railway Rolling Stock in Service (VV IBG), the guideline on CSM Risk Evaluation and Assessment and Rolling Stock Safety Regulations (SIRF). The VV IBG has annexes, which may serve as a template for the safety assessment report in accordance with the CSM. The procedure outlined therein is used for authorisations to place new vehicles in service and for notifications/authorisations for placing in service of modifications to existing vehicles. In addition to the use of the risk assessment when placing vehicles into service within the framework of the VV IBG, the ‘Sector Agreement MoU on Vehicle Licensing’ also stipulates the use of the CSM risk assessment when licensing vehicles. As a rule, the applicants submit the documents envisaged in the ‘MoU on Vehicle Licensing’ (result of safety assessment report and related declaration): for all significant changes, a risk management procedure must be applied and a declaration must be given that the result of the safety assessment report confirms that the relevant risks have been identified by all suitable methods and the implemented measures for verification sufficiently cover all risks arising from the significant change. Where Regulation (EU) No 402/2013 is applied, this is done in the proposer’s written declaration under Article 16 of that regulation.

Vehicle monitoring

The Federal Railway Authority focused specifically on the application of CSM risk assessment as part of the monitoring measures related to vehicles in the reporting year. Uncertainties still remain in this respect in relation to the correct procedure during the application of CSM 'Risk assessment'. A number of providers have not been able to underpin the fundamental duty to apply this by way of corresponding processes. As a result, these actors only applied the CSM and identified the necessity to incorporate it into their processes when asked to do so by the Federal Railway Authority.

## Feedback from providers

A formal feedback procedure has still not been introduced (e.g. use of questionnaires). The affected undertakings did not report to the EBA about any experience with the application of CSM for the evaluation and assessment of risks. A survey of the undertakings in the form of interviews still shows that they do not have a unified understanding of the method and its management.

## Revision of national safety regulations to take account of the Commission Regulation on CSM for risk evaluation and assessment

No special national safety regulations to take account of the Commission Regulation on CSM for risk evaluation and assessment have been enacted in Germany. This was not necessary. Instead, the current EU Regulation is being directly applied.

# Application of CSM monitoring

Regulation (EU) No 1078/2012 of 16 November 2012 on a common safety method for monitoring to be applied by railway undertakings, infrastructure managers after receiving a safety certificate or safety authorisation and by entities in charge of maintenance (‘CSM Monitoring’) entered into force on 7 June 2013. The regulation describes the requirements for the internal monitoring of the safety management system by the undertakings themselves.

Infrastructure

The EBA monitors the establishment and effectiveness of internal monitoring procedures which are generally a component of the SMS by, on the basis of random sampling,

* comparing the results of internal audits which the railway operations managers (EBL) carry out with the findings from the supervision activities of the EBA pursuant to Regulation (EU) No 1077/2012;
* participating in the railway operations managers' (EBL) audits at the bodies performing the maintenance.

As in the previous year, the findings of the EBA correspond to those of the EBLs in principle. Accordingly, there are no negative findings as regards the manner of functioning of the monitoring procedures of the EIUs.

As the internal monitoring procedure generally forms part of the SMS, a check also takes place on the basis of the criteria set out in Regulation (EU) No 1169/2011 in the context of the granting of the safety authorisation pursuant to Section 7(c) AEG. Where deficits are identified, the EBA reports these to the undertaking concerned in the context of the authorisation procedure. However, a complete substantive review of all processes does not take place, since the examination is generally limited to the existence of processes and, in certain cases, fundamental plausibility.

Rolling stock / Operations

Experience from monitoring shows that the application of this shared safety method still remains difficult for undertakings. First, this involves the technical integration of the method in relation to the SMS and its scheduling as individual tasks in the management. The undertakings require corresponding competence for this in order to abstractly handle managerial duties. Second, the appropriate consideration to and the regular work with the method also requires appropriate resources.

In the past, larger undertakings drew up action plans based on the method in relation to systematic issues. However, the actual resolution of shortcomings heavily relies on the actual processes of the SMS in planning, implementation and improvement. Accordingly, also in the implementation of the method the process is often shortened, as the undertakings are acting in a practice-oriented manner. A clear connection between CSM monitoring and the actual safety management system already at the level of EU regulations could help here.

# Exceptions to the ECM certification system

In the 2016 reporting year, the EBA has issued no exceptions pursuant to Article 14(a)(8) of Directive 2004/49/EC regarding the method for certifying the entity in charge of maintenance (ECM). Therefore, there was no need to lay down alternative measures.

### ANNEX A: Common Safety Indicators

Safety indicators in accordance with Annex I of the Railway Safety Directive (Directive 2004/49/EC)

1. Indicators relating to accidents
   1. Total number of significant accidents and average number of significant accidents (per million train-kilometres), broken down into the following types of accident

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | All types of accident | Collisions of trains with a rail vehicle | Collisions of trains with an obstacle within the clearance gauge | Train derailments | Level crossing accidents including accidents involving pedestrians | Accidents leading to personal injury involving a moving railway vehicle, excluding suicide and suicide attempts | Vehicle fires | Other accidents |
| Total | 310 | 2 | 27 | 3 | 50 | 183 | 6 | 39 |
| Average number | 0.291 | 0.002 | 0.025 | 0.003 | 0.047 | 0.172 | 0.006 | 0.037 |

Level crossing accidents including accidents involving pedestrians and average number of these accidents (per million train-kilometres), broken down into the following types of accident

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | passive level crossing  [6.2 a)] | active level crossing, manual  [6.2 b) i)] | actively protected level crossing, automatic with user-side warning  [6.2 b) ii)] | actively protected level crossing, automatic with user-side protection  [6.2 b) iii)] | actively protected level crossing with rail-side protection  (6.2 b) iv)] |
| Total | 9 | 0 | 15 | 24 | 2 |
| Average number | 0.008 | 0.000 | 0.014 | 0.023 | 0.002 |

* 1. Total number and average number (per million train-kilometres) of serious injuries and fatalities by type of accident, broken down into the following categories
     1. Seriously injured persons

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | All types of accident | Collisions of trains with a rail vehicle | Collisions of trains with an obstacle within the clearance gauge | Train derailments | Level crossing accidents including accidents involving pedestrians | Accidents leading to personal injury involving a moving railway vehicle, excluding suicide and suicide attempts | Vehicle fires | Other accidents |
| Total number of seriously injured persons | 145 | 27 | 1 | 0 | 36 | 78 | 0 | 3 |
| Average number of seriously injured persons | 0.136 | 0.025 | 0.001 | 0.000 | 0.034 | 0.073 | 0.000 | 0.003 |

Of which:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Passengers | 33 | 27 | 0 | 0 | 0 | 6 | 0 | 0 |
| Average number of seriously injured passengers | 0.031 | 0.025 | 0.000 | 0.000 | 0.000 | 0.006 | 0.000 | 0.000 |
| Average number of seriously injured passengers per billion passenger-kilometres | 0.352 | 0.288 | 0.000 | 0.000 | 0.000 | 0.064 | 0.000 | 0.000 |
| Average number of seriously injured passengers per million passenger train-kilometres | 0.041 | 0.034 | 0.000 | 0.000 | 0.000 | 0.007 | 0.000 | 0.000 |
| Employees or contractors | 13 | 0 | 1 | 0 | 2 | 7 | 0 | 3 |
| Average number of seriously injured employees, including contractors | 0.012 | 0.000 | 0.001 | 0.000 | 0.002 | 0.007 | 0.000 | 0.003 |
| Level crossing users | 34 | 0 | 0 | 0 | 34 | 0 | 0 | 0 |
| Average number of seriously injured level crossing users | 0.032 | 0.000 | 0.000 | 0.000 | 0.032 | 0.000 | 0.000 | 0.000 |
| Trespassers | 42 | 0 | 0 | 0 | 0 | 42 | 0 | 0 |
| Average number of seriously injured trespassers on railway premises | 0.039 | 0.000 | 0.000 | 0.000 | 0.000 | 0.039 | 0.000 | 0.000 |
| Other persons on platforms | 22 | 0 | 0 | 0 | 0 | 22 | 0 | 0 |
| Average number of seriously injured other persons on platforms | 0.021 | 0.000 | 0.000 | 0.000 | 0.000 | 0.021 | 0.000 | 0.000 |
| Other persons not on platforms | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Average number of seriously injured other persons not on platforms | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 |

* + 1. Casualties

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | All types of accident | Collisions of trains with a rail vehicle | Collisions of trains with an obstacle within the clearance gauge | Train derailments | Level crossing accidents including accidents involving pedestrians | Accidents leading to personal injury involving a moving railway vehicle, excluding suicide and suicide attempts | Vehicle fires | Other accidents |
| Total number of seriously injured persons | 150 | 11 | 0 | 0 | 28 | 111 | 0 | 0 |
| Average number of seriously injured persons | 0.141 | 0.010 | 0.000 | 0.000 | 0.026 | 0.104 | 0.000 | 0.000 |

Of which:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Passengers | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| Average number of passengers killed | 0.007 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Average number of passengers killed per billion passenger-kilometres | 0.075 | 0.075 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Average number of passengers killed per million passenger train-kilometres | 0.009 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Employees or contractors | 10 | 4 | 0 | 0 | 0 | 6 | 0 | 0 |
| Average number of employees, including contractors, killed | 0.009 | 0.004 | 0.000 | 0.000 | 0.000 | 0.006 | 0.000 | 0.000 |
| Level crossing users | 28 | 0 | 0 | 0 | 28 | 0 | 0 | 0 |
| Average number of level crossing users killed | 0.026 | 0.000 | 0.000 | 0.000 | 0.026 | 0.000 | 0.000 | 0.000 |
| Trespassers on railway premises | 101 | 0 | 0 | 0 | 0 | 101 | 0 | 0 |
| Average number of trespassers on railway premises killed | 0.095 | 0.000 | 0.000 | 0.000 | 0.000 | 0.095 | 0.000 | 0.000 |
| Other persons on platforms | 3 | 0 | 0 | 0 | 0 | 3 | 0 | 0 |
| Average number of other persons on platforms killed | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 |
| Other persons not on platforms | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Average number of other persons not on platforms killed | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 |

1. Indicators relating to dangerous goods

Total number and average number (per million train-kilometres) of accidents in relation to the transport of dangerous goods, broken down into the following categories

|  |  |  |
| --- | --- | --- |
|  | Accidents in which at least one rail vehicle carrying dangerous goods was involved | Accidents in which dangerous goods were released |
| Total | 1 | 3 |
| Average number | 0.001 | 0.003 |

1. Indicators relating to suicides

Total and average number (per million train-kilometres) of suicides

|  |  |  |
| --- | --- | --- |
|  | Suicides | Suicide attempts |
| Total | 798 | 91 |
| Average number | 0.748 | 0.085 |

1. Indicators relating to incidents and near misses

Total number and average number (per million train-kilometres) of incidents and near misses, broken down into the following categories

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | All incidents and near misses | Rail breakages (only EIU) | Buckled rails and other track layout failures (only EIU) | Signalling errors (only EIU) | Signals passed at danger with the danger point being reached | Signals passed at danger without the danger point being reached | Broken wheels | Axle and wheelset axle breakages |
| Total | 831 | 292 | 15 | 0 | 74 | 449 | 0 | 1 |
| Average number | 0.779 | 0.274 | 0.014 | 0.000 | 0.069 | 0.421 | 0.000 | 0.001 |

1. Indicators relating to the consequences of accidents

Total amount in EUR and total delay in minutes and average values (per million train-kilometres) for

|  |  |  |
| --- | --- | --- |
|  | Costs of damage to rolling stock and infrastructure | Costs of damage to the environment |
| Total costs | 50 775 982 | 49 000 |
| Average costs | 47 610.923 | 45.946 |

|  |  |  |
| --- | --- | --- |
|  | Minutes of delay in passenger transport | Minutes of delay in freight transport |
| Minutes of delay total | 94 708 | 189 305 |
| Minutes of delay average | 118.010 | 752.443 |

1. Indicators relating to technical safety of infrastructure and its implementation
   1. Train protection systems

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | warning | warning and automatic stopping | warning and automatic stopping and speed monitoring in sections | warning and automatic stopping and continuous speed monitoring |
| Percentage of lines with automatic train protection (EIUs only) | 1.6% | 1.7% | 88.5% | 8.0% |
| Percentage of train-kilometres travelled for which on-board train protection systems are used | 0.0% | 1.0% | 85.4% | 13.5% |

* 1. Number of level crossings (in total, per line kilometre and per track kilometre), broken down into the following five types (only for EIU):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | manual | automatic with user warning | automatic with user protection | with rail-side protection |
| Actively protected level crossings | 1 087 | 714 | 6 937 | 1 037 |
| Average number per line kilometre | 0.033 | 0.021 | 0.208 | 0.031 |
| Average number per track kilometre | 0.018 | 0.012 | 0.114 | 0.017 |

|  |  |
| --- | --- |
|  | Total |
| Passively protected level crossings | 4 279 |
| Average number per line kilometre | 0.128 |
| Average number per track kilometre | 0.071 |

\* The train-kilometres travelled using on-board train protection systems are available for only some of the railway undertakings. These undertakings together provide approximately 70% of train-kilometres.

### ANNEX B: Amended legal provisions

#### Table 1: Implementation of the amendments to Directive 2004/49/EC

|  |  |  |  |
| --- | --- | --- | --- |
| Implementation of the amendments to Directive 2004/49/EC | Implemented (Yes/No) | Main legislative act | Date of entry into force |
| Directive 2008/57/EC | Yes | Eighth Act Amending the Statutory Provisions Governing Railways of 12 September 2012 (BGBl. I p. 1421) | 18.09.2012 |
| Seventh Act Amending the Statutory Provisions Governing Railways of 10 December 2012 (BGBl. I p. 2632) | 20.12.2012 |
| Eighth Act Amending the Statutory Provisions Governing Railways of 22 November 2013 (BGBl. I p. 4008) | 29.11.2013 |
| Directive 2008/110/EC | Yes | Eighth Act Amending the Statutory Provisions Governing Railways of 12 September 2012 (BGBl. I p. 1421) | 18.09.2012 |
| Directive 2009/149/EC | Yes | Fifth Regulation on the Adoption and Amendment of the Statutory Provisions Governing Railways dated 29.04.2011 (BGBl. I p. 705) | 07.05.2011 |
| Directive 2014/88/EU | Yes | Ninth Regulation on the Amendment of the Statutory Provisions Governing Railways dated 19.11.2015 (BGBl. I p. 2105) | 01.01.2016 |

#### Table 2: Changes to the national legal framework during 2016

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Legal and administrative regulations | Provision | Date of entry into force | Description of the main change | Reasons for the change |
| Concerns national safety authority | Tenth Act Amending the Statutory Provisions Governing Railways of 12 May 2016 (BGBl. I, p. 1225) | 1 June 2016 | Federal rail tariff regulation (Bundeseisenbahngebührenverordnung; BEGebV):  Recognition by the EBA of Notified Bodies, Designated Bodies and Assessment Bodies.  Trans-European Railway  Interoperability Regulation (Transeuropäische- Eisenbahn-Interoperabilitätsverordnung, TEIV):   * + - * + Simplified licensing for placing into service on border sections for rolling stock with foreign license.         + Modification and/or comprehensive conversion and refurbishment. | Amendments necessary for the application of Directive 2008/57/EC and Regulation (EU) No 402/2013 |
| Concerns NoBo, DeBo, AsBo, third parties with regard to registration, examination etc. |
| Concerns railway undertakings / infrastructure managers / ECMs |
| Concerns railway undertakings / infrastructure managers / ECMs | Eleventh Act Amending the Statutory Provisions Governing Railways of 10 October 2016 (BGBl. I p. 2242) | 15 October 2016 | Railway Construction and Operation Code (*Eisenbahn-Bau- und*  *Betriebsordnung*, EBO):   * + - * + Stipulating obligations and regulations in working times and rest periods.         + Clarifying the term 'persons' (Personen).         + Lowering the minimum age for train drivers to 20 years.   Railway Superintendent Regulation (*Eisenbahnbetriebsleiterverordnung*, EBV):   * + - * + Recording obligations.   Train Driver Driving License Control Regulation (Triebfahrzeugführerschein-Prüfungsverordnung, TfPV)   * + - * + Separating the functions 'training' and 'testing'. | Exact definition of the obligations arising from Directive 2004/49/EC  Directive 2007/59/EC |

### ANNEX C – List of abbreviations

|  |  |
| --- | --- |
| AEG | General Railways Act [*Allgemeines Eisenbahngesetz*] |
| AsBo | Assessment Body |
| BEGebV | Regulation on Fees and Charges of the Federal Railway Administrations (Federal Railway Fees Regulation) [*Verordnung über die Gebühren und Auslagen der Eisenbahnverkehrsverwaltungen des Bundes (Bundeseisenbahngebührenverordnung)*] |
| BEVVG | Federal Rail Traffic Management Act (Federal Railway Administration Act) [*Gesetz über die*  *Eisenbahnverkehrsverwaltung des Bundes (Bundeseisenbahnverkehrsverwaltungsgesetz)]* |
| BGBl | Federal Gazette [*Bundesgesetzblatt]* |
| CSI | Common Safety Indicators |
| CSM | Common Safety Methods |
| DeBo | Designated Body |
| EBA | Federal Railway Authority [*Eisenbahn-Bundesamt*] |
| EBO | Railway Construction and Operation Code (Eisenbahn-Bau- und  Betriebsordnung) |
| EBPV | Regulation on the Examination for Railway Operations Managers [*Verordnung über die Prüfung zum Betriebsleiter für Eisenbahnen*] |
| EBV | Regulation on the Appointment, Confirmation, Tasks and Powers of Railway Operations Managers [*Verordnung über die Bestellung und Bestätigung sowie die Aufgaben und Befugnisse von Betriebsleitern für Eisenbahnen*] |
| EBZugV | Regulation on Access to the Profession of Railway Entrepreneur [*Eisenbahnunternehmer-Berufszugangsverordnung*] |
| ECM | Entity in charge of maintenance |
| EC | European Community |
| ESiV | Railway Safety Regulation [*Verordnung über die Sicherheit des Eisenbahnwesens (Eisenbahn-Sicherheitsverordnung)*] |
| EU | European Union |
| EUB | Federal Railway Accident Investigation Office [*Eisenbahn-Unfalluntersuchungsstelle des Bundes*] |
| EUV | Regulation on the Investigation of Dangerous Occurrences in Railway Operations [*Verordnung über die Untersuchung gefährlicher Ereignisse im Eisenbahnbetrieb*] |
| EVU | Railway undertaking [*Eisenbahnverkehrsunternehmen*] |
| ICE | Intercity-Express |
| MoU | Memorandum of Understanding |
| NoBo | Notified Body Interoperability |
| PZB | Intermittent automatic train control |
| RL | Directive |
| Ril | Deutsche Bahn Group Guideline |
| SIRF | Rolling Stock Safety Regulations [*Sicherheits-Regelwerk Fahrzeuge*] |
| STE | Signalling, telecommunication and electrical engineering [*Signaltechnik, Telekommunikation und*  *Elektrotechnik*] |
| TEIV | Trans-European Railway Interoperability Regulation [*Verordnung über die Interoperabilität des*  *transeuropäischen Eisenbahnsystems ; Transeuropäische-Eisenbahn-Interoperabilitätsverordnung*] |
| TSI | Technical Specification for Interoperability |
| VDV | Verband Deutscher Verkehrsunternehmen e. V. (Association of German Transport Undertakings) |
| VO | Regulation |
| VV IBG | Administrative Regulation on Authorisation for Placing Rolling Stock in Service [*Verwaltungsvorschrift über die Inbetriebnahmegenehmigung von Eisenbahnfahrzeugen*] |

1. One seriously injured person died two months after the accident. In accordance with the definition in Directive 2004/40/EC, this person is recorded as seriously injured. [↑](#footnote-ref-1)
2. Under Directive  2004/49/EC, ‘significant accidents’ involve at least one rail vehicle in motion, resulting in at least one killed or seriously injured person, or in significant damage (at least EUR 150 000) to stock, track, other installations or environment, or extensive disruptions to traffic (suspension of train services on a main railway line for six hours or more). [↑](#footnote-ref-2)