



EUROPEAN RAILWAY AGENCY

Safety Unit

Guidance on the decision to investigate accidents and incidents Articles 3(1), 19 and 21(6)

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/1/	Directive 2004/49/EC of the European Parliament and of the Council on safety on the Community's railway and amending Council Directive 95/18/EC on the licensing of railway undertakings and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying for the of railway infrastructure and safety certification (Railway Safety Directive)	Directive 2004/49/EC Railway Safety Directive	Corrigendum as amended by Directive 2008/57/EC, Directive 2008/110/EC Directive 2009/149/EC.
/2/	Regulation (EC) No 881/2004 of the European Parliament and the Council establishing a European railway agency	Regulation (EC) No 881/2004	Corrigendum as amended by Regulation (EC) No 1335/2008
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Specific terms and abbreviations

Term	Definition
Agency	the European Railway Agency

Abbreviation	Meaning
IM	Infrastructure Manager(s)
NIB	National Investigating Body (-ies)
NSA	National Safety Authority (-ies)
RSD	Railway Safety Directive
RU	Railway Undertaking(s)

Definitions

The following definitions are taken from article 3 and Appendix to Annex I of Directive 2004/49/EC (/1/).¹ For example:

- a) *'railway system'* means the totality of the subsystems for structural and operational² areas, as defined in Directives 96/48/EC³ and 2001/16/EC⁴, as well as the management and operation of the system as whole;
- b) *'accident'* means an unwanted or unintended sudden event or a specific chain of such events which have harmful consequences; accidents are divided into the following categories: collisions, derailments, level-crossing accidents, accidents to persons caused by rolling stock in motion, fires and others;
- c) *'incident'* means any occurrence, other than accident or serious accident, associated with the operation of trains and affecting the safety of operation;
- d) *'train'* means one or more railway vehicles hauled by one or more locomotives or railcars, or one railcar travelling alone, running under a given number or specific designation from an initial fixed point to a terminal fixed point. A light engine, i.e. a locomotive travelling on its own, is considered to be a train;
- e) *'train collision'* (or *'collision of trains'*), including collisions with obstacles within the clearance gauge⁴ means a front to front, front to end or a side collision between a part of a train and a part of another train, as well as with:
 - shunting rolling stock,
 - fixed or temporarily present objects on or near the track (except at level crossings if lost by crossing vehicle/user).
- f) *'train derailment'* or *'derailment of trains'* means any case in which at least one wheel of a train leaves the rails;
- g) *'level crossing accidents'* means accidents at level crossings involving at least one railway vehicle and one or more crossing vehicles, other crossing users such as pedestrians or other objects temporarily present on or near the track if lost by a crossing vehicle/user;

¹ Numeration doesn't match the numeration in Directive 2004/49/EC /1/ and Directive 2009/149/EC /2/

² "Operational" should be read as „functional“, see also Footnote 3) and 4)

³ Directive 96/48/EC was repealed and replaced by Directive 2008/57/EC /5/. According to Article 40 of /5/ reference to repealed Directives shall be construed as references to Directive 2008/57/EC.

⁴ Directive 2001/16/EC was repealed and replaced by Directive 2008/57/EC /5/. According to Article 40 of /5/ reference to repealed Directives shall be construed as references to Directive 2008/57/EC.



- h) *'level crossing'* means any level intersection between the railway and a passage, as recognised by the infrastructure manager and open to public or private users. Passages between platforms within stations are excluded;
- i) *'passage'* means any public or private road, street or highway, including footpaths and bicycle paths, or other route provided for the passage of people, animals, vehicles or machinery.
- j) *'level crossing users'* means all persons using a level crossing to cross the railway line by any mean of transportation or by foot.
- k) *'accidents to persons caused by rolling stock in motion'* means accidents to one or more persons that are either hit by a railway vehicle or by an object attached to or that has become detached from the vehicle. Persons that fall from railway vehicles are included, as well as persons that fall or are hit by loose objects when travelling on-board vehicles;
- l) *'fires in rolling stock'* means fires and explosions that occur in railway vehicles (including their load) when they are running between the departure station and the destination, including when stopped at the departure station, the destination or intermediate stops, as well as during re-marshalling operations;
- m) *'wrong side signalling failure'* means any failure of a signalling system (either to infrastructure or to rolling stock), resulting in signalling information less restrictive than that demanded.
- n) *'broken wheels and broken axles'* means a break affecting the essential parts of the wheel or the axle and creating a risk of accident (derailment or collision).
- o) *'deaths (killed person)'* means any person killed immediately or dying within 30 days as a result of an accident, excluding suicides;
- p) *'injuries (seriously injured person)'* means any person injured who was hospitalized for more than 24 hours as a result of an accident, excluding attempted suicides;
- q) *'suicide'* means an act to deliberately injure oneself resulting in death, as recorded and classified by the competent national authority;
- r) *'passenger'* means any person, excluding members of the train crew, who makes a trip by rail. For accident statistics, passengers trying to embark/disembark onto/from a moving train are included.
- s) *'employees (staff of contractors and self-employed contractors are included)'* means any person whose employment is in connection with a railway and is at work at the moment of the accident. It includes the crew of the train and persons handling rolling stock and infrastructure installations.
- t) *'extensive damage'* means damage that can immediately be assessed by the investigation body to cost at least EUR 2 million in total;
- u) *'subsystem'* means the result of the division of the rail system, as shown in Annex II of Directive 2008/57. These subsystems may be structural or functional;
- v) *'interoperability constituents'* means any elementary component, group of components, subassembly or complete assembly of equipment incorporated or intended to be incorporated into a subsystem, upon which the interoperability of the rail system depends directly or indirectly. The concept of a 'constituent' covers both tangible objects and intangible objects such as software.



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1. Introduction

Learning lessons from accidents and incidents is broadly accepted as a duty of the society. For the European railway system, the Railway Safety Directive (RSD) /1/ sets out the principles for the safety investigation of accidents and incidents by independent investigation bodies.

In April 2006, in accordance with article 24 of the RSD, the investigating bodies in the member states began informing the Agency of their decisions to start an investigation of accidents and incidents according to article 19 of this directive and also, where the national legislation gives the investigating body a wider remit for investigation, according to article 21 (6).

The variability of the accident and incident notifications received by the Agency during the first years of reporting indicate the need for a common understanding of the requirements of the RSD concerning the obligation to investigate, in particular

- the understanding of what accidents shall be investigated and reported to the Agency,
- the accidents and incidents which may be reported to the Agency,
- the classification of the types of accidents – e.g. level crossing accidents, collisions etc.

The network of national investigating bodies (NIB) supported the move towards a common approach. This document provides guidance developed by the Agency's task force and based on an examination of the notifications and investigation reports sent to the Agency and discussions during the plenary meetings of the NIB network.

1.1. Purpose of this guidance

The objective of accident investigation as set out in article 19 of the RSD is the possible improvement of railway safety and the prevention of future accidents. Important preconditions are the establishment of independent national investigating bodies and a common understanding of their tasks and obligations as given in articles 19 – 25.

The Agency has prepared this guidance with the support of the NIB network. This guidance is intended to be a reference manual for accident investigating bodies; it explains the legal requirements in articles 19 and 21(6) of the RSD, and provides examples to facilitate a common understanding about accident investigation across the European Union. It is not intended as a substitute for the legal text.

The aim of the guidance is to:

- promote a common understanding of the decision criteria in the RSD for accident investigation and reporting,
- Provide a clear explanation of the definitions of accident types and terms used in the RSD,
- promote a consistent reporting, categorisation of the types of accidents and incidents.

The guidance will be reviewed and, if necessary, updated in light of the development of European legislation and standards, and to respond to experience gained from the information received by the Agency from the investigating bodies in the coming years. The reader is invited to consult the website of the European Railway Agency for information about the latest available edition of the guidance (www.era.europa.eu).

This guidance is not legally binding.

This guidance does not claim to cover each individual case.



In general, following from the general principles of public administration the decisions of the NIB to:

- investigate an occurrence or not,
- start an investigation (e.g. in the case of a series of accidents)
- not to conduct a full investigation
- categorise accidents in another way than suggested in this guidance

should be reasoned and documented.

1.2. Structure of this guidance

The guidance is structured as follows:

General part	section 1
Principles of the decision to investigate and the categorisation of accidents and incidents	section 2
Guidance on article 3 (1)	section 3
Guidance on article 19 (1)	section 4
Guidance on article 19 (2)	section 5
Guidance on article 19 (3)	section 6
Guidance on article 21 (6)	section 7
Overview on the decision process	section 8
Examples	Annex 1



2. Principles of the decision to investigate and the categorisation of accidents and incidents

The Railway Safety Directive creates a common framework for the management of safety on the Union's railways. To ensure the high level of safety in the railway system, a common understanding of requirements in the directive is important. Following the spirit of the directive, this applies equally to the requirements for the investigation of accidents.

The RSD specifies when the:

- investigation of an accident is mandatory (article 19 (1)),
- investigation of an accident or incident is within the discretion of the investigating body (article 19 (2)); decision criteria are set out in article 19 (2),
- investigation of accidents or incidents other than those referred to in article 19 may be subject to national legislation (article 21 (6)).

It is also important for the NIBs to know on which basis they are investigating:

- a national legislation implementing the requirements of the RSD or
- additional national requirements.

This has consequences for the:

- decision to investigate or not and
- application of the requirements and procedures given in the RSD

The RSD foresees a hierarchical relationship:

- if an accident does not fall under article 19 (1), it may be subject to an investigation according to the decision criteria in article 19 (2) and
- if an accident or incident does not fall within the scope of article 19, it may be subject to an investigation in accordance with national legislation.

The Agency encourages the NIB to apply the criteria for the decision to investigate as given by this guidance and where applicable carry out investigations under article 19 (1) or 19 (2); investigations according to article 21(6) should be restricted to cases where there is no intrinsic safety interest from the viewpoint of the investigating body, but which are required by national legislation, see also sections 7 and 8.

With regard to accidents to be investigated under article 19(1), it is clearly important that there should be a common understanding of the definition of “*serious accident*”.

Article 19 (3) of the RSD is an important steering tool to guide the extent of the investigation, (for more details see section 6). This steering tool is formally only applicable to investigations under article 19. However, when there are no specific national requirements, it is useful to apply these principles to investigations under article 21(6) in line with the national legislation.

The scope for accident investigation are the accidents and incidents occurring in the railway system of a member state. There is frequently discussion in particular in relation to level crossing accidents, accidents to persons hit by rolling stock in motion, fire in a rolling stock and others as to whether the occurrence should be classified as a “railway accident or incident” at all.

In cases where it is difficult to apply the criteria in article 3 (1) of the RSD this decision has to be taken by the NIBs. The following, general principles may be useful:

- All accidents and incidents and, where applicable, the consequences of an accident are the result of one or more deviations from the required conditions (not to be mixed up with causes!). A NIB always should consider launching an investigation when there is some indication of an unwanted or unintended deviation within the railway system, regardless of whether this deviation led to the accident or incident, or to its consequences.



- In addition, the investigations of NIBs should focus on accidents and incidents having their origin outside of the railway system but having caused harm to “railway users”, or which might be a hazard for their health and safety. The term “railway users” should be interpreted in a wide sense (e.g. track workers, people in railway station etc.).

In many cases a preliminary examination⁵ is necessary to collect the essential facts in order to determine the category of the type of accident or incident and to decide to investigate or not, (for more details see section 6).

Please note:

The RSD applies to the railway system as defined in article 3 (a):

“‘railway system’ means the totality of the subsystems for structural and operational⁶ areas, as defined in Directives 96/48/EC⁷ and 2001/16/EC⁸, as well as the management and operation of the system as whole”.

Article 2 (2) allows member states to exclude parts of their railway system from the national implementation of the transposed measures. It has to be highlighted that it is the implementation of **measures** that can be excluded; this does not change the **scope** of the RSD.

The following example illustrates the practical implications for the investigating bodies.

Example:

A member state has used the exclusion given in Article 2(2)b) for a network which is functionally separated from the rest of the railway system and intended only for the operation of a local passenger services from the implementation of the measures transposing the requirements in articles 10 and 11 of the RSD – relating to safety certification and safety authorisation. However, if this network has not been excluded from the implementation of the measures relating to the investigation of accidents or the work of the NIB, then the provisions in articles 19 – 25 and Annex V apply; accidents and incidents on this network are within the scope of article 19.

The decision to investigate under article 19 or under article 21(6), if governed by national measures excluding or including specific parts of the railway, in accordance with article 2(2), should be clearly mentioned in the investigation report.

⁵ This preliminary examination may not necessarily be performed by the NIB

⁶ “Operational” should be read as „functional“, see also Footnote 73) and 84)

⁷ Directive 96/48/EC was repealed and replaced by Directive 2008/57/EC /5/. According to Article 40 of /5/ reference to repealed Directives shall be construed as references to Directive 2008/57/EC.

⁸ Directive 2001/16/EC was repealed and replaced by Directive 2008/57/EC /5/. According to Article 40 of /5/ reference to repealed Directives shall be construed as references to Directive 2008/57/EC.



3. Guidance on article 3 (1)

The decision to investigate in accordance with article 19 of the RSD depends on a clear understanding of a “serious accident”. article 3 (1) gives the definition of a “serious accident”:

“Serious accidents” means any train collision or derailment of trains, resulting in the death of at least one person or serious injuries to five or more persons or extensive damage to rolling stock, the infrastructure or the environment, and any other similar accident with an obvious impact on railway safety regulation or the management of safety; ‘extensive damage’ means damage that can immediately be assessed by the investigating body to cost at least EUR 2 million in total”.

In the NIB-network there is discussion about the correct reading of article 3 (1), consequently there is uncertainty about the obligation to investigate. We have also noticed from the notifications to investigate that there is a problem in categorising accidents.

Our understanding of this definition is as follows:

‘Serious accidents’ are:

- **Any train collision**, which results in the death of at least one person or serious injuries to five or more persons or extensive damage to rolling stock, the infrastructure or the environment,
- **Any train derailment**, which results in the death of at least one person or serious injuries to five or more persons or extensive damage to rolling stock, the infrastructure or the environment,
- **Any other accident**, which results in the death of at least one person or serious injuries to five or more persons or extensive damage to rolling stock, the infrastructure or the environment **and has an obvious impact on railway safety regulation or the management of safety.**

This guidance will focus mainly on this last point.

Please note:

- Some investigating bodies consider that the word “similar” refers to the type of accidents: train collision or derailments of trains. Therefore, they conclude that only these two types of accident can be “serious accidents”.
However, the term “similar” should be read together with “any other.... accident” as “any other similar accident”. It is then clear that “other” refers to the accident type listed in Article 3(k) under the definition of ‘accident’ and “similar” to the consequences.
- For “train collisions” and “the derailment of trains” the RSD implies that these accident types always have an “obvious impact on railway safety regulation or the management of safety”.
- For cases of all other types of accidents, it is necessary to consider what is the impact on railway safety regulation or the management of safety, because the causes or the consequences of such accidents may not relate to railway safety management or regulation (e.g. suicide, trespassing).



With regard to the criteria relating to the cost of an accident, it is not expected that investigators should calculate the exact cost. The classification depends on an initial assessment made at the accident site. Experience shows that the costs are in most cases underestimated at first.

The following estimates are given to help the investigator assess costs; they are based on the replacement value of the technical systems. In estimating the costs, the investigator should take into account the age and condition of the damaged material.

	Unit	Replacement value in €
freight locomotive	1	3 million
passenger train locomotive	1	5 million
locomotive/motor-section of high-speed train	1	7 million
coach for commuter traffic	1	1 million
passenger coach	1	1,5 million
coach of high-speed train	1	2 million
freight wagon	1	300.000
track renewal	metre	1.000
catenary renewal	metre	1.000
switch, small ($r = 190 \text{ m} \leq 300 \text{ m}$)	1	200.000
switch, medium ($r = 500 \leq 760 \text{ m}$)	1	500.000
switch, large ($r \geq 1200 \text{ m}$)	1	1 million
signal, small	1	50.000
signal, large	1	200.000

Table for the estimation of costs



4. Guidance on article 19 (1)

Article 19 (1) of the RSD determines the obligation to have an NIB investigation of serious accidents on the railway:

“Member States shall ensure that an investigation is carried out by the investigating body referred to in article 21 after serious accidents on the railway system, the objective of which is possible improvement of railway safety and the prevention of accidents.”

With reference to article 3 (k) of the RSD, accidents are divided into the following categories:

accident type	section	page
Collisions	0	14
Derailments	0	15
Level-crossing accidents	0	16
Accidents to persons caused by rolling stock in motion	4.4	18
Fires	0	20
Others	0	22

It is the purpose of this section to give guidance for each single category on the criteria, **when it has an obvious impact on railway safety regulation or the management of safety**, and thus when there is an obligation to investigate.

Please note:

In general incidents do not fall under article 19 (1) investigations as that is related only to serious accidents; however, incidents may be investigated according to article 19 (2), see section 5.



4.1. Train collisions

a) Important definitions⁹

- ‘train collision’ or ‘collision of trains’, including collisions with obstacles within the clearance gauge’ means a front to front, front to end or a side collision between a part of a train and a part of another train, as well as with:
 - shunting rolling stock,
 - fixed or temporarily present objects on or near the track (except at level crossings if lost by crossing vehicle/user).
- ‘train’ means one or more railway vehicles hauled by one or more locomotives or railcars, or one railcar travelling alone, running under a given number or specific designation from an initial fixed point to a terminal fixed point. A light engine, i.e. a locomotive travelling on its own, is considered to be a train;

b) Principle

Train collisions must be investigated when they result in the death of at least one person or serious injuries to five or more persons or extensive damage to rolling stock, the infrastructure or the environment.

criteria 1 - consequences	criteria 2 - impact	conclusion	
Consequences ≥ 1 fatality ≥ 5 serious injuries damage estimated as ≥ 2 million €?	obvious impact on railway-safety regulation or the management of safety?	obligation to investigate under article 19 (1)	investigation under article 19 (2)
yes	for train collisions not applicable	yes	
no		no	strongly recommended

Table: Overview of the obligation to investigate train collisions

c) Guidance

For train collisions with the consequences mentioned in article 3 (1), an investigation is mandatory without any exception. Other train collisions should be seriously considered to be investigated according to article 19 (2) because of the high risk potential (see section 5.2.2.1).

d) Please note

- Any collision involving only railway vehicles not covered by the definition of a train have to be categorised as “others” or, if applicable, as “level crossing accident”.
- Any collision between a railway vehicle (trains or other railway vehicles) with
 - one or more road vehicles crossing over the tracks,
 - other level crossing users, such as pedestrians
 - or other objects present on or near the track that have fallen from vehicles or users crossing the tracks
 is classified as a “level crossing accident”.

⁹ Source of definitions: Appendix of /2/



4.2. Derailment of trains

a) Important definitions

- *‘train derailment’ or ‘derailment of trains’ means any case in which at least one wheel of a train leaves the rails;*
- *‘train’ means one or more railway vehicles hauled by one or more locomotives or railcars, or one railcar travelling alone, running under a given number or specific designation from an initial fixed point to a terminal fixed point. A light engine, i.e. a locomotive travelling on its own, is considered to be a train;*

b) Principle

Derailments of trains must be investigated when

- they result in the death of at least one person or serious injuries to five or more persons or extensive damage to rolling stock, the infrastructure or the environment.

criteria 1 - consequences	criteria 2 - impact	conclusion	
Consequences ≥ 1 fatality ≥ 5 serious injuries damage estimated as ≥ 2 million €?	obvious impact on railway-safety regulation or the management of safety?	obligation to investigate under article 19 (1)	investigation under article 19 (2)
yes	for derailment of trains not applicable	yes	
no		no	strongly recommended

Table: Overview of the obligation to investigate derailments of trains

c) Guidance

For derailments of trains with the consequences mentioned in article 3 (1), an investigation is mandatory without any exception. Other derailments of trains should be seriously considered to be investigated according to article 19 (2) because of the high risk potential (see section 5.2.2.1).



4.3. Level-crossing accidents

a) Important definitions

- ‘level crossing accidents’ means accidents at level crossings involving at least one railway vehicle and one or more crossing vehicles, other crossing users such as pedestrians or other objects temporarily present on or near the track if lost by a crossing vehicle/user;”
- ‘level crossing’ means any level intersection between the railway and a passage, as recognised by the infrastructure manager and open to public or private users. Passages between platforms within stations are excluded;”
- ‘passage’ means any public or private road, street or highway, including footpaths and bicycle paths, or other route provided for the passage of people, animals, vehicles or machinery.

b) Principle

Level-crossings accidents must be investigated when

- they result in the death of at least one person or serious injuries to five or more persons or extensive damage

and

- have an obvious impact on railway safety regulation or the management of safety.

criteria 1 - consequences	criteria 2 - impact	conclusion	
Consequences ≥ 1 fatality ≥ 5 serious injuries damage estimated as ≥ 2 million €?	obvious impact on railway-safety regulation or the management of safety?	obligation to investigate under article 19 (1)	investigation under article 19 (2)
yes	yes, when the accident was a result of deficiencies within the railway system	yes	-
yes	no	no	within the discretion of NIB
no	not applicable, as criteria 1 not fulfilled	no	

Table: Overview of the obligation to investigate level-crossing-accidents

c) Guidance

Level crossing accidents have an obvious impact on railway safety regulation or the management of safety, when the **accident** was a result of deficiencies within the railway system (e.g. technical failures of infrastructure devices or rolling stock, staff not complying with the procedures, deficiencies in the safety management system etc.).

All other level-crossing accidents, independent of their consequences, should not be classified as a “serious accident” in terms of article 3 (1).¹⁰

¹⁰ As it would be arbitrary to set a specific a number of fatalities or injured people which has to be considered as “obvious impact ...”, the Agency has decided not to recommend such numbers.



d) Please note

- Level-crossing accidents are one of the biggest groups of accidents with fatalities and it is frequently worthwhile to investigate them from the safety perspective in order to avoid recurrence.

Non-permitted entry onto a level-crossing is a widely spread issue; therefore these cases should not be excluded by default from investigation.

Even in the case of an obvious violation of safety rules, the causal factor may originate from the railway system.

The Agency suggests starting a preliminary examination¹¹ in cases where the behaviour of the level crossing user cannot be explained rationally. Often poor visibility conditions, poor signposting or poor design of the level-crossing influences the level crossing user's behaviour.

- Level-crossing accidents and incidents may be suitable cases for studying a series of accidents. Incidents should be included in this consideration.
- The objective of Directive 2004/49/EC is to improve the safety **of the railway system**. Even when there are serious consequences to one or more persons on the “road-user-side”, a level-crossing accident, which was obviously caused by violation of the rules by the “road-side-user” and there are no indicators of any safety issues relating to the railway system (including the visibility of the level crossing and the signposting), should not be classified as a “serious accident” as defined by article 3 (1). Therefore an investigation is not obligatory, but it may be carried out under article 19 (2), e.g. when the investigating body expect results which may improve safety at level crossings or in cases of high public interest. Each investigating body is given the discretion in article 19 (2) to decide about the criteria (e.g. number of fatalities) for starting an investigation in such cases.
- When the **consequences** were a result of deficiencies within the railway system (e.g. insufficient crashworthiness of the rolling stock), an investigation is appropriate.
- Findings during investigations of level-crossing accidents may also lead to safety recommendations addressed to “*other authorities and bodies*” in terms of article 25 (2) aiming on improvements on the road side.

e) Good practice

Following an accident at a level crossing, which led to death or serious injury of the users of the crossing, there should be a preliminary examination to identify whether the railway systems were working correctly (both level crossing and train). In cases where there are injuries or fatalities of persons in the train, this preliminary examination should include consideration of whether the passive protection system of the train worked correctly.

If the railway subsystems functioned correctly, and the users of the level crossing (e.g. vehicle drivers etc) were responsible for putting themselves in danger (e.g. by deliberately ignoring the warning lights and zigzagging around a half-barrier), then an investigation would not be appropriate, unless it would clearly lead to an improvement in railway safety.

Although the case may not fall under the criteria for an article 19(1) investigation, the NIB may at its discretion investigate the accident under article 19(2) or in cases of national law requires so (article 21 (6)).

¹¹ This preliminary examination may not necessarily be performed by the NIB



4.4. Accidents to persons caused by rolling stock in motion (excluding suicides)

a) Important definitions

‘accidents to persons caused by rolling stock in motion’ means accidents to one or more persons that are either hit by a railway vehicle or by an object attached to or that has become detached from the vehicle. Persons that fall from railway vehicles are included, as well as persons that fall or are hit by loose objects when travelling on-board vehicles;

b) Principle

Accidents to persons caused by rolling stock in motion must be investigated when

- they result in the death of at least one person or serious injuries to five or more persons or extensive damage

and

- have an obvious impact on railway safety regulation or the management of safety.

criteria 1 - consequences	criteria 2 - impact	conclusion	
Consequences ≥ 1 fatality ≥ 5 serious injuries damage estimated as ≥ 2 million €?	obvious impact on railway-safety regulation or the management of safety?	obligation to investigate under article 19 (1)	investigation under article 19 (2)
yes	yes, when the accident was a result of failures within the railway system	yes	-
yes	no	no	within the discretion of NIB
no	not applicable, as criteria 1 not fulfilled	no	

Table: Overview of the obligation to investigate accidents to persons caused by rolling stock in motion

c) Guidance

Accidents to persons caused by rolling stock in motion have an obvious impact on railway-safety regulation or the management of safety, when the accident was the result of deficiencies within the railway system (e.g. technical failures of infrastructure devices or rolling stock, staff not complying with the procedures, poor planning of maintenance work, etc.).

d) Please note

- The accident type “rolling stock in motion” includes solo running wagons, shunting movements, etc.
- Experience from the investigation of this type of accident shows that in many cases improvement of safety is possible, e.g. through better planning of maintenance.
- Accidents caused by rolling stock in motion are one of the biggest groups of accidents with fatalities and often worthwhile investigating from the safety perspective in order to avoid recurrence.

Even if, from the legal point of view, non-permitted access to the tracks - known as “trespassing” - contributed to the accident, this is not unusual and may be connected with a lack of risk awareness; therefore these cases should not be excluded by default from investigation, (see examples in Annex 1).



- Even in the case of an obvious violation of safety rules, the underlying causes may originate from the railway system, (e.g. deficiencies in risk assessment)
- The Agency suggests starting a preliminary examination¹² at least in those accidents with damage to persons, who were hit during an activity that has a close connection to the intended use of railway. A close connection with the intended use of the railway can be assumed, if people were hit
 - in railway stations,
 - in marshalling yards,
 - during construction¹³ or maintenance work on railway infrastructure.

This approach helps the NIB and other parties to be sure that there were no deficiencies in the railway system, which led the person to his/her behaviour. If the railway subsystems functioned correctly, it is not necessary to carry out an investigation.

e) **Good practice**

Following an accident to persons caused by rolling stock in motion, which led to the death or serious injury of any person, there should be a preliminary examination to identify whether there is evidence or a strong indication of suicide. If this is not the case, the examination should establish whether the railway subsystems were working correctly both on the train and on potential track-side protection installations.

In cases of accidents with injuries or fatalities in the context of maintenance or construction work on the railway system the preliminary examination should check whether the safety measures were sufficient and performed correctly.

If all railway subsystems were working correctly, and the person who was hit (e.g. the trespasser) was responsible for putting him/herself in a position of danger (e.g. by passing over the tracks when there was a safe passage within a reasonable distance) and **he/she was obviously not influenced by factors within the railway system**, then an investigation would not to be appropriate unless it would clearly lead to an improvement in railway safety.

Although the case may not fall under the criteria for an article 19(1) investigation, the NIB may at its discretion investigate the accident under article 19(2), e.g. in cases of high public interest, or if national law requires so (article 21 (6)).

¹² This preliminary examination may not necessarily be performed by the NIB

¹³ Structural subsystems which never have been placed into service (e.g. new infrastructure during construction period) are not covered



4.5. Fire in rolling stock

a) Important definition

“fires in rolling stock’ means fires and explosions that occur in railway vehicles (including their load) when they are running between the departure station and the destination, including when stopped at the departure station, the destination or intermediate stops, as well as during re-marshalling operations;”

b) Principle

Fires in rolling stock have to be investigated when

- they result in the death of at least one person or serious injuries to five or more persons or extensive damage

and

- have an obvious impact on railway safety regulation or the management of safety.

criteria 1 - consequences	criteria 2 - impact	conclusion	
Consequences ≥ 1 fatality ≥ 5 serious injuries damage estimated as ≥ 2 million €?	obvious impact on railway-safety regulation or the management of safety?	obligation to investigate under article 19 (1)	investigation under article 19 (2)
yes	yes, when the fire was the result of deficiencies within the railway system, the consequences were a result of deficiencies within the railway system	yes	-
yes	no	no	within the discretion of NIB
no	not applicable, as criteria 1 not fulfilled	no	

Table: Overview of the obligation to investigate fire in rolling stock

c) Guidance

Fire in rolling stock has an obvious impact on railway safety regulation or the management of safety, when

- the fire was the result of deficiencies within the railway system (e.g. technical failures of rolling stock, technical failure in infrastructure devices which led to a fire in rolling stock),
- the consequences were a result of deficiencies within the railway system (e.g. if passengers could not escape because of locked doors).



d) Please note

Fires arising from rolling stock always have the potential for catastrophic consequences, e.g. if they occur in tunnels.

e) Good practice

Following a fire in the rolling stock which led to death or serious injury of a person, there should be an examination to identify whether there is evidence or a strong indication of arson. If this is not the case, the examination should establish whether the railway subsystems were working correctly (with reference to both the location where the fire arose, and the protection and safety installations).

If all railway subsystems were working correctly, and there was evidence of arson, then it would not be appropriate to investigate, unless this would clearly lead to an improvement in railway safety.

If the case does not fall under the criteria for an article 19(1) investigation, the NIB may at its discretion investigate the accident under article 19(2), e.g. in cases of high public interest, or in cases of national legal requirements (article 21 (6)).



4.6. Other Accidents

a) Important definition

“other types of accidents’ means all accidents other than those already mentioned (train collisions, train derailments, at level-crossings, to persons caused by rolling stock in motion and fires in rolling stock”

b) Principle

Other accidents have to be investigated when

- they result in the death of at least one person or serious injuries to five or more persons or extensive damage

and

- have an obvious impact on railway safety regulation or the management of safety.

criteria 1 - consequences	criteria 2 - impact	conclusion	
Consequences ≥ 1 fatality ≥ 5 serious injuries damage estimated as ≥ 2 million €?	obvious impact on railway-safety regulation or the management of safety?	obligation to investigate under article 19 (1)	investigation under article 19 (2)
yes	yes, when the occurrence was the result of deficiencies within the railway system, the consequences were a result of deficiencies within the railway system	yes	-
yes	no	no	within the discretion of NIB
no	not applicable, as criteria 1 not fulfilled	no	

Table: Overview of the obligation to investigate other accidents

c) Guidance

Other accidents have an obvious impact on railway safety regulation or the management of safety, when

- the occurrence was a result of deficiencies within the railway system (e.g. technical failures of infrastructure devices or rolling stock, staff not complying with the procedures, deficiencies in the safety management system etc.).
- the consequences given in article 3 (1) occurred to passengers or staff (numbers of each group should be added together).



d) Please note

In cases of doubt it might be useful to contact the Agency to discuss whether an “other accident” should be classified as a serious accident and be investigated under article 19 (1) or not. The final decision has to be taken by the investigating body.

The main cases belonging to the category of other accidents are:

- collisions and derailments of shunting rolling stock/maintenance machines; including those on tracks closed for maintenance operations;
- collisions and derailments purposefully caused by applying safety procedures in response to an emergency;
- electrocution related to rolling stock



5. Guidance on article 19 (2)

Article 19 (2) authorises the NIBs to investigate accidents and incidents, which do not fall under article 19 (1), at their discretion. Furthermore, article 19 (2) provides the criteria for the decision to investigate an occurrence:

“In addition to serious accidents, the investigating body referred to in article 21 may investigate those accidents and incidents which under slightly different conditions may have led to serious accidents, including technical failures of the structural subsystems or of interoperability constituents of the trans-European high-speed or conventional rail systems.

The Investigating body shall, at its discretion, decide whether or not an investigation of such an accident or incident shall be undertaken. In its decision it shall take into account:

- (a) *the seriousness of the accident or incident;*
 - (b) *whether it forms part of a series of accidents or incidents relevant to the system as a whole;*
 - (c) *Its impact on railway safety on a Community level,*
- and*
- (d) *requests from infrastructure managers, railway undertakings the safety authority or Member States.”*

Article 19 (2) contains 3 main elements:

- the characteristics which help determine the type of accident or incident belong to this group (section 5.1)
- the power for the NIBs to investigate such accidents and incidents (section 5.2)
- the criteria to decide whether or not to investigate (section 5.3).

5.1. Determination of accidents and incidents which are included under article 19 (2)

The types of accidents and incidents which may be investigated according to article 19 (2) are those:

- *“which under slightly different conditions may have led to serious accidents”*
- *“including technical failures of the structural subsystems or of interoperability constituents of the trans-European high-speed or conventional rail systems”*

5.1.1. *“which under slightly different conditions may have led to serious accidents”*

Serious accidents are defined under article 3 (1); guidance is given in section 3.

“Accidents and incidents which under slightly different conditions may have led to serious accidents” are not defined explicitly. It is not possible to set clear guidelines to apply this criterion. Hence, this may be understood in a wide sense.

It is up to the NIB to decide whether an accident or incident belongs to the group or not.

The Agency suggests that the NIBs consider investigating under article 19 (2) all accidents and incidents which have obvious potential for the consequences defined in article 3 (1). Some examples for these accidents and incident are:



a) Accidents

- train collisions,
- train derailments,
- level crossing accidents on level crossings with motorised road-traffic
- people struck by rolling stock in motion, but not killed
- fire in passenger trains.

From experience there is evidence that these accidents have the potential to become serious accidents. For this reason it can be generally assumed that the criterion, “which under slightly different conditions may have led to serious accidents”, is fulfilled.

b) Incidents

All other cases, when an incident did not lead to serious consequences, as defined in article 3 (1), simply because of random or favourable circumstances should also be considered for investigation under article 19(2).

Weather conditions cannot be considered as random circumstances if they had any influence on the causes of the occurrence (e.g. in the case of an earth slide after heavy rainfall), but they may be considered as random if the consequences were less serious as a result of the weather conditions (e.g. if a fire was extinguished by heavy rainfall).

The incident types¹⁴, which have a clear potential to lead to serious accidents are:

- broken wheels
- broken axles
- wrong side signalling failures
- track buckles in areas with train operation
- broken rails in areas with train operation
- runaway trains or wagons, etc.
- track workers had to jump clear off the rolling stock in motion.

From experience there is evidence that these incidents have the potential to become serious accidents. In these and similar cases, it always may be assumed that the criterion “which under slightly different conditions may have led to serious accidents” is likely to be fulfilled.

5.1.2. “including technical failures of the structural subsystems or of interoperability constituents of the trans-European high-speed or conventional rail systems”

The passage “including technical failures of the structural subsystems¹⁵ or of interoperability constituents of the trans-European high-speed or conventional rail systems” relates to a further category of incidents, technical failures should be considered as incidents.

Incidents involving technical failures of structural subsystems or interoperability constituents also fulfil the criterion “which under slightly different conditions may have led to serious accidents”.

5.2. Decision to investigate under article 19 (2)

The Agency would emphasise that in the spirit of the RSD, the overriding reason for the NIB to carry out an investigation is based on the expectation that safety lessons can be learnt by investigating an accident. Three main decision criteria are set out in other sections of RSD:

¹⁴ The definitions of incidents which are collected as precursors are given in the Annex to reference /2/

¹⁵ Structural subsystems are defined in reference /3/



- “‘investigation’ means a process conducted for the purpose of accident and incident prevention...” (article 3 (n))
- “Member states shall ensure that an investigation is carried out ..., the objective of which is possible improvement of railway safety and the prevention of accidents” (article 19 (1))
- “The extent of investigations and the procedure to be followed in carrying out such investigations shall be determined by the investigating body, ... **depending on the lessons it expects to draw from the accident or incident for the improvement of safety.**” (article 19 (3))

(**emphasis** by the author)

In article 19 (2) there are additional criteria, which provide the basis for the NIB to apply discretion in their decisions to investigate.

5.2.1. Discretion of the investigation body to decide to investigate

In article 19 (2) of the RSD, the two clauses (“*the investigation body ... may investigate*”) and (“*...shall, at its discretion, decide ...*”) clearly indicate that it is within the power of the investigation body to decide whether or not to investigate an accident or incident, which does not meet the criteria in article 19 (1). The criteria (a) to (d) specified in article 19(2) shall be taken into account; however, it remains at the discretion of the investigation body to decide to investigate regardless of whether one or more of these criteria are met or not.

Please note:

Even if the national legislation requires an NIB investigating a wider range of accidents and incidents than the RSD, the NIB should check whether the criteria for an investigation in terms of article 19 (2) are fulfilled. If not, the investigation will fall under article 21(6).

5.2.2. Decision criteria for the decision to investigate

Article 19 (2) provides criteria for the decision to investigate those accidents and incidents which do not fall under article 19 (1):

“In its decision it shall take into account:

- the seriousness of the accident or incident;*
- whether it forms part of a series of accidents or incidents relevant to the system as a whole;*
- Its impact on railway safety on a Community level,*
and
- requests from infrastructure managers, railway undertakings the safety authority or Member States.”*



5.2.2.1. *“the seriousness of the accident or incident”*

The seriousness of an accident should always be a criterion in deciding to investigate an accident, which does not fall under article 19 (1). Even when there is initially no expectation that there will be safety lessons to be learnt, any accident with harmful consequences is likely to be of public interest. From the public’s point of view, an occurrence may be considered as a “serious accident” even when the criteria of article 19 (1) are not fulfilled.

The NIB should therefore take the public interest into account when deciding to investigate or not.

Other criteria should be taken into account when judging on the “seriousness of an accident or incident”, e.g. the risk potential of the occurrence.

5.2.2.2. *“whether it forms part of a series of accidents or incidents relevant to the system as a whole”*

a) **Definitions**

A “series” is a sequence of similar occurrences.

The “system” should be read as “railway system” as defined in article 3 (a) of the RSD.

b) **Guidance**

To form an opinion as to whether an occurrence may be part of a series, the investigation bodies should systematically search for similar accidents or incidents in their national accident database, the Agency’s database, the “safety information system” and other relevant databases.

Typically “type” of accident or incident will be used as a search indicator. When there are two or more similar accidents or incidents; they may be considered as part of a series of accidents or incidents.

However, it is not sufficient to simply compare accident or incident types. To identify similarities in occurrence, it is necessary to search for combinations of related incidents and accidents, e.g. “train derailment” ⇔ “broken wheel” or “train collision” ⇔ “SPAD”. Furthermore, there should also be other similarities between two or more accidents or incidents in order to consider an accident or incident as “part of a series”. These similarities may be, for example:

- in the location of the occurrence
 - in the type of rolling stock involved or the infrastructure
- but also
- in the behaviour of the staff, e.g. the violation of an operating procedure, an incorrectly applied communications protocol
 - in the underlying or the root causes of the occurrences - this may be more difficult to detect.

The second criterion “relevant to the system as a whole” should be read in such a way that the type of occurrences in question must bear an obvious risk potential for the safety of the railway system in its totality. The risk potential may arise from the probability of an occurrence and/or the potential consequences.

5.2.2.3. *“its impact on railway safety at Community level”*

In cases of technical failures of the structural subsystems or of interoperability constituents, the impact on railway safety at Community level should always be considered, if the failure bears an obvious risk potential for the safety of the railway system on European level. Again the risk potential may arise from the probability of an occurrence and/or the potential consequences.



When similar accidents or incidents have also occurred in other member states, this may be another indication of “... *impact on railway safety at Community level*”.

5.2.2.4. “requests from infrastructure managers, railway undertakings, the safety authority or Member States”

a) **Requests from infrastructure managers and railway undertakings**

RUs and IMs are obliged to investigate accidents and incidents within their safety management system (Annex III, point 2 (h) of Directive 2004/49/EC/1/). They may request an independent investigation by the national investigating body, in particular when they require an impartial examination of their Safety Management System.

b) **Requests from the safety authority**

Requests by the safety authority are explicitly foreseen in article 19 (2), therefore they are permitted to ask the national investigating body to investigate an accident or incident. This includes requests by safety authorities of other member state transmitted via the NSA-network; see also “Guidance on safety recommendations in terms of article 25”.

c) **Requests of Members States**

There are two cases:

- A request by the government, the Parliament or any other constitutional or parliamentary institution of the NIB’s member state.
- A request by the government, the Parliament or any other constitutional or parliamentary institution of another member state transmitted through the usual protocols or procedures.

As article 19 (2) explicitly states, it is clear that these requests must be taken into account in the decision to investigate an occurrence or not.

Please note:

Article 22 (1), last sentence states that “*This paragraph shall not preclude Member States from agreeing that the relevant bodies should carry out investigations in cooperation in other circumstances*”. An agreement between Member States (or with a third country) may have a wider scope than article 19 of the RSD. Hence, after an accident or incident falling under that agreement, the NIB has to check whether it fulfils the criteria of 19 (2). If not, the investigation may fall under article 21 (6).



6. Guidance on article 19 (3)

Article 19 (3) provides a steering tool by giving the NIB the power to decide about the extent of an investigation carried out under article 19 (1) or 19 (2):

“The extent of investigations and the procedure to be followed in carrying out such investigations shall be determined by the investigating body, taking into account the principles and the objectives of articles 20 and 22 and depending on the lessons it expects to draw from the accident or incident for the improvement of safety.”

As there are clear duties and rights for the NIBs concerning:

- their obligation to investigate serious accidents under article 19 (1) in connection with article 3 (1) of the RSD, and
- the discretion of the NIB to decide on an investigation of all other accidents and incidents,

article 19 (3) entitles the investigation bodies to determine the extent of the investigation and the procedure to be followed during such investigation.

Figure 1 shows the generic investigation process as shown in the “Guidance on good reporting practice” /3/:

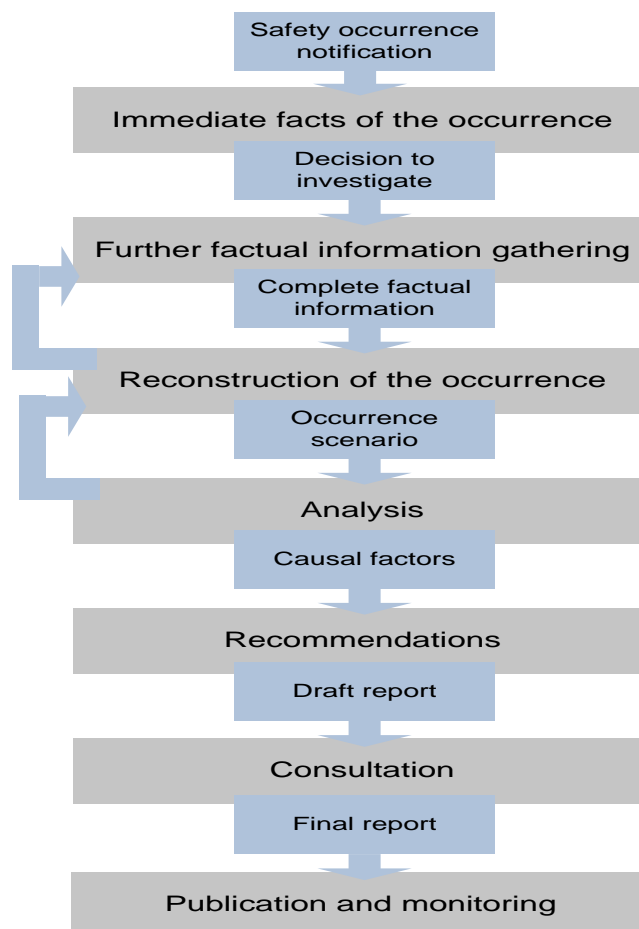


Fig.1: The generic occurrence investigation process



When the NIB is informed about an accident or incident, there should be a preliminary examination to identify whether:

- the accident should be classified as a serious accident in terms of article 19 (1) or
- the occurrence should be investigated according to article 19 (2).

In many cases it will be possible to form a judgement only by visiting the accident site. Therefore, visiting the accident site has at least two purposes:

- to collect facts for the decision to perform an accident investigation,
- to collect facts as part of the accident investigation, in case it has been so decided.

After collecting the facts of the occurrence, it is within the discretion of an NIB to decide about the extent of an investigation. So the investigation body can decide to:

- focus on special areas within an investigation
- limiting the investigation to the level of direct causes if justified by the facts.

The NIB should keep in mind when deciding on the extent of the investigation:

- the lessons it expects to draw from the accident or incident for the improvement of safety
- the principles and objectives of articles 20 and 22 of the RSD.
- the definition of “investigation” in article 3 n), and
- the content of Annex V.

For ensuring the transparency of the decision making process, all reasons taken into consideration by the NIB to make a decision should be documented.

For more details see the guidance on good reporting practice /3/.

Please note:

- Visiting the accident site does not necessarily mean that an investigation has to be performed. If, after visiting the accident site, the investigating body decides not to start an investigation, there are no obligations in the RSD for the NIB to do otherwise, except in the case of the serious accidents in terms of article 19 (1).
- It is often the case that occurrences falling under article 19 (2) of the RSD have a higher potential for safety “lessons to be learned” than article 19 (1) accidents. For this reason, the NIB may be justified in deciding to perform a “deeper” investigation for an article 19 (2) occurrence.
- Article 19 (3) of the RSD does not discharge the investigation bodies from conducting an investigation in cases falling under article 19 (1). An investigation cannot be limited only to the collection of facts. In any cases the investigation should include at least the analysis of the findings and the identification of the direct and immediate causes. The decision not to carry out an investigation of the underlying and the root causes should be justified and documented.

Good practice:

- Some member states use the term “preliminary examination” to describe the phase, when the investigation body is collecting facts but has not yet taken the decision to investigate. Although the RSD does not make this distinction, giving this activity a formal label contributes to a useful and clearer overview of the investigation process and procedures.
- Some member states regularly draft short notes recording the visit to the accident site, even when the NIB has decided not to investigate. This note may be used in the justification of the decision.



7. Guidance on article 21 (6)

In article 21 (6) of the RSD it is clearly stated that it is within the power of the member state to entrust the investigation body with investigations other than those referred to in article 19:

“Member States may entrust the investigation body with the task of carrying out investigation of railway accidents and incidents other than those referred to in article 19.”

As this article refers to accidents not covered by article 19, there is a clear distinction in types of accidents covered by the respective legal base.

When investigations fall under article 21(6), the NIBs shall respect their national legislation. The RSD does not set out requirements for the conduct of these investigations.

Please note:

Even in cases where the national legislation requires the investigation of specific types of occurrences, e.g. all suicides, the NIB shall first consider whether the occurrence should be investigated according to article 19 (2) of the RSD. Only when it is certain that this is not the case and the national legislation obliges the NIB to carry out an investigation, the accident or incident fall under to article 21 (6).

8. Overview on the decision process

This flowchart describes the decision process to investigate or not and to classify an accident or an incident:

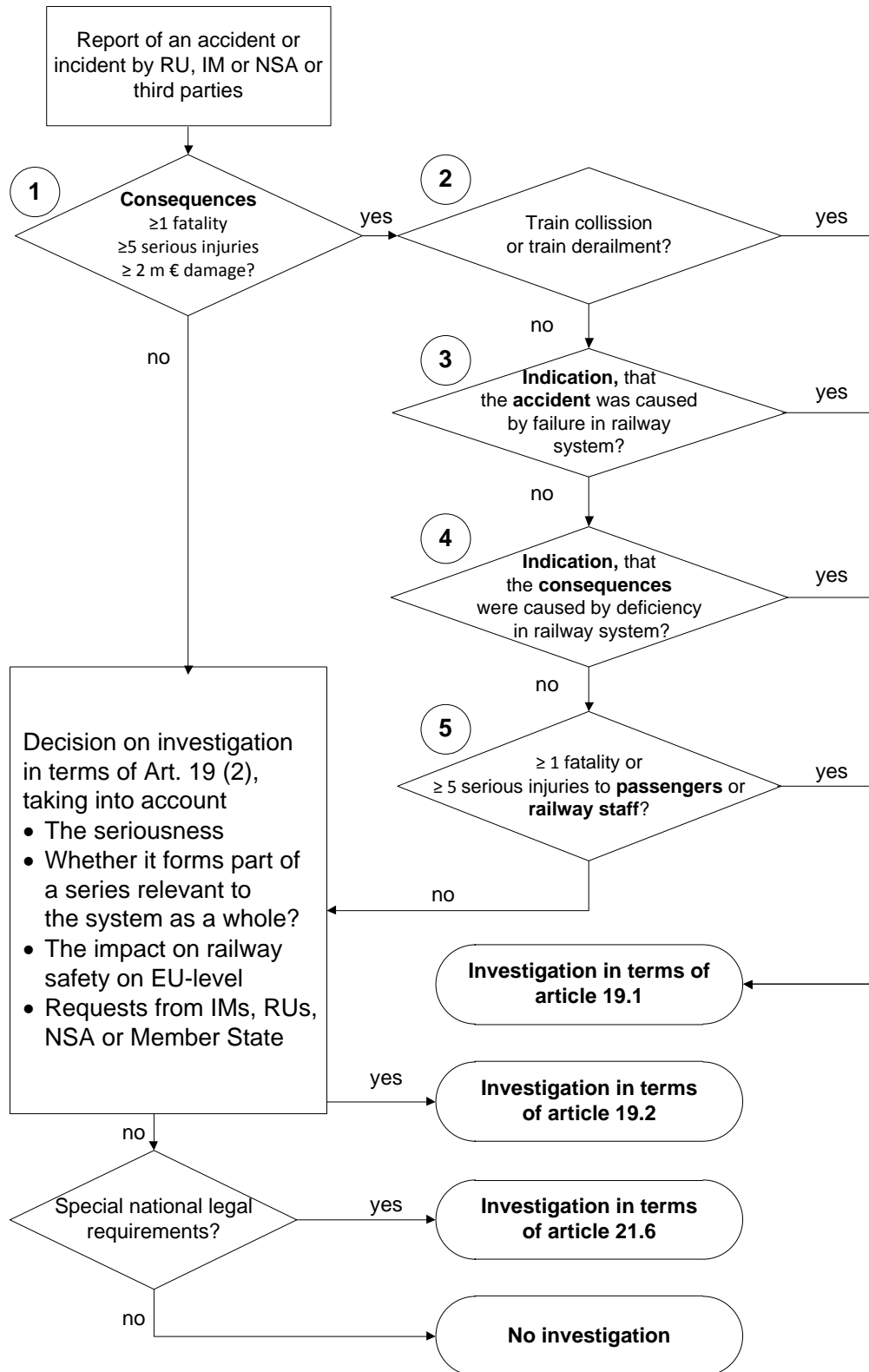


Fig.2: Flowchart for the decision to investigate or not



In cases of doubt the NIB should proceed as follows:

Decision points	Conditions	Proposed action
1¹⁶	When consequences marginally do not fulfil the article 19 (1) criteria	start to investigate according to article 19 (2) because of “the seriousness of the accident or incident”
4	When there is an indication that the accident itself or the severity of the consequences was caused by a failure within the railway system	start the investigation according to article 19 (2) because of the “impact on railway safety on EU-level”
5	When the accident was caused by third parties but with severe consequences to persons within the railway system	start to investigate according to article 19 (2) because of “the seriousness of the accident or incident” or “impact on railway safety on EU-level”

The decision to investigate accidents and incidents which do not fall within article 19 (1) can be changed at any time; the reasons for the change of decision should be documented.

Consequently, the notification in the Agency’s database ERADIS may - after consultation with the Agency- be reclassified or deleted.

¹⁶ The numbers in this table refer to the numbers in Fig. 2



Annex I Examples

This section provides examples for each category of accidents to support the guidance.

1. Examples of accidents which should or should not be classified as article 19 (1)

1.1. Train collisions

a) Obligation for investigation under article 19 (1):

- A train collided with a tree. Two passengers were killed. This accident is classified as a train collision and should be investigated according to article 19 (1). The main focus of the investigation should be on the following questions:
 - how the RU and the IM dealing with the risk of trees falling down on the track
 - whether there are indications for possible improvement in the construction of the train (e.g. crashworthiness) or the rescue devices (e.g. escape installations)?
- A train collided with a car which had fallen from a bridge. Three people in the car were killed in the collision. This accident has to be investigated according to article 19 (1).
- A train collided with a freight wagon lost by another train. 10 passengers were seriously injured. This accident has to be investigated according to article 19 (1).

b) No obligation for investigation under article 19 (1):

A train collided with a tree. Two passengers were slightly injured. This accident does not have to be investigated according to article 19 (1); however, it should be checked whether an investigation according to article 19 (2) may be useful. In general train collisions should be investigated.

1.2. Train derailments

a) Obligation for investigation under article 19 (1):

Two wagons of a freight train derailed on the open line. There were no injuries. The track was destroyed over a length of 3500 m, 2 switches were destroyed. The estimated damage was 2.500.000 €. This accident has to be investigated according to article 19 (1).

b) No obligation for investigation in terms of article 19 (1):

Two wagons of a freight train derailed on the open line. There were no injuries, the estimated damage was 25.000 €. This accident does not have to be investigated according to article 19 (1); however, it should be checked whether an investigation according to article 19 (2) may be useful. In general train derailments should be investigated.

1.3. Level-crossing accidents

a) Obligation for investigation under article 19 (1):

- A train collided with a car on a level crossing secured by half-barriers. Two people in the car were killed; the train driver and 7 passengers were seriously injured. There was no malfunction of the barriers or other rail-side safety devices. According to witness accounts, the car driver tried to pass by the barriers. This accident has to be investigated according to article 19 (1) because the consequences to passengers and employees indicate that there are lessons to be learned either for safety management or safety regulation or both. The main focus of the investigation should be on the questions:
 - why were the consequences so serious within the train
 - whether the risks for the train driver and passengers for these relatively frequent occurrences were assessed and measures implemented?



- A train collided with a car on a level crossing secured by half-barriers. Two people in the car were killed; the train driver was slightly injured. There was evidence of a malfunction of the barriers as they did not close. This accident has to be investigated according to article 19 (1) because the accident was probably caused by a technical failure; this has an impact on the management of safety.
- A train collided with a car on a level crossing without technical protection. Two people in the car were killed. The inspection showed that the road user could not see the approaching train because a side-trailer for use in planned construction works obstructed visibility of the crossing. This accident has to be investigated according to article 19 (1) because of obvious deficiencies in the preparation for track working.

b) No obligation for investigation under article 19 (1):

- A train collided with a car at a level crossing secured by half-barriers. Two people in the car were killed; the train driver was slightly injured. It was evident that there was no malfunction of the barriers or other rail-side safety devices. Witnesses reported that the car driver tried to pass by the closed barriers. This accident does not have to be investigated according to article 19 (1).
- A train collided with a car on a level crossing without technical protection. Two people in the car were killed. The inspection showed that all technical standards were observed and the train staff acted in accordance with the rules. This accident does not have to be investigated according to article 19 (1).

1.4. Accidents to persons caused by rolling stock in motion

a) Obligation for investigation under article 19 (1):

- A train hit a group of people on a double-track line. Two people were killed, two others were seriously injured. Evidence was given that the people were visitors of the IM, who wanted to examine a special installation close to the track. They were within the track area with permission of the dispatcher and under the supervision of IM's safety staff. This accident has to be investigated according to article 19 (1) because the accident was probably caused by a communication failure within the railway system and there are lessons to be learned for safety management.
- In a station a train hit a two people, who were killed. Evidence was given that the people had wanted to reach a commuter train, which was to depart from a different platform than was usual. While crossing the tracks within the station, they were hit by a passing train. The closest safe possibility to cross the tracks was 300 m away. This accident has to be investigated according to article 19 (1) because the decision of the dispatcher to change the departure platform probably contributed to the accident and there are significant lessons to be learned for the safety management system.
- The NIB was informed about a woman killed by a moving train in a station. It appeared to be a case of trespass. Therefore, the NIB had decided not to investigate. However, from press reports and witness statements, the NIB became aware that there may have been circumstances in the railway system, which had caused the accident. The NIB revised its decision and started an investigation. The investigation showed that the woman, acting on ambiguous information, had caught the wrong train. When the train started moving in the wrong direction, she opened the doors –despite technical devices to prevent the doors being opened – and fell out of the train. Subsequently, lying injured on the track, she was hit by another train.

Initially, this accident might have been classified as accident according to article 19 (2). After more information became available, this accident should have been classified as an accident according to article 19 (1).



b) No obligation for investigation under article 19 (1):

A train hit a group of people on a double-track line. Two people were killed, two others were seriously injured. Evidence was given that the people wanted to take a shortcut on the way to a restaurant. This accident does not have to be investigated according to article 19 (1); however, it should be checked whether an investigation according to article 19 (2) may be useful, in particular if there is indication the use of this shortcut is established practise.

1.5. Fire in rolling stock

a) Obligation for investigation under article 19 (1):

A fire in a double-deck coach occurred. One passenger was killed, two passengers seriously injured. It was evident that the fire began on the upper deck. The passengers, who died of smoke poisoning, were found in the upper level; they had tried to escape through the windows labelled as the emergency exit. This accident has to be investigated according to article 19 (1) because it is possible that the construction of the coach contributed to the consequences to the passengers.

b) No obligation for investigation in terms of article 19 (1):

A fire in rolling stock occurred. One passenger was slightly injured. It was evident that the fire was caused by an electrical shortcut in the ventilation system. This accident does not have to be investigated according to article 19 (1); however, it should be checked whether an investigation according to article 19 (2) may be useful. In general, fires in passenger trains should be investigated.

2. Examples on accidents which should be classified according to article 19 (2) or not

2.1. Train collisions

- A train collides with a tree. Two passengers were slightly injured. At certain times of day the train is full of school children. Because of school holidays, the train was almost empty when the accident occurred.

There are two reasons that indicate that this collision should be investigated according to article 19 (2):

- It is only because of favourable conditions: school holidays that the collision did not lead to serious consequences in terms of article 3 (1). The school holidays may be considered as a random condition in the context of the incident/accident.
- Train collisions always have the potential to lead to serious accidents. It is within the discretion of the NIB to investigate or not.

- Two freight trains both travelling at 10 km/h collided on an open line. One locomotive driver was slightly injured. The low speed of one train was the result of a temporary speed restriction because of track work; the driver of the other locomotive had received an “urgent stop call” from the train dispatcher and had triggered the emergency brake.

There are two indications for an investigation according to article 19 (2):

- The low speed of the trains was caused by special fortunate circumstances, which actively contributed to the minor consequences of the collision.
- Train collisions always have the potential to lead to serious accidents.

It is within the discretion of the NIB to investigate or not.

- The first bogie of a regional freight train derailed at low speed on a one-track line because of a snowdrift. The speed is normally limited to 40 km/h on this line because of track alignment. No passenger trains operate on this line.



As derailments always have the potential to lead to serious accidents, this accident may be considered as accident according to article 19 (2). Another issue may be how the RU and the IM deal with the risk of snowfall in their safety management systems.

2.2. Train derailments

- Two wagons of a freight train derailed on an open line. The derailment had been observed by a train dispatcher, who immediately informed the train driver. No people were injured; the estimated damage was 25.000 €.

The train dispatcher was only able to observe the derailment because it occurred just in front of his office. It can be assumed that otherwise the damage would have been much higher and persons might have been injured.

There are two indications for an investigation according to article 19 (2):

- The observation of the derailment can be considered as a special, fortunate circumstance, which actively contributed to the minor consequences of the derailment.
- Train derailments always have the potential to lead to serious accidents.

It is within the discretion of the NIB to investigate or not.

- Eight cars of a high-speed passenger train derailed in a tunnel as a result of a broken wheel. The train, which was being operated in left-hand driving, derailed to the left-hand side and was held upright by the walls of the tunnel. A few seconds later an oncoming train passed by without colliding with any part of the derailed train. Nobody was seriously injured.

There are two indications for an investigation according to article 19 (2):

- The direction of the derailment can be considered as a “randomly distributed” condition. The derailment would have resulted in a serious accident had this one condition been different.
- Train derailments always have the potential to lead to serious accidents.

It is within the discretion of the NIB to investigate or not.

2.3. Level-crossing accidents

- A train collided with a car on a level crossing secured by half-barriers. Two people in the car were killed; the train driver was slightly injured. There was no evidence that the barriers or other rail-side safety devices malfunctioned. There were witness accounts that the car driver tried to pass by the closed barriers.

An accident on a level crossing with motor vehicles always has the potential to lead to a serious accident. This may be a reason to perform an investigation.

It is within the discretion of the NIB to investigate or not.

- A train collided with a woman on a level-crossing for pedestrians. The woman was seriously injured. It was clear that the woman had ignored the acoustic signals warning of the approach of the train.

This accident should not be classified as an accident according to article 19 (2) unless there are particular reasons why the women ignored the warning signals. This is not an accident which under slightly different conditions may have led to a serious accident.



2.4. Accidents to persons caused by rolling stock in motion

- A train hit a group of people on a double-track line. Two people were killed, two others were seriously injured. Evidence was given that the people wanted to take a shortcut on the way to a restaurant.

This accident does not have to be investigated according to article 19 (1). This accidents should not be classified as an accident according to article 19 (2), unless there are special reasons relating to the railway system why the shortcut was taken. This is not an accident which meets the criteria to investigate under article 19 (2).

- A child's pushchair was pulled onto the tracks from a platform besides a two-track line, by the air draft from a passing freight train. By chance the pushchair was empty, as the father had just taken the child up into his arms.

This accident may be considered as "*incident, which under slightly different conditions could have led to a serious accident*" and, if appropriate, should be investigated according to article 19 (2).

It is within the discretion of the NIB to investigate or not.

2.5. Fire in rolling stock

- There was a fire in a passenger train. One man was slightly injured. It was clear that the fire was caused by an electrical shortcut in the ventilation system.

There are two indications for an investigation according to article 19 (2):

- An electrical shortcut in the ventilation system may have an impact on railway safety at a Community level, as it is a standard equipment of passenger trains.
- Fire in passenger trains always have the potential to lead to serious accidents.

If appropriate, this accident should be investigated according to article 19 (2). It is within the discretion of the NIB to investigate or not.

3. Examples on investigations with limited extent according to article 19 (3)

A train derailed after a collision with a lorry. The lorry driver had crossed the track as a short-cut between a level crossing and a company yard 50 m away from the level crossing. The lorry became stuck in the ballast. A regional train was not able to stop and collided with the lorry.

15 passengers were slightly injured. The direct and immediate cause of the accident was clear.

When visiting the accident site the NIB detected a problem with the emergency exit windows of the train. Therefore the NIB decided to start an investigation which was focussed on the problem with the emergency exit windows.

The NIB justified their decision because this problem might have a wider impact on railway safety.