

Passenger-carrying miniature railways

Guidance on safe practice



HSG216

HSE BOOKS

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This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance as illustrating good practice.

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Preface

The guidance has been agreed by the Health and Safety Executive (HSE) and the Miniature Railway Liaison Group.

The following associations are represented within the Group:

- The Northern Association of Model Engineering Societies
- The Southern Federation of Model Engineering Societies
- The Midlands Federation of Model Engineering Societies
- Society of Model and Experimental Engineers
- Ground Level 5" Gauge Main Line Association
- 7 $\frac{1}{4}$ " Gauge Society
- Representatives from trade, manufacturers and press
- Representatives from private railways



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Introduction

1 This book explains how to work safely and comply with the law if you are involved in miniature railways. It concentrates on the safety of employers, employees, volunteers (who may be club or society members) and the general public. The guidance gives advice on measures that can be taken to ensure that risks are controlled.

2 The Miniature Railway Liaison Group has worked for some time to raise the level of safety awareness among miniature railway operators, to improve standards and to exchange information. Miniature railways have been shown to be relatively safe, but there have been a small number of accidents involving either the general public and/or operators. Risks therefore need to be kept to acceptable levels.

3 The book replaces Technical Note 3 *Guidelines on the application of the Health and Safety at Work Act 1974 to miniature railways*, issued by Her Majesty's Railway Inspectorate (HMRI) in August 1992. The revision is necessary because of a major shift in health and safety legislation towards risk management through assessment. The new guidance also differentiates between the safety requirements for fairground and amusement park rides and attractions and those for miniature railways.



Passengers enjoying rides on both elevated and ground-level tracks at a club open day

4 The Health and Safety at Work etc Act 1974 (HSW Act) places duties on those who design, plan, construct, operate and maintain miniature railways. All of these people have a duty to ensure that a

miniature railway has been constructed so that it can be operated safely. Further information on health and safety law applicable to miniature railways is contained in Appendix 1.

5 It is recommended that this guidance is followed by clubs and societies, as well as the individual person who constructs or operates a miniature railway for pleasure purposes but intends to offer facilities for the general public to view or ride on the system.

6 Members of the Miniature Railways Liaison Group, who helped write this guidance, recommend the criteria for key components of the miniature railway infrastructure, rolling stock and the appropriate systems and procedures to ensure safe operation. Clubs, societies or individuals are free to meet their legal obligations in other ways, but need to be able to show that what they have done is equally effective.

7 The guidance is based on the processes of hazard identification and risk assessment to identify means of controlling risks as required by health and safety law.

8 Occupational risks, such as manual handling, exposure to substances hazardous to health, noise etc, are not covered. Advice on general health and safety requirements is given in HSE book *Essentials of health and safety at work* (see 'Further reading').

Implementation

9 This guidance covers miniature railways of less than 350 mm gauge. Railways may be those that provide a genuine transport facility within a site, those that constitute a tourist attraction or simply a railway that acts as an expression of the engineering skills of the owner or group involved.

10 HSE's Railway Inspectors will inspect those miniature railways below 350 mm gauge which operate under statutory provisions because they cross a public highway or have other works authorised by a private Act of Parliament or an order under the Light Railway Act 1896. They will

advise whether this guidance or the *Railway safety principles and guidance* (RSPG) need to be applied.

11 General principles to ensure safe practice are provided but the various organisations representing specific aspects of miniature railways may wish to develop and publish their own detailed standards.



A general scene on a ground-level track

12 Any new miniature railways that are constructed should follow this guidance and it is also recommended to operators of existing miniature railways. There is no need to apply this guidance retrospectively but in cases where there are wide variances, or an accident has occurred, you need to consider improving safety by adopting it.

13 This book provides advice on both ground-level and raised-track miniature railways. Where there is no specific reference to one or other of these in any paragraph then the guidance is applicable to both types of miniature railway.

Definitions and abbreviations

Check rail	Rails placed on the inside of the running rail to assist vehicles in the negotiation of small radius curves or pointwork
Flangeway	The distance between the running edge of the rail and the contact edge of the check rail
Gauge	The distance between the inside edge of the two running rails
Locomotive	Any form of motive power including any associated tender and/or driving truck if used
MR	Miniature railway (a railway with a gauge of less than 350 mm)
PER	Pressure Equipment Regulations 1999
PSSR	Pressure Systems Safety Regulations 2000
RSPG	Railway Safety Principles and Guidance
Staff	Any person involved in the operation of the railway, whether an employee, volunteer or member of a club or society
Train	A number of vehicles coupled together, normally headed by a locomotive but in some cases may be hand-propelled

Risk assessment

14 Miniature railway operators need to introduce procedures to identify hazards and assess risks to determine what control measures should be adopted to avoid risk or reduce it to acceptable levels. Procedures for existing miniature railways should be kept under review in order to identify whether any changes to the control measures are needed.

15 Most accidents happen because simple precautions are not taken. An assessment of risks involves looking at what can go wrong, the likelihood of it going wrong and what needs to be done to prevent it from happening. Risk assessment is often about applying common sense in a logical way.

16 A good risk assessment needs to:

- identify the hazards;
- look at who might be harmed and with what degree of severity;
- decide whether the risks are already adequately controlled; and
- determine what further action (if any) is necessary to control the risks.

17 A risk assessment needs to be carried out during each stage of the design, planning, construction, operation and maintenance of a miniature railway. For an existing miniature railway, a risk assessment needs to be carried out for the ongoing infrastructure and operation.

18 A risk assessment may be carried out by anyone who has suitable knowledge and experience of the operations involved. Remember that the owner or operator is responsible for seeing that the risk assessment is done and is adequate.

19 The recommended approach to risk assessment consists of five steps as indicated below.

Step 1 Look for the hazards

'Hazard' means anything that can cause harm (eg hot ashes, runaway vehicles). Look at all of the activities, including non-routine tasks. Look at what actually happens rather than what should happen.

Step 2 Decide who might be harmed, and how

There are employees, volunteers, members of the club or society and members of the public to consider:

Think about how people may be at risk either in carrying out their tasks or as spectators or passengers.

Step 3 For each hazard, evaluate the chance, big or small, of harm actually being done and decide whether existing precautions are adequate or more should be done.

For each hazard, consider what would be the worst result. Would it be damage to limbs, someone being burned, scalded or even killed? How likely is it to happen? If you consider more needs to be done to control the risk, ask yourself if you can avoid the hazard by performing the task in a different way. If not, you need to think about controlling the hazard more effectively:

- Choose the most important thing to tackle first.
- Work with those performing the task to solve the problems and agree precautions.
- Don't forget that new training and information may be required.

Remember, even after all precautions have been taken, some risk will often remain. The important things you need to decide are whether the hazard is significant, and whether you have taken satisfactory precautions so that the risk is as small as possible. Check this when you assess the risks.

Step 4 Record the significant findings of your risk assessment

A 'significant' hazard has the potential to cause serious harm. You can keep paper or electronic records but make sure these are easily accessible. Remember, you only need to record significant findings. These would include the hazards, the existing control measures and the people who may be affected.

Step 5 Review your assessment from time to time, and revise it if necessary

Remember that things change - you might start new operations or there may be technological or social changes. Rules get broken and people don't always do as they have been told. The only way to find out about changes like these is by checking. Don't wait until something has gone wrong. Check that the hazards are the same and that the precautions are still adequate. You should record the results of the review.

Track

General

20 Track is used to support and guide the trains. It should be designed, installed and maintained to a standard suitable for the loadings and speeds of the traffic it has to carry. You need to ensure the stability of the gauge, line and level of the track under all conditions of load and temperature.

21 Drainage needs to be provided if required and it may be necessary to take additional measures to ensure stability on weak or unstable ground.

22 There may be other methods of supporting and correctly locating the rails than the traditional ballast and sleepers. Any other arrangement that is used should meet the standards achieved with ballast and sleepers.

Sleepers and rail supports

23 Sleepers may be made of wood, concrete, steel, plastic or other suitable material. They are used to hold the rails to the correct gauge and distribute the loads imposed by the trains to the supporting structure. They also need to be of suitable dimensions to ensure that these functions are adequately performed.

24 The distance between sleeper centres will be dependent upon the rail section being used, the size of the sleepers and the planned maximum loads to be carried on the track. Sleepers immediately on each side of a rail joint should be pitched so that they minimise the risk of dipped joints.

Rails and fixings

25 The rail should be of a suitable weight and profile for the maximum axle loadings and speed of the trains on the railway. In cases where a mixture of locomotive types and rolling stock is used, the rail needs to be suited to the longest and heaviest vehicles.

26 The fixings attaching the rails to the sleepers or support should be able to hold the rails to gauge and withstand vibration and any temperature

changes. The fixings used to secure the ends of the rails should hold them in vertical and horizontal alignment and, where appropriate, accommodate expansion and contraction.



An example of ground-level track showing sleepers, fixings and ballast

27 When curved track is required, the radius should be as large as is possible, with transition both before and after the curve. The minimum acceptable radius of curved track depends on the gauge, type of stock used and the operating speeds.

28 On curved track it may be advisable to provide super-elevation by the outer rail being higher than the inner one to balance the forces acting on the vehicle so as to load both rails equally. The super-elevation or cant needs to be gradually introduced at the start of a curve and similarly reduced at the end. The amount of super-elevation or cant needs to be appropriate to the speed of the trains and the height of the centre of gravity of a loaded train. When train speeds are very low, super-elevation may not be required.

29 The gauge may be widened slightly on curved track as a means of improving the ride around the curve and to reduce the wear both on the rails and wheels.

30 Ensure that the track does not move out of alignment when there are changes in temperature.

Elevated track

31 When a track is installed on a formation raised from the ground, the foundations must be adequate to bear the loads of both the superstructure and the loaded trains to be carried. The structures need to be so designed and installed as to ensure their stability and that of the trackwork.

32 An adequate system should be provided to prevent any passenger-carrying vehicles from tipping. This may be achieved by a combination of suitable design of the track structure, provision of anti-tipping rails, or the design of the vehicles.



Train running on an elevated track with concrete supports and longitudinal timber beams

33 Any traversers, turntables or other devices built into the track need to have a system installed which ensures that it is not possible to run on to them without their being properly and securely in place.

Ground-level track

Ballast

34 Ballast has four main functions;

- to distribute the load from the sleepers to the larger bearing surface of the track bed;
- to retain the sleepers in position;
- to allow both line and levels to be adjusted; and
- to provide adequate drainage of surface water.

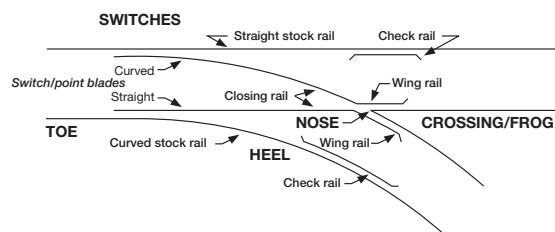
35 The ballast should be of a hard, crushed, angular material and be large enough to provide resistance

to the sideways movement of the sleepers. Shingle or crushed beach stones do not provide sufficient resistance and are not recommended for use.

36 The size of ballast may vary according to sleeper size, spacing and rail sections used but it needs to be of larger than scale appearance to be functional. It needs to extend beyond the ends of the sleepers in order to retain them. The finished level of all of the ballast should be level with the top surface of the sleepers.

Switches and crossings (points)

37 It is preferable to lay trailing points but in cases where the layout requires facing points they need to be kept to a minimum and have some form of route indication. There needs to be a means of establishing that the switchblades are fully 'home' in the correct direction for the signalling.



An example of a switch showing the major components. The facing direction is a movement from left to right in the above diagram and trailing direction is the opposite. The terminology used may vary and the diagram is for illustrative purposes only

38 The gauge of the track should be maintained through any points in either direction. Check rails should be provided to ensure that the wheels are unable to take other than the intended direction of travel. The moving switchblades should be manufactured to fit against the appropriate fixed rail and may need to be recessed accordingly to ensure they allow the wheels to pass in the correct direction.

39 The clearances of flangeways and crossings need to be compatible with the profile of the wheels in use.

40 At remote locations a system using spring-loaded points or weighted levers may need to be installed at turning or passing loops. You need to indicate the direction in which the points are set.

Note: In all cases the driver is responsible for ensuring the points are set for the correct route and the switchblades are fully home before passing over them.

Portable track

41 Portable track (consisting of pre-formed track panels complete with rails, fixings and sleepers) needs to be erected so that the track is level. Any packing necessary to achieve this levelling should be of suitable size and material to ensure that it can bear the loads imposed upon the tracks and transfers them to the ground without distortion. The spacing of any packing should be close enough to prevent twist and the support should be rigid enough to prevent significant deflection under traffic.



Portable track in use at an outside event

42 Where a portable track is a simple 'out and back' layout, you need to consider providing upwards slopes on the approach to each end, to assist in braking, together with buffer stops or an adequate over-run area.

43 Where a portable track is used, suitable barriers may be required to control the movement of people.

Infrastructure

Clearances for train and passenger safety

44 Wherever possible, the clearances should ensure that passengers cannot reach out and strike any passing trains, structure or other object (including trees). Where this is not possible, warning indications need to be displayed.

45 All structures and earthworks should be designed to ensure that there is a clearance of adequate width on each side of the widest stock used on the line to allow for passengers to get off trains in an emergency.

Earthworks

46 Earthworks (usually embankments and cuttings) need to be designed and constructed with suitable materials to provide adequate support and stability.

47 Any earthworks need to be graded to provide long-term stability while allowing the use of mechanical machinery for grass cutting etc and safe access for maintenance. Precautions may be required in steep-sided cuttings to ensure materials do not fall onto the line.



Track on an embankment showing side clearances to allow for passengers to get off the train in an emergency

Bridges, tunnels and viaducts

48 Bridges and viaducts should be strong enough to bear the weight of the trains. If walkways and handrails are provided on bridges and viaducts, they need to be strong enough to bear the weight of the vehicles on them and also the likely number of passengers who may use them.

49 Tunnels and bridges should be designed with adequate width and headroom to ensure safety in cases where it is necessary for passengers to get off the train.

Fencing

50 Consider fencing off areas where the public are likely to congregate, especially around station areas where there will be flows of pedestrians.

51 Unfenced track is acceptable provided drivers have a clear and unobstructed view of the areas on both sides of the track. Where this is not the case, consider providing fencing or regulating train speeds.

Stations

Platform layout



Station layout showing both elevated and ground-level tracks with safety fencing and overbridge for access

52 Stations should be designed with straight platforms where practicable but in all cases there needs to be good visibility for the train crew of the full length of the train. They should be on as level gradient as is possible. Any buildings or canopies need to be built and located so as not to interfere with the driver's line of sight.

Platform construction

53 Platforms should be long enough to accommodate the longest train operated and wide enough for the greatest number of passengers likely to use them at any one time. Platform buildings or other obstructions should be designed to avoid undue restrictions to the movement of passengers. Where the layout permits, provide separate loading and unloading platforms or a barrier system to prevent the platform becoming overcrowded.

54 The level of the platform should allow ease of access to the rolling stock in use and avoid the possibility of people trapping their legs or feet. The platform surface needs to be of a suitable material to minimise the risk of slips or trips and have a gentle slope away from the edge of the platform to ensure objects left unattended do not roll onto the track. The edges of the platform surface should be marked with a white line.

Other public areas in a station

55 The public areas of stations should be designed to allow the unimpeded movement of passengers when those areas are at their busiest. Where passenger numbers are higher than usual, there may be a need to introduce additional measures for crowd control.

56 All floors, steps, treads etc should be designed with due consideration to the environmental conditions and should minimise the risks of slipping and tripping. All columns, posts, seats and other obstructions in the public areas should be clearly visible.

Signalling

57 Any miniature railway that has more than one train in operation needs a system to prevent conflicting movements. The system of control needs to be as simple as possible, while ensuring the safe operation of the railway.

58 The primary function of any control or signalling system is to:

- prevent collisions between trains;
- give indications of the route that has been set;
- control access of trains to a section of the line; and
- protect level crossings.

59 Where the safety of operation of a miniature railway can be ensured by a system of driving on a line-of-sight basis, no signalling system may be required. Train speeds need to be regulated so that the driver can stop within line of sight at all times.

60 Where a signalling system is installed on a miniature railway, the complexity will depend on the type of line and the speed and frequency of trains.



Semaphore signalling at the departure end of a station showing controlling signal box

61 There are various types of suitable control systems in addition to full signalling. These include one engine in-use, tokens giving authority over specific areas of the line and two-way radio communication. There may be cases where it is advisable to use a mixture of systems, in which case you need to ensure that the basic functions listed

earlier are ensured. The choice of signalling system needs to be supported by an appropriate risk assessment.

62 The signals need to be spaced at appropriate intervals for the frequency, speed and braking performance of all trains using the line. Signals may include visual indications passed to the train crew by means of coloured lights, semaphore signals, fixed markers, coloured flags or similar manual operations. Where these are to be used during the hours of darkness or reduced levels of visibility, they need to have supporting lighted indications.

63 Signal aspects need to be visible for an adequate length of time on the approach to the signal and when a train has stopped at the signal. Where an adequate sighting cannot be obtained, another signal, which repeats the main one, may be provided on the approach.

64 Any signalling system provided should ensure that, in case of failure, all signals return to danger. Points should remain in the same position as they were at the time of the failure.

Level crossings

65 In situations where a level crossing has to be provided, there should be an adequate form of protection. The extent of this will depend on the potential for conflicting movements of trains, vehicles and people.

66 At unmanned level crossings, warning signs, whistle boards and a train speed restriction may provide enough protection. The driver of an approaching train needs to have an unobstructed view of the approach areas on both sides of the crossing.

67 Where there is a level crossing of a road which provides access to public vehicles, you need to ensure that the requirements of the Level Crossings Act 1983 (as amended by the Level Crossings Regulations 1997) are complied with. You should consult HSE's Railway Inspectors in the early stages of planning, as they are the authority that will give ultimate approval. The requirements are contained in the *Railway safety principles and guidance*, Part 2 Section E 'Level crossings' (available from HSE Books).

68 Where a level crossing is authorised, you need to ensure adequate co-operation between the railway and the person responsible for the road, paying particular attention to the visibility for both road and rail traffic.

Locomotives and rolling stock

Locomotives

69 Locomotives need to be:

- constructed to provide safety and reliability in service;
- provided with a system to give an audible warning of approach; and
- provided with a system to ensure safety when the locomotive is left unattended or stabled.

Boiler systems

70 The Pressure Equipment Regulations 1999 (PER) cover placing boilers above a certain size on the market and putting them into service. The Regulations do not apply to a privately built boiler put into service by the same person for their own use.

71 The Pressure Systems Safety Regulations 2000 (PSSR) provide for the ongoing safety of all vessels with a pressure in excess of 0.5 bar (7 psi) above atmospheric pressure (ie 22 psi absolute) or steam at any pressure. The purpose of the Regulations is to prevent the risk of serious injury from stored energy and steam being released as a result of the failure of a pressure system or part of one. Steam locomotives fall under the definition of 'installed systems' for the purposes of the Regulations (they are excluded from the definition of 'mobile system').

72 The Regulations require that boilers are properly designed and constructed from suitable materials. They also require that examinations are carried out in accordance with a written scheme of examination detailing the various items to be included and the frequency of examinations.

73 The Regulations require inspections to be carried out by a person who is competent to examine that particular piece of equipment. They also require that adequate records of the examinations are kept. The maximum intervals between examinations should be specified and each report should indicate the latest date of the next examination.

74 When a boiler is to be used other than in the course of a business by a member of a club or society or by a private individual, the examination arrangements provided by one of the model associations or federations may be used. These procedures need to cover aspects provided for in PSSR. Boilers having certificates issued under these arrangements may still be acceptable as visitors on lines operating as a business but this will depend on the insurance cover and management of the particular railway concerned.

Rolling stock

75 Passenger-carrying vehicles need to be stable, with enough protection to ensure that they minimise the risk of people being able to move their feet into a position of danger, trap any of their limbs or strike lineside objects. Arrangements should also be in place to make it impossible for a passenger to trap a limb between the vehicles.

76 Rolling stock should have adequate suspension, buffers and couplings to ensure that it can be operated safely.



Sit-inside passenger carriages on a ground-level track

Couplings

77 The design of any coupling should be adequate for the purpose and ensure that the rolling stock is securely coupled in all circumstances, eg when propelling or in a derailment. You need to prevent over-riding in the event of a collision. There are a number of different coupling systems which may be appropriate including three-link with side buffers, bars secured with pins and combined central buffer/coupling. The use of scale couplings of the three-link, instanter or screw type are not recommended as in scale form they have insufficient strength to ensure safety in all circumstances.

78 Safety chains should be considered between the locomotive and tender or driving truck. Their use between other vehicles in a train could prevent a division even if the main coupling fails.

79 On miniature railways where propelling of trains takes place, you need to consider ensuring the lateral stability of the vehicles within the train during this operation.



Elevated track passenger carriages showing valances and flexible coverings between the top and sides of the vehicles

Brakes

80 A braking system is required which is adequate for the loaded train weight, normal speed of running, gradients and operating methods. This system needs to be capable of bringing the train to a stop in normal and emergency conditions, in a safe distance.

81 If the braking system is of a continuous type, operating on the coaches and locomotives, it should be capable of being worked from the locomotive by the driver; in emergency by the guard (if carried) or be applied automatically in the event of a division of the train. Brakes used as the normal 'service brake' should be capable of being applied gradually to stop the train smoothly.

82 When the brakes have been applied, they should remain on in order to hold the vehicle(s) for an adequate length of time.

83 Lightweight trains may be operated with a non-automatic brake of adequate power. Where small locomotives are used, it is common to provide a braked 'driving truck', rather than rely on the locomotive brakes.

84 If locomotives are using one of the various propulsion systems involving a chain, gear or hydraulic drive, the transmission system cannot be relied upon to provide an adequate train braking system. The severance of any chain or gear drive to the wheels would lead to the driver being unable to control the speed of the train. The brakes need to act directly onto the wheels or axle-mounted discs and not be of the sled or skid type that operate on the rails in view of the danger of this type of system lifting the vehicles off the track.

Wheels

85 The wheels on any wheelset and the suspension of a vehicle need to be compatible with the rail profile, track geometry, infrastructure and vehicle or train speed.

Operation

General

86 Any miniature railway, even a simple operation, needs to have operating rules to provide for safe operation in both normal and emergency situations. The rules should be appropriate to the railway, easy to understand by all staff and not too complex.

87 Miniature railways need to ensure that all staff involved are competent and have declared their medical and physical fitness for the duties they are to perform.

88 Miniature railways should ensure that all staff involved are not under the adverse influence of alcohol or drugs.

89 Miniature railways need to prepare procedures to cover safe operation, and in particular undertake a risk assessment for their operations. The attention to detail in the risk assessment needs to be commensurate with the scale of operations. Separate risk assessments may be required for operations of fixed and portable tracks. The results of the risk assessments and any control measures introduced to reduce risks should be recorded.

90 Where people below the age of 18 are involved in any activities on a miniature railway, you need to ensure that a risk assessment has been carried out which takes into consideration the inexperience and reduced attention span of the individuals concerned. This requirement is in order to comply with the legislation in connection with young persons undertaking work and, provided they have been assessed as competent, does not preclude them from any particular activity (such as driving).

91 Miniature railways should have the following documentation. Copies should be reasonably available at all times and on request by any party concerned:

- general description of miniature railway;
- plan of track and site, showing public access areas, junctions, pathways, gradients, speed restrictions, signals etc;
- risk assessment documentation; and
- operating rules, byelaws etc as appropriate to the operation.

Management of operations

92 It is recommended that for each running session you appoint a person in charge who has the authority to ensure that all procedures laid down are followed.

93 The person in charge should have details of the emergency plans and a list of emergency contact telephone numbers. All of the staff involved should be made aware of the procedures in case of emergency. On all occasions that the railway operates, a record should be kept of the date, locomotives run on the track and staff in attendance.

Recording and reporting incidents

94 A record needs to be maintained giving details of all incidents and near misses that happen during any operating session. Full details of the occurrence and the people involved, together with any witnesses, should be recorded. This record needs to be completed at the time of the event in order to ensure that full details are available in the event of their being required at a later date. The form shown in Appendix 2 provides some indication of the information that may need to be recorded.

95 You are legally required to report certain incidents causing injury or dangerous occurrences. Notification is required when:

- members of the public are taken to hospital for treatment;
- employees suffer certain injuries or are unable to work for more than three days; or
- any unintended collision of a train or vehicle with any other train, vehicle or stationary object occurs which might have caused death or major injury to any person.

More detail is contained in *A Guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995* (see 'Further reading').

96 When you report an incident, use form F2508 (see example shown in Appendix 3). This can either be directly to the appropriate enforcing authority (your local HSE office or local authority) or through

the Incident Contact Centre. If you use the centre you do not need to be concerned about which is the appropriate enforcing authority, as they will process the report for you. If you do not have a copy of the form, contact the centre and you will be sent one.

Incident Contact Centre
Caerphilly Business Park
Caerphilly
CF83 3GG
Tel: 0845 300 9923
Fax: 0845 300 9924
riddor@natbrit.com
Internet reports: www.riddor.gov.uk

97 You need to investigate and record the causes of any incident and, if necessary, reassess the operations in the light of what has occurred.

Trains

98 When trains are operating with more than one passenger-carrying vehicle, you need to consider providing a guard to ride on the train.

99 You need to consider the load of trains for various sizes of locomotives, taking into account the speed, braking and hauling capabilities. These should be reviewed if there are any changes in the operational circumstances. The main changes to be considered would be a reduction in the braking capacity or a change in the rail conditions (ie from dry to wet) reducing adhesion.

100 In darkness or reduced visibility, the train needs to carry a lighted red tail-lamp on the rear of the last vehicle. In other conditions it is recommended that some form of red indicator marks the rear of the train.

101 Drivers are responsible for ensuring their locomotive or train is under control at all times and, in cases where no guard is carried, are also responsible for the safety of the passengers.

102 The guard, where one is provided, is responsible for the safety of the train including any passengers or goods. This person needs to be in a

position to enable them to see as much of the train as is reasonably practicable. It is preferable that they have access to an emergency brake control, but if not, there needs to be a system of audible warning communication between the guard and driver.

Servicing of locomotives

103 The operations involved with the preparation and disposal of locomotives, such as using a blower to raise steam, dropping the fire and blowing down boilers, should be carried out carefully, in areas away from the public. Care needs to be taken to avoid the risk of injury to other staff and to avoid any spread of fire.

104 Refuelling of diesel, petrol or gas-fired locomotives should be carried out well away from public areas and places where steam locomotives are being prepared or ash disposed of. Care should also be taken when charging or changing batteries in case any sparking could create hazardous conditions.

Pre-running inspection

105 A visual inspection of the track and adjacent areas should be made before starting any running session to ensure that it is safe for use. The person making this inspection needs to make any entry to this effect in the record of the running session and sign it.

106 A visual inspection of any locomotive should be made before it is used. In the case of a steam locomotive, a further inspection needs to be made during steam raising to look out for any leaks or failures. This latter inspection needs to include checking the water feeds to the boiler; blowing down the water gauges and observing the correct action of the safety valve(s). In all cases, the inspection should include the testing of the audible warning device and any braking system. Any defects found in these items should be remedied before the locomotive is used.

107 All items of rolling stock should be inspected before being used in any running session to ensure that they are safe for use.

The self-employed

108 If people working under the control and direction of others are treated as self-employed for tax and National Insurance purposes, they are nevertheless treated as employees for health and safety purposes. If any doubt exists about who is responsible for an individual's health and safety, it should be clarified in the terms of contract. However, remember that a criminal legal duty cannot be absolved nor transferred by means of contract. Legal advice should always be sought before attempting to employ workers on the basis that they will be responsible for their own health and safety.

Insurance

109 The operator of any miniature railway needs to have a suitable level of public, product or employer's liability insurance. Ensure that such insurance covers the ages of all people likely to perform duties. If any age limits are imposed by the insurers, for particular duties, ensure they are adhered to.

Maintenance of equipment

110 In order to ensure that any railway continues to remain serviceable, all items of trackwork, locomotives, rolling stock and buildings etc should receive adequate maintenance. The frequency and detail of the various examinations will vary according to the complexity of the individual piece of equipment and how much it is used.

111 Any system of maintenance should ensure the following:

- Regular maintenance (including, as necessary, inspection, testing, adjustment, lubrications and cleaning) should be carried out at suitable intervals, taking into account the level of use of the item of equipment concerned.
- Any defects should be identified and remedied. If necessary, arrangements need to be made for the affected vehicle or infrastructure not to be used in the meantime. If the defect cannot be rectified immediately, it may be necessary to impose conditions which will ensure that safety is not compromised.
- Regular maintenance and remedial work should be carried out properly (and to the same or improved standards of the original).

112 Keep suitable records of the work inspections and any work carried out.

Appendix 1 Guidance on health and safety law

1 The main piece of health and safety legislation is the Health and Safety at Work etc Act 1974 (HSW Act). This sets out the general duties that employers, the self-employed, and people in control of premises have towards their employees, and others who could be affected by the work activities. It also gives employees the general duty to ensure the health and safety of themselves and each other.

General duties of employers and the self-employed

2 Where any organisation, such as a miniature railway, has at least one paid employee anywhere in their organisation, it is considered to be an 'employer' for the purposes of the HSW Act and the regulations made under it.

3 Section 2 of the HSW Act places a duty on employers to ensure, so far as is reasonably practicable, the health, safety and welfare of their employees while at work.

4 Section 3 of the HSW Act places a duty on employers and the self-employed to conduct their undertakings in a way that ensures, so far as is reasonably practicable, that people other than their employees (eg voluntary workers, club or society members and members of the public) are not exposed to risks to their health or safety.

5 The Management of Health and Safety at Work Regulations 1999 place a duty on both employers and the self-employed to assess the risks to employees and anyone else (eg voluntary workers, club or society members and members of the public) who may be affected by the activities being undertaken. As a result of this assessment, appropriate preventative and protective measures have to be taken to reduce the risks identified if they are not adequately controlled at present. Further guidance is given in the 'Risk assessment' section earlier in this guide.

Other general duties in health and safety law

6 Section 4 of the HSW Act places a duty on people in control of non-domestic premises (eg the owner/operator or management committee of any club or society) to ensure, so far as is reasonably practicable, that access arrangements, any activities carried out and any equipment or substance in the premises are safe and without risk to health. The duty is in relation to non-employees (eg voluntary workers or members of a club/society) who use the premises as a place of work, or where they carry out any activities in a public place.

Application of health and safety standards to voluntary workers (including club/society members)

7 In general, the same health and safety standards should be applied to voluntary workers as they would to employees exposed to the same risks. However, if the risk assessment shows that the risks to voluntary workers are different, the preventative and protective measures taken should reflect the different risks.

8 HSE considers it good practice for a volunteer user or management committee of a club or society to provide the same level of health and safety protection as they would in an employer/employee relationship, irrespective of whether there are strict legal duties.

9 If you have any doubts about your health and safety responsibilities towards your employees or others who may be affected by the work activities of your miniature railway undertaking, you should seek further advice. See also HSE Information Sheet ETIS12 *Safe operation of miniature railways, traction engines and road vehicles*.


Appendix 2 Example of an incident report form

This form is an example that may be used to record incidents that did or might have had an effect on the safe operation of the miniature railway, whether involving staff or members of the public. Forms should be completed as soon as possible after the incident and be processed according to your procedures.

INCIDENT REPORT FORM	
1. Date of incident	2. Time of incident
<input type="text"/>	<input type="text"/>
3. Location	4. Weather conditions
<input type="text"/>	<input type="text"/>
5. Details of incident (give as much information as possible, including names of persons concerned)	
<input type="text"/>	
6. Formation of train (if appropriate)	
<input type="text"/>	
7. Driver's name	8. Guards name
<input type="text"/>	<input type="text"/>
9. Details of witness (name, address and telephone no)	
<input type="text"/>	
10. Were there any injuries?	<input type="button" value="Y/N"/> If Yes <input type="button" value="To Staff? To others"/>
11. Details of injuries including name and address of injured persons	
<input type="text"/>	
12. Were emergency services called?	13. If yes, at what time?
<input type="button" value="Y/N"/>	<input type="text"/>
14. If yes, which service?	<input type="button" value="Fire / Police / Ambulance"/>
15. Name/Number of Officer and any Assistant(s) attending (include Crime/Accident Record No if available from emergency service personnel)	
<input type="text"/>	
Please continue entries on reverse if required	
16. Report made by	17. Position
<input type="text"/>	<input type="text"/>
18. Signed	19. Date
<input type="text"/>	<input type="text"/>

Appendix 3 HSE Form F2508

Report of an injury or dangerous occurrence



Health and Safety at Work Act 1974
The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995

Report of an injury or dangerous occurrence

Filling in this form
This form must be filled in by an employee or other responsible person.

Part A

About you

1 What is your full name?

2 What is your job title?

3 What is your telephone number?

About your organisation

4 What is the name of your organisation?

5 What is its address and postcode?

6 What type of work does the organisation do?

Part B

About the incident

1 On what date did the incident happen?

2 At what time did the incident happen?
Please use the 24-hour clock eg 0000

3 Did the incident happen at the home address?

Yes Do to question 3

No Where did the incident happen?

elsewhere in your organisation – give the name, address and postcode

at someone else's premises – give the name, address and postcode

in a public place – give details of where it happened

If you do not know the postcode, what is the name of the local authority?

4 In which department, or where on the premises, did the incident happen?

FORM F2508 (10/11)

Part C

About the injured person

If you are reporting a dangerous occurrence, go to Part E. If more than one person was injured in the same incident, please attach the details asked for in Part C and Part D for each injured person.

1 What is their full name?

2 What is their home address and postcode?

3 What is their home phone number?

4 How did they die?

5 Are they

male?

female?

6 What is their job title?

7 Was the injured person (tick only one box)

one of your employees?

on a training scheme? Give details

on work experience?

employed by someone else? Give details of the employer

self-employed and at work?

a member of the public?

Part D

About the injury

1 What was the injury? (eg fracture, laceration)

2 What part of the body was injured?

Continued on sheet 2

3. Was the injury (tick the one box that applies)

- a fatality?
- a major injury or condition? (the accompanying notes)
- an injury to an employee or self-employed person which prevented them doing their normal work for more than 8 days?
- an injury to a member of the public which meant they had to be taken from the scene of the accident to a hospital for treatment?

4. Did the injured person (tick all the boxes that apply)

- second amputation?
- need resuscitation?
- remain in hospital for more than 24 hours?
- none of the above.

Part E

About the kind of accident

Please tick the one box that best describes what happened, then go to Part G.

- Contact with moving machinery or material being machined
- Hit by a moving, flying or falling object
- Hit by a moving vehicle
- Hit something fixed or stationary
- Injured while handling, lifting or carrying
- Slipped, tripped or fell on the same level
- Fell from a height
How high was the fall?
 metres
- Trapped by something collapsing
- Drowned or asphyxiated
- Exposed to, or in contact with, a harmful substance
- Exposed to fire
- Exposed to an explosion
- Contact with electricity or an electrical discharge
- Injured by an animal
- Physically assaulted by a person
- Another area of incident (describe it in Part G)

Part F

Dangerous occurrences

Enter the number of the dangerous occurrence you are reporting. (The numbers are given in the Regulations and in the notes which accompany this form)

For official use

Claim number

Location number

Event number

INV REP Y N

Part G

Describing what happened

Give us much detail as you can. For instance:

- the name of any substances involved
- the name and type of any machines involved
- the events that led to the incident
- the part played by any people.

If it was a personal injury, give details of what the person was doing. Describe any action that has since been taken to prevent a similar incident. Use a separate piece of paper if you need to.

Part H

Your signature

Signature

Date

Where to send the form

Please send it to the Enforcing Authority for the place where it happened. If you do not know the Enforcing Authority, send it to the nearest HSE office.

Further reading

Management of health and safety at work. Management of Health and Safety at Work Regulations 1999. Approved Code of Practice and guidance
L21 HSE Books 2000 ISBN 0 7176 2488 9

An introduction to health and safety
HSE Books 1997 INDG259 Free leaflet

Five steps to risk assessment HSE Books 1998 Leaflet
INDG163(rev1) Single copies free; also available in priced packs ISBN 0 7176 1565 0

Five steps to risk assessment: Case studies HSG183
HSE Books 1998 ISBN 0 7176 1580 4

Young people at work: A guide for employers HSG165
(Second edition) HSE Books 2000 ISBN 0 7176 1889 7

Essentials of health and safety at work
HSE Books 1996 ISBN 0 7176 0716 X

Charity and voluntary workers: A guide to health and safety at work HSG192 HSE Books 1999
ISBN 0 7176 2424 2

Pressure Equipment Regulations 1999
SI 1999/2001 The Stationery Office

Pressure Systems Safety Regulations 2000
SI 2000/128 The Stationery Office

Safety of pressure systems. Pressure Systems Safety Regulations 2000. Approved Code of Practice L122
HSE Books 2000 ISBN 0 7176 1767 X

A Guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 L73 (Second edition) HSE Books 1999 ISBN 0 7176 2431 5

Safe operation of miniature railways, traction engines and road vehicles Entertainment Information Sheet ETIS12
HSE Books 2000

Requirements for the examination/testing of miniature steam boilers

Copies are available from the Secretaries of:
Southern Federation of Model Engineering Societies.
Northern Association of Model Engineering Societies
The Midlands Federation of Model Engineering Societies

7 $\frac{1}{4}$ " Gauge Society

While every effort has been made to ensure the accuracy of the references listed in this publication, their future availability cannot be guaranteed.

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