

INTRODUCING STAY OFF THE TRACKS

KS3 RESOURCE

Stay off the Tracks – KS3 films (Overhead live wires and electric (third) rail)

These two Stay off the tracks films have been developed in collaboration with the rail industry and aim to illustrate some of the dangerous consequences of interacting improperly with the rail environment.

There are two films within this resource. Both films use either special effects or prosthetics to demonstrate the severe injuries that can occur when someone comes into contact with electrified parts of the railway environment – either from the overhead live wires or the electric (third) rail. Both films feature a Specialist Burns Nurse who helps to explain the immediate physical consequences, and long-term medical impacts for survivors to help reiterate the importance of staying off the tracks and following railway safety rules.

This resource has been designed and is appropriate for the KS3 audience (12-14 years old). We also have a version of this resource for KS4 audience (14-16 years old), which can be found on the Switched On website. This film follows a similar structure but is accompanied by differing activities.

It is important to note that both films in this resource contain content warnings, graphic imagery and deal with sensitive issues, such as injury and death. This should be communicated to pupils, and parents can be given details of where to watch the film if they would like to pre-check content.

LIVING SWITCHED ON

This resource is a part of our Living Switched On suite; a programme designed for 12-16-year-olds.

Young people often make responsible choices around the tracks but there can be times when independent decision-making can be compromised. Living Switched On has been designed to help young people aged 12-16 explore a range of themes such as peer pressure, the perils of group mindset and how at times accidents happen as a result of small bad decisions rather

than one big mistake.

Living Switched On encourages young people to gain the knowledge that could keep them safer around the tracks, whilst also exploring the impact ripple that rolls out across communities and the rail industry workplaces when accidents happen.

We can all enjoy life's adventures when we spot signs of danger, look out for our friends and always stay Switched On.

All other resources in the Living Switched On (12-16) programme can be found on the [Switched On website](https://www.switchedonrailsafety.co.uk).

CURRICULUM LINKS

KS3 & KS4

- **PSHE**
 - Health and wellbeing: self concepts, drugs, alcohol and tobacco, managing risk and personal safety.
 - Relationships: Relationship values, social influences
- **Citizenship**
- **English**
 - Reading, spoken English
- **Science**
 - Physics

S1-S5

- **PSE**
 - Health and wellbeing: self concepts, drugs, alcohol.
 - Managing personal safety and risks, relationships.
 - Social influences
- **Citizenship**
- **English**
 - Reading and talking
- **Science**
 - Physics

These resources can also be used within SMSC planning and delivery.

WHY IS THERE A NEED TO INCORPORATE RAIL SAFETY INTO YOUR TEACHING?

There are 20,000 miles of track, 30,000 bridges, tunnels and viaducts plus thousands of signals, level crossings and stations across our rail network. There are more than 19,000 trespass incidents on the tracks every year.

Learning to hazard spot and address potentially dangerous behaviour is crucial at any age. Schools have recognised the importance of teaching a range of safety behaviours through PSHE and Citizenship lessons in school. The rail industry wants to support this vital work.

HOW TO RUN THE ACTIVITIES AT SCHOOL

This resource has been designed to be flexible and easy-to-use with a range of options for delivery. This teacher guidance document contains tips for delivery and a loose script that can be adapted by educators to best suit the needs of their learners.

This lesson is suitable for a PSHE lesson (or small series of lessons) focused on Rail Safety.

HOW TO RUN THE ACTIVITIES IN OTHER SETTINGS

We're aware that youth groups and families may also want to use the materials. Specific guidance has been provided where appropriate within the lesson plans.

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RESOURCE OVERVIEW

NAME OF RESOURCE	FORMAT	LEARNING OUTCOMES
Stay off the tracks – KS3 films	<ul style="list-style-type: none">VFX Overhead live wires filmProsthetics electric (third) rail filmsTranscripts for both films provided in PDF format	<ul style="list-style-type: none">I can identify dangers of trespassing on the railway, and specifically what causes theseI can identify possible physical impacts on people's lives and bodies from interactions with the electric (third) rail or overhead live wiresI can identify the important warning messages that this film wants to communicate with a young audience

GETTING STARTED

- Resources can be accessed via the [Switched On website](#). Living Switched On also incorporates films and activities from You vs Train, an existing Network Rail resource warning about the risks of trespassing on the railway
- Living Switched On hosts a range of resources from films to quizzes and group discussions we recommend that educators familiarise themselves with the content and plan an appropriate approach for their students

RESOURCE GUIDANCE

STAY OFF THE TRACKS – KS3 FILMS

Overview

Film 1: (Visual effects and overhead live wires) shows a Visual Special Effects Designer demonstrating the effects on a body when it comes into close proximity of the current from the overhead live wires that power some trains. It is created in consultation with a Specialist Burns Nurse, who explains how electricity can cause severe burns and serious internal damage to the body. The film discusses the long-term medical consequences for survivors, with clear warnings to stay off train tracks and follow railway safety rules.

Film 2: (Prosthetics and electric (third) rail) shows a Special Effects Makeup Artist creating realistic injuries, to show what could happen if someone touches an electrified rail. Once again, it is created in consultation with a Specialist Burns Nurse, who explains how electricity can cause severe burns and serious internal damage to the body. The film discusses the long-term medical consequences for survivors, with clear warnings to stay off train tracks and follow railway safety rules.

Supporting resources and equipment required

- Stay off the tracks KS3 film – Prosthetics and electric (third) rail
- Stay off the tracks KS3 film – Visual effects and overhead live wires
- Interactive whiteboard / projector and computer connection
- Transcripts for both films
- Paper and pens
- If available (and appropriate) devices for groups to rewatch their group allocated via (non-essential)

Timing

Minimum 1 x 60-minute lesson

There is however the option to turn this into 2 x 45–60-minute lessons if time allows, which would mean that each film could be studied by all groups in Task 2 and 3, rather than splitting the classes in half.

Home learning tips

The film can be used as home learning, with students responding to the questions rather than undertaking the discussions. Discussion may take place between the home educator and the student, or questions can be used for individual written reflections.

ACTIVITY

Starter activity

- Provide a content warning ahead of starting this lesson:
 - While these films use VFX (visual effects) and prosthetics (stage makeup) it is important to note that it deals with serious issues and injury that some may find upsetting. This should be communicated to students, and parents can be given details of where to watch the film if they would like to pre-check content.
- Introduce the concept to the class:
 - Explain that the purpose of the films is to highlight the dangers of interacting with the railway unsafely, particularly where electricity is used to power trains.

12-14 years

- Before watching the films cue attention to the following questions:
 - **What parts of the railway are the film warning you about?**
 - **Why is it warning us about these parts of the railway?**
- Play both videos to the whole class.
- Students should make notes whilst watching their film in response to the above questions and then
 - in pairs or groups – discuss their answers.
- Bring the class back together and check for understanding. You should reinforce the two specific parts of the railway that the films warn us about interacting unsafely with:
 - **The overhead live wires** (where electricity powers trains from above)
 - » You may want to point out that this is sometimes referred to as 'overhead cables' or 'overhead line equipment'.
 - **The electric (third) rail** (where electricity powers the train through the rails)
 - » You may want to point out that this is sometimes referred to as the 'third rail', 'electric rail' or 'conductor rail'
- Emphasise that both can cause electrocution in
- Ask students to consider some scenarios that may result in human injury caused by dangerous interaction or trespassing on the railway. Some incidents are mentioned in the film, but educators may need to think of additional scenarios of when injury could occur with unsafe interactions with the railway.

- If you want to extend the learning for higher-attaining students or to further consolidate learning: ask students to expand their responses by considering the differences in scenario, depending on whether the railway is powered by overhead live wires or an electric rail.
 - **What might be different between these two scenarios?**
 - **What is similar between the scenarios?**

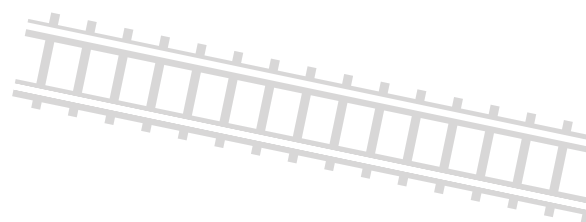
- Run a class discussion to gather answers – call on groups/individuals to share their responses to the three questions.
- Give particular emphasis/focus on what might happen to a person when in close proximity or touching the electric current through the overhead live wires or the electric (third) rail.
- Capture answers from the different groups'/pairs' answers and as a class come to a consensus on the answers to the questions. These can be charted on an interactive whiteboard or flipchart to use in a later task.
- Use the answers on the next page to support you in facilitating the discussion:

TASK 1

KEY INFORMATION FROM THE FILMS

different ways.

- Allow a short time for students to read the transcripts (or watch the film again) and to consider the questions below independently before working with a partner to discuss and prepare ideas.
 - **Identify information about the railway and the overhead live wires that make it dangerous for a person to come in close proximity to it**
 - **Identify information about the railway and the current in the electric (third) rail that make it dangerous for a person to touch it**



TASK 1 – ANSWERS

What is it that makes the overhead live wires dangerous for a person when they come into close proximity with it?

- You don't even have to touch the wires to get electrocuted. Electricity can jump through the air (arc) up to 3m and destroy human tissue, whatever path it takes through the body
- Overhead live wires carry 25,000 volts. That's more than 100 times what you get in your sockets at home
- You can't see the electricity, you can't quickly dodge out the way
- Electricity leaps much further than you think, straight into your body

What is it that makes the current in the electric (third) rail dangerous if you come into contact with it?

- If you come into contact with the electrified rail, the electrical current will flow through your body
- As the electricity passes through your body, the current will try to escape quickly and burst through your skin
- The electricity from the rail will grip you – meaning you won't be able to get away until the power is switched off

What scenarios might cause this danger?

- Trespassing on railway tracks
- Climbing on disused trains near a railway track
- Ignoring the signs and accessing the railway when/where you're not supposed to
- Messing around on a railway bridge or other structures close to the railway and overhead live wires
- Climbing trees or fences in proximity of the railway and overhead live wires
- Throwing items off a bridge which has overhead live wires running underneath it

What scenarios might cause this danger?

- Taking a quick shortcut across the railway
- Hopping the fence and trespassing on the railway
- Ignoring the signs present and crossing the tracks where you shouldn't
- Not using a level crossing properly

Any differences or similarities between the two scenarios?

Differences:

- If the trains are powered by overhead live wires, you don't have to touch the wires to become electrocuted. If the train is powered by an electric (third) rail, you have to come into contact with the tracks to be electrocuted by it

Similarities:

- Trespassing i.e. – not using train stations or level crossings as directed, could put you in a position of danger
- Trespassing on the railway is illegal
- Both overhead live wires and the electric (third) rail can cause significant injury or death

12-14 years

TASK 2

IMPACTS ON LIVES CAUSED BY ELECTROCUTION

- Split the class into half and create partners or small groups from within each half.
- One half (and the groups within them) will further study Film 1 and the other half (and the groups within it) will further study Film 2.
- Using the transcripts (and via re-watching the films if needed) students should look to identify the possible impacts on peoples' lives from interactions with the overhead live wires or electric (third) rail.
- They should examine the short-term physical impacts, longer term physical impacts, and wider impacts such as on wider lives, hobbies, and families.
- Students should use the content of the film initially, but to extend their answers, they can consider wider impacts and implications that they may think of.
 - This might include some of the longer-term impacts of short-term physical damage, e.g. if the skin is burnt, it is going to lead to long-term burn scars.
- Use the answers below to support you in facilitating the discussion:

TASK 2 – ANSWERS

	Electrocution via the overhead live wires	Electrocution via the electric (third) rail
Short-term physical impacts	<ul style="list-style-type: none"> • Electrocution can destroy human tissue • Skin and hair can catch fire • Burns outside the body on the skin • Burns inside the body including to muscles, tissues, organs and/or to bones • If the heart stops beating and cannot be restarted, this will lead to death 	<ul style="list-style-type: none"> • Electrical current may burst through your skin • Body parts heat up to severely damaging temperatures • Extensive burns externally • If the heart stops beating and cannot be restarted, this will lead to death
Long-term physical impacts	<ul style="list-style-type: none"> • Electrocution can destroy human tissue • Long-term burns and scarring • Damage to organs such as the heart, lungs, kidneys, pancreas, brain, and other organs resulting in further operations, dialysis.... • Long-term stays in intensive care in hospital • Long-term changes to body – you may need help to clean your blood (like dialysis) or lots of operations to repair scar damage • Death 	<ul style="list-style-type: none"> • May need large skin grafts to repair burn damage • Damage to organs such as the heart, lungs, kidneys, pancreas, brain, and other organs • Nerve damage, organ damage, brain damage • Regular treatments to help your body work properly • Death

Electrocution via the overhead live wires

Other impacts such as emotional or impact on others

- Very long periods of recovery which may result in friends visiting less and losing friendships
- Emotional impacts – negative effect on wellbeing, mental health, effect of trauma
- The emotional impact on family and friends – pain, grief, upset. As well as time spent helping you to recover

Electrocution via the electric (third) rail

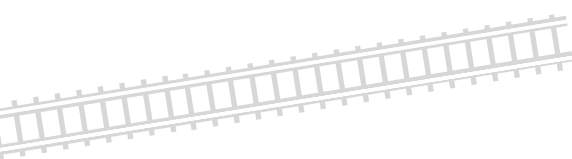
- Months of rehabilitation where you won't be able to hang out with your friends and do the things you want to do
- You could need help eating, going to the toilet, getting dressed
- Effects on how you think, feel and move for the rest of your life.
- Emotional impacts – negative effect on wellbeing, mental health, effect of trauma

- Share findings from the two different halves of the class – calling on specific groups to pull out reflections on each of the points (long-term, short-term and wider impacts).
- Through discussion, draw out similarities between the effects of both types of trespassing on the railway.
- **Key questions for reflection:**
 - Are there any significant differences between the type of injuries caused by the different types of electrocution?
 - How much difference is there in the outcome on someone's life, whether they are electrocuted by the overhead live wires or the electric (third) rail?
- Finish this task by reiterating the importance of following the signs present to avoid all of the impacts you've just discussed.

TASK 3

RAIL INDUSTRY MESSAGES

- Split the class into pairs and ask them to imagine that these films had been presented without visual effects or prosthetics and instead with real people being electrocuted. How would this make them feel?
- Pairs should discuss the question, using the following points to support their reflections:
 - **The choice to tell this story through visual effects or prosthetics rather than show it in real life**
 - **The choice to hear from a Specialist Burns Nurse**
 - **How it might feel if they saw it happening in real life to a friend or family member**
 - **The warning messages that the film are trying to communicate**
- Following these discussions, students should capture what they think the key warning messages are that the films are designed to get across to a young audience about their interactions with the railway.
- Emphasize that they should be concise and specific about the facts, but also consider the emotional warnings being presented.
- If time is limited, groups can be split into studying one film specifically, rather than gathering the warning messages from both films.



TASK 3 – ANSWERS/PROMPTS

Overhead live wires film – What are the key warning messages?

- The overhead live wires are really dangerous
- You don't have to touch the wire, the electricity can jump 3m.
- Getting too close to them can cause serious and life-threatening injuries and sometimes even death
- We should always follow the signs and never trespass on the railway

Electric (third) rails film – What are the key warning messages?

- The electric (third) rail is really dangerous
- Stepping onto the electric (third) rail can cause serious and life-threatening injuries and sometimes even death
- We should always follow the signs and never trespass on the railway

- Bring the class together for a final discussion. Key questions for this reflection:
 - What are the main takeaways and feelings from watching these films?
 - How does it make you reflect on how we might choose to behave around the railway?
- Wrap the up this lesson by reiterating that the railway environment is safe as long as you follow the rules and signs present and stay off the tracks.

Differentiation

For learners with lower cognitive or literacy skills who would benefit from additional support or a slower pace of learning you may wish to draw on resources from the 'Switched On for every journey' programme, which are designed for students aged 7-11. These revisit key rail safety messages in a more supported and accessible way.

NEXT STEPS

If you're looking for other ways to teach rail safety to your students head over to the wider [Switched On website](https://www.switchedonrailsafety.co.uk) for more resources and activities!