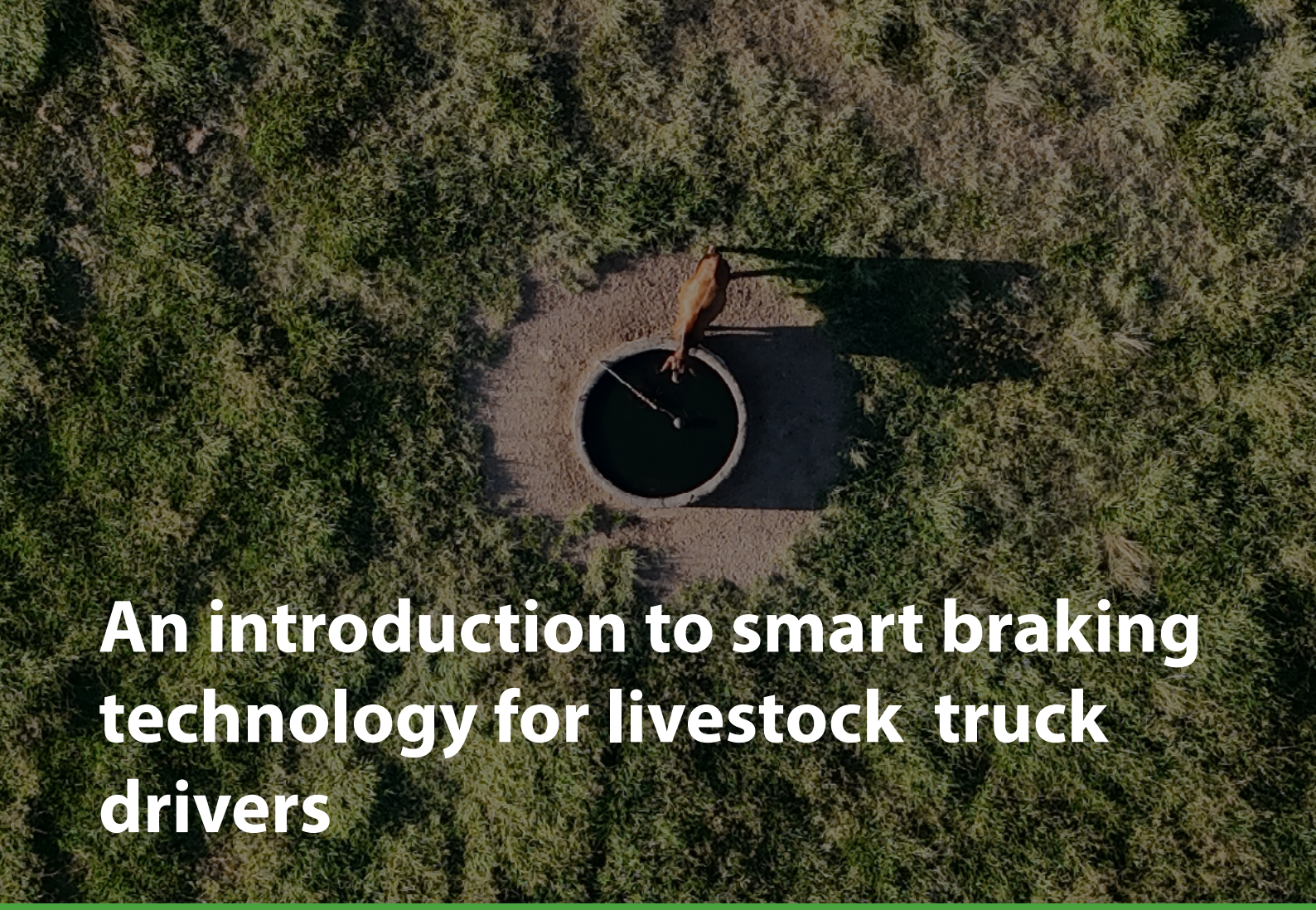


An introduction to smart braking technology for livestock truck drivers

Team Leader/Manager/Facilitator Package

This Toolbox Talk Package is designed to provide Team Leaders/Managers and Facilitators with the required resources and information to conduct a safety talk about the work driving to a group of employees within the organisation.

A generic overview of Toolbox Talk Discussion and how it can be applied to driver fatigue, includes a step by step process to assist team leaders/managers and facilitators to lead a Toolbox Talk discussion.

- Aid for the promotion of discussion
- Topic background information and fact sheet
- Discussion prompt sheet
- Participant attendance record sheet
- Participant self-assessment sheet
- Discussion review sheet

Toolbox Talks

ALRTA
Australian Livestock and Rural Transporters Association

Overview of Toolbox Talk Discussion Kit as a Work Driving Safety Intervention

Introduction

Toolbox Talks have been utilised as a means to communicate information and knowledge and/or discuss work health and safety or operational issues within a workplace. Consequently, Toolbox Talks are an ideal broad-based intervention strategy that can be used to highlight issues associated with work driving safety. Previous research by Swedish Televerket (Telecom) demonstrated the effectiveness of group discussion in comparison to a suite of intervention strategies designed to reduce crash involvement. Results indicated that group discussion contributed to the highest reduction in crashes and was also the most cost-effective intervention to implement (Gregersen et al 1996).

Toolbox Talks are a simple and cost-effective method that not only provides knowledge regarding professional driving safety, but in addition promotes awareness and relevant discussion to the organisation. They typically are kept to a small and manageable timeframe (15-20 minutes) and are designed to convey important information and actively promote further discussion. Longer timeframes may be allocated dependant on time and resources provided by the organisation

Aim

The aim of the Toolbox Talks is to present information and evidence regarding professional driving safety. In addition, it promotes the group discussion of these issues, especially how they may impact your organisation and your employees. Discussion concerning relevant and current issues promotes a more knowledgeable workforce regarding both positive and negative aspects. Ultimately, this proactive intervention aims to incentivise individual behavioural change with assistance from peer involvement and support.

Resources/Kit Contents Explanation

Within the Toolbox Talk kit there are 6 simple steps to aid in planning, leading and reviewing of issues relevant to work driving safety Toolbox Talks. Each of the 6 steps are outlined below;

Step 1 – Aid for the Promotion of Discussion

This has been included as a guide to assist the Team Leader/ Supervisor/Manager as the facilitator. Step 1 aims to provide the basic information to promote discussion within a small group, how to keep the discussion going and ways of dealing with introvert and extrovert participants. Please read the contents of Step 1 completely before moving on to Step 2.

Step 2 – Topic Background Information/Fact Sheets

Step 2 provides the Toolbox Talk facilitator (e.g. Team Leader/ Supervisor/Manager) with background information and recent research with regards to each topic area. Each topic background information sheet(s) should be thoroughly read before leading each Toolbox Talk discussion topic.

Step 3 – Toolbox Talk Discussion Prompts and Supporting Material

Step 3 includes for each topic a set of bulleted points containing the main points for each topic. It assists the Team Leader/ Supervisor/Manager as the facilitator by providing concise information to prompt and guide the discussion. The kit also includes a poster, a presentation and a video to complement the fact sheet with valuable information and allow participants to engage with the presented information in multiple ways.

Step 4 – Topic/Participant Attendance Information

Professional driving safety is part of work health and safety and as such is governed by current legislation, and the Heavy Vehicle National Law. Part of legislation is to provide training/ communicate knowledge of safety issues to staff. This kit contains a participant attendance sheet to be copied, completed and filed with relevant work health and safety records within your organisation.

Step 5 – Participant Self-Assessment

The Participant Self-Assessment aim is to encourage participants to reflect on the issues discussed at the Toolbox Talks with their own driving safety. The assessment is not designed to be mandatory; however, Team Leaders/Supervisors, etc. should encourage participants to complete the questions, at a time convenient to them after the Toolbox Talk. The Participant Self-Assessment sheet provided should be photocopied and handed to participants at the end of the discussion.tep 6 – Toolbox Talk Discussion Review

A review sheet is provided for each topic as part of the kit. It is to be completed prior to doing the next safety Toolbox discussion topic. Facilitators should aim to use the sheet to ask what the participants remember from the last Toolbox Talk instead of reading the list.

Reference

Gregersen, N.P., Brehmer, B. & Moren, B. (1996). Road safety improvement in large companies. An experimental comparison of different measures, Accident Analysis and Prevention, 28, 297-306.

Step 1 - Aid for Promotion of Discussion

The following information is provided as Step 1 of the Toolbox Talk and is designed to assist Team Leaders/Supervisors/ Managers in leading a Toolbox Talk Discussion.

A typical discussion group session consists of a small number of participants under the guidance of their Team Leader/ Supervisor/Manager who will be responsible for leading and facilitating the discussion groups. The informal group discussion atmosphere is intended to encourage team members to speak freely and completely about behaviours, attitudes, and opinions they possess. The role of the Team Leader/Supervisor/Manager facilitating the Toolbox Talk is to create an environment for constructive and cooperative interaction. Below are seven top tips to assist the Team Leader/Supervisor/Manager to lead and facilitate a successful Toolbox Talk.

1) Clearly defined objective and discussion topic

Before starting the Toolbox Talk discussion, make participants aware of the purpose or objectives of the Toolbox Talk discussion, the topic or title for discussion, and any time limits.

2) The nature of the group

The recommended size of focus groups is between 5 and 10 participants. The concise sessions are designed to be approximately 15-20 minutes in duration.

3) Atmosphere/environment and rapport

The atmosphere/environment should be informal and participants should be encouraged to relax, to participate, and to contribute their opinions and ideas without fear of any organisational disciplinary action. Toolbox Talk discussions should take place in an environment with minimal distractions and free of interruptions. Mobile phones should be switched off for the duration of the Toolbox Talk discussion.

4) An aware listening facilitator

The facilitator should be an active listener and flexible in the management of the Toolbox Talk discussion groups. The facilitator should support participants in developing their own solutions rather than suggesting solutions for them.

5) A well organised and prepared facilitator

Toolbox Talk discussions are designed to be short informative sessions where participants can discuss their perceptions and thoughts regarding a particular fleet safety topic. As such, the facilitator should be familiar with the information provided in the Toolbox Talk fact sheet, and be prepared to use them to promote discussion.

6) Structure and direction, but restrained contribution

The facilitator should remain neutral and ensure the fluent discussion by prompting others to discuss their ideas and suggestions. In addition, the facilitator should maintain a balanced flow of ideas among the participants, focussed on the topic at hand and not let a few participants dominate the discussion.

7) Ethical/ Privacy considerations

Confidentiality of discussions should be maintained Participants should be reminded that discussions or opinions raised will be dealt with in a confidential manner and that they abide by this rule. If confidentiality is breached participants may not be willing to share their opinions and suggestions at future Toolbox Talk discussions.

Encouraging Participation in the Toolbox Talk Discussions

The following statements have been highlighted as methods for encouraging participation. Review the discussion topic and objective at the start of the session to orient participants to the nature of the discussion.

Establish a ground set of rules at the start of the session:

- It is important to hear everyone's ideas and opinions.
- Don't offer opinions yourself; instead draw out participants' ideas and thoughts.
- Invite participants who are not contributing for their thoughts or opinions (e.g. Joe, what do you think about this?).
- Acknowledge contributions by thanking the person or by indicating in other ways that the contribution is helpful (e.g. "Very interesting…" or "That should improve the …" or "That's a new way of looking at the problem").
- Encourage people to generate new ideas or approaches.
- Accept opposing points of view.

Problems facilitators may encounter

Introduction

The following common issues/problems are included to aid the facilitator in maintaining the flow of the Toolbox Talk discussions:

- Quiet/Shy Participant
- A group member is not participating as the facilitator thinks they should. This may be because the participant is:
- shy, timid or insecure
- indifferent to the topic being discussed
- bored
- feeling superior
- distracted by pressing issues outside the discussion group
- having trouble understanding the topic under discussion.

Possible Solutions:

- make eye contact with the participant and ask a simple question
- involve the participant more in the discussion
- recognise his/her contribution immediately, sincerely and encourage more
- suggest that everyone takes a turn in sharing their opinion
- ask after the discussion, in private about why the participant was quiet.

Overly Talkative Participant

A participant talks too much, rambles on repeatedly and is generally dominant. This may be caused by:

- a natural need for attention
- being overly prepared/unprepared for the discussion
- wanting to flaunt a large vocabulary or extensive knowledge
- having the most authority.

Possible Solutions:

- glance at your watch whilst the participant is speaking
- during a pause for breath, thank the participant for their comments, and restate the agenda
- emphasising relevant points and time limits
- ask the participant to explain how their comments adds value to the topic in hand
- reflect their comments back to the group
- remind everyone of the time limit.

Side Conversation

A participant is disrupting the discussion by being involved in too many side conversations. This may be because the participant:

- feels the need to introduce an item not relevant to the discussion
- is bored with the discussion
- has a point to raise that they feel makes other items in the discussion less important
- is discussing a related topic but not being heard
- wants to be the centre for attention.

Possible Solutions:

- ask the participant by name if they would like to share their idea with the group
- restate a recently made point and ask for the participants opinion.

Overly Disagreeable Participant

A participant is highly argumentative or generally antagonistic. This may be because they:

- have a combative personality
- are upset by others opinions or a specific discussion issue
- are a show-off by nature
- are unable to make suggestions constructively
- feel that they are being ignored
- have other personal or job-related issues/problems

Possible Solutions:

- paraphrase the participant's comments, and after their response, recap his/her position in objective terms
- find merit in the participant's suggestions, express agreement, then move on
- respond to the participant's comments, not the attack
- open the discussion of the participant's comments to the group
- mention that, due to time restraints, the comments can be further discussed later.
- Toolbox Talk Discussion Prompt Sheets.

Toolbox Talks

Step 2- Fact Sheet

This section (Step 2) includes a copy of a fact sheet which outlines key facts relating to livestock transport. The fact sheet can be copied and distributed to team members participating in the Toolbox Talk.

The transport industry is one of the most dangerous in Australia. Livestock transport presents significantly greater challenges than linehaul, due to factors such as:

- Animal handling and welfare
- Managing Dynamic loads
- Navigating regional and remote areas
- Dealing with road quality which can range from poor to worse

Potential Hazards

Livestock transport presents fundamental hazards, such as loading and unloading livestock, and the fact that you cannot tie them down meaning it is always going to be a dynamic load. Additionally, there is the need to be concerned about animal welfare, taking additional breaks, and thinking about temperatures, water, and time off feed. Livestock transport mostly operates in remote and regional areas, and drivers go to places that almost nobody else goes. In such areas, road types can vary from little more than two tyre tracks through the grass up to regional highways, and the quality often reflects an overdue need for investment.

Given those hazards, the skills and professionalism of livestock truck drivers are highly valued, yet it is important to acknowledge that it is human to make mistakes. The key is to minimise the cost of these mistakes as much as possible, so that when they happen, safety is not compromised.

According to the National Truck Accident Research Centre (NTARC) the single vehicle untripped rollover (SVURO) is the leading crash in livestock transport. This type of event starts with the wheels lifting off the ground in a corner or a bend, and then the truck rolling over. In this way, it is the rollover that causes the crash, rather than a crash causing the rollover.

In 2022, SVUROs were the leading type of serious incident involving livestock trucks, with 44% of incidents over $50k. More than 95% of these crashes were single vehicle. The data shows the average age of drivers involved in SVURO crashes was 43, meaning this is not a problem exclusively affecting young drivers. Likewise, drivers involved in such incidents had an average experience in the license category they were driving at the time of the crash of 13 years. From this information it can be inferred that it is middle-aged and well-experienced drivers who are getting involved in this type of incident, despite their trajectory in the profession.

A concerning aspect presented by the data is that in between one in 41 and one in 50 of these rollover crashes, the driver of the truck is killed.

'Smart' Braking Technologies

Fortunately, different vehicle technologies and systems can help prevent SVUROs.

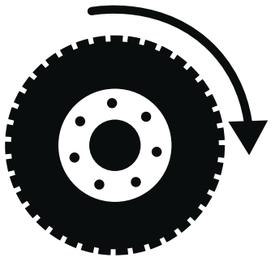
1) Anti-lock Braking Systems (ABS)

Firstly, Anti-lock Braking System, or most commonly know as ABS, is a technology designed to keep your wheels rotating and not have them locked up and sliding. This is important because sliding wheels do not have directional control, and a wheel that is still rotating under heavy braking can slow a vehicle down quicker, making stopping distances shorter.

ABS works by having wheel speed sensors fitted to some (but not usually all) of the wheel ends in each axle group on a truck or trailer. These wheel speed sensors allow the ABS to know that some axles have locked up while others are still rolling and it can then release some of the air pressure to the brake chambers for that axle or axle group until it senses that the wheels have started rotating again, and then reapply that pressure.

ABS helps you monitor wheel sped and modulate braking for groups of wheel ends, which provides directional stability under brakes, avoids flat-spotted tyres, and reduces stopping distances.

95% SVURO crashes were single vehicle.



ABS keeps wheels rolling, preventing lock up and sliding.

2) Electronic Braking Systems (EBS)

Secondly, Electronic Braking System, or most commonly known as EBS, is a technology designed to generate a faster brake response. In the traditional pneumatic braking system there is an air supply that goes to the brake valve for each axle group, and a control or signal line. When you apply the brake pedal, it releases a proportional air pressure signal down the control line and at the valve that signal releases an equivalent but much bigger volume of air to the brake chambers applying the brakes.

With EBS, all those pneumatic controls are retained, but with electronically controlled actuators and an electronic control signal. This means that instead of waiting for that pneumatic signal to weave its way through the prime mover and between each of your trailers, there is a near instantaneous electronic signal to every brake valve in the system. This results in brakes that apply more quickly and where all of the brakes on the combination apply virtually simultaneously.

EBS benefit the driver by providing a faster brake response, shorter stopping distances, and a combination that should be more stable under brakes. Additionally, having electronic control EBS effectively enables other technologies, such as electronic load sensing and brake force distribution.

1) Electronic Stability Control (ESC)

Thirdly, Electronic Stability Control, or most commonly known as ESC, is a technology designed to detect and respond to potential rollover events. The system has sensors that can detect high G forces and wheel-lift events, and apply brakes on the laden side to stabilise combination. It benefits drivers by reducing road wear to rear-view mirrors, and avoiding serious and potentially fatal incidents.

Supporting Change

It is important to identify whether a vehicle has any of these systems, by looking for an indication such as a plate. For instance, the EBS data plate is most commonly (but not always) fitted around the front or front left side of the trailer. If the equipment has the relevant plugs and sockets, it is necessary to ensure it is adequately plugged in. When the vehicle is starting up you should see the dash lights for the brake system illuminate. If they either don't come on or stay illuminated, you need to report it as soon as possible to the workshop.

Some common concerns related to these systems are related to how the brakes in a combination vehicle respond or 'feel' different when the EBS system is functioning. It is important to validate this concern because in the livestock space, any change related to the vehicle brakes can have a real impact on animal welfare. It is recommended to have a trial for a period (e.g., two weeks) for drivers to report back any issues. If there is, it is important to communicate with the brake system designer/certifier.

Another common concern is being watched. This concern is entirely valid and may reflect past shortcomings in communication between employers and employees in transport businesses. It is recommended to have an open and honest discussion with staff about their concerns and the organisation's plans to use the system.

Additionally, some drivers may be concerned that a system failure could leave them stranded. It might be motivated by their high level of concern about animal welfare and as a result, may reflect positively on their cultural fit for livestock transport.

In this case, highlight that smart braking systems are added on top of a traditional pneumatic braking system, meaning if the system fails, it fails back to the system the industry has been running for decades.

Instant electronic signal to every brake valve in the system.

Step 3- Discussion Prompt Sheet and Supporting Material

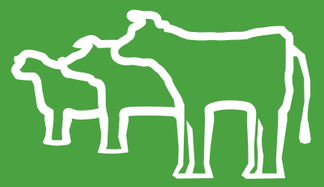
Step 3 of the Toolbox Talk package includes a discussion prompt sheet which includes a set of bulleted points containing the main or focal points for the topic. It is designed to assist the Team Leader/Supervisor/Manager lead and facilitate a Toolbox Talk by providing concise information to guide the discussion. The discussion prompt sheet also contains examples of questions to prompt further discussion if required, as well as a "Setting the Scene" paragraph which can be used by the facilitator to highlight the importance of the topic for participants.

Discussion should not be restricted to the information included within the prompt sheet. If you run out of time, don't worry, just review the main points within the prompt sheet that were not discussed. This will ensure participants are familiar with the key facts relating to livestock transport.

Setting the Scene

The transport industry is one of the most dangerous in Australia. Livestock transport presents significantly greater challenges than linehaul, due to factors such as:

- Animal handling and welfare



- Managing Dynamic loads
- Navigating regional and remote areas
- Dealing with road quality which can range from poor to worse

Complementary resources

The Toolbox Talks kit includes additional material, such as posters and a presentation. The posters present a brief description of each of the key smart braking technologies, how they work and why a driver should want them to be working. It is designed to be displayed in a location constantly visited by staff, where ideally they would spend a couple of minutes, in a printed or digital version.

The presentation summarises the issue and main recommendations in a concise way and presents a 'questions to ask yourself' section. The objective of this presentation is to promote self-assessment and an open conversation about how practices, strategies and decisions, both individual and corporate, could be improved to create and sustain genuine safety culture.

There are some issues that are likely to arise during the implementation of smart braking systems in a transport business. Most of them are often related to resistance to change, and it is crucial to acknowledge that it is reasonable for people to express this type of concerns.

Concern 1. I don't like how it drives.

It is important to validate this concern because in the livestock space, any change related to the vehicle brakes can have a real impact on animal welfare. It is recommended to have a trial for a period (e.g., two weeks) for drivers to report back any issues. If there is, it is important to communicate with the brake system designer/certifier.

Concern 2. I don't like being watched.

This concern is entirely valid and may reflect past shortcomings in communication between employers and employees in transport businesses. It is recommended to have an open and honest discussion with staff about their concerns and the organisation's plans to use the system.

Concern 3. I don't want to be stranded.

Some drivers may be concerned that a system failure could leave them stranded. It might be motivated by their high level of concern about animal welfare and as a result, may reflect positively on their cultural fit for livestock transport. It is recommended to highlight that smart braking systems are added on top of a traditional pneumatic braking system, meaning if the system fails, it fails back to the system the industry has been running for decades.

Step 4- Participant Attendance Sheet

Step 4 provides an example attendance sheet which can be used by the Team Leader/Manager/Facilitator to record attendees for organisational training and education records.

Discussion Group Form

Topic Title: An introduction to smart braking technology for livestock truck drivers

Date of Discussion Group: _____

Time: _____

Location of Discussion Group: _____

Organisation/Business Group: _____

Team Leader/Manager/Facilitator: _____

PARTICIPANTS IN ATTENDANCE

PARTICIPANT FULL NAME (Print)	EMPLOYEE NUMBER

Step 5- Participant Self-Assessment

The following information forms the basis of self-assessment for Toolbox Talk participants. Please complete this short self-assessment by circling your response to the questions below.

These questions aim to highlight environmental and road conditions that can be putting you in a high-risk situation, as well as the strategies that can help you manage it.

Question 1. Do I experience issues with your vehicle's brakes?

→ Yes, on a daily basis.

→ Yes, regularly.

→ Sometimes but it is not often.

→ It has happened in the past but it was a long time ago.

→ No, I don't remember when was the last time I did.

In my opinion and based on my experience, what are the top 3 situations I find regularly on the road that Anti-lock Braking System (ABS) or Electronic braking System (EBS) could help me manage in a safer way:

- _____
- _____
- _____

Question 2. Have I driven a truck with Anti-lock Braking System (ABS), Electronic braking System (EBS) or Electronic stability Control (ESC)?

→ No, I have never driven a truck with ABS, EBS or ESC.

→ Only for a test drive.

→ Yes, only once.

→ A couple of times.

→ Occasionally.

→ Regularly.

Has my understanding of these systems changed in time?

_____

_____

_____

_____

_____

Question 3. How familiar am I with Electronic Stability control (ESC) systems?

→ Very familiar.

→ I have a general knowledge.

→ I know a bit about it.

→ Unfamiliar.

Could you be at risk?

There are always potential risks and consequences associated with driving for work. However, these risks can be heightened during longer journeys or driving in certain areas.

Analyse your answers, have you identified any situation, choice or driving behaviour that could be putting you in a high-risk situation? Discuss with your manager your answers and available training.

Step 6- Discussion review

The final step (step 6) in the smart braking technology for livestock trucks Toolbox Talk process is for the Team Leader/ Manager/Facilitator to do a quick review of the key points and learnings. The discussion review section below includes a summary of the key points to improve driving safety when driving with the new conditions.

The discussion review can be undertaken at the end of the Toolbox Talk or alternatively, it provides an opportunity to reiterate the key issues at the beginning of the next Toolbox Talk topic session. Therefore, please take 5 minutes to review the key facts relating to livestock transport before doing the next Toolbox Talk topic. Team Leaders/Managers/Facilitators should aim to use the sheet to ask what the participants remember from the last Toolbox Talk instead of just reading the list.

Key points

- The transport industry is one of the most dangerous in Australia, and livestock transport presents significantly greater challenges due to factors such as animal handling and welfare, managing Dynamic loads, navigating regional and remote areas, and dealing with road quality which can range from poor to worse.
- There is the need to be concerned about animal welfare, taking additional breaks, and thinking about temperatures, water, and time off feed.
- Livestock transport mostly operates in remote and regional areas, and drivers go to places that almost nobody else goes. In such areas, road types can vary from little more than two tyre tracks through the grass up to regional highways, and quality often reflect and overdue need for investment.
- According to the National Truck Accident Research Centre (NTARC) the single vehicle untripped rollover (SVURO) is the leading crash in livestock transport.
- In 2022, SVUROs were the leading type of serious incident involving livestock trucks, with 44% of incidents over $50k. More than 95% of these crashes were single vehicle. It is mostly middle-aged and well-experienced drivers involved in this type of incident, despite their trajectory in the profession.
- It is estimated that in between one in 41 and one in 50 of these rollover crashes, the driver of the truck is killed.
- Different vehicle technologies and systems can help prevent SVUROs.
- Anti-lock Braking System (ABS), is a technology designed to keep your wheels rotating and not have them locked up and sliding. ABS helps you monitor wheel speed and modulate braking for groups of wheel ends, which provides directional stability under brakes, avoids flat-spotted tyres, and reduces stopping distances.
- Electronic Braking System (EBS), is a technology designed to generate a faster brake response. This results in brakes that apply more quickly and where all of the brakes on the combination apply virtually simultaneously. It benefits the driver by providing a faster brake response, shorter stopping distances, and a combination that should be more stable under brakes.
- Electronic Stability Control (ESC) is a technology designed to detect and respond to potential rollover events. The system has sensors that can detect high G forces and wheel-lift events, and apply brakes the laden side to stabilise combination. It benefits drivers by reducing road wear to rear-view mirrors, and avoiding serious and potentially fatal incidents.

Recommendations

Concern 1. I don't like how it drives.

It is important to validate this concern because in the livestock space, any change related to the vehicle brakes can have a real impact on animal welfare. It is recommended to have a trial for a period (e.g., two weeks) for drivers to report back any issues. If there is, it is important to communicate with the brake system designer/certifier.

Concern 2. I don't like being watched.

This concern is entirely valid and may reflect past shortcomings in communication between employers and employees in transport businesses. It is recommended to have an open and honest discussion with staff about their concerns and the organisation's plans to use the system.

Concern 3. I don't want to be stranded.

Some drivers may be concerned that a system failure could leave them stranded. It might be motivated by their high level of concern about animal welfare and as a result, may reflect positively on their cultural fit for livestock transport. It is recommended to highlight that smart braking systems are added on top of a traditional pneumatic braking system, meaning if the system fails, it fails back to the system the industry has been running for decades.