



Broadband Backup Alarms – Effect on Worker Safety

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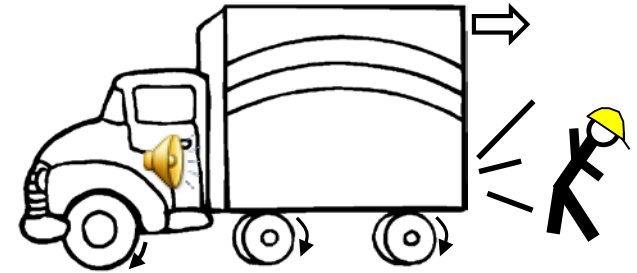
Incidents

- 550+ reversing injury incidents 2001-2018
- 350 with mobile equipment and backup alarms
- 15 fatalities between 2003 and 2018



Single tone backup
alarms are most
commonly used

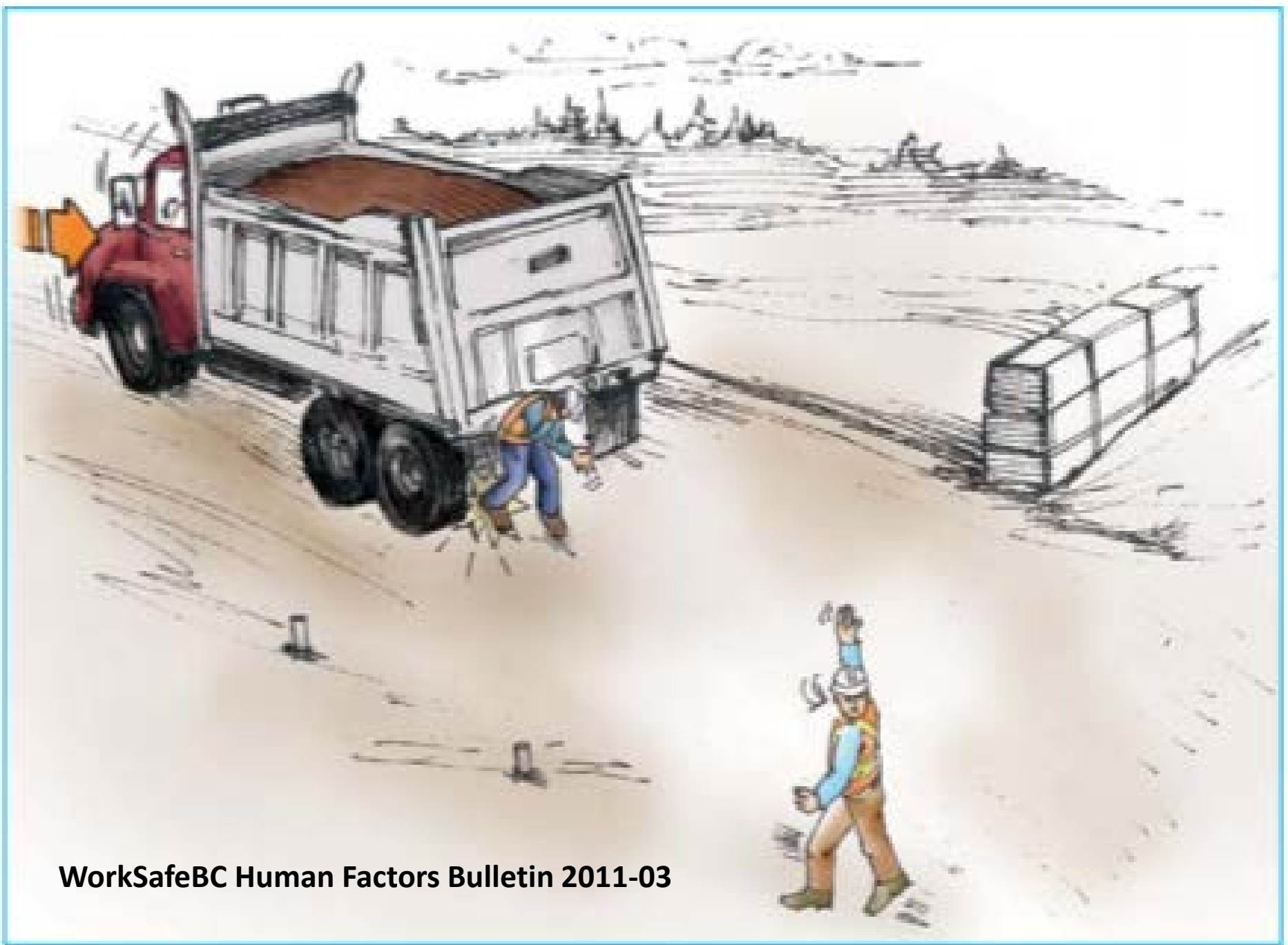
Safety concerns



Accidents still happen !

Difficult to pinpoint, source of nuisance noise, loud, high frequency, propagates 3 km, habituation, non-uniform sound, can be masked





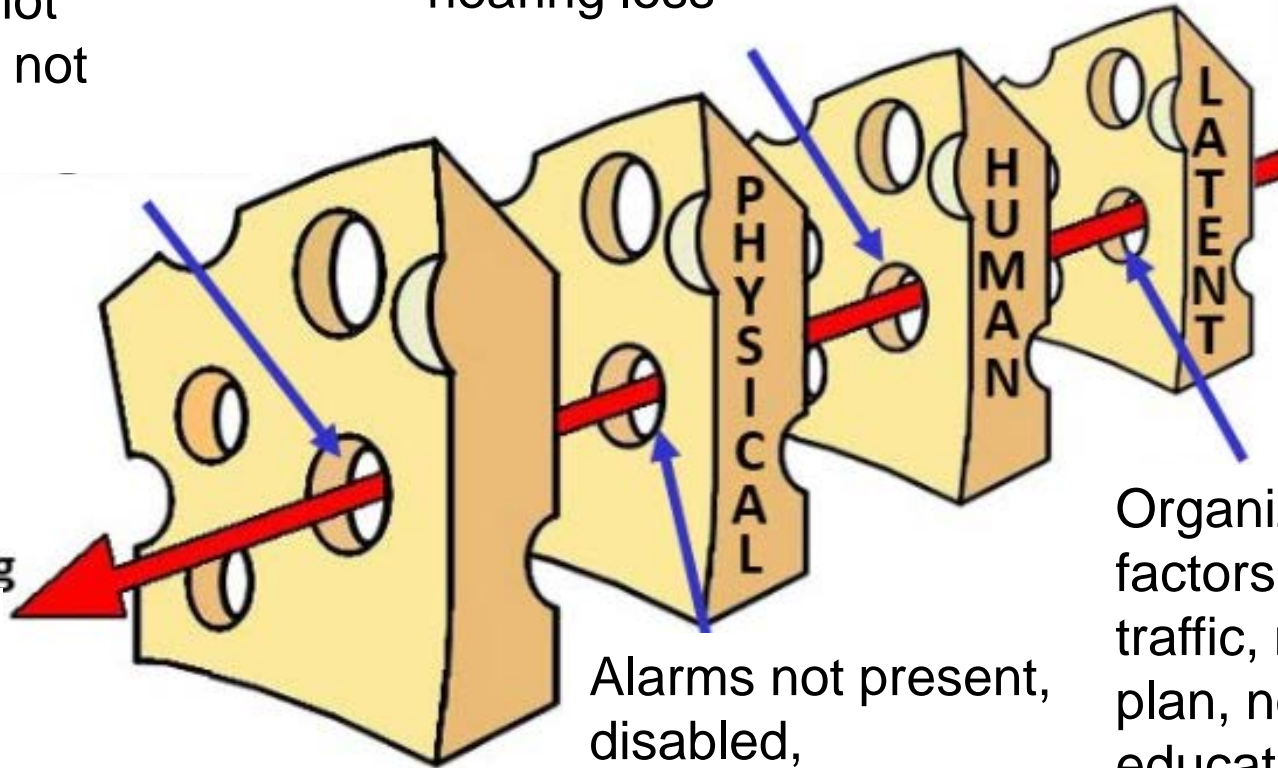
WorkSafeBC Human Factors Bulletin 2011-03



Other traffic, work location, blind spots, mirrors not adjusted, ignored, not localized, not noticed

Not detected, alarms masked by other noise, muted, HPDs, line of attention, habituation, hearing loss

Recurring Injuries & Incidents



Alarms not present, disabled, malfunctioning, no driver feedback

Organizational factors, mixed traffic, no TC plan, no/poor education,



New alarm gaining popularity



Broadband alarm (pschtt-pschtt)



Replacing conventional tonal

Goal: Improve workplace safety

In theory, advantages of BBA are convincing

- Uniform sound field behind vehicles
- Easier to locate / less confusion
- Reduces nuisance noise



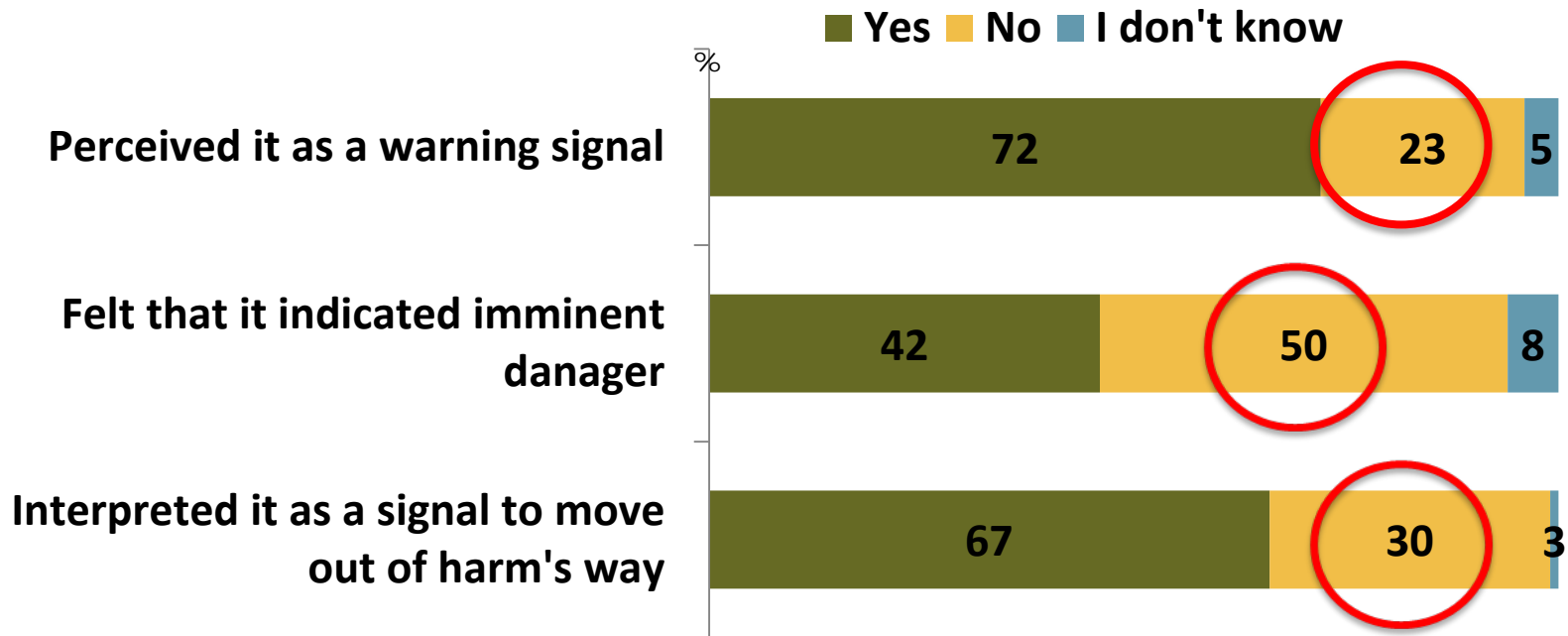
Interpretation as a Warning

When you first heard the broadband alarm, did you

Q: Perceive it as a warning signal?

Q: Feel it indicated imminent danger?

Q: Interpret it as a signal to move out of harm's way?



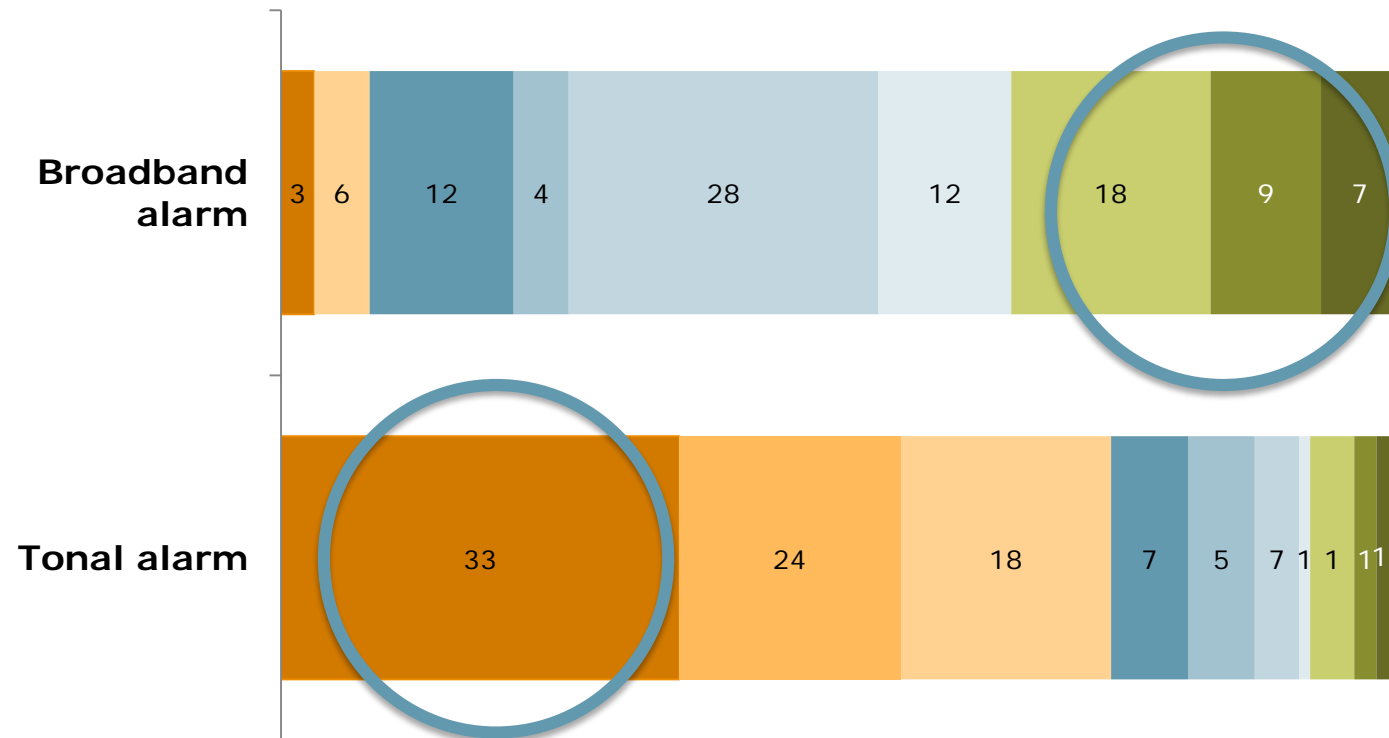


Annoyance

Q: On a scale of 1 to 10, how annoying do you find the broadband alarm?

Q: On a scale of 1 to 10, how annoying do you find the tonal alarm?

■ 10 = extremely annoying ■ 9 ■ 8 ■ 7 ■ 6 ■ 5 ■ 4 ■ 3 ■ 2 ■ 1 = extremely pleasant



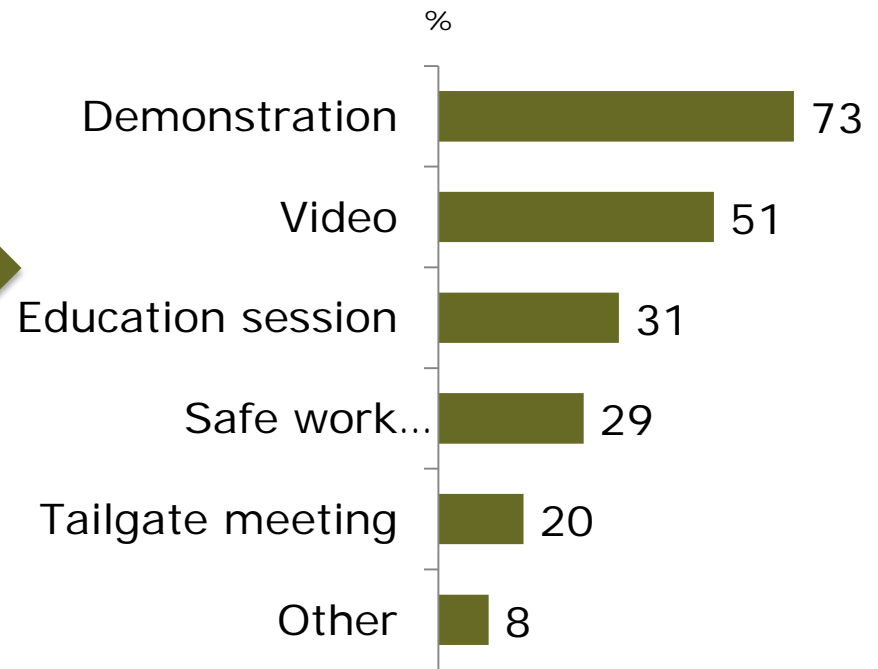
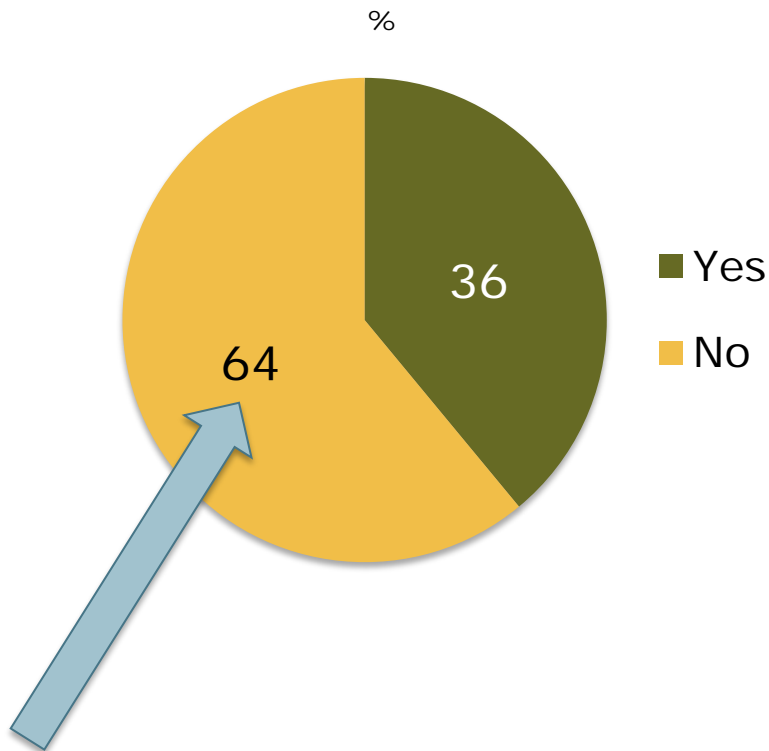
Base: Heard of the broadband alarm before, n=138



Training

Q: Have you received training about the broadband alarm?

Q: What type of training have you received regarding the broadband alarm?



Base: Heard of the broadband alarm before, n=138

Base: Have received training, n=49



Conclusions

- BBA is effective at capturing attention and indicating where the hazard is
- While 53% associated the sound with a reversing vehicle, 1/4 associated with wildlife, other electronics, broken alarm
- Inconsistent understanding about the meaning of the BBA



Recommendations

- **Separate pedestrian traffic and vehicle traffic**
- Camera systems for trucks
- Mount alarms in the best place
- Lapel badges, vests
- Training & education
- Fields of Vision – Pedestrian Safety Around Forklifts

BE AWARE OF BLIND SPOTS



OK

30ft



OK

BE AWARE OF BLIND SPOTS



OK

30ft

1 Lane



OK

20ft



OK

2 Lanes



OK



OUR ROADS SAFETY
Partnership for Responsible Driving

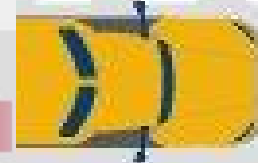
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OK



20ft



OK



OUR ROADS SAFETY
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Next Steps

Preventing back-over incidents

- Multiple case review
- Coroner's review panel
- Follow-up with HSE 10 years post implementation
- Work with distributors
- Employer resources

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Thank you !

Questions?





References

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