Transportation Safety Board of Canada

Bureau de la sécurité des transports du Canada

Finding trouble before trouble finds you

Canadian Association of Railway Suppliers

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Canada

SMS – A bit of history

- 1974 Flixborough — Explosion Petrochemical facility
  - First requirement for a "Safety Case"
- 1976 Seveso — Released 6 tons of chemicals, including 1 kg dioxin (carcinogen)
  - European safety regulations
- 1988 Piper Alpha — Explosion/fire on North Sea oil & gas rig
  - Enquiry by Lord Cullen
  - Recommended: Formal Assessments of Major Hazards to be Identified & Mitigated (i.e., a "Safety Case")
  - To be updated regularly and on the occurrence of change of circumstances

Canadian rail SMS requirements

Majors	• Manage Occurrences • Report Contraventions and Hazards • Manage Knowledge • Scientifically Based Schedules for Operating Employees
Majors and Local Class I	• Accountability • Establish Targets and Develop Initiatives • Continuous Improvement
All railroads (Majors, Local Class I and II)	• Safety Policy • Compliance with Regulations • Identify Safety Concerns • Implement / Evaluate Remedial Action • Risk Assessments

Three approaches to safety management

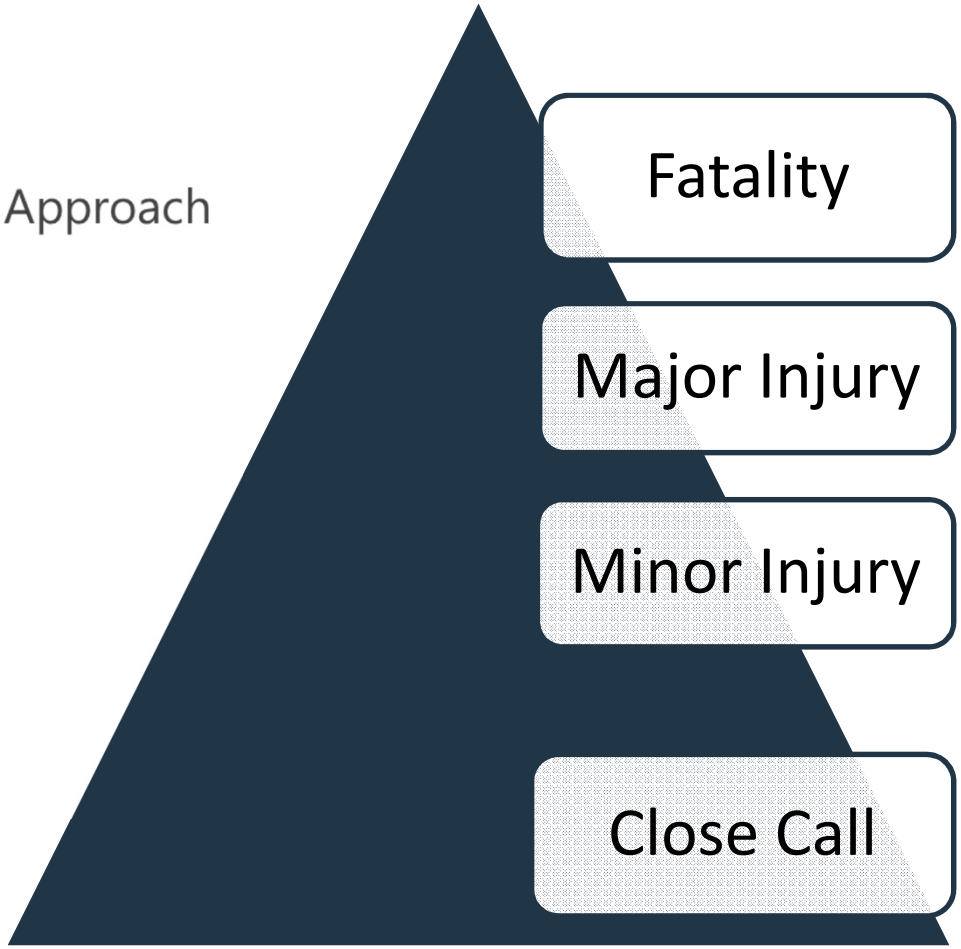
The Person Model

What it is

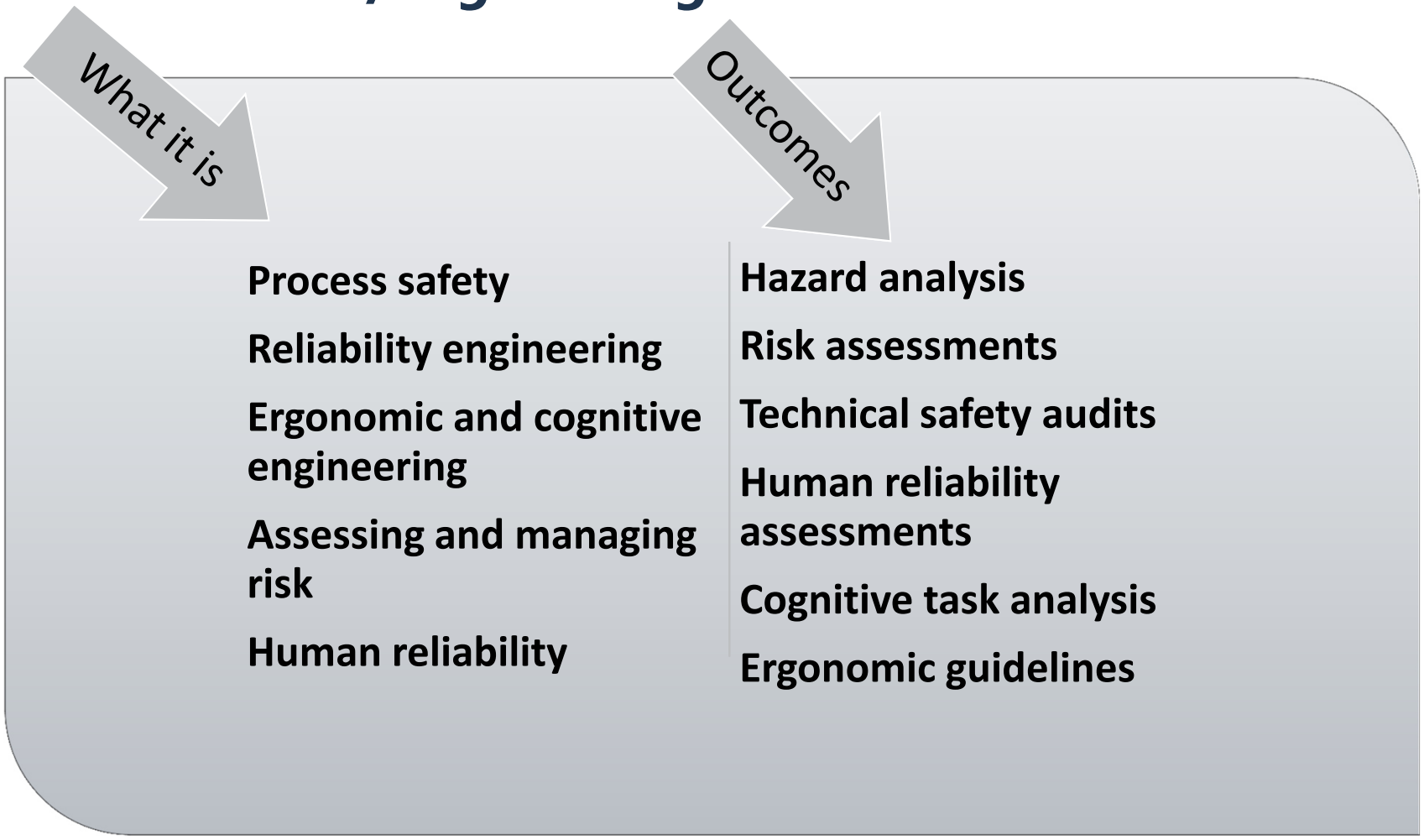
- Traditional Occupational Safety Approach
- Unsafe Acts
- Accidents/Injuries
- "Iceberg" or "pyramid"

Outcomes

- "Blame and retrain"
- Write another procedure
- Traditional discipline



The technical/engineering model



The organization model

What it is

Human error viewed as consequence not cause

Errors are symptoms of latent conditions in the system

Latent conditions the result of:

- **Management decisions**
- **Design**
- **Changes introduced after earlier accidents**

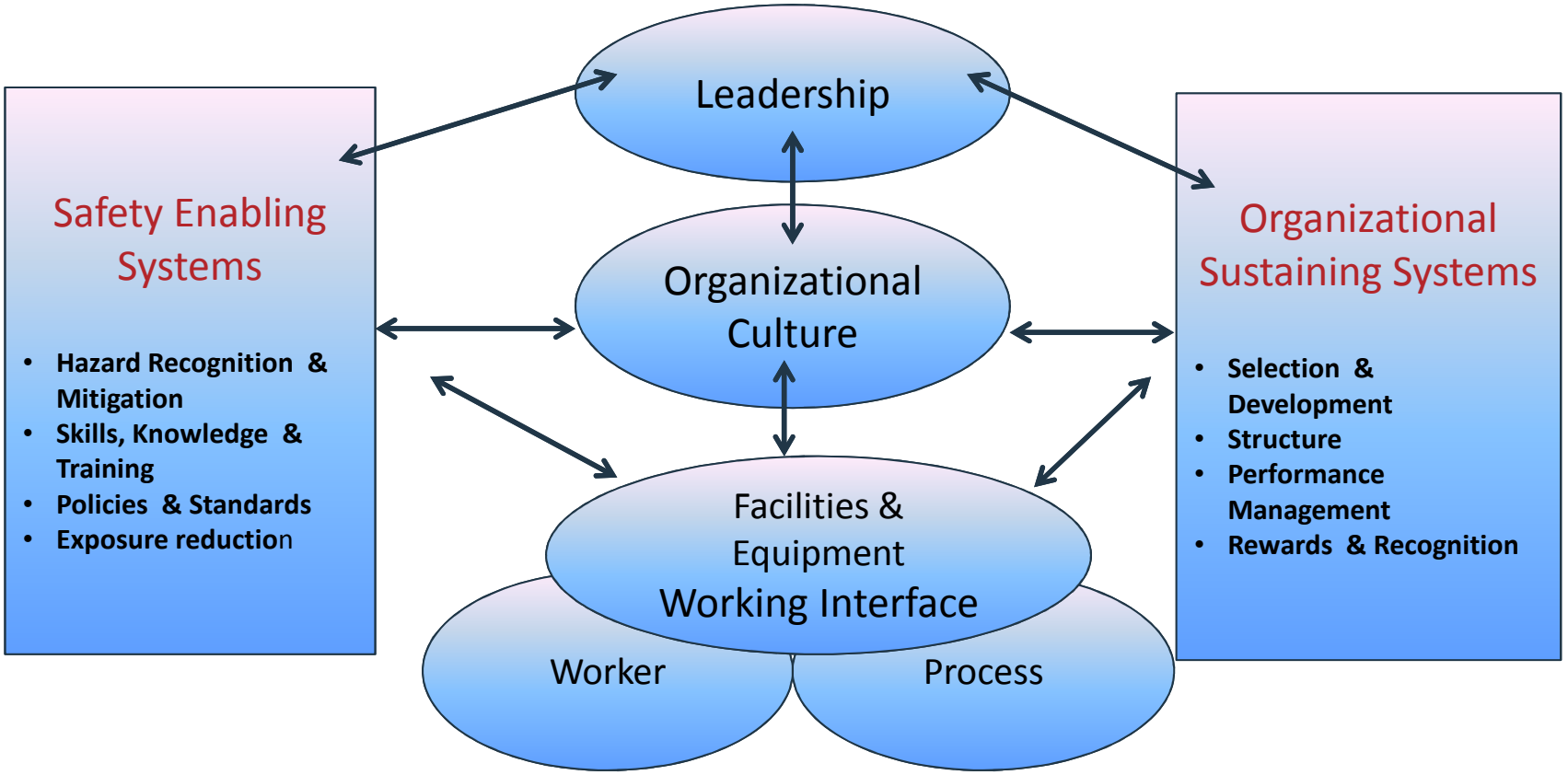
Success defined by

Having pro-active (or leading) indicators of the health of the system

Safety decision making embedded throughout the organization

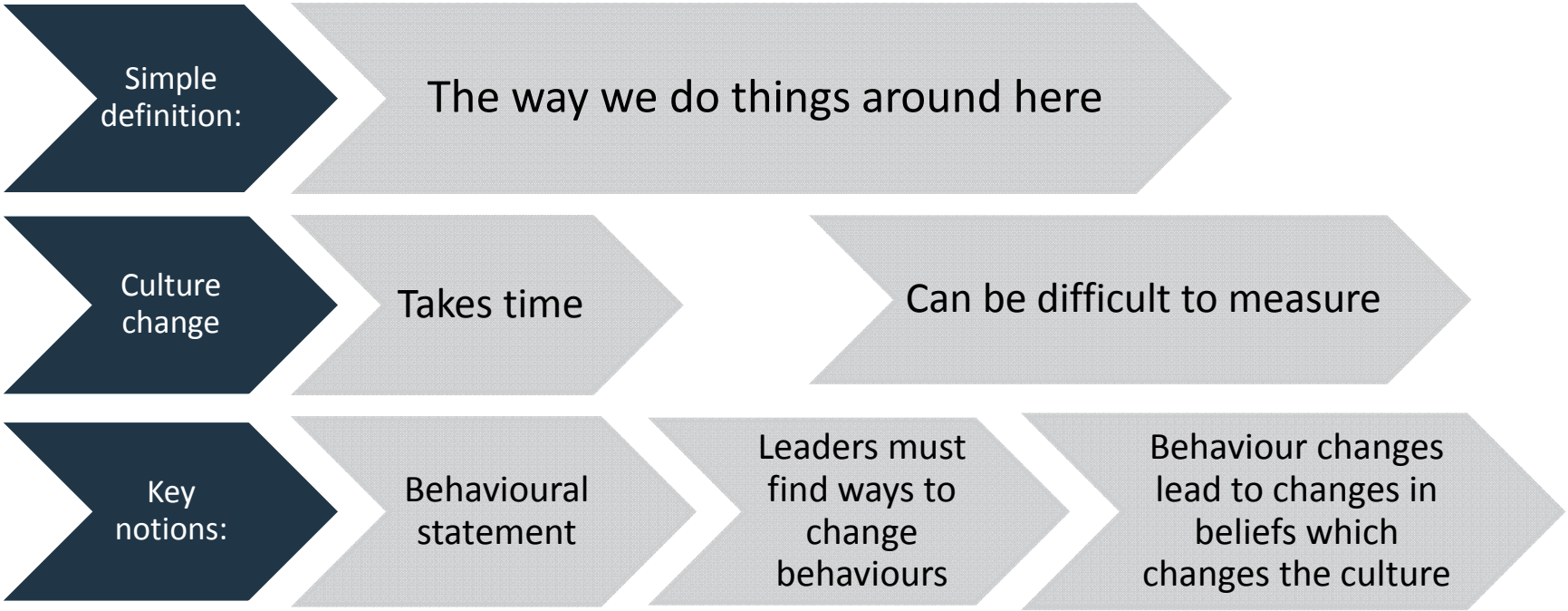
Organization performance - find opportunity for actions to prevent accidents ("find trouble before trouble finds you")

Safety, leadership, and culture



Source: *Leading with Safety*. Tom Krause, Behavioral Sciences Technologies

What is safety culture?



What is “just culture”?

- **Do not** automatically **blame** and **punish** for all errors
- Find a way to **distinguish** between “unacceptable” behaviour and blameless error:
  - Human error
  - Negligence
  - Reckless
  - Willful
- Strive to **avoid** hindsight bias influencing the determination of culpability

With **a "just culture"**

- Encourages openness, compliance, fostering safer practices, critical self-evaluation
- Willingly shares information without fear of reprisal
- Seeks out multiple accounts and descriptions of events
- Protects safety data from indiscriminate use
- Protects those who report their honest errors from blame

Dekker, S (2007) *Just Culture*, Ashgate Publishing Ltd.

Without **a "just culture"**

- Safety-critical information flow stifled for fear of reprisals
- Organizations invest in being defensive rather than improving safety
- Safety suffers when operators are punished

Dekker, S (2007) *Just Culture*, Ashgate Publishing Ltd.

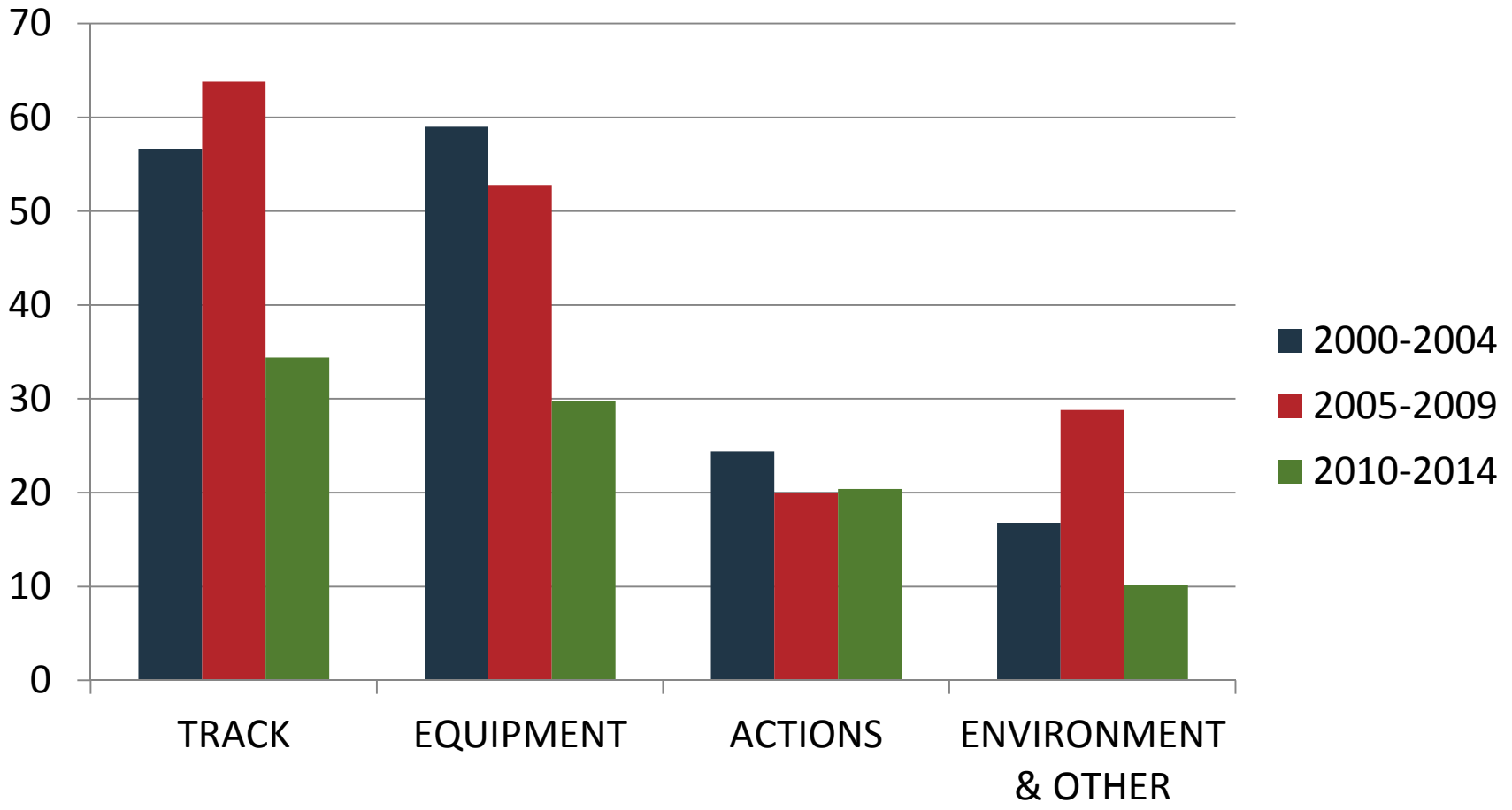
Systems and processes to learn from accidents

- What happened?
- Why did it happen?
- What changes are needed?
  - Procedures → Administrative defences
  - Equipment
  - Software → Physical defences
  - New technology
- How effective are the changes?
  - New risks created?

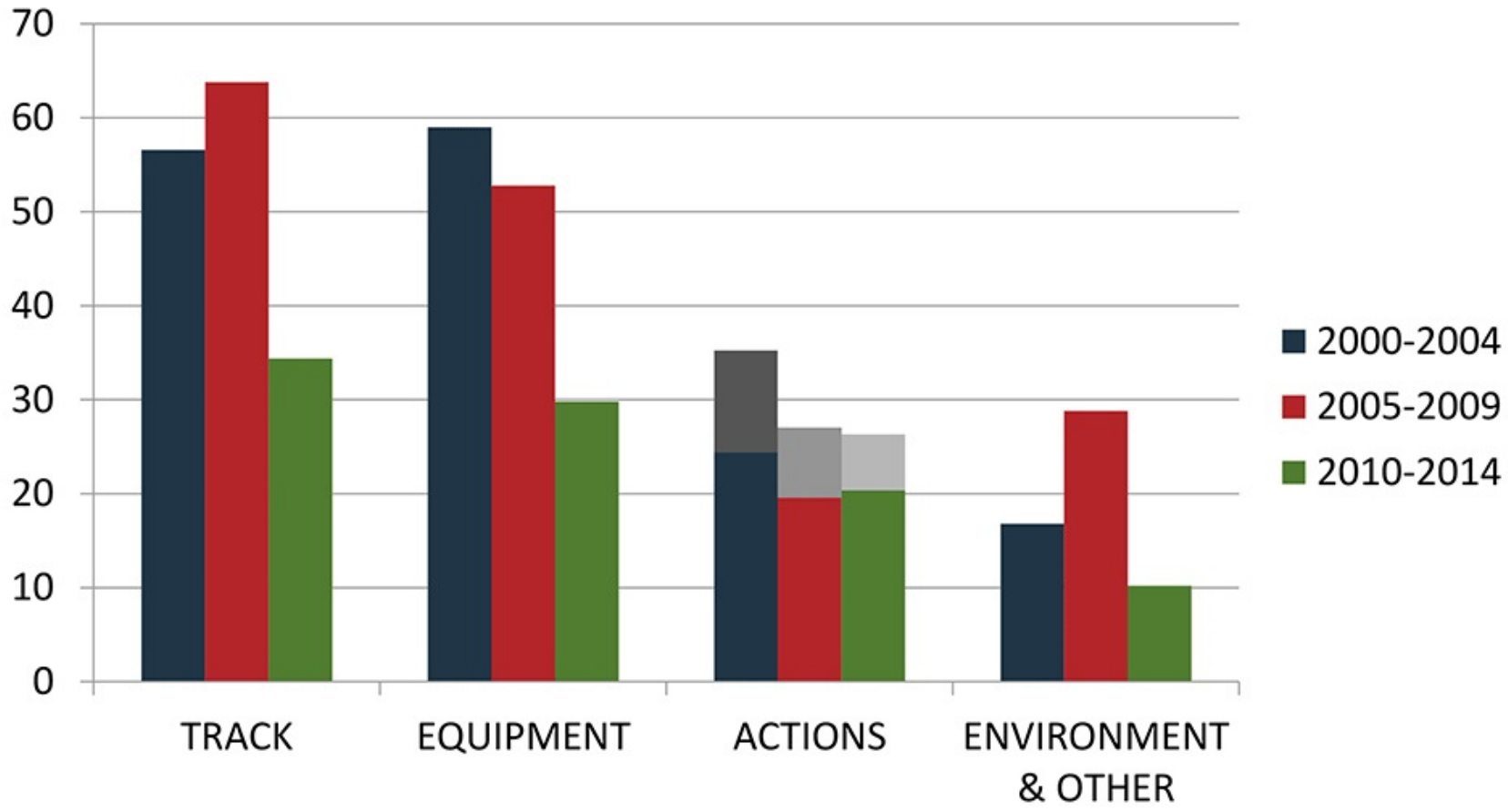
Information flow to proactively identify safety concerns

- Capture “weak” signals
  - Employee reporting
  - Technology
  - Automated inspections
  - Observations
- Use the data
  - Analyze
  - Risk assessments
  - Learn
- Make changes
  - Plant, equipment, procedures

Inside the numbers



Inside the numbers



SMS requirements for Canadian railways - Conclusions

- SMS elements of regulation are all “enabling”
- Therefore, they are **necessary** but **not sufficient** to ensure sustained safety improvement
- Paradox: Perception of bureaucratic documentation versus the need to make these “living” processes
- Risk: A system on paper that does not exist in day-to-day operations

TSB Watchlist
Safety management and oversight

Some transportation companies are not effectively managing their safety risks, and TC oversight and intervention has not always proven effective at changing companies' unsafe operating practices.

SOLUTION

- Transport Canada must expand regulations to require all operators to have formal safety management processes, and conduct regular oversight.
- Operators that are required to have safety management systems (SMS) must demonstrate they are working.
- When required, Transport Canada must intervene to change unsafe operating practices.

Words to consider …

"No amount of regulations for safety management can make up for deficiencies in the way in which safety is actually managed. The quality of safety management … depends critically, in my view, on effective safety leadership at all levels and the commitment of the whole workplace to give priority to safety."

Lord Cullen
2013 Conference,
25th Anniversary Piper Alpha

Questions?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