Accident Causation: Psychological Factors – Part 1
Patricia Murray

Learning Outcomes
Having completed all of the learning activities associated with this lecture, you should be able to:

- Show understanding of the different approaches to analysing an accident
- Demonstrate an insight into the human factors approach to accident causation
- Suggest different reasons for any accident, including socio-technical, physical and psychosocial

Accident Causation: Psychological Factors
Part 1
Key frameworks and developments in accident causation – psychological factors

Part 2
Safety culture – innovations and change

Model of Accident – Process

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<tr>
<th>Person</th>
<th>Environment</th>
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Accident behaviour
Accident event
Accident outcome

Behaviour is a function of the person and the organisation.

\[ B = F(P \times O) \]

Accident behaviour

Lewin, K. [1932]
Social psychologist
Traditional Approach
- Focus on the person:
  - Negative
  - Blame the person approach
  - Carelessness
  - Negligence

Traditional Approach
- Work in recent years has highlighted the complexity of:
  - Accident causation
  - Solutions to accidents
  - Problems

Current Approach

Approaches to Accident Understanding
- Overall pattern
  - accident rates
- Behaviour over time
distribution by:
  - months
  - weeks
  - days

Approaches to Accident Understanding
- Severity of the accident:
  - to people
  - to property
  - medical
  - insurance
  - lost wages

The Accident Sequence
- Interaction: person and environment
- Accident behaviour
- Accident event
Accident Theories of the Person
Accident proneness
- Early approach
  - faulty attitude of person
  - faulty judgment of person
  - impulsiveness
  - risk-taking

Human Factors Approach
- Physical abilities
  - Vision
  - Hearing
  - Sense of smell
  - Reaction time
- Perceptual understanding
  - Judgment
  - Reasoning
  - Training and learning
  - Job knowledge
- Personality traits
  - Risk-taking
  - Stable / neurotic

Errors
The error process can be viewed as being similar to the accident process in that it is initiated by an interaction between human characteristics and a situation (setting, piece of equipment, etc.)

Classification of Errors
Questions about human error
A: Behaviour What?
B: Contextual Where?
C: Conceptual How?
D: Source - cause Why?

Questions about Human Error
- Problem-solving
- Decision-making
- What are recurrent error forms?
- How much control do I have?
  (Cognitive control)
Organisational Factors
- Selection and training
- Development activities
- Practice - perfectionism
- Occupational health support
- Psychological support
- Management support
- Colleague support

The Environment: Physical
- State of equipment
  - Design
- Ergonomics – for human use, every day?
- Environmental work conditions:
  - Design
  - Heat/Cold
  - Space
  - Noise
  - Light

The Environment: Organisational Setting

Recent Approaches to Risk assessment and Risk Prevention
- Socio-technical approach - machines and people, not just one or the other
- Attitude of organisation to safety – leaders and supervisors especially important
- Promotion of health and safety
  - safety consciousness/climate/speak'
- Safety culture – influences perceptions, which go on to influence behaviours

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Part 1
Key frameworks and developments in accident causation – psychological factors

Part 2
Safety culture – innovations and change