

Chapter 14 - SAFETY and ACCIDENT PREVENTION

An Introduction to Human Factors Engineering - Wickens, Lee, Liu
& Becker 2004

- **Introduction to safety and accident prevention** p. 352
- **Regulation & Legislation** – see separate slides/website
- **Accidents; causes and contributions** p. 356
- **Human Error** p. 366
- **Hazard Identification and Control** p. 369
- **Safety Management** p. 375

- Risk Taking and Warnings

p.378

REGULATION and LEGISLATION in ACCIDENTS

- The section SAFETY LEGISLATION (p. 353-356) in Wickens et al. (2004) relates to the situation in the United States, and can be skipped.
- Substitute the next four slides concerning the Dutch (European) situation

European Regulation

Directive product liability (85/374/EEG)

Principle of liability without fault: no proof of negligence needed.

Producer has a wide meaning including:

Any participant in the production process.

The importer of the defective product.

Any person putting their name, trade mark or other distinguishing feature on the product.

Any person supplying a product whose producer cannot be identified.

Burden of proof: The injured person must prove:

the actual damage.

the defect in the product.

the causal relationship between damage and defect.

Directive product liability (85/374/EEG) - continued

Lack of the safety, which the general public is entitled to expect,

Exemption of producers from liability

Damage covered: For the purposes of the Directive, "damage" means:

Damage caused by death or by personal injuries.

Damage to an item of property intended for private use or consumption other than the defective product, with a lower threshold of ECU 500.

Expiration of liability: The injured person has three years within which to seek compensation.

The producer's liability expires at the end of a period of ten years from the date on which the producer put the product into circulation.

No contractual clause may allow the producer to limit his liability in relation to the injured person.

Derogation clauses: The Directive allows each Member State to set a limit for a producer's total liability for damage resulting from death or personal injury caused by identical items with the same defect. This limit may not be lower than ECU 70 million.

Directive product liability (85/374/EEG) - continued

Netherlands: wet Produkten aansprakelijkheid,

Burgerlijk Wetboek art. 6:185-193 - 01.11.1990

Belgium: wet Produktaansprakelijkheid

Burgerlijk Wetboek art. 1382, 25.02.1991

Directive product liability holds for all EU countries

Accidents

Labour protection was regulated in the Netherlands by the

- **Ongevallenwet (Accident law) 1901** (Ir. C.W. Lely), replaced by
- **WAO - Wet op de ArbeidsOngeschiktheidsverzekering 1967**
(Veldkamp) (regulates worker compensation)
- **ARBO, wet op de ARBeidsOmstandigheden (law on labour conditions) 1998** (regulates working conditions)

Construction workers have highest accident risk

Construction work is responsible for 6% of all jobs, but in this sector 22% of all accidents occurs. Of all victims 93% is male, and 7% female, yet the ratio on the work floor is 65-35. In 2003 70 accidents were fatal.

The most important causes of serious injury were **falls** and **getting pinched**. More than half of the accidents in construction work are connected with falling. Injuries most often involve **bone fracture**, 33%. **Amputation** of body parts (19%) comes second.

Human Error

Technical “errors” : *design errors and failures, breakdowns*
technology does **not** err!

Human errors: *human error/operator error*

human error may be unlikely, but is **unavoidable** in the long term

Human Error

Error of omission: *not performing a necessary action*

Error of commission: *performing an action that should not be taken*

Intended : *violation*
mistake rule-based
mistake knowledge-based

Unintended: *slip (wrong action)*
lapse (neglect, no action)