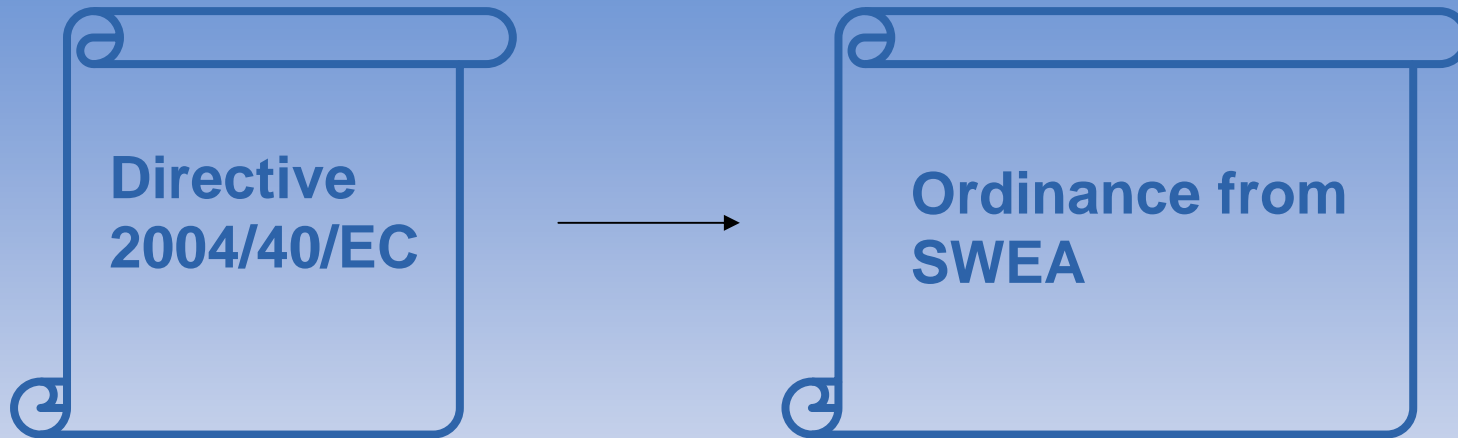


Implementation problems as seen from the Swedish national point of view

Janez Marinko



- Transposition of directive possible in theory!
- Will fail to abide to the directives provisions in practice!

The main problem...

... Such directives are to avoid imposing administrative, financial and legal constraints in a way which would hold back the creation and development of small and medium-sized undertakings.

As the directive is stated today the directive will create

- Administrative
- Financial
- Technical
- Legal

burden, as well as for employers as for implementing authorities!

Some problematic articles in directive 2004/40/EC

- **Article 3.3**

- For the assessment ... until ... standards...CENELEC...

- **Article 4.2**

- ... the employer shall assess and, if necessary, calculate whether the exposure limit values are exceeded.

- **Article 4.4**

- The assessment ... carried out by competent services or persons...

- **Article 5.1**

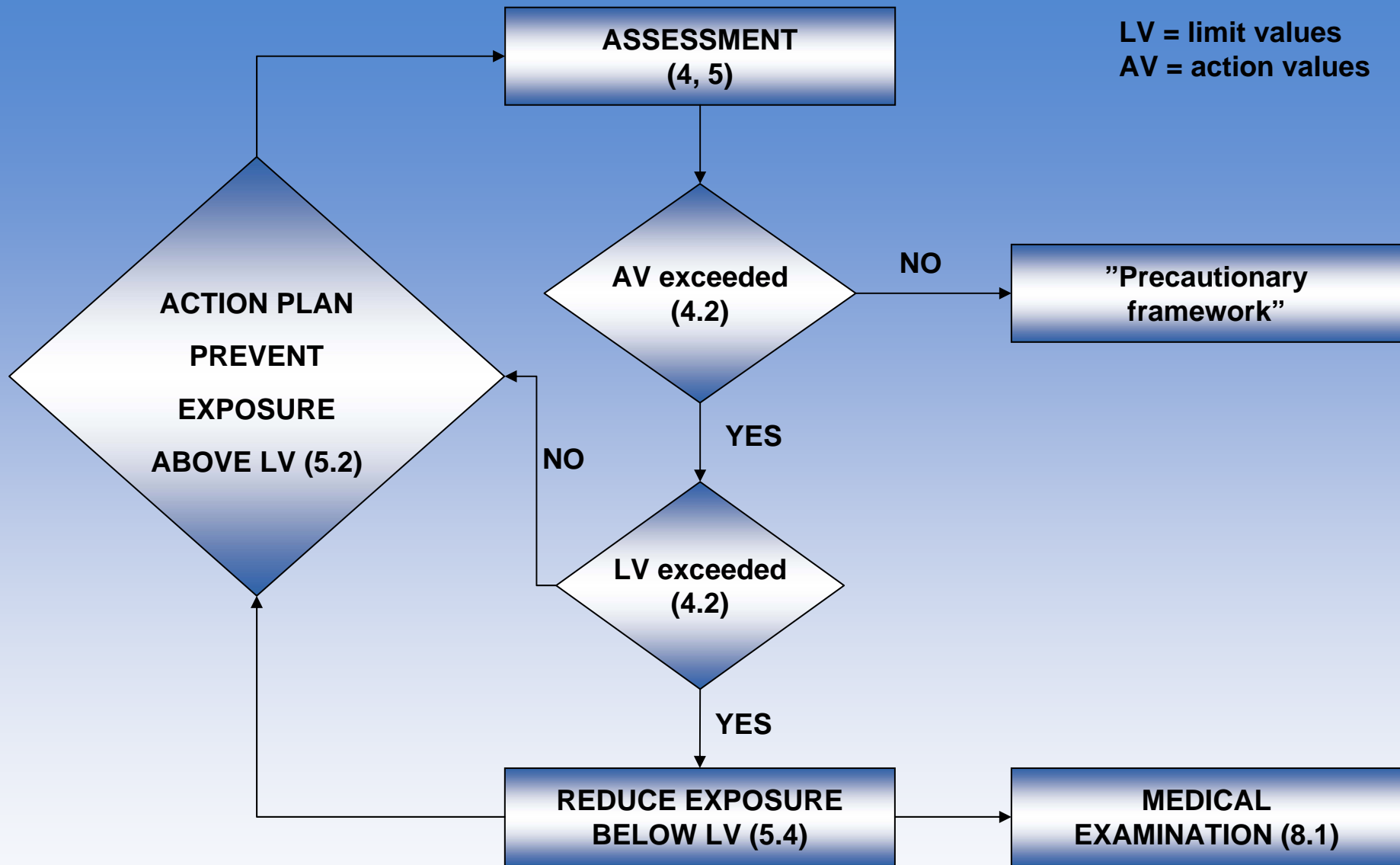
- ... the risks arising from exposure ... shall be eliminated or reduced to a minimum

- **Article 5.4**

- If ... limit values are exceeded ...immediate action to reduce exposure below limit values.

- **Article 8.1**

- In any event, ... exposure above limit values detected, a medical examination shall be made available ...



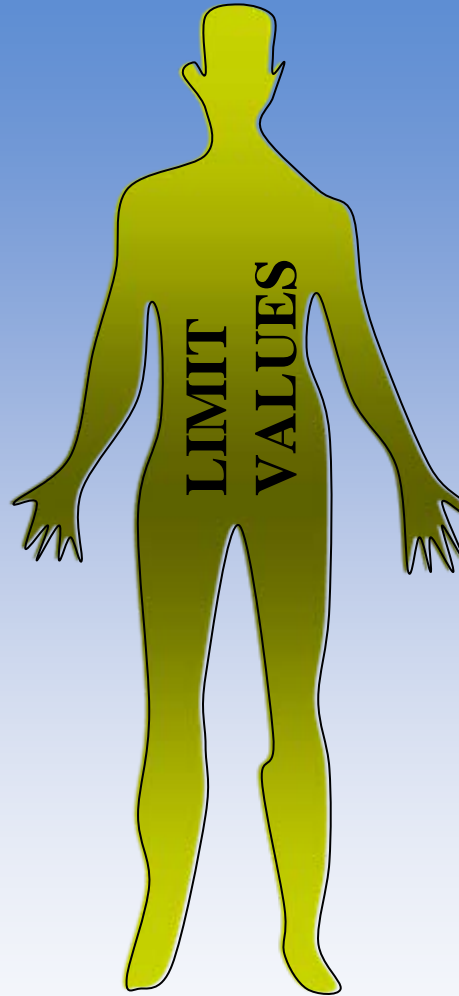
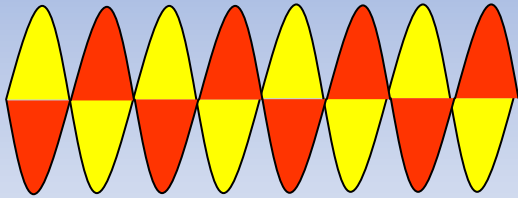
For the assessment ... until ... standards...CENELEC...(3.3)

- Emissions standards
 - Laboratory environment
 - Focus on emission levels
 - Complex protocols
 - Time consuming
 - Expensive
- Exposure assessment is not the same as emissions assessment!
- How to assess
 - General waveforms
 - non-sinus, pulse, transients
 - Multiple source/frequencies

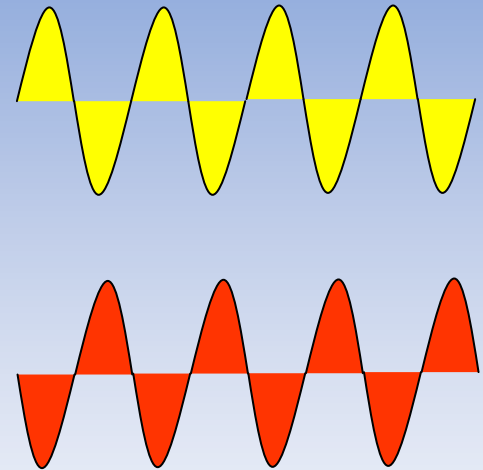
QuickTime och en
TIFF (okomprimerat)-dekomprimerare
krävs för att kunna se bilden.

Limit values - action values

INCIDENT FIELD



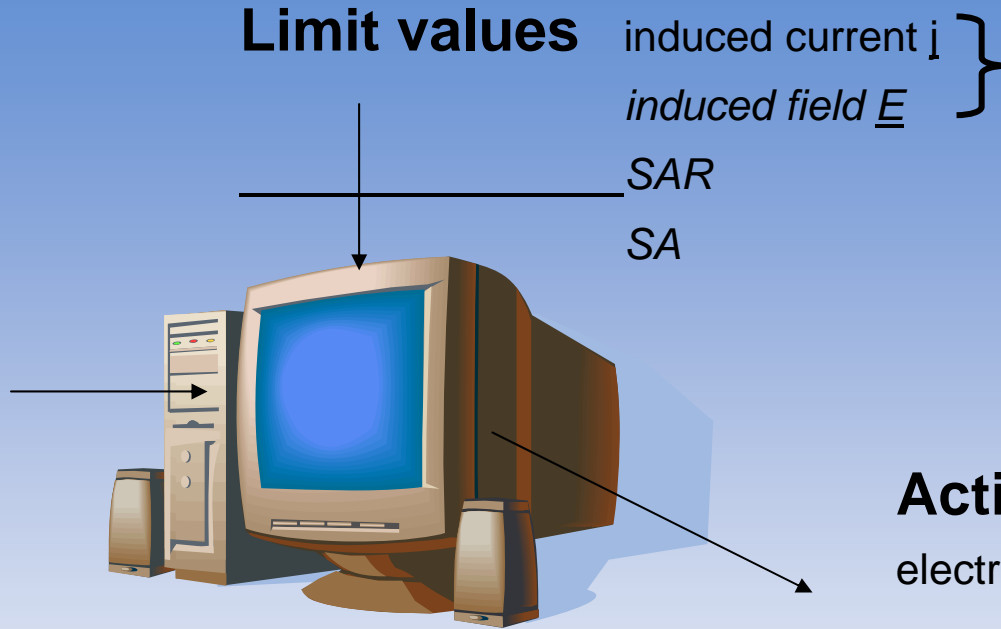
ACTION VALUES



Construction of action values ...



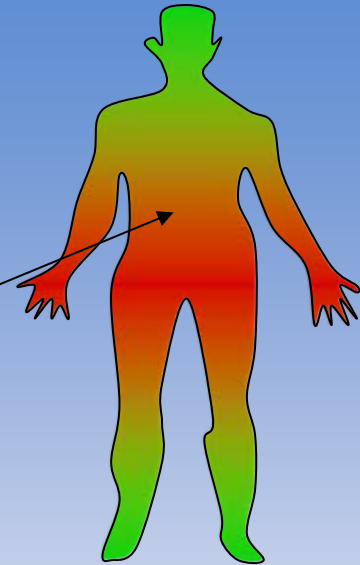
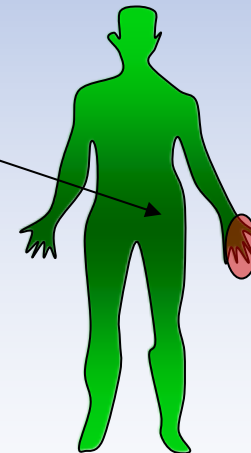
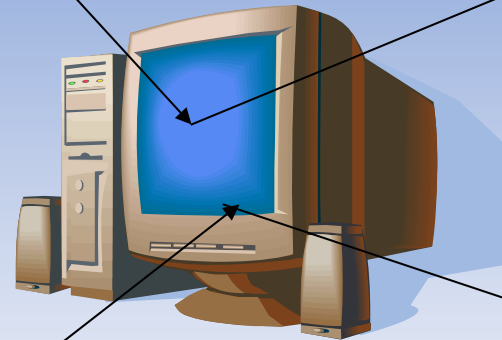
Model



...calculate whether the exposure limit values are exceeded (4.2)



QuickTime och en
TIFF (okomprimerat)-dekomprimerare
krävs för att kunna se bilden.



The assessment ... carried out by competent services or persons... (4.4)

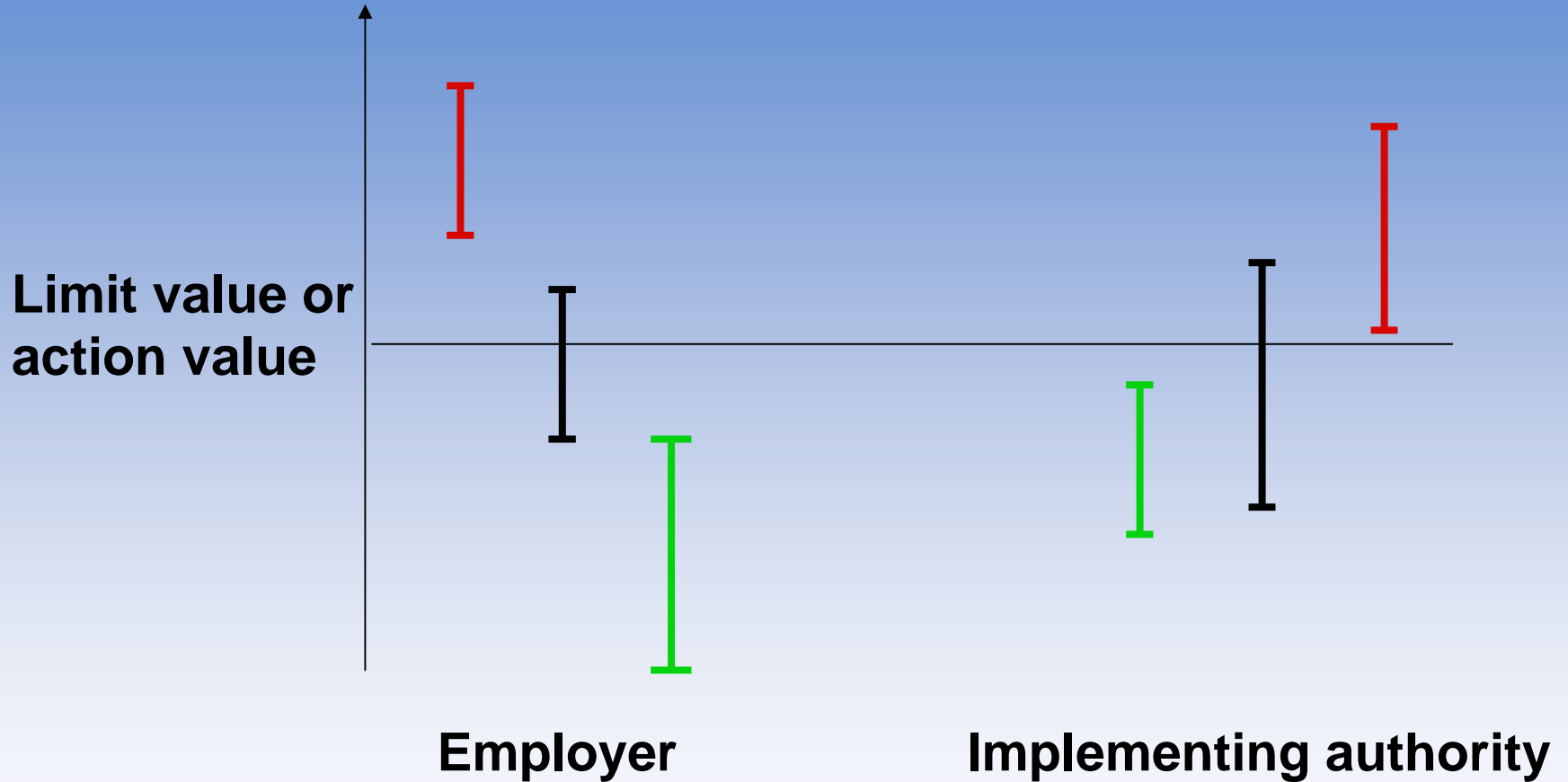
Limit values

- Experts
- Software
 - Numerical tools
 - Adequate model of workplace
 - Source
 - Environment
 - Adequate model of worker(s)
 - Posture
 - Material
- Hardware

Action values

- Skilled professionals
 - Accreditation?
- Instrument
- Measurement standards, protocols

Result from assessment...



... the risks arising from exposure to electromagnetic fields shall be eliminated or reduced to a minimum (5.1)

- What are the risks if exposure is below action level?
 - The values in the directive are far below threshold values for biological effects!
- Sufficient to state that exposure to EMF shall be eliminated or reduced to a minimum.
- Precautionary framework
 - Prudent avoidance
 - Reduce exposure

If ... limit values are exceeded ...immediate action to reduce exposure below limit values (5.4)

Immediate action

- **Limit values are time-consuming to assess**
 - Weeks rather than days
 - Iteration
- Employer vs authority

Immediate action = close down workplace until court decision if limit values are exceeded?

- Electrolysis
- Dielectric heating
- Induction heating
- Welding
- Medical applications
 - MRI, diathermy

Health surveillance (Article 8)

- This article will be discussed in session 8.1 by Leif Aringer, MD.

Possible solutions ...

- Limit values must be stated as measurable quantities, not as computer quantities!
- Limit values = Action values
 - Should cover a vast majority of workplaces and equipment
- Development of simple exposure assessment standards!

Biological effect vs adverse health effect

- A biological effect occurs when exposure to electromagnetic waves causes some noticeable or detectable physiological change in a biological system.
- An adverse health effect occurs when the biological effect is outside the normal range for the body to compensate, and thus leads to some detrimental health condition.
- (WHO Fact Sheet N182, 1998)