Machinery Directive

Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006

Described as a health and safety measure, the Directive aims to ensure harmonised standards and reduce barriers to trade. There are specific measures for the control of ergonomic hazards, noise, vibration and radiation.

The great majority of specifications are concerned with immediate causation issues such as impact injury, cuts, amputations, acid burns and electrocution.

Cumulative or latent diseases receive some attention:

1.1.6. ***Ergonomics***
Under the intended conditions of use, the discomfort, fatigue and physical and psychological stress faced by the operator must be reduced to the minimum possible, taking into account ergonomic principles such as:
— allowing for the variability of the operator's physical dimensions, strength and stamina,
— providing enough space for movements of the parts of the operator's body,
— avoiding a machine-determined work rate,
— avoiding monitoring that requires lengthy concentration,
— adapting the man/machinery interface to the foreseeable characteristics of the operators.

1.5.8. ***Noise***
Machinery must be designed and constructed in such a way that risks resulting from the emission of airborne noise are reduced to the lowest level, taking account of technical progress and the availability of means of reducing noise, in particular at source.

The level of noise emission may be assessed with reference to comparative emission data for similar machinery.

1.5.9. ***Vibrations***
Machinery must be designed and constructed in such a way that risks resulting from vibrations produced by the machinery are reduced to the lowest level, taking account of technical progress and the availability of means of reducing vibration, in particular at source.

The level of vibration emission may be assessed with reference to comparative emission data for similar machinery.

2.2.1.1. ***Instructions***
The instructions must give the following information concerning vibrations transmitted by portable handheld and hand-guided machinery:
— the vibration total value to which the hand-arm system is subjected, if it exceeds 2,5 m/s^2. Where this value does not exceed 2,5 m/s^2, this must be mentioned,
— the uncertainty of measurement.

These values must be either those actually measured for the machinery in question or those established on the basis of measurements taken for technically comparable machinery which is representative of the machinery to be produced.

If harmonised standards are not applied, the vibration data must be measured using the most appropriate measurement code for the machinery.

The operating conditions during measurement and the methods used for measurement, or the reference of the harmonised standard applied, must be specified.

3.6.3.1. ***Vibrations***
The instructions must give the following information concerning vibrations transmitted by the machinery to the hand-arm system or to the whole body:
— the vibration total value to which the hand-arm system is subjected, if it exceeds 2,5 m/s^2. Where this value does not exceed 2,5 m/s^2, this must be mentioned,
— the highest root mean square value of weighted acceleration to which the whole body is subjected, if it exceeds 0,5 m/s^2. Where this value does not exceed 0,5 m/s^2, this must be mentioned,

— *the uncertainty of measurement.*

These values must be either those actually measured for the machinery in question or those established on the basis of measurements taken for technically comparable machinery which is representative of the machinery to be produced.

Where harmonised standards are not applied, the vibration must be measured using the most appropriate measurement code for the machinery concerned.

The operating conditions during measurement and the measurement codes used must be described.

1.5.10. ***Radiation***
Undesirable radiation emissions from the machinery must be eliminated or be reduced to levels that do not have adverse effects on persons.

Any functional ionising radiation emissions must be limited to the lowest level which is sufficient for the proper functioning of the machinery during setting, operation and cleaning. Where a risk exists, the necessary protective measures must be taken.

Any functional non-ionising radiation emissions during setting, operation and cleaning must be limited to levels that do not have adverse effects on persons.

Comment
Ergonomics
Discomfort, fatigue, physical and psychological stress are not defined. In our view they would not be regarded as injuries. Failure to reduce these to the minimum possible could be evidence of a breach of duty of care. 'Minimum possible' is not defined. It is not clear that the specific measures e.g. not being tied to machine-determined work rate, would be sufficient to minimise discomfort etc. A causal link between a duty of care defined in this way and actual injury e.g. epicondylitis is very unclear.

Noise
Specification would be subject to expert opinion of the state of the art in noise reduction technology. The implication is that if noise levels can be reduced, they should be. No level of noise is acceptable if there is any residual risk. Expert opinion, or additional regulation, on the level of noise equating to zero risk would be needed. Use of data from measurements made of similar machines should reduce the number of noise tests required when determining total noise exposure. No targets for total noise exposure are provided here. {see the Physical Agents Directives; noise}

Radiation
'No adverse effects' is a term that would include all adverse biological effects whether or not these were harmful. Subjective standard.

Vibration
Physical Agents Directive targets are reproduced here.