

# Epidemiology in risk management for chemicals

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## KEY WORDS

Hazard; attributable risk; hazard identification; risk assessment

## SUMMARY

*Risk management is the process by which choices are made between alternative actions or policies according to the likelihood of beneficial or adverse outcomes. It entails an assessment of the potential risks and benefits associated with each possible option, and the application of value judgements to decide which option should be chosen. In formal risk management for chemicals, a distinction is made between hazard (a potential adverse effect of the substance) and risk (the probability that that a hazard will be realised given the circumstances and extent of exposure to the substance). Where there is uncertainty about the existence of a hazard or about the level of risk associated with an exposure, this must also be taken into account. Of the various measures of risk, the two that are most relevant to risk management are the individual attributable risk and the population attributable risk. Assessment of risk entails the identification and characterisation of hazards, and estimation of the risks associated with the exposure circumstances that will follow from different policy options. Examples are given of the way in which epidemiology can contribute to this process, and also to checking that the outcomes of decisions in risk management accord with what was predicted by underpinning risk assessments. The strengths and limitations of epidemiology as a tool in risk management are discussed.*