

Risk and hazard

How they differ





Risk and Hazard

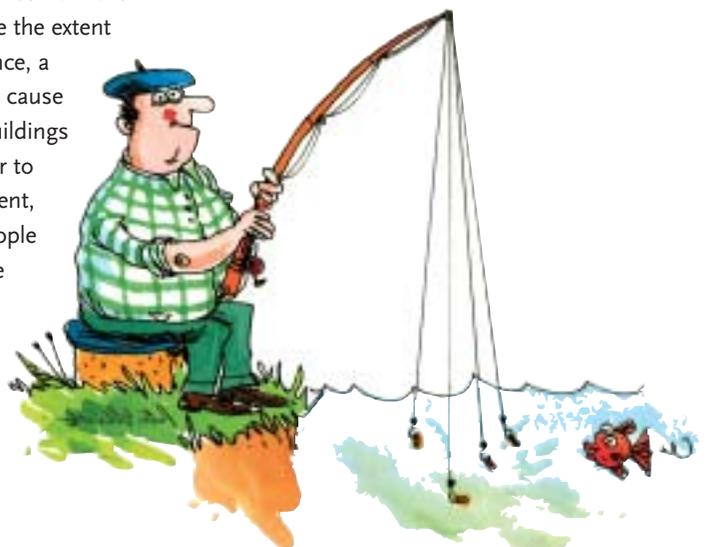
A lot of jargon is used when talking about risk and some of this can be confusing. In the discussion about chemicals, the words “risk” and “hazard” are very often used as if interchangeable. In this brochure we offer our understanding of the difference between these expressions, appreciation of which is fundamental to informed debate on the safety of chemical products and processes.

HAZARD:
The way in which an object or a situation may cause harm

A hazard exists where an object (or substance) or situation has a built-in ability to cause an adverse effect. Such hazards include uneven pavements, unguarded machinery, an icy road, a fire, an explosion and a sudden escape of toxic gas.

EXPOSURE:
The extent to which the likely recipient of the harm is exposed to - or can be influenced by - the hazard

The presence of a potential target in the area and its distance from the hazard will determine the extent of the risk. For instance, a fire or explosion may cause damage to nearby buildings and their contents, or to vehicles and equipment, but will not harm people if there are no people present at the time.





RISKS AND HAZARDS OF CHEMICALS

“All substance are poisons, there is none which is not a poison. The right dose differentiates a poison from remedy.”
(Paracelsus, 1493-1541)

Does a hazardous chemical pose a risk? For there to be a risk there must be both the hazard and the exposure to that hazard present at the same time.

The hazard of a chemical means it has an intrinsic ability to cause an adverse effect for humans or environment. Risk is the chance that such effect will occur. Even if a chemical has hazardous properties, any risk to human health or environment is extremely low if the chemical is handled safely under controlled conditions.

Risk assessment is a management tool to determine whether, how and in what circumstances, harm might be caused. In order to assess risk, both hazard and exposure must be considered. Although there may be several ways in which a risk assessment could be performed, it is important that the best way is chosen.

sub-consciously. When deciding whether to cross the road, whether to eat healthily, and how to care for the family, we make judgements about the hazards involved, and assess the risks before taking action.

Just as there are risks in our every day lives, so there are risks in activities that companies carry out, and in products they make.

BUT for harm to occur in practice - in other words, for there to be a risk - there must be BOTH the hazard AND the exposure to that hazard; without both these at the same time, there is no risk.

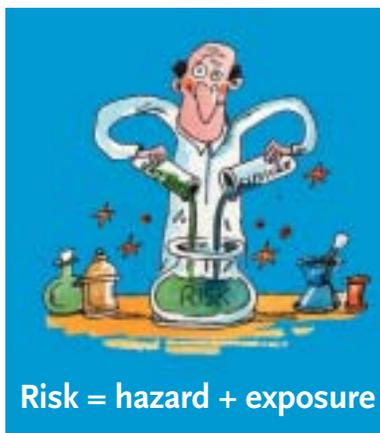
We can use an example of a dangerous animal. It can be seen as a “hazard”. When the animal is free, people in the surroundings are exposed to it. Consequently, there is a risk that these people might be attacked. However, when the animal is closed in a cage, it remains “hazardous” but there is no exposure to it; consequently, there is no risk.



Risk:
The chance that harm will actually occur

As mentioned, a hazard exists where an object (or substance) or situation has a built-in ability to cause an adverse effect. Risk, on the other hand, is the chance that such effects will occur: the risk can be high or negligible.

Risks are all around us in our daily lives. Likewise, we all carry out risk assessments constantly, in one form or another, whether consciously or



Risk = hazard + exposure

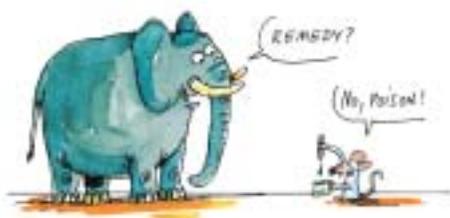
The only reliable basis for the assessment of risks from chemicals is sound science. This should be the cornerstone of workable and successful chemicals policy.

In addition, all risk management decisions should be based on risk assessments taking into account the actual use and exposure, not simply the intrinsic properties of a chemical.

Cefic - The European Chemical Industry Council

Chemistry making a world of difference

© Cefic - August 2003
Dépôt légal D/3158/2003/11



Cefic
Avenue E. van Nieuwenhuyse 4
B - 1160 Brussels
tel +32 2 676 72 11
fax +32 2 676 73 00
mail@cefic.be
www.cefic.org