

# Is it safe enough?

“Risk” is a central concept when we think about health and safety. More knowledge, however, seems to contribute to a sense of insecurity. A guest article by Professor Dr. Daniëlle Timmermans from the Vrije Universiteit Amsterdam.

In January 2011, a factory in Moerdijk, a small town in the Netherlands, burned down. Large black clouds of smoke and blazing flames, combined with the fact that it was a chemical company, immediately evoked the image of a disaster. Experts said that there was no danger to public health. However, a week after the fire, the public was still concerned and uncertain about possible health effects. Another example of different perceptions of a health risk is mobile telephony: despite the fact that more than 30 years of research have not shown any negative health effects, people are worried. More research showing a lack of effect cannot convince these people to change their mind. Risk is not equal to danger. A risk is a measured or quantified uncertainty. This quantification generates knowledge about a possible negative event and provides tools for making decisions for the future.

Nowadays, “risk” is one of the central concepts we use in thinking about health and safety. More knowledge and a better management of risks, however, seem to contribute to a sense of insecurity rather than to a sense of security. People often are concerned about risks, which experts say are negligible. What can explain this difference in perception?



**Professor Dr. Daniëlle Timmermans** was a Maria Sibylla Merian Fellow at the BfR from October to December 2019. The Dutch psychologist received the BfR accolade for her scientific achievements. During her stay, Ms. Timmermans worked on the development of a joint research project on risk communication.

### **Risk perception: more than a number**

Apparently, larger risks like serious overweight due to an unhealthy lifestyle or health problems from heavy smoking are less threatening to people than the much smaller health risks caused, for example, by the above named fire. The difference is that environmental and technological risks are less known to most people, both in size and in terms of consequences. Moreover, they are not voluntarily chosen and not controllable.

A risk is thus perceived as more than a number. It is not only about the probability, but also about the nature of the risk, the severity of the consequences and the degree of control.

### **Risk perception: it happens or it does not happen**

It is an old idea in psychology that we process information – including risk information – in two parallel systems, which roughly correspond to the everyday concepts of intuition and reason. While analytical thinking is logical and sequential and follows rules, intuitive thinking is associative, expressive and often emotionally charged. The intuitive, affective evaluation of risks often serves as a guideline for judgments or decisions. A positive evaluation of a technology or activity results in a lower perception of the associated risk. When a technology has no direct benefit for us, is associated with a negative feeling, the health risk is seen as larger.

In that sense, it does not matter whether there is a probability of one in thirty or one in three thousand. We have an image, a mental model of the potential negative consequences of the hazard. This also applies to risk perception of toxic substances. For experts, the harmfulness of toxic substances depends on the dose and the degree of exposure. In the perception of many people, substances are dangerous or not. Moreover, they value the mere presence of a chemical in food as unacceptable.

Negative feelings or fears we have with regard to certain health risks are real in the sense that the feared consequences are possible. It makes us cautious, especially in uncertain situations. Often that is wise, but these negative feelings sometimes have a disproportionate influence on our judgments and decisions. Our fears then do not match the facts. Risk perception, therefore, is about facts and probabilities, but also about fears. This should be sufficiently acknowledged to make risk communication successful. ■