Paradigms are constellations of opinions, ratings, and methodologies, which underlie the approaches to interpretation of data by a scientific community. Although one might expect that consistent opinions prevail in a standard-setting profession, this is not always the case in regulatory toxicology. On the contrary, diverging views on scientific interpretations and societal evaluations are fairly frequent. This can lead to fundamental differences in approaches to standard setting. For example, some regulating sectors strive for quantitative risk assessment for carcinogenicity, while others explicitly prefer a qualitative approach. The regulatory toxicologist must know the paradigms that underlie a specific argument. A successful regulation depends, among other factors, on the ability of the toxicologist to work within such conflicting paradigms and to seek to reconcile the different approaches.

**Toxicological Paradigms**

When in a specific scenario the substance concentration is so low that no adverse effect is measurable but a risk can still not be excluded, then risk assessment has to rely on assumptions. We consider here assumptions related to the mode of action of carcinogens, to combination effects, and to the different biology in sensitive persons. All these paradigms and conceptual models serve the final goal to achieve safety.

**Evaluation Paradigms**

Evaluation paradigms are influenced by the way of thinking and cultural and social settings. Depending on how these are incorporated in a regulation, seemingly contradictory regulations may coexist. The potential for conflict due to different evaluation paradigms can be exemplified as follows: Let us assume that a harmful substance such as PCB is regularly found in human fat due to its enrichment in the food chain. In such a case, one could argue that from a hygienic and toxicological point of view, any additional exposure and intake must be absolutely avoided. On the other hand, one can argue that in view of the variability of the PCB-background levels between individuals, a small additional burden may be considered as irrelevant. There is a surprisingly large number of such conflicts, mainly relating to protection strategies at low doses.