

Carcinogenic “Hazard” and “Risk”; From the View Point of Carcinogenic Evaluation

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< Summary >

Not only does the general population not clearly understand the difference between “hazard” and “risk,” many scientists also find it difficult to distinguish the two concepts. “IARC Monographs on the Evaluation of Carcinogenic Risks to Humans” published by IARC (International Agency for Research on Cancer) are collectively considered to be the bible for carcinogenic evaluation. Although the title of this collection of monographs contains the word “risk,” they evaluate carcinogenic hazards, without considering their risks. “Hazard” is a substance (or exposure setting) which confers adverse effects under certain exposure conditions. Therefore, while “risk” can be expressed as a “strong or weak,” “hazard” cannot be ranked by strength. IARC monographs classify carcinogens into Groups 1, 2A, 2B, 3 and 4. They are classified by the “strength of evidence” for their carcinogenicity rather than by their carcinogenic strength. Group 1 of the IARC Monograph includes well-known carcinogens such as cigarette smoke and asbestos. But alcoholic beverages consumed by many adults and sunlight to which most people are exposed are also listed in Group 1. Thus for practical purposes, hazard identification is meaningless unless risk assessment is also carried out. Therefore, it is extremely important to establish an adequate risk assessment system.

Based on my experience as a member of the IARC and NTP (National Toxicology Program) carcinogen evaluation committees, I will describe detailed methods for evaluation and explain carcinogenic risk and hazard.