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OEL FOR CARCINOGENS (LINEAR DOSE-RESPONSE)

Setting an occupational exposure limit for a carcinogenic substance is complicated since there is no safe threshold for exposure to carcinogens. Any exposure to a carcinogen above hypothetical zero increases the risk of cancer to some extent. Therefore, the only exposure level at which there will be no adverse health effect (increased risk of cancer) is zero.

However, to regulate exposure to carcinogens, it is necessary to have legally binding OELs that are somewhat protective depending on the risk tolerance of an OEL setting agency. The level of risk is usually dictated by the society through elected representatives who then convey the public views into legislation. In the UK, the acceptable risk to workers is somewhere between 1 in 1000 and 1 in 10 000.

In a nutshell, to set an OEL for a carcinogen, a number of relevant exposure studies (typically animal toxicity data) are pulled together and plotted onto a chart. A best-fit line is then drawn through the data points and the hypothetical zero. The selected risk tolerance level is then matched with the exposure concentration, which becomes an OEL.

An OEL for a carcinogen does not protect you against cancer as such but protects you against the intolerable risk of cancer. Therefore, it is crucial to reduce exposures to carcinogens below the OEL AND as low as reasonably practicable (ALARP).

Source: Patty's Industrial Hygiene 6th ed. p709.

#OH #IH #Exposure #Safety #OEL #Cancer