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OELs & NON-OCCUPATIONAL EXPOSURE

Occupational exposure limits (OELs) are typically derived so that a worker can be exposed to a specific concentration of a chemical over the working lifetime without experiencing any adverse health effects or unacceptable excess risk of cancer.
When considering exposure in non-occupational settings, you should never use OELs to complete your health risk assessment. There are several reasons not to apply OELs to the general public:

1. Occupational exposures typically occur 8 hours per day, 5 days a week, over 50 weeks per year or less, while non-occupational exposures can be 24/7 all year.
2. Occupationally exposed workers are generally in the prime of life and more healthy, while non-occupationally exposed folks can be very young, very old, infirmed or shut in.
3. The UK HSE sets the acceptable risk of dying on the job about 1 in 1000, while for the general public, it is set at 1 in 10,000 a year.
4. Occupationally exposed persons are being compensated (i.e., paid) during their exposure, while non-occupationally exposed folks are presumably not deriving any benefit from their exposure.

Thus, the exposure limits for non-occupationally exposed persons are always lower than for those who are occupationally exposed. If you have to carry out exposure assessment for non-occupationally exposed groups, you could use Inhalation Reference Concentrations (RfCs) derived by the US EPA as the benchmark of acceptability. You would also need to reconsider sample collection and analysis methods to achieve a better limit of detection, often 1000 times lower than required for an OEL.
Source: Patty's Industrial Hygiene 6th ed. p.768-770.
#Exposure #Health #Safety #IH #OH #OEL