

ventilation rate, while for derivation of AEGL values a ventilation rate corresponding to light to moderate activity was assumed). The ERPG-3 is the maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 h without experiencing or developing life-threatening health effects. The ERPG-3 is based on the belief that humans can generally tolerate COHb of 20% for brief periods without substantial toxicity. Based on the original CFK model using a ventilation rate at rest, it was considered that exposure to 500 ppm for 1 h will lead to a COHb of about 15%. (Comment: The ERPG derivation does not discuss the CO effects on children. Moreover, model calculation for deriving ERPG values assumed a resting ventilation rate, while for derivation of AEGL values a ventilation rate corresponding to light to moderate activity was assumed).

<sup>e</sup>EEGL (emergency exposure guidance levels, National Research Council) (NRC 1985) is the concentration of contaminants that can cause discomfort or other evidence of irritation or intoxication in or around the workplace, but avoids death, other severe acute effects and long-term or chronic injury. The NRC document states that 400 ppm (460 mg/m<sup>3</sup>) was determined as the concentration of CO to which a 1 h exposure would result in a COHb level of less than 10% in resting individuals. The committee cautions that sensitive individuals, such as persons with angina or heart disease, should not be exposed to concentrations approaching the EEGL as they may incur serious adverse health effects (Comment: The EEGL derivation excludes patients with coronary artery disease. Moreover, model calculation for deriving EEGL values assumed a resting ventilation rate, while for derivation of AEGL values a ventilation rate corresponding to light to moderate activity was assumed).

<sup>d</sup>IDLH (Immediately Dangerous to Life and Health, National Institute of Occupational Safety and Health) (NIOSH 1996) represents the maximum concentration from which one could escape within 30 min without any escape-impairing symptoms, or any irreversible health effects. The IDLH value is based on the observation by Henderson et al. 1921, that exposure of a healthy man at 1,000 ppm for 1 h caused unpleasant but no dangerous symptoms, and that more severe symptoms develop at 40% COHb (Steward 1975). According to the CFK model, a 30-min exposure at 1,200 ppm will produce a COHb of 10-13%. (Comment: The IDLH derivation does not discuss patients with coronary artery disease. In the Henderson et al. (1921) study, the subject was sitting still during exposure and developed Cheyne-Stokes breathing at the end of exposure, which is considered a serious effect. Moreover, model calculation in the IDLH derivation assumed a resting ventilation rate, while for derivation of AEGL values a ventilation rate corresponding to light to moderate activity was assumed).

<sup>f</sup>REL-TWA (Recommended Exposure Limits - Time Weighted Average National Institute of Occupational Safety and Health,) (NIOSH 1996) is defined analogous to the ACGIH-TLV-TWA.

<sup>j</sup>PEL-TWA (Permissible Exposure Limits - Time Weighted Average Occupational Health and Safety Administration (29CFR Part 1910.1000 [2000]) is defined analogous to the ACGIH-TLV-TWA, but is for exposures of no more than 10 h/day, 40 h/week.

<sup>k</sup>TLV-TWA (, Threshold Limit Value - Time Weighted Average American Conference of Governmental Industrial Hygienists) (ACGIH 2001) is the time-weighted average concentration for a normal 8 h workday and a 40 h workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect. "This value is intended to maintain blood COHb levels below 3.5%, to minimize the potential for adverse neurobehavioral changes, and to maintain cardiovascular work and exercise capacities."

<sup>h</sup>MAK (Maximale Arbeitsplatzkonzentration [Maximum Workplace Concentration], Deutsche Forschungsgemeinschaft [German Research Association], Germany) (Henschler 1981; DFG 1999) is defined analogous to the ACGIH-TLV-TWA.

<sup>i</sup>MAK Spitzenbegrenzung (Kategorie II,2) [Peak Limit Category II,1] (DFG 1999) constitutes the maximum average concentration to which workers can be exposed for a period up to 30