

COHb is considered unlikely to contribute significantly to the effects of smoking on the cardiovascular system.

In conclusion, patients with coronary artery disease must be considered more susceptible to the effects of CO than other subpopulations, such as children, elderly people, and pregnant women who may be more susceptible than healthy adults. A level of 4% COHb was the NOEL for AEGL-2 effects in patients with coronary artery disease; the LOEL was estimated at 6-9%. In comparison, the LOEL was about 10-15% in children and 22-25% in pregnant women. Since AEGL-2 values were based on experimental data on the most susceptible subpopulation, they were considered protective also for other subpopulations, and a total uncertainty factor of 1 was used.

Using the CFK model (Coburn et al. 1965; Peterson and Stewart 1975), exposure concentrations were calculated for 10 min, 30 min, 1 h, 4 h, and 8 h to result in an end-of-exposure COHb of 4% in adults (see Appendix B). Calculations were performed for a 70-kg man with a starting COHb of 0.75% due to endogenous CO production and using a ventilation rate of 23 m³/day. Somewhat higher end-of-exposure COHb would result for children. For a 5-kg child with an alveolar ventilation rate of 3,580 mL/min, COHb values from 4.9% to 5.2% were calculated for the different AEGL time points. For a 3.5-kg newborn with an alveolar ventilation rate of 1,250 mL/min, COHb values from 5.3% to 5.6% were calculated. Higher COHb values will also be obtained in people having a higher starting COHb concentration as a result of other exposures. For smokers having typical starting COHb concentrations of 3% to 8%, COHb values of 6.2% to 11.5% will result from exposure to AEGL-2 concentration-time combinations.

A total uncertainty factor of 1 was used. An intraspecies uncertainty factor of 1 was considered adequate because the values are based on observations in the most susceptible human subpopulation (patients with coronary artery disease).

It is acknowledged that apart from emergency situations, certain scenarios could lead to CO concentrations that may cause serious effects in persons with cardiovascular diseases. These scenarios include extended exposure to traffic fume emissions (e.g., in tunnels or inside cars with defective car exhaust systems), charcoal or wood-fire furnaces, and indoor air pollution by tobacco smoking.

The values are listed in Table 2-15.

TABLE 2-15 AEGL-2 Values for Carbon Monoxide

Classification	10 min	30 min	1 h	4 h	8 h
AEGL-2	420 ppm (480 mg/m ³)	150 ppm (170 mg/m ³)	83 ppm (95 mg/m ³)	33 ppm (38 mg/m ³)	27 ppm (31 mg/m ³)