

Farrow et al. (1990) reported a case of fetal death in a 20-year-old woman, who was exposed to CO due to use of a portable propane heater in her unventilated mobile home. She arrived by ambulance at the hospital approximately 60 min after being found unconscious at her mobile home. En route to hospital she had been intubated and had received 100% supplemental oxygen. Her measured COHb at the time of admission was 7%. On the second day in hospital, the patient delivered a 1,050-g stillborn female fetus. On gross autopsy, bright red discoloration of the skin and visceral organs was noted. A fetal COHb of 61% was measured. The authors assumed that the mother had reached a minimal COHb of 40 to 50% because she was found unconscious.

#### **2.4. Genotoxicity**

No studies documenting genotoxic effects of CO in humans were located in the available literature.

#### **2.5. Carcinogenicity**

No studies documenting carcinogenic effects of CO in humans were located in the available literature.

#### **2.6. Summary**

In healthy adults, death from CO poisoning occurs at COHb larger than 50% (Steward et al. 1970; Steward 1975; Pach et al. 1978, 1979; AIHA 1999; WHO 1999a). At a COHb of about 16%, headaches can develop (Steward et al. 1970). Subtle (nonadverse) effects, such as decrements in neurobehavioral function start at about 5% COHb (WHO 1999a; EPA 2000).

Analysis of lethal cases reported by Nelson (2006a) indicated that most lethal poisoning cases occurred at COHb levels higher than 40% and that survival of CO-exposed humans were likely to be seen at levels below 40%. Persons with coronary artery disease constitute a subpopulation that is much more susceptible to the effects of CO. Case reports indicate that death through myocardial infarction can occur at COHb around 20-30% and as low as about 15% in this group (Grace and Platt 1981; Balraj 1984; Atkins and Baker 1985; Ebisuno et al. 1986;). In individuals with coronary artery disease, a COHb of 2.0 or 4.0% can significantly reduce the time to onset of angina and the time to 1-mm ST-segment change in the electrocardiogram during physical exercise (Allred et al. 1989a,b, 1991). At 5.3%, but not at 3.7% COHb an increased arrhythmia frequency was observed in subjects with coronary artery disease (Sheps et al. 1990, 1991).

Children and the unborn also constitute susceptible subpopulations: Measured COHb of higher than 22-25% in the mothers' blood may lead to stillbirths