



### **III. CARBON MONOXIDE - as a combustion product**

Aside from environmental tobacco smoke, the major combustion pollutants that may be present at harmful levels stem from malfunctioning heating devices, or inappropriate, inefficient use of such devices. Incidents are usually seasonal. Other sources may include motor vehicle emission due to garage space, gas ranges malfunctioning or use as a heat source, improperly vented fireplace, furnace, wood or coal stove, gas water heaters and gas clothes dryers. Most cases involve the home or non-work-related consumer activity. Carbon Monoxide is an asphyxiant that is odorless and colorless. This compound combines with hemoglobin in the blood to form carboxyhemoglobin (COHb) and disrupts oxygen transport. Common household products, such as paint strippers, can metabolize methylene chloride into carbon monoxide, which can attach to hemoglobin.

#### **REGULATION LEVELS:**

The Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices (TLVS & BEIs) indicate the allowable amount for a working day of 8 hours ( Time-Weighted Average -TWA) for carbon monoxide is 25 ppm.

#### **TESTING:**

Nondispersive Infrared (NDIR) Spectrometry: absorption of Infrared radiation by Carbon Monoxide (CO) in a sample cell is compared to that of a reference (CO Free) absorption cell.

Electrochemical: sample air is passed through a cell wherein oxidation of CO produces a signal that is proportional to concentration.

\*\* Electrochemical detectors based on aqueous solutions have seen the most use for IAQ applications.

Colorimetric Tubes: Sample gases are drawn through a chemically treated sorbent bed that changes color in the presence of CO -length of color stain is correlated with concentration.

\*\* There are many different types of tubes that can test all kinds of species specific gases.

#### **REMEDIAL ACTION:**

Periodical professional inspection and maintenance of installed equipment such as furnaces, water heaters, and clothes dryers are recommended.

Such equipment should be vented directly to the outdoors.

Fireplace and wood or coal stoves flues should be regularly cleaned and inspected before each heating season.

Kitchen exhaust fans should be exhausted to outside.

Vented appliances should be used whenever possible.

Charcoal should never be burned indoors.

Individuals potentially exposed to combustion sources should consider

installing carbon monoxide detectors that meet the requirements of Underwriters Laboratory (UL) Standard 2034. No detector is 100 % reliable so health problems may still be experienced.