

Carbon Monoxide and Other Poisons

Carbon monoxide (CO) is an odorless, colorless gas that reduces oxygen levels in the blood. CO lessens night vision and hearing and is the same deadly gas found in auto exhaust. Tobacco smoke is full of dozens of other poisons, such as arsenic, barium, lithium, copper, lead and xanthine.

Oxygen/Carbon Monoxide Simulation

Purpose - To provide an analogy of how CO mixes easier in the bloodstream than oxygen.

Equipment

About ½ tsp. of coffee grounds

Food coloring (blue or green is best)

Eye dropper or small straw to pipette a drop of food coloring

Small, clear bottle with lid, 2/3 full of water

Procedure

Place the coffee grounds in the bottle of water and shake it up. The coffee colors the water very slowly. This represents oxygen in the blood. Now add one drop of food coloring to the same bottle. Note how quickly it colors the water. This represents CO as it enters the blood.

Key Points

CO is picked up in the blood 240 times faster than oxygen. The oxygen level drops when carbon monoxide is present.



BACKGROUND:

Over 3000 youth from the U.S. start smoking every day.
Many of these kids continue to smoke into adulthood.
According to the Center for Disease Control and Prevention, nearly 90 % of all adult smokers first lit up as teenagers.

PROBLEM:

The year is 2030.
You have been smoking regularly since the age of thirteen.
As an adult, you smoked two packets of cigarettes per day.
You have now been diagnosed with lung cancer and your doctor says that you have only 12 months to live.

In recent years scientists have invented a time machine which can transport people back in time. Because this technology is extremely expensive to operate, it is controlled by an anti-smoking group of scientists called the Cancer and Medications Education League (CAMEL).

Since you have only a short time to live, you have dedicated your final 12 months of life to preventing teenagers from taking up smoking and falling victim to the tragedy of cancer.

You have volunteered yourself to the CAMEL scientists to be selected as a person to go back in time to prevent teenage smoking. Because of the costs involved, you must prove to the CAMEL group that you are worthy of selection by researching the task below and presenting your findings in a quality manner.

YOUR TASK:

- To research why teenagers start smoking
- To develop an advertising campaign to discourage teenagers from smoking.

You may choose from:

- A poster
- An audio cassette suitable for radio advertising
- A video tape presentation suitable for TV
- A magazine advertisement
- A multi-media computer presentation

Obstructive Properties of Tar

Purpose ~ To demonstrate how an accumulation of tar can inhibit the absorption of oxygen.

Equipment

2 coffee filters

Water

Funnel

Beaker or jar

Black strap molasses or other tar-like substance

Procedure

Place the funnel in the jar. Line the funnel with filter paper, and pour in the water. Note how quickly it flows through. Remove the wet paper. Coat another piece of filter paper with molasses or other tar-like substance and place it in the funnel. Pour water into the filter, noting how slowly the water flows through the coated paper.

Key Points

The filter paper represents lung tissue.

The water represents oxygen.

The molasses represents **tobacco** tar.

The lungs coated with tar do not exchange oxygen as well as healthy lungs without tar.

