Health Hazards of Air Pollution (SE)

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Why is this woman wearing a mask?
In many cities around the world, the air quality is so poor that people are often told to stay indoors when possible. When there is poor air quality in a city, some people choose to wear face masks when they have to be outdoors. Lowering exposure to air pollutants with a face mask is especially important for people with existing heart or lung conditions.

Health Hazards of Air Pollution

The World Health Organization (WHO) reports that 2.4 million people die each year from causes directly related to air pollution. This includes both outdoor and indoor air pollution. Worldwide, there are more deaths linked to air pollution each year than to car accidents. Research by the WHO also shows that the worst air quality is in countries with high poverty and population rates, such as Egypt, Sudan, Mongolia, and Indonesia.

Respiratory system disorders are directly related to air pollution. These disorders have severe effects on human health, some leading to death directly related to air pollution. Air pollution related respiratory disorders include asthma, bronchitis, and emphysema. Asthma is a respiratory disorder characterized by wheezing, coughing, and a feeling of constriction in the chest. Bronchitis is inflammation of the membrane lining of the bronchial tubes of the lungs. Emphysema is a deadly lung disease characterized by abnormal enlargement of air spaces in the lungs and destruction of the lung tissue. Additional lung and heart diseases are also related to air pollution, as are respiratory allergies.
Air pollution can also indirectly cause other health issues and even deaths. Air pollutants can cause an increase in cancer, eye problems, and other conditions. For example, using certain chemicals on farms, such as the insecticide DDT (dichlorodiphenyltrichloroethane) and toxic PCBs (polychlorinated biphenyl), can cause cancer. Indoors, pollutants such as radon or asbestos can also increase your cancer risk.

**Air Pollution in Cities**

Certain respiratory conditions can be made worse in people who live closer to or in large cities. Some studies have shown that people in urban areas suffer lower levels of lung function and more chronic bronchitis and emphysema. If you live in a city, you have seen smog. It is a low-hanging, fog-like cloud that seems to never leave the city (Figure 1.1). Smog is caused by coal burning and by ozone produced by motor vehicle exhaust. Smog can cause eye irritation and respiratory problems.

![FIGURE 1.1](A layer of smog is typical for Cairo, Egypt.)

**Protecting Yourself from Air Pollution**

After reading about the effects of air pollution, both indoors and outdoors, you may wonder how you can avoid it. As for outdoor air pollution, if you hear in the news that the outdoor air quality is particularly bad, then it might make sense to wear a mask outdoors or to stay indoors. Because you have more control over your indoor air quality than the outdoor air quality, there are some simple steps you can take indoors to make sure the air quality is less polluted. These include:

1. Make sure that vents and chimneys are working properly, and never burn charcoal indoors.
2. Place carbon monoxide detectors in the home.
3. Keep your home as clean as possible from pet dander, dust, dust mites, and mold.
4. Make sure air conditioning systems are working properly.

Are there any other ways you can think of to protect yourself from air pollution?
Vocabulary

- **air pollution**: Pollution caused by chemical substances and particles released into the air mainly by human actions, such as the burning of fossil fuels.
- **asthma**: Illness in which the bronchioles are inflamed and become narrow.
- **bronchitis**: Inflammation of the membrane lining of the bronchial tubes of the lungs.
- **emphysema**: Chronic lung disease caused by the breakdown of the lung tissue.
- **ozone**: Pollutant in the lower atmosphere; created when some pollutants react with sunlight.
- **respiratory system**: Organ system that brings air to sites where gas exchange can occur between the blood and cells (around body) or blood and air (lungs).
- **smog**: Type of air pollution derived from vehicular emissions and industrial fumes.

Summary

- Air-pollution can directly cause deaths due to illnesses like asthma and emphysema or indirectly cause deaths by increasing your risk of cancer.
- There are steps you can take to decrease your exposure to indoor air pollution, such as having carbon monoxide detectors in your home and keeping your home as clean as possible from pet dander, dust, dust mites, and mold.

Practice

Use the resource below to answer the questions that follow.

- **State of the Air - Health Effects of Air Pollution** at [http://www.youtube.com/watch?v=sf3kOa3cys](http://www.youtube.com/watch?v=sf3kOa3cys) (5:24)

1. How has air quality improved in Southern California since the 1960s? What was a common occurrence for people living in Southern California in the 1960s?
2. Is the air quality that people currently experience in Southern California healthy? Explain your thinking completely remembering the individual variation which exists in humans.
3. Why do young and old people seem to be more affected by air quality? Consider what is happening metabolically within people and exposure lengths. Is it safe to assume that since someone seems unaffected, they are in fact not affected?
4. What is believed to be the primary source of cancer caused from air pollution? Where does this substance come from?

Review

1. What are direct and indirect causes of air-pollution related deaths?
2. How can you protect yourself from indoor air pollution?
References

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