

ASTHMA & AIR POLLUTION

STATEMENT OF THE PROBLEM

Scientists have shown that air pollution from cars, factories and power plants is an important cause of asthma attacks and may increase the risk of developing asthma. More than 159 million Americans live in areas with bad air. A research study published in 2002 estimated that 30% of childhood asthma is due to environmental exposures of all types, costing the nation \$2 billion per year. (National Resources Defense Council website)

BACKGROUND

There are several air pollutants that trigger asthma:

- Ground level ozone is a toxic component of smog that triggers asthma. It also leads to the development of asthma in children. Ozone is produced at ground level when tailpipe pollution from cars and trucks reacts with oxygen and sunlight. It is a big problem in cities with lots of traffic. Ozone is often worst on hot summer days, especially in the afternoons or early evenings.
- Sulfur Dioxide is produced when coal and crude oil are burned. One in 5 Americans lives within 10 miles of a coal-fired power plant. Oil refineries and older diesel engines can also release lots of dioxide into the air.
- Particulate matter refers to a wide range of pollutants—dust, soot, fly ash, diesel exhaust particles, wood smoke and sulfate aerosols—which are suspended as tiny particles in the air. Some of these fine particles can lodge in the lungs and trigger asthma attacks. The number of hospitalizations for asthma increases when particulate matter in the air rises. Particle pollution can be bad any time of year, and especially when the weather is calm and air pollution builds up. It can also be high near busy roads at rush hour, near factories or when smoke from fireplaces, wood stoves or burning vegetation is in the air. School bus idling can also be a significant cause of exposure to particulate matter for children. Particulate matter can get inside homes, drifting through windows and even walls if they are not tightly sealed.
- Nitrogen oxide is a gas emitted from tail pipes and power plants and contributes to the formation of ground-level ozone and smog. It also reacts with other air pollutants to form small particles that cause breathing problems, especially in people with asthma. Limiting your exposure to air pollution can be an important part of managing your asthma. The EPA monitors air quality all over the country through its daily Air Quality Index. At the website www.epa.gov/airnow you can enter your zip code and state and get the rating of the air in your area daily.

EPA'S AIR QUALITY INDEX

The air quality index values are below:

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
When the AQI is in this range:	...air quality conditions are:	...as symbolized by this color:
0 to 50	Good	Green
51 to 100	Moderate	Yellow
151 to 200	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon

Check the EPA website or your local television, newspaper or radio weather reports for daily updates on air quality. On bad air days, signified by orange and red colors on the index, children and people with respiratory diseases should limit their time outdoors. Purple and maroon indicate extreme levels of pollution -- even healthy adults should try to stay inside.

ASSESSMENT

- Note any outdoor pollution sources on the way to the participant's home. Is the home near a freeway or busy road (within 100 yards)? Is it near a manufacturing plant or industrial area?
- Ask if asthma symptoms increase more often when the participant is physically active when the air is more polluted.

EDUCATIONAL MESSAGES

- Air pollution can be an asthma trigger and it can worsen existing asthma.
- Plan outdoor activities when pollution levels are low. In summer, plan most vigorous activity for morning. Try to exercise away from busy roads or industrial areas. Exercise indoors on hot smoggy days.
- Change your activity level when the air pollution is high e.g. Walk instead of jog or spend less time on the activity (20 minutes instead of 30).
- Air pollution can make you more sensitive to triggers like mold and dust mites. An increased sensitivity to indoor asthma triggers could be due to outdoor air pollution.

ACTIONS

CHW ACTIONS	PARTICIPANT ACTIONS
<ul style="list-style-type: none"> • Notice any sources of outdoor pollution en route to the house. Is it near a busy freeway or roadway? Is it near a factory or industrial area? Comment on these observations as you do the home environmental check. Advise avoiding vigorous exercise near these sites. • Advise participant about ways to decrease risk of asthma when air pollution is high. • Work with parent to inform school if children are exposed to significant school bus idling. • Provide website resource for determining air quality index. 	<ul style="list-style-type: none"> • Monitor/decrease outdoor activity when air pollution level is high. • Keep your rescuer on hand when you are active outdoors. • Check air quality index if you are concerned about the pollution level • Check with your health care provider if you have more symptoms when the air pollution is high.

SUPPLIES

EDUCATION HANDOUTS

REFERRALS