



ATSDR
AGENCY FOR TOXIC SUBSTANCES
AND DISEASE REGISTRY

The Agency for Toxic Substances and Disease Registry (ATSDR) is a federal public health agency of the U.S. Department of Health and Human Services. It was created by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (also known as the Superfund legislation). ATSDR's mission is to serve the public by using the best science, taking responsive public health actions, and providing trusted health information to prevent harmful exposures and disease related to toxic substances.

Environmental Health

Air Quality and Health in Alexandria

Overview

Background

The Alexandria Department of Health asked the Agency for Toxic Substances and Disease Registry (ATSDR) to review available environmental air data and to determine possible health impacts to people in the community near the Mirant Potomac River Generating Station.

ATSDR Activities

To learn about ATSDR's public health activities in Alexandria go to <http://www.atsdr.cdc.gov/sites/mirant/index.html> and see the fact sheet titled **ATSDR's Public Health Activities in Alexandria**.

About ATSDR

ATSDR is an independent public health agency located in Atlanta, GA. Our mission is to provide communities with information they can use to protect their health. ATSDR often assists state and local health departments with environmental public health issues.

ATSDR is an advisory agency. ATSDR personnel conduct public health activities to provide authorities such as the U.S. Environmental Protection Agency (EPA) and health departments with information needed to guide their decision-making.

Purpose of Fact Sheet

In response to community interest, ATSDR is providing general information about air quality and health.

Air Pollution: General Information

Air Pollution

Air pollution is a major problem in modern society. Air pollutants are composed of a mixture of gases, small particles and liquid droplets. There are many sources of air pollution; some of these include industrial facilities, car and truck emissions, fires, and other activities.

Clean Air Standards

The Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set standards for common air pollutants. These standards are called the National Ambient Air Quality Standards (NAAQS).

Most of the standards are health-based and are reviewed every five years. The standards cover the following pollutants: carbon monoxide, nitrogen dioxide, lead, ozone, particulate matter, and sulfur dioxide. The list of standards are found at <http://www.epa.gov/air/criteria.html>.

Air Quality in Alexandria

For a direct link to Alexandria air quality go to <http://alexandriava.gov/link/redir.pxe?www.deq.virginia.gov/airquality/>.

Also, the AIRNow Web site provides access to daily air quality forecasts and real-time conditions for over 300 cities. It has links to more detailed state and local air quality sites; go to <http://cfpub.epa.gov/airnow/index.cfm?action=airnow.main>.

Air Pollutants and Health

Overview

ATSDR conducted short-term air monitoring in Alexandria. We monitored for pollutants that are most likely to be emitted from the Mirant Plant and that are most likely to pose health concerns to the community. Two of the pollutants we monitored, sulfur dioxide and particulate matter, are discussed in this fact sheet.

Health Effects

Not all individuals will experience health-related symptoms from exposure to outdoor air pollution. Symptoms people may experience from outdoor air pollution depend on a number of factors:

- Size and composition of particles in the atmosphere
 - Amount/level of pollutants in the atmosphere
 - Duration of the exposure
 - Local weather conditions
 - Age and sensitivity of the exposed person to the air pollutants
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Sulfur Dioxide (SO₂)

Sulfur dioxide is a pungent, colorless gas. The odor is similar to the smell of a just-struck match. Sulfur dioxide is a common pollutant in the atmosphere and can be a health concern for some people.

Sources*

Some natural sources of sulfur dioxide include volcanic activity and gases from natural warm springs. Man-made sources include burning of coal and oil, industrial processes (paper and metals) and diesel motor vehicles.

Health Effects

Sulfur dioxide at levels of concern can

- cause irritation in the lungs, throat, nose and eyes
- affect the immune system of the lungs
- can affect breathing in people with existing respiratory infections, asthma and heart disease

Vulnerable People

People who may experience greater health effects from exposure to sulfur dioxide include

- children
- elderly
- asthmatics
- people with chronic lung disease such as bronchitis and emphysema
- people with existing heart disease

* Not all sources of sulfur dioxide are listed.

Particulate Matter

Particulate matter, or particles in the air, includes organic chemicals, dust, smoke, soot, fly ash, diesel exhaust particles and other particles. Particulate matter is a common pollutant in the atmosphere and can be a health concern for some people.

Particle Size

Particles are grouped according to size because they act differently in the environment and in the body.

- Coarse particles are 10 microns or less in diameter and are called PM10.
- Fine particles are 2.5 microns or less in diameter and are called PM2.5.

A micron is 1 millionth of a meter. A particle that is 10 microns or less in size cannot be seen by the human eye. A human hair is about 70-100 microns.

Sources*

Natural sources of particulate matter include dust, soil, forest fires, pollen, spores, and livestock. Some man-made sources include motor vehicles exhaust, lawn and snow blowers, factories, incinerators, power plants, tobacco smoke and cooking smoke.

Health Effects

Particulate matter at levels of concern can cause

- Sore throat, chronic cough, burning eyes, wheezing, shortness of breath, tightness of chest, and chest pain
- Flare-ups of existing lung and heart conditions are more likely to occur at high levels in very short term exposure

Vulnerable People

People who may experience greater health effects from exposure to particulate matter include

- Asthmatics, the elderly, and people with existing heart and lung problems
- Some children when they spend a lot of time outdoors

* Not all sources of particulate matter are listed.

About Asthma

Asthma is a chronic disease that can be managed. Poor air quality can affect some asthmatics.

Description - Asthma occurs when the lungs become inflamed and overreact to allergens and irritants. These irritants trigger increased mucus, swelling and narrowing of the airway.

Symptoms - Symptoms can include chest tightness, coughing, wheezing, a blocked airway and shortness of breath. Asthma symptoms can range from mild to severe.

Asthma Triggers

An asthma trigger is a thing or condition that can bring on an asthma attack. Each person has specific triggers that cause flare-ups of their asthma. Some common asthma triggers are listed in the table below.

Allergens - Animal dander, cockroaches, dust mites, pollen, foods and molds

Irritants - Tobacco smoke, strong odors, perfumes, cold air, exercise, colds, lung infections, some medications that can make your asthma worse

Other triggers - Excitement, stress, and sudden change in temperature

Outdoor air pollutants - Asthmatics can be sensitive to outdoor air pollution. They can develop flare-ups of their asthma symptoms when pollutants are at levels of concern.

Asthma Management

Be aware of the factors that trigger your asthma. Develop an asthma care plan with your doctor to manage your asthma symptoms when they occur. To manage your asthma, you will want to

- Identify your asthma triggers.
- Anticipate and prevent asthma flare-ups when possible.
- Take medications as prescribed.
- Control flare-ups by taking medications as directed by your doctor.
- Visit your doctor on a regular basis to maintain and improve your asthma care plan.

Protecting Your Health

Reducing Exposure to Air Pollutants

In areas with variable air quality, you can protect your health by taking the following actions

- Stay informed about air pollution alerts in your area by going to <http://alexandriava.gov/link/redirect.pxe?www.deq.virginia.gov/airquality/>.
- Avoid prolonged outdoor exertion near high traffic areas.
- Stay indoors and close windows on smoggy days.
- Avoid exposure to tobacco smoke, wood smoke, vehicle exhaust and other sources of airborne particles, when possible.
- Stay involved in community efforts to improve air quality in your area.

Consult with Health Care Providers

If you experience breathing or heart problems such as persistent cough, burning eyes, wheezing, shortness of breath, tightness of chest or chest pain on air quality alert days, consult with your health care provider as needed.

Reporting Health Concerns

We are interested in whether you feel your health is affected by exposure to air emissions from Mirant. If you'd like to share your concerns, you can go to <http://www.alexhealth.org/miranthealthconcerns.html>

We can use your information only to inform our public health work in a general way. The information you provide cannot be used to determine the cause of your health problem or to implicate any one environmental source.

If you are sick, you should seek medical care from your health care provider.

Contact ATSDR

For More Information

- Online:
<http://www.atsdr.cdc.gov/sites/mirant/index.html>

<http://www.atsdr.cdc.gov>
- Contact Lora Werner, ATSDR regional representative:
Email: lkw9@cdc.gov
Phone: 215-814-3141

Sources: Some of the information contained in this fact sheet was obtained from the Environmental Protection Agency and the American Lung Association.