Pneumoconiosis is a general term given to any lung disease caused by dusts that are breathed in and then deposited deep in the lungs, causing damage. Pneumoconiosis is usually considered an occupational lung disease and includes asbestosis, silicosis, and coal workers’ pneumoconiosis (CWP), also known as “black lung disease.”

**Learn About Pneumoconiosis**

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Different types of dust cause different types of pneumoconiosis; however, not all types of dust are known to cause pneumoconiosis.

**Key Facts**

- Pneumoconiosis is caused by workplace exposure to airborne dusts that are breathed into the lung.
- Exposure to asbestos, silica, and coal dust are the most common causes of pneumoconiosis. Most types of dust are not known to cause pneumoconiosis.
- There is no cure for pneumoconiosis, but it can be prevented with appropriate respiratory protection.

**What Is Pneumoconiosis?**

Pneumoconiosis can develop when airborne dusts, particularly mineral dusts, are inhaled at work. The dust particles remain in the lung where they can cause inflammation or fibrosis (scarring). The effects of damage from inhaled mineral dusts may not show up for many years, so patients may not develop symptoms until long after they are no longer exposed to these dusts. The most common cause of pneumoconiosis is inhalation of asbestos, silica (sand or rock dust), or coal dust. Only some workers exposed to these dusts will develop pneumoconiosis. Preventing inhalation of harmful dusts makes pneumoconiosis a preventable disease.

**How Pneumoconiosis Affects Your Body**

When mineral dusts are inhaled, dust particles can land (deposit) in the airways (bronchial tubes) or all the way in the alveoli (air sacs) that are deep in the lungs. How far into the lungs the dust particles can get depends on the size and shape of the particles. The smaller the particles the deeper in the lung they get. After the dust particles land and settle in the lung, the lung tissue may try to get rid of the dust particles or try to surround them to prevent them from causing damage. Cells from your immune system travel to these affected areas of lung, and inflammation develops as it tries to fight the dust particle. In some cases, the inflammation is severe enough to cause scar tissue to form. The formation of scar tissue in the lung is called fibrosis. If the inflammation or fibrosis is severe enough or involves a large enough area of lung tissue, breathing will be affected. Dry cough and shortness of breath are common symptoms of fibrosis.

**How Serious Is Pneumoconiosis?**

The severity of pneumoconiosis varies widely depending on the type of dust, how much of the lungs are affected, and how intense the dust exposure was. Pneumoconiosis sometimes causes no symptoms and is diagnosed during workplace surveillance programs that test workers to find early signs of pneumoconiosis using chest X-rays.
Pneumoconiosis continued

and/or spirometry (a breathing test to check how well air goes in and out of lungs). In rare cases, pneumoconiosis can be very severe and cause death.

**Pneumoconiosis Symptoms, Causes, and Risk Factors**

The most common symptoms of pneumoconiosis are cough and shortness of breath. The risk is generally higher when people have been exposed to mineral dusts in high concentrations and/or for long periods of time. Inadequate or inconsistent use of personal protective equipment (PPE) such as respirators (specially fitted protective masks) is another risk factor since preventing dusts from being inhaled will also prevent pneumoconiosis. Pneumoconiosis does not generally occur from environmental (nonworkplace) exposures since dust levels in the environment are much lower.

**What Are the Symptoms of Pneumoconiosis?**

Patients with pneumoconiosis may have no symptoms at all, particularly early in the disease. Symptoms can include cough, with or without mucous (sputum) production, or chest tightness. Many patients complain of shortness of breath. Patients may first notice getting more breathless or winded with activity, like walking or climbing stairs. Some patients may feel breathless even when they are at rest.

If pneumoconiosis involves a large part of the lungs or causes a lot of scarring, oxygen may be prevented from easily reaching the blood during breathing. This results in hypoxemia (low blood oxygen levels). Hypoxemia may only be present during activity or while sleeping. Hypoxemia may be present all the time if pneumoconiosis is severe or progresses. Many patients with hypoxemia do not know that their oxygen levels are low because hypoxemia itself does not always cause symptoms like breathlessness. Oxygen in the blood delivers oxygen to all the internal organs, so recognizing hypoxemia is important to prevent stress on other organs, like the heart and brain.

**What Causes Pneumoconiosis?**

Many dusts can cause pneumoconiosis. The most common workplace mineral dusts that are known to cause pneumoconiosis are asbestos, silica (rock and sand dust), and coal dust.

**What Are Risk Factors?**

Pneumoconiosis includes asbestosis, silicosis and coal workers’ pneumoconiosis (CWP). CWP is sometimes called “black lung disease” because the charcoal dust in the lungs can turn them black in color. Below are the dusts that cause these diseases.

**Asbestos fibers** are very durable and resistant to heat, leading to their use in insulation and fireproofing, as well as in textile manufacturing. Examples of workers who might be exposed to asbestos include plumbers, roofers, mechanics, and shipyard workers, including naval officers. People are at higher risk of developing asbestosis if they have higher levels of exposure to asbestos dust over longer periods of time. The disease typically does not develop for 10 or 20 years after first exposure.

**Crystalline silica** is a main component of dust from sand and rock. Examples of workers who might be exposed to silica include miners, sandblasters, stonemasons, and foundry workers. Risk factors for developing silicosis include higher levels of silica exposure and longer time of exposure. Lower levels of exposure over many years most commonly lead to “chronic simple silicosis” in which many small nodules of inflammation form in the lungs. This is the most common form of silicosis. In a small percentage of cases, simple silicosis develops into a more severe form of silicosis called “progressive massive fibrosis” (PMF) when many small nodules “grow” together into large masses. In PMF, patients have more severe respiratory symptoms because the masses...
limit the function of normal lung. If exposure to silica is very intense over a shorter period of time, patients may develop “accelerated” or “acute silicosis.” Acute silicosis is rare and generally occurs only after extremely high exposures, but it causes death in most cases.

**Coal dust** is made of carbon-containing particles, and coal miners are at risk of inhaling this dust. Coal miners may also be exposed to silica-containing dust because coal mining may involve some drilling into silica-containing rock. Workers exposed to graphite dust can also develop pneumoconiosis similar to CWP. Just like with silicosis, CWP is most commonly “simple” disease with nodules of inflammation forming in the lungs, but it can become PMF in a small percentage of patients.

**Chronic beryllium disease** (also called berylliosis) is another work-related lung disease that may be considered pneumoconiosis. Beryllium is a very strong and lightweight metal that is used in the electronics, aerospace, and nuclear power industries. Chronic beryllium disease is caused by inhalation of airborne beryllium during its processing such as in melting or grinding it. There are other less common mineral dusts that might also cause pneumoconiosis including cobalt, talc, and aluminum oxide.

**When to See Your Doctor**
If you have been exposed to asbestos, silica, coal dust, or other toxic dusts and have respiratory symptoms such as cough or shortness of breath, you should consult your health-care provider.

**Diagnosing and Treating Pneumoconiosis**
Pneumoconiosis may be diagnosed by routine workplace surveillance in exposed workers, or it may be diagnosed because symptoms develop in a person previously exposed to mineral dusts. Workplace surveillance programs may involve workers having breathing tests and/or chest X-rays every year or periodically looking for abnormalities.

**What to Expect**
Your health-care provider will ask you about your symptoms and also about past exposures to dusts like asbestos or silica. It is common that you would be referred to a pulmonologist (lung doctor) for your evaluation. You may also be referred to an occupational medicine provider to find out more about past exposures and to evaluate you further.

**How Pneumoconiosis Is Diagnosed**
Pneumoconiosis is diagnosed using several pieces of information:

- Your history, including the details about your symptoms and exposures
- A physical examination
- Pulmonary function tests (breathing tests)
- Chest X-ray or CT scan (“CAT scan”) of the chest

Chest X-rays or CT scans may show your health-care provider:

- Nodules (“spots”) or masses
- Areas of inflammation
- Pneumonia
- Excess fluid in or around the lungs

Sometimes additional, more invasive testing is necessary to diagnose pneumoconiosis. Evaluation might include bronchoscopy in which a thin tube with a camera is inserted through your mouth into your trachea (windpipe) to look at your airways, to obtain a fluid sample to look for infection, or to take small biopsy samples of lung tissue. If more lung tissue is needed, surgery may be necessary to take a larger biopsy specimen. While invasive procedures and biopsies are generally not necessary to diagnose pneumoconiosis, these tests may be necessary to exclude other diagnoses.

**How Pneumoconiosis Is Treated**
There are no specific treatments or medications for pneumoconiosis, and there is no cure. Most treatments for patients with pneumoconiosis are aimed at limiting further damage to the lung, decreasing symptoms and improving quality of life.
Patients may be treated with inhaled medications (inhalers) if they have symptoms of asthma or chronic obstructive pulmonary disease (COPD). A pulmonary rehabilitation program may be recommended to improve a patient’s ability to exercise. Oxygen is prescribed if patients have a low oxygen level. Some patients need to wear oxygen all the time, while others only need it when they are active or while they sleep.

In rare, very severe cases, your health-care provider may refer you for a lung transplant. You would have many tests to find out if you are healthy enough to undergo a lung transplant and if it would improve or prolong your life.

If you are a smoker, you will be strongly advised to quit smoking. Quitting cigarette smoking (or smoking any other drugs) is very important to prevent further decline in lung function. Smoking with some types of pneumoconiosis can actually increase your chance of developing lung cancer more than just smoking without pneumoconiosis. The Lung Association offers many resources for help quitting smoking. Call our Lung HelpLine at 1-800-LUNGUSA or visit FFSonline.org to learn more.

Living With Pneumoconiosis

Pneumoconiosis is different for every person. Some patients have very mild disease that is stable (does not get worse and worse over time). Other people have more severe disease, or disease that gets much worse over time. Because there is no cure, living with pneumoconiosis involves taking the best care of your lungs and your general health as you can and following up regularly with your health-care provider to manage your symptoms, to monitor you for worsening of your lung function, and to watch for other diseases that can develop in patients who have pneumoconiosis.

What to Expect

If you have pneumoconiosis, you should expect to have regular visits to your health-care provider(s). You may need to have regular testing, such as pulmonary function tests (“breathing tests”) or chest X-rays to monitor you and your disease closely. You should have a flu shot every year, and you should ask your health-care provider about pneumonia vaccines. People with silicosis should expect a tuberculosis skin test to make sure tuberculosis hasn’t started growing in your lung also.

Managing Pneumoconiosis

Taking care of your heart and lungs is one of the most important things you can do for your health if you are living with pneumoconiosis. This means not smoking and avoiding secondhand smoke. You should also avoid any further exposure to harmful dusts. Keeping your weight in a healthy range and exercising regularly helps with symptoms of breathlessness. For people with more severe breathing symptoms, exercising may be difficult, and a pulmonary rehabilitation program can be helpful.

People with pneumoconiosis can have a higher risk of developing some other diseases. Your health-care provider may need to watch for these. For instance, patients with asbestosis are at higher risk of developing lung cancer. This risk is especially high if the patient has been a cigarette smoker. One lung cancer that is related to asbestos exposure but not to cigarette smoking is called mesothelioma. Mesothelioma is rare compared with other types of lung cancer, but asbestos exposure is its only known cause. Your health-care provider may ask you to have a chest X-ray or chest CT scan to check for lung cancer.

Patients with silicosis are at a higher risk of developing tuberculosis. Your health-care provider may do a skin test or a blood test to see if you have been exposed to tuberculosis in
the past, or they may ask you about other risk factors for tuberculosis. If you have been exposed to tuberculosis in the past and are carrying the tuberculosis bacteria (latent tuberculosis infection), it may be recommended that you take antibiotics to help prevent you from getting active tuberculosis.

Patients with silicosis are also at higher risk of developing rheumatoid arthritis, a form of arthritis in which the body’s immune system attacks the joints causing pain, swelling and stiffness. People with silicosis who develop certain symptoms or signs of arthritis may need blood tests or other evaluation to check for rheumatoid arthritis. Patients with rheumatoid arthritis often need special medications to control the symptoms of their arthritis.

Patients with CWP may also be at an increased risk of tuberculosis or rheumatoid arthritis since coal dust can be contaminated with silica.

Finding Support
If you are diagnosed with pneumoconiosis, you may be entitled to workers’ compensation. Contact your state workers’ compensation board for more information about how to file a claim.

The Lung Association recommends patients and caregivers join our Living With Lung Disease Support Community to connect with others facing this disease. You can also call the Lung Association’s Lung HelpLine at 1-800-LUNGUSA to talk to a trained respiratory professional who can help answer your questions and connect you with additional support.

Ask your health-care provider about lung disease support groups in your area, or look online for a Better Breathers Club near you.

Questions to Ask Your Doctor About Pneumoconiosis
Making notes before your visit, as well as taking along a trusted family member or friend, can help you through the first appointment with your doctor.

- Did exposure to a dust affect my lungs? What kinds of dusts may have caused a problem, and how can I avoid them?
- Am I at risk for pneumoconiosis? Do my job and work environment put me at risk?
- If I am at risk for pneumoconiosis, what kind of testing should I have?
- What symptoms should I look for if I am worried about pneumoconiosis?
- If I have pneumoconiosis, how often do I need to come to the doctor?
- How often do I need to have breathing tests or chest X-rays?
- Should I use oxygen?
- How will having pneumoconiosis affect my life expectancy?
- Should I have a pneumonia vaccine and a flu shot? When and where can I get these vaccines?
- What kind of exercise could I do to help me get or stay in shape?
- Would pulmonary rehabilitation be a good idea for me?
- Am I at a healthy weight? What is a healthy weight for me?
- How can I stop smoking? What treatments or support are available to me?

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