



Malignant Mesothelioma Causes, Risk Factors, and Prevention

Risk Factors

A risk factor is anything that affects your chance of getting a disease such as cancer. Learn more about the risk factors for malignant mesothelioma.

- [What Are the Risk Factors for Malignant Mesothelioma?](#)
- [Do We Know What Causes Malignant Mesothelioma?](#)

Prevention

There is no way to completely prevent mesothelioma. But there are things you can do that might lower your risk. Learn more.

- [Can Malignant Mesothelioma Be Prevented?](#)

What Are the Risk Factors for Malignant Mesothelioma?

A risk factor is anything that affects your chance of getting a disease such as cancer. Different cancers have different risk factors. Some risk factors, like smoking, can be changed. Others, like a person's age or family history, can't be changed.

But having a known risk factor, or even several, does not mean that you will get the disease. And some people who get the disease may have few or no known risk factors.

Researchers have found some factors that increase a person's risk of mesothelioma.

Asbestos

The main risk factor for pleural mesothelioma is exposure to asbestos. In fact, most cases of pleural mesothelioma have been linked to asbestos exposure, usually from high levels of exposure in the workplace.

Asbestos is a group of minerals that occur naturally as bundles of tiny fibers. These fibers are found in soil and rocks in many parts of the world.

When asbestos fibers in the air are inhaled, they can get into the lungs. Fibers that stay in the lungs can travel to the ends of the small airways and enter the pleural lining of the lung and chest wall. These fibers can then injure the cells of the pleura, and eventually cause mesothelioma. Asbestos fibers can also damage cells of the lung and result in *asbestosis* (scar tissue in the lung) and/or lung cancer.

Peritoneal mesothelioma, which forms in the abdomen, can result from coughing up and swallowing inhaled asbestos fibers.

Many people are exposed to very low levels of naturally occurring asbestos in outdoor air in dust that comes from rocks and soil containing asbestos. This is more likely to happen in areas where rocks have higher asbestos content. In some areas, asbestos can be found in the water supply as well as in the air.

In the past, asbestos was used in many products because of its heat and fire-resistant properties. The link between asbestos and mesothelioma is now well known, so its use in the United States has gone down dramatically. Most use stopped several decades ago, but it is still used in some products.

Still, millions of Americans may already have been exposed to asbestos. People at risk for asbestos exposure in the workplace include some miners, factory workers, insulation manufacturers and installers, railroad and automotive workers, ship builders, gas mask manufacturers, plumbers, and construction workers. Family members of people exposed to asbestos at work can also be exposed because the workers can carry home asbestos fibers on their clothes.

Asbestos was also used to insulate many older homes, as well as commercial and public buildings around the country, including some schools. Because these particles are contained within the building materials, they are not likely to be found in the air in large numbers. The risk of exposure is likely to be very low unless the particles somehow escape into the air, such as when building materials begin to decompose over time, or during remodeling or removal.

The risk of developing mesothelioma is loosely related to how much asbestos a person is exposed to and how long this lasts. People exposed at an early age, for a long time, and at higher levels are more likely to develop this cancer. Still, most people exposed to asbestos, even in large amounts, do not get mesothelioma. Other factors, such as a person's genes, may make them more likely to develop mesothelioma when exposed to asbestos.

Mesotheliomas related to asbestos exposure take a long time to develop. The time between first exposure to asbestos and diagnosis of mesothelioma is usually between 20 and 50 years. Unfortunately, the risk of mesothelioma does not go down over time after the exposure to asbestos stops. The risk appears to be lifelong.

For more detailed information on asbestos, see [Asbestos and Cancer Risk](#).

Zeolites

Zeolites are minerals chemically related to asbestos. An example is erionite, which is common in the rocks and soil in parts of Turkey. High mesothelioma rates in these areas are believed to be caused by exposure to this mineral.

Radiation

There have been a few published reports of mesotheliomas that developed after people were exposed to high doses of radiation to the chest or abdomen as treatment for another cancer. Although the risk of mesothelioma is higher in patients who have been treated with radiation, this cancer is still rare in these patients.

There have also been reports linking mesothelioma to injections of thorium dioxide (Thorotrast). This radioactive material was used by doctors for certain x-ray tests until the 1950s. Thorotrast was found to cause cancers, so it has not been used for many decades.

SV40 virus

Some studies have raised the possibility that infection with simian virus 40 (SV40) might increase the risk of developing mesothelioma. Some injectable polio vaccines given between 1955 and 1963 were contaminated with SV40. As many as 30 million people in the United States may have been exposed to this virus.

Some lab studies have suggested that SV40 infection might cause mesothelioma. For example, infecting some lab animals like hamsters with SV40 causes mesotheliomas to develop. Researchers also have noticed that SV40 can cause mouse cells grown in lab dishes to become cancerous, and that asbestos increases the cancer-causing effect of SV40 on these cells. Other researchers have found SV40 DNA in some biopsy specimens of human mesotheliomas. But fragments of SV40 DNA can also be found in some non-cancerous human tissues.

So far, the largest studies looking at this issue in humans have not found an increased risk for mesothelioma or other cancers among people who received the contaminated vaccines as children. But the peak age range for diagnosis of mesothelioma is 50 to 70 years. Some researchers have pointed out that this issue may remain unresolved until more of the people accidentally exposed to SV40 between 1955 and 1963 reach that age range.

Most experts have concluded that at this time we still don't know if SV40 is responsible for some mesotheliomas. This important topic is still being researched.

Age

The risk of mesothelioma increases with age. Mesothelioma can occur in young people (even children), but it is rare in people under age 45. About 2 out of 3 people with mesothelioma of the chest are 65 or older.

Gender

Mesothelioma is much more common in men than in women. This is probably because men have been more likely to work in jobs with heavy exposure to asbestos.

- [References](#)

[See all references for Malignant Mesothelioma](#)

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Do We Know What Causes Malignant Mesothelioma?

Researchers have found several [factors that increase a person's risk of mesothelioma](#), but it's not yet clear exactly how all of these factors might cause this cancer.

Cancers, including mesotheliomas, occur when cells in the body suffer damage to their DNA. DNA is the chemical in each of our cells that makes up our *genes* – the instructions for how our cells function. We usually look like our parents because they are the source of our DNA. But DNA affects more than how we look. Some genes control when cells in the body grow, divide into new cells, and die at the right time. Changes in these genes may cause cells to grow out of control, which can lead to cancer.

Asbestos exposure is the main cause of pleural mesothelioma. When asbestos fibers are breathed in, they travel to the ends of small air passages and reach the pleura, where they can cause inflammation and scarring. This may damage cells' DNA and cause changes that result in uncontrolled cell growth. If swallowed, these fibers can reach the abdominal lining, where they can have a role in causing peritoneal mesothelioma.

But most people exposed to asbestos, even in large amounts, do not get mesothelioma. Other factors, such as a person's genes, may make them more likely to develop mesothelioma when exposed to asbestos. For example, researchers have found that some people who seem to be at high risk have changes in *BAP1*, a gene that normally helps keep cell growth under control. Other genes are probably important as well.

Radiation treatments for other cancers have been linked to mesothelioma in some studies. Radiation can damage the cells' DNA, leading to out-of-control cell growth.

It is still not known if infection with the SV40 virus increases the risk of mesothelioma, or exactly how it might do so. In lab studies, researchers have found that the virus can affect certain genes that have been linked with cancer, but further research in this area is needed.

- [References](#)

[See all references for Malignant Mesothelioma](#)

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Can Malignant Mesothelioma Be Prevented?

Being [exposed to asbestos](#) is by far the biggest risk factor for mesothelioma, so the best way to reduce your risk is to limit your exposure to asbestos at home, in public buildings, and at work.

People who might be exposed to high levels of asbestos at work include some miners, factory workers, insulation manufacturers and installers, railroad and automotive workers, ship builders, gas mask manufacturers, plumbers, and construction workers. If there is a chance of on-the-job exposure, such as during the renovation of old buildings, you should use all protective equipment and safety procedures designed for working around asbestos.

Older homes may have insulation containing asbestos or other materials. A knowledgeable expert can check your home to find out if there is any asbestos and whether it poses any risk of exposure. This may mean testing the air for asbestos levels. Just because asbestos exists in a home does not necessarily mean that it needs to be removed. As long as the material is not damaged or disturbed, for example by drilling or remodeling, the fibers will not be released into the air. If asbestos needs to be removed from your home, you should hire a qualified contractor to do this to avoid contaminating your home or causing any exposure to your family or to the workers. You should not attempt to remove asbestos-containing material yourself.

Asbestos can also be found in some commercial and public buildings (including some schools), where the same basic principles apply. Intact, undisturbed materials containing asbestos generally do not pose a health risk. They may pose a risk if they are damaged, are disturbed in some way, or deteriorate over time and release asbestos fibers into the air. By federal law, all schools are required to inspect materials with asbestos regularly and to have a plan in place for managing them.

- [References](#)

[See all references for Malignant Mesothelioma](#)

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