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# 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.

- [Risk Factors for Malignant Mesothelioma](#)
- [What Causes Malignant Mesothelioma?](#)

## Prevention

There's 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?](#)

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# Risk Factors for Malignant Mesothelioma

A risk factor is anything that increases 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 many, 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 high levels of asbestos exposure, usually 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, over time, cause mesothelioma. Asbestos fibers can also damage cells of the lung and result in **asbestosis** (scar tissue in the lung) and/or [lung cancer](#)<sup>1</sup> .

**Peritoneal** mesothelioma can form in the abdomen when inhaled asbestos fibers are coughed up and then swallowed.

Many people are exposed to very low levels of naturally occurring asbestos in outdoor air. It's 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 it was heat and fire-resistant. The link between asbestos and mesothelioma is now well known, and most of its use in the United States stopped several decades ago, but it's 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're 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 exposure 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 or having radiation treatments in the past, 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 the first asbestos exposure and diagnosis of mesothelioma is usually between 20 and 50 years. And the risk of mesothelioma does not go down over time after the exposure to asbestos stops. The risk appears to be lifelong.

For more information, see [Asbestos and Cancer Risk<sup>2</sup>](#).

## **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. In the United States, erionite has been detected in Nevada, Oregon, Utah, Arizona, Montana, and South Dakota.

## **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.

## **SV40 virus**

Some studies have raised the possibility that infection with simian virus 40 (SV40) might increase the risk of developing mesothelioma. But most experts agree 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's 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.

## Gene changes

A mutation or change in the gene called *BAP1* can be passed in families and has been linked to mesothelioma. But *BAP1* mutations are rare.

## Hyperlinks

1. [www.cancer.org/cancer/lung-cancer.html](http://www.cancer.org/cancer/lung-cancer.html)
2. [www.cancer.org/cancer/cancer-causes/asbestos.html](http://www.cancer.org/cancer/cancer-causes/asbestos.html)

## References

See all references for Malignant Mesothelioma ([www.cancer.org/cancer/malignant-mesothelioma/references.html](http://www.cancer.org/cancer/malignant-mesothelioma/references.html))

American Society of Clinical Oncology. Mesothelioma: Risk Factors. 07/2017. Accessed at [www.cancer.net/cancer-types/mesothelioma/risk-factors](http://www.cancer.net/cancer-types/mesothelioma/risk-factors) on October 17, 2018.

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National Comprehensive Cancer Network, Clinical Practice Guidelines in Oncology (NCCN Guidelines®), Malignant Pleural Mesothelioma, Version 2.2018 -- February 26,

2018. Accessed at [www.nccn.org/professionals/physician\\_gls/pdf/mpm.pdf](http://www.nccn.org/professionals/physician_gls/pdf/mpm.pdf) on October 17, 2018.

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## 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 the DNA in cells is damaged. 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. 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. About 8 out of 10 people with mesothelioma have been exposed to asbestos. 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.

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.

### References

See all references for Malignant Mesothelioma ([www.cancer.org/cancer/malignant-mesothelioma/references.html](http://www.cancer.org/cancer/malignant-mesothelioma/references.html))

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# Can Malignant Mesothelioma Be Prevented?

Being [exposed to asbestos](#)<sup>1</sup> 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's 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 asbestos or other toxic materials. A knowledgeable expert can check your home to find out if there's 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 doesn't mean that it needs to be removed. As long as the material isn't damaged or disturbed, for example by drilling or remodeling, the fibers won't 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 shouldn't try 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, 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 must have a plan in place for managing them.

## Hyperlinks

1. [www.cancer.org/cancer/cancer-causes/asbestos.html](http://www.cancer.org/cancer/cancer-causes/asbestos.html)

## References

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