



Beryllium and Chronic Beryllium Disease

Beryllium

Beryllium is a metal that is found in nature, especially in beryl and bertrandite rock. It is extremely lightweight and hard, is a good conductor of electricity and heat, and is nonmagnetic. These properties make beryllium suitable for many industrial uses, including: metalworking (pure beryllium, copper and aluminum alloys, jet brake pads, aerospace components); ceramic manufacturing (semiconductor chips, ignition modules, crucibles, jet engine blades, rocket covers); electronic applications (transistors, heat sinks, x-ray windows); atomic energy applications (heat shields, nuclear reactors, nuclear weapons); laboratory work (research and development, metallurgy, chemistry); extraction (ore and scrap metal); and dental alloys (crowns, bridges, dental plates); and sporting goods (golf clubs, bicycle frames).

Exposure

Exposure happens when a person breathes in beryllium mists, dusts or fumes. Beryllium can then travel to the lungs where it can cause damage. Beryllium-related granulomas (non-cancerous tumors or growths) can also develop in other body tissues but these do not usually result in a loss of function.

Machinists, welders and operators may be exposed through direct handling of beryllium and beryllium compounds. Other workers may be exposed by performing laboratory analyses on beryllium compounds, coming into contact with contaminated equipment or by working near a beryllium operation.

Major Health Problems

Beryllium disease is caused primarily by breathing air with beryllium mists, dusts and fumes. Both acute (abrupt, short-term) and chronic (long-term) health problems can occur.

The acute disease starts soon after exposure and resembles pneumonia or bronchitis. It requires relatively high levels of exposure to occur and is now quite rare because protective measures to reduce exposure are usually in place.

The chronic form – Chronic Beryllium Disease (CBD) – takes longer to develop than the acute form. Onset may occur from several months to decades after exposure. CBD can occur after much lower levels of exposure than the acute form. In Chronic Beryllium Disease, inflammation and scarring of the lungs make it more difficult for the lungs to get oxygen to the bloodstream and body.

A special type of scarring called granuloma is very typical of this disease. These noncancerous growths look like scars or tumors present in another disease called sarcoidosis. A detailed work history and additional tests will help to make the correct diagnosis.

Most people exposed to beryllium will NOT develop Chronic Beryllium Disease.

Chronic Beryllium Disease can be either mild or severe. For some, it can be a relatively minor condition, while for others it can be a very serious, even fatal, disease.

The amount or length of exposure necessary to cause a specific individual to develop CBD is not known. As with many workplace hazards, it is believed that higher exposures cause more people to become sensitized. In a few people, exposure to even very small amounts of beryllium can pose a problem.

In these people, their bodies react and begin the disease process even when exposed to only small amounts of the metal. The reason for this is not well understood.

Beryllium Disease. (These "steroids" are not the same as the ones you hear about athletes using.) These steroids reduce inflammation and are believed to help keep the condition from progressing. Any decision to use steroids or other medications should be made after discussing possible side effects with your doctor.

Any person with a lung condition, including Chronic Beryllium Disease, may benefit from pneumonia and flu vaccinations and early treatment of respiratory infections.

If you smoke cigarettes, try to STOP. This is especially important for those with lung disease. Exposure to beryllium increases a person's chances of getting lung cancer. It is important to eliminate additional lung cancer risks such as smoking.

If you do have a beryllium-related health condition, it is advisable for you to avoid further exposure to beryllium. It is not known if avoiding future exposure will help slow or stop the progression of the disease but it is wise to take this precaution.

Beryllium is identified by the International Agency for Research on Cancer and the National Toxicology Program as a human carcinogen. Persons exposed to beryllium are at increased risk of developing lung cancer.

Symptoms

Symptoms of Chronic Beryllium Disease include:

- Cough;
- Shortness of Breath (especially with activity);
- Chest Pain;
- Fatigue;
- Weight Loss; and
- Loss of Appetite.

It is important to note that NOT all individuals with these symptoms have CBD. These can be symptoms of other conditions which may also require medical attention. Not all people with CBD have all of these symptoms.

Disease Course

The course of Chronic Beryllium Disease is variable, ranging from a stable condition controllable with or without prescription medications to a poorly controlled, progressive condition that is debilitating. Progressive, poorly controlled CBD can be fatal. It is not possible to predict how CBD will affect a particular individual.

Some people can be diagnosed with the disease but have no symptoms. If you do not have any symptoms, you probably will not require treatment and Chronic Beryllium Disease will probably have little effect on your life. Even so, you should see a doctor regularly to monitor the disease for signs of progression.

Treatment with a group of drugs called corticosteroids ("steroids"), such as prednisone, may be advised for those with symptoms of, or breathing tests that indicate Chronic

Chronic Beryllium Disease occurs only in people who have been exposed to beryllium, so most primary care health care providers have not had the opportunity to treat individuals with CBD. For this reason, you may wish to consult a health care provider who is familiar with Chronic Beryllium Disease. Be sure to check if your medical insurance covers any health care provider visits that you schedule, although you may be eligible for medical coverage under the Workers' Compensation Program if you are sensitized to beryllium or if you are diagnosed with Chronic Beryllium Disease.

Most exposures to beryllium occur in the workplace. However, there are documented cases in which beryllium-sensitization and/or Chronic Beryllium Disease have occurred in persons with no known occupational exposure to beryllium.



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