Q  What is beryllium?
A  Beryllium is a metallic element found abundantly in the Earth's crust that is used not only in major industries such as aerospace and electronic communications but also in small commercial ventures such as dental laboratories. Beryllium is added to some alloys because it is lightweight yet stable, has high heat resistance, corrosion resistance, insulating properties, nonmagnetic and nonsparking qualities and the ability to conduct electricity. A single wire made with beryllium can carry hundreds of electronic signals.

In industrial applications beryllium can be:
- used as pure metal
- mixed with other metals to form alloys
- processed to salts that dissolve in water
- processed to form oxides and ceramic materials

For more information about industrial uses of Beryllium, see [encarta.msn.com](http://encarta.msn.com).

Q  What are the health risks associated with beryllium?
A  People exposed to beryllium (pure metal particles, alloy particles or oxide dust) can become sensitized to beryllium and may develop a granulomatous lung condition known as chronic beryllium disease (CBD). In some people who inhale beryllium particles as small as  \_\_\_\_\_\_\_\_\_ deep into the lungs, the immune system over-reacts and "clogs up" lung tissue with lymphocytes. Eventually, lung function is compromised and the individual can become quite debilitated. Some people with CBD can develop lung cancer. Beryllium has been shown to cause cancer in animal studies, but the evidence for beryllium as a human carcinogen is still being evaluated.

For more information about the origin of beryllium disease, see [Berylliosis - Gale Encyclopedia of Medicine](http://www.gale.com).

Q  What are the symptoms of beryllium disease?
A  Chronic beryllium disease is characterized by coughing, shortness of breath, chest pains, night sweats and fatigue. These symptoms are frequently associated with other acute or chronic conditions. Chest X-rays may show evidence of lung scarring and pulmonary function tests may indicate compromised airflow.

For more information on the clinical assessment of beryllium disease, see [http://www.nationaljewish.org/](http://www.nationaljewish.org/).

Q  How much beryllium do you have to be exposed to before you get the disease?
A  Some people can work with beryllium for years and never become sensitized; others can have minimal, even incidental exposure such as working in the office of a plant that uses beryllium, and become sensitized within a few months. Disease latency is another factor that makes it difficult to come up with an answer to this question. People have been know to have their initial positive test
What is the test for beryllium sensitivity?

The Beryllium-induced Lymphocyte Proliferation test (BeLPT) is the most reliable means of detecting the beryllium-specific immune response seen in sensitized individuals. Specialty Laboratories is one of only four laboratories in the United States that has been certified to perform the test following the procedures recommended by the Department of Energy. A blood sample is drawn from the patient and sent to Specialty by overnight courier, then:

1. Lymphocytes are separated by centrifugation using a method that maximizes the yield of mononuclear cells.
2. Cells are washed thoroughly, counted, and adjusted to a specified concentration.
3. The cell suspension is challenged by three different beryllium sulfate concentrations in a tissue culture plate.
4. The cells are also exposed both to a PHA mitogen and a recall antigen which serve as proliferation stimulation controls.
5. The cells are then incubated for specific intervals at 37°C.
6. Tritiated thymidine is added to the wells prior to each harvest.
7. On designated days, cells are harvested and lymphocyte proliferation is measured, based upon beta particle counts dependent upon thymidine incorporation.
8. The Stimulation Index for each harvest date is calculated.
9. Results are reported as “Positive”, “Negative”, “Borderline” or “Uninterpretable”.

For more information on the Beryllium Lymphocyte Proliferation Test, see specialtylabs.com and click on Medical Information for Allergy & Immunology assays.

Who should be tested for beryllium sensitization?

Anyone with known or suspected occupational exposure to beryllium particles or beryllium dust may wish to consult a physician about the advisability of testing for beryllium sensitization. It should be noted that while a positive test is a strong indication of disease, a negative test does not rule out the possibility that the individual will test positive subsequently. The Occupational Safety and Health Administration can provide some additional guidelines regarding exposure to beryllium.

For more information on testing guidelines, [OSHA web site]

What happens if a person tests positive for beryllium?

Generally, a second BeLPT is performed to confirm that the person is sensitized. A second positive test is often followed by a comprehensive physical examination including X-rays, pulmonary
function tests and exercise tolerance tests. If there are no signs of lung disease, the patient will be asked to return in one or two years – or when symptoms (cough, shortness of breath, etc.) develop. A patient with symptomatic disease can be treated with steroids to control the symptoms, but there is currently no cure for chronic beryllium disease.

For more information on the clinical course of CBD, see [National Jewish Medical Center](#).

**Q** Is there compensation for those who contracted CBD on the job?

**A** The Energy Employees Occupational Illness Compensation Act of 2000 provides compensation for Energy Department and federally contracted employees with established beryllium sensitization.

For more information on the DOE compensation program, see [DOE](#).

**Q** What about those who didn’t work for the government?

**A** Individual companies may or may not have plans to compensate occupationally exposed employees who are beryllium sensitized or have CBD. A person concerned about possible beryllium exposure could contact the Human Relations office at the facility where the exposure could have occurred. There is also a beryllium support group Web site that may provide additional information.

For more information, see [National Beryllium Support Group](#).

**Q** Are there any occupations other than manufacturing that are associated with exposure to beryllium?

**A** OSHA has recently released a bulletin alerting dental laboratory technicians to the possibility of beryllium exposure while casting, grinding, polishing and finishing dental alloys containing beryllium. [OSHAwebsite](#).