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## Building Trades National Medical Screening Program

P.O. Box 900960 ▪ Seattle, WA 98109 ▪ 1-800-866-9663

Building Trades National Medical Screening Program

### FACTS CONCERNING

### BERYLLIUM, BERYLLIUM DISEASE

And

### THE BERYLLIUM LYMPHOCYTE PROLIFERATION TEST (Be-LPT)

#### What is Beryllium?

Beryllium is a naturally occurring metal which is found in beryl and bertrandite rock. It is extremely lightweight and hard, is a good electrical and thermal conductor and is non-magnetic. These properties make beryllium suitable for many industrial uses, including:

- Metal working (pure beryllium, copper and aluminum alloys, jet brake pads, aerospace components)
- Ceramic manufacturing (semi-conductor chips, ignition modules, crucibles, jet engine blades, rocket covers)
- Electronic industry (transistors, heat sinks, x-ray windows)
- Atomic energy industry (heat shields, nuclear reactors, nuclear weapons)
- Laboratory work (research and development, metallurgy, chemistry)
- Extraction (ore and scrap metal)
- Dental alloys (crowns, bridges, dental plates)

Beryllium was used in different alloys on many DOE sites to make reactor fuel rods and bomb components. Although construction workers did not work in manufacturing processes involving beryllium, they frequently worked in the same buildings. Maintenance, repair, and renovation and demolition and construction activities in these buildings, even years after beryllium was no longer used, could disturb beryllium dust on floors, ceilings, pipes and other surfaces. It is believed that this is how construction workers got their exposures.

#### How Could I have Been Exposed To Beryllium?

Most construction workers who have worked on DOE facilities say they don't know if they have been exposed to beryllium. The reason for this is that most beryllium was used in closed production facilities. We are not certain exactly what kind of exposures that construction workers may have had, but most likely they come from two main types of source: first, many construction workers have used spark resistant tools, and these contain beryllium. Beryllium dust from such tools could also have developed in tool chests and tool rooms where they are stored. Second, beryllium exposure could have come from dust during tasks involving repair, maintenance, renovation and demolishing of buildings where beryllium production has been done.

## **What is Chronic Beryllium Disease (CBD)?**

Beryllium disease primarily affects the lungs. It occurs when people inhale beryllium dust or fumes. Skin disease with poor wound healing and rash or wart-like bumps can also occur. Exposure to beryllium can cause an immune reaction (sensitization) that can lead to lung disease known as berylliosis, or chronic beryllium disease (CBD). We do not know for sure what being sensitized means. It might simply mean that a person has been exposed to beryllium and that their body has reacted in some way to that exposure. It might mean that one person is more likely than another to get CBD. Beryllium disease can, but won't always, develop many years after a person has stopped working in the beryllium industry. Types of disease caused from beryllium inhalation include:

- **Acute Beryllium Disease** usually has a quick onset and resembles pneumonia or bronchitis. It happens quickly after high exposure. It is now rare due to improved industrial protective measures designed to reduce beryllium exposure levels.
- **Chronic Beryllium Disease** has a very slow onset. It occurs in **one to six percent** of people exposed to beryllium. It is caused by an allergic reaction (sensitization) to beryllium. Even brief or small exposures can lead to this disease.
- **Does Beryllium Cause Cancer?** Beryllium has been shown to cause cancer in several species of animals. Some beryllium-producing facilities have had an increased rate of lung cancer. Beryllium has recently been classified as a human carcinogen by the International Agency for Research on Cancer (IARC).

## **What Are My Chances of Getting Beryllium Disease?**

Beryllium disease is rare among construction workers. Among the first 3800 construction workers examined in medical screening programs for construction workers at Hanford, Oak Ridge, and Savannah River Site, less than 1% developed the disease. Beryllium disease occurs among people who are exposed to dust or fumes from beryllium metal, metal oxides, alloys, ceramics or salts. Even very small amounts of exposure to beryllium can cause disease in some people. You are at risk of developing beryllium sensitization even after you leave beryllium exposure. The risk continues the rest of your life, even if you tested normal for beryllium sensitization at one time.

## **What are the Signs and Symptoms of Beryllium Disease?**

Beryllium disease is often accompanied by several abnormalities. **Some symptoms that you may notice include:**

- Cough
- Shortness of breath, especially with activity
- Fatigue
- Weight loss and/or loss of appetite
- Fevers
- Night sweats

## **Signs of beryllium disease that your doctor may notice include:**

- Abnormal lung sounds heard with a stethoscope
- Many small lung scars seen on chest x-ray
- Abnormal breathing tests (pulmonary function tests)
- Allergy (sensitization) to beryllium, which is measured in the blood or in lung washings with a test called the beryllium lymphocyte proliferation test (Be-LPT)
- A particular type of scar called a granuloma which is found in lung or skin tissue when the tissue is examined with a microscope

If you have been exposed to beryllium and developed an unexplained cough, shortness of breath, fatigue or skin rash, you should inform your doctor of your past beryllium exposure or seek information from a doctor who specializes in occupational lung diseases.

### **What is the purpose of the Beryllium Lymphocyte Proliferation Test for former construction workers?**

The main purpose of Be-LPT is to learn if construction workers who were exposed to beryllium, with or without their knowledge, have been sensitized to beryllium so that appropriate medical treatment can be provided at no cost to the worker. Results from the program may help DOE identify and offer screening to other construction workers who may be at risk of getting CBD.

### **What is the Beryllium Lymphocyte Proliferation Test (Be-LPT)?**

In the Be-LPT, disease-fighting blood cells normally found in the body, called lymphocytes, are examined in the laboratory and separated from your blood. Beryllium and other test agents are then added to small groups of these lymphocytes. If these lymphocytes react to beryllium in a specific way, the test results are "abnormal". If they do not react with beryllium, the test is "normal". Experts believe that the Be-LPT shows abnormal results in individuals who have become sensitized or allergic to beryllium. It is unclear what this sensitivity means. Studies have shown it to be an early sign of chronic beryllium disease (CBD) in many individuals. In others, sensitivity might simply mean that the person was exposed to beryllium and that his or her body has reacted. It might mean that an individual is more likely than others to get CBD. You are being offered the Be-LPT because doctors believe it is useful in detecting cases that might otherwise be missed or diagnosed as another type of lung problem. Once CBD is identified, doctors can determine the treatment needed to minimize the lung damage CBD causes.

If you have one "abnormal" test, you will be offered assistance to file an application with the Department of Labor (DOL) to obtain further medical tests to confirm or rule out CBD. Once you have filed an application with DOL, you will be offered another Be-LPT test to confirm the "abnormal" results while you are waiting to be accepted into the DOL program. If chronic beryllium disease is identified, doctors can determine the treatment that is needed to minimize the lung damage that this disease causes.

As in any other medical test, the Be-LPT sometimes fails or produces results that cannot be clearly classified as "abnormal" or "normal". The laboratory calls these results "uninterpretable". If you have an

“uninterpretable” test result, you will be asked to provide another blood sample so the test can be repeated.

Even when the test appears to provide clear results, the test may be wrong. In other words, the test may appear “abnormal” when a person is not sensitized to or allergic to beryllium. This is called a "false abnormal" result. It also is possible that the test will show "normal" results when a person is actually "sensitized" to beryllium. This is a "false normal" result.

**Remember that you may refuse further tests at this point or at any point during your medical evaluations.**

It is important for you to know that if your medical history or the results from any tests you are receiving suggest that you have CBD, you will be offered further medical tests. Some individuals with confirmed “abnormal” Be-LPT's, but no other signs of CBD have developed the disease. The likelihood of this happening will only be known after large groups of potentially exposed individuals have had their blood tested, have had further medical tests, and are studied for many years. If your Be-LPT is “abnormal”, your future medical follow-up will be covered by a Department of Labor program established under the Energy Employees Occupational Illness Compensation Program Act of 2000 (EEOICPA). Building and Construction Trades Medical Screening Program staff will make sure you have the information you need to apply for these benefits. If your Be-LPT is “normal”, but you have other symptoms indicative of CBD, more testing may be recommended. Generally in this case, the Building and Construction Trades Medical Screening Program nurse will refer you to your personal physician or a specialist of your choice for these additional tests.

**Do I have to have the Be-LPT done?**

No. Your participation in the medical screening program is strictly voluntary. You may refuse any of the tests offered to you, including the Be-LPT. If you change your mind, you are free to participate further in the program at any time. Talking with your family, your doctor, or other people you trust may help you decide. Physicians and health professionals in the clinic that provide the tests can also help answer any questions that you might have.

**Can I make arrangements on my own for the Be-LPT test?**

Yes. Your own personal physician could send a sample of your blood to a specialty laboratory that performs the Be-LPT test, and if the result is determined to be “abnormal”, you would be eligible to apply for acceptance into the Department of Labor follow-up and compensation program (EEOICPA). *However*, if you make these arrangements on your own, you or your personal medical insurance are responsible for 100% of the costs. The Building Trades National Medical Screening Program cannot reimburse any such privately incurred costs.

**When will I receive the results of my Be-LPT blood test?**

It could take 10-12 weeks for you to receive a letter informing you of your Be-LPT test results along with the results of the other medical exams authorized by the Building and Construction Trades Medical Screening Program. The Be-LPT testing laboratory reports results to the examining physician who includes them in his/her report to you.

**What will happen if I decide to have the Be-LPT blood test?**

A small amount of your blood (about 1 ounce) will be drawn from a vein in your arm and sent to a laboratory. There is little physical risk in drawing the blood. In a few people, slight pain and bruising

may take place. Rarely, an infection from the needle puncture is possible. A chest x-ray may also be offered when you have the Be-LPT if you are experiencing any symptoms that may be related to CBD.

### **What Other Testing is Necessary to Diagnose Beryllium Disease?**

One positive LPTs indicates that you are sensitized to beryllium, and you will be referred to the Energy Employees Occupational Illness Compensation Program (EEOICP) for further medical testing. You may have to travel some distance, in which case, DOL will reimburse you for your travel. The program office (1-800-866-9663) can further explain the additional testing offered by DOL.

### **What is the Treatment of Chronic Beryllium Disease?**

Treatment is very effective in controlling the disease however, a complete cure with or without treatment is rare. Patients who are **sensitized** to beryllium, who **do not have the disease** do not need treatment. However, they do need to be checked by a doctor regularly for signs of disease development.

Patients with **early beryllium disease**, who **do not yet have symptoms**, might not require treatment. However, they do need to be checked by a doctor regularly.

Patients with **beryllium disease** who **do have symptoms and abnormal breathing tests** are usually treated with prednisone, a type of steroid that fights inflammation. Treatment with this medication usually causes the disease to stabilize and often relieves symptoms.

Beryllium particles imbedded in the skin often must be removed before skin wounds will heal.

### **What do I do if my Be-LPT result is “abnormal”?**

If you have one or more “abnormal” Be-LPT results, you will be provided with information on filing a claim with the Department of Labor for additional medical testing to confirm or rule out chronic beryllium disease. Your consent will be requested before any additional tests are given. You can always choose to refuse additional testing.

Under the Energy Employees Occupational Illness Compensation Program Act of 2000 (EEOICPA), any person who was employed by DOE or a DOE contractor or DOE sub-contractor in the nuclear weapons industry is eligible for the following benefits:

- **Beryllium Sensitization:** Workers with one or more abnormal Be-LPT tests, are eligible for life-time medical evaluation for beryllium disease, and for travel costs to and from a specialist.
- **Chronic Beryllium Disease.** Workers with a diagnosis of CBD are eligible for a cash payment of \$150,000 as well as life time medical costs for treatment of CBD and for travel costs to and from a specialist.

For more information, call the U.S. Department of Labor, which administers this program, toll free at 1-866-666-4606.

If you have one or more abnormal Be-LPT results and you choose not to enroll in the Department of Labor program you must make your own arrangements for any future beryllium-related medical services and you must pay for any charges for such services without possibility of reimbursement.

### **If my Be-LPT result shows that I am not sensitized to beryllium, is my testing finished?**

This is a good question. Information is just beginning to be received for groups of workers who have been tested every 2 or 3 years. A small percentage of workers who have “normal” test results will be found to have “abnormal” results on their second or third test. So, it looks like a worker who does not work around or with beryllium, and is no longer actively exposed to beryllium may develop the



sensitivity many years later. For this reason, construction workers may seek to repeat the Be-LPT test every three years even if all the tests now are “normal”.

### **What will happen to the records of the medical examination results?**

When your blood sample is sent to the testing laboratory it does not have your name on it, only a unique identification code. If your Be-LPT test results show an “abnormal” result, when you file a claim with the Department of Labor under the Energy Employees Occupational Illness Program Act, you will have to reveal your identity and the results of the Be-LPT test.

Your medical results and other personal information collected for this program will be protected as confidential medical records under state law. Personal information may not be used or disclosed except with your consent or as required by a court order, state law or other law. Your personal information will be assigned a unique code number and entered into a dedicated computer that is password protected and accessible only by assigned program personnel. No information with your personal identifiers will be released or used for any purpose other than this program, unless authorized by you for release to your personal physician or to support a claim for compensation.

Your Be-LPT test results will be medically confidential data that with your consent will only be available to the people listed below and will not be released to anyone else without your written permission. The people who may require access to records that identify you by name are limited to:

1. The Principal Investigator of the Building Trades National Medical Screening Program and his staff who have committed in writing to keep your information confidential.
2. The Building Trades National Medical Screening Program physicians, nurses, and medical data processing staff who have committed in writing to keep your information confidential.
3. Others as required by a court order, such as a subpoena, state law, or under another law.

The Department of Energy (DOE) will not require access to personally identified medical records. Data files without any information that can identify you may be used by our Program staff or other researchers to better understand the types of risks workers may be exposed to, or to determine how well this program is meeting its objectives. Information from such research will be used to protect workers like you better in the future. Release of personal identifiers and de-identified data will be handled in the manner you chose when you consented to participate in this Program. At the end of this medical screening program, the Center to Protect Workers’ Rights and Duke University will retain a copy of the data without individual identifying information for fifteen years.

### **Could an abnormal Be-LPT affect my work around or with beryllium in the future?**

If you are found to have a consistently abnormal Be-LPT, or if you have CBD, it is advisable to stay away from environments where beryllium may be present. Therefore, if you are currently working in an area where beryllium is used, or may have been used in the past, you should consider how this advice may affect your future employment decisions. If you work at a DOE site, you may be required to disclose the results of your Be-LPT, and this information may become part of your medical file at the DOE site. This may directly affect your right to work with or around beryllium at a DOE site. Also, the chance of loss of confidentiality of this information may be higher once the test results are included in a DOE site medical file.

## **What laws or restrictions protect my privacy if I consent to participate in the Be-LPT testing program?**

State medical and nursing licensing boards enforce codes of ethics that require doctors and nurses to keep medical information confidential. DOE imposed protections similar to those provided to government owned records under the Privacy Act of 1974 to prevent unauthorized access to your records without your permission. Discriminatory use of the information in the record may be prohibited by the Americans with Disabilities Act.

## **Can my privacy and the confidentiality of my medical records be guaranteed?**

**No.** The specific results of the test with your name on it will not be revealed.

However, access to or release of records could be required under court order although it is unlikely. If you apply for another job or for insurance, you may be requested to release the records to a future employer or insurance company.

## **What Can I do to Avoid Beryllium Exposure?**

It is not possible to determine your exact risk for developing beryllium disease, but listed below are some general guidelines that you can follow to lessen your exposure.

- Avoid breathing beryllium dust or fumes by working in well-ventilated, well-exhausted areas where beryllium air monitoring is done routinely.
- Use all ventilation and exhaust equipment available in order to reduce exposures to the lowest possible level.
- Whenever possible, work with non-beryllium metals, alloys, ceramics and salts.
- Do not eat, drink or smoke in areas where beryllium is in use.
- Before entering work areas where beryllium is used, change into work clothes, including shirt, pants and shoes.
- At the end of the work shift take a shower and thoroughly clean your hands and hair before changing into street clothing.
- Use approved respirators for tasks that may result in high exposures.
- Avoid generating beryllium dust unless the process is well protected and has been sampled for exposure levels.

Portions of this fact sheet were adopted with permission from the National Jewish Medical and Research Center. National Jewish Medical and Research Center is the nation's leading treatment center for respiratory diseases and immune disorders. National Jewish offers the following service to provide current information on respiratory, immunologic diseases and treatment options:

LUNG LINE® 1-800-222-LUNG (5864) Monday - Friday from 8:00 am to 5:00 pm, Mountain Time. A registered nurse can answer questions and provide educational literature on respiratory and immunologic disease, or contact the former worker program at 1-800-866-9663.