

# Dental labs get beryllium alert

## OSHA warns that toxic metal poses threat to workers

**By Sam Roe**

Tribune staff reporter

In a rare move, federal regulators are warning thousands of dental laboratories that they might be exposing workers to harmful levels of beryllium, a highly toxic metal used in the production of crowns and bridges.

The warning, to be issued Tuesday in the form of a health hazard bulletin, states that several dental lab technicians have contracted a potentially fatal lung disease after inhaling tiny amounts of beryllium dust.

America's dental labs "should certainly not be complacent," said John Henshaw, head of the Occupational Safety and Health Administration, which is issuing the warning. "They should be very alert at how the material may be in the air and then take the precautions to avoid inhalation."

The Tribune reported last year that dental labs across the nation were using materials containing beryllium without proper safeguards, such as respirators.

OSHA said it would mail the nine-page warning to dental labs and post it on the agency's Web site. There are about 7,300 dental labs and 42,000 dental technicians nationwide; U.S. census statistics show. The

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# BERYLLIUM: Risks appear remote for patients

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number of labs using beryllium is not known, but a Tribune spot check of 31 in the Chicago area found that 16, or about half, use the metal.

The warning applies only to dental laboratories and not to dental offices unless they cut or grind beryllium, OSHA said. And the risks to patients appear remote: Scientists said they did not know of anyone contracting the disease from having a beryllium crown or bridge in the mouth.

Beryllium is usually associated with the defense industry as the strong, lightweight metal that has been used for decades in nuclear weapons, tanks and missiles. As the Cold War waned, beryllium producers increasingly searched for other markets, including the dental industry.

Small amounts of beryllium are frequently mixed with other metals to improve the strength of crowns and bridges. These beryllium alloys are often cast, ground and polished in dental laboratories, which then sell the finished pieces to dentists.

In solid form, beryllium appears to be safe. But when the metal is cut, polished or otherwise altered, the resulting dust can cause an incurable lung disease. Studies show that about 3 percent of those exposed develop the illness, sometimes decades after their last exposure.

OSHA's hazard bulletin recommends that dental labs use ventilation, respirators and protective clothing to limit beryllium dust exposure. Employ-

## How beryllium can have an effect on unsuspecting dental industry

Some dental crowns and bridges are made with nickel alloys instead of more expensive precious metals. These alloys contain small amounts of beryllium, an extremely lightweight metal. It is not hazardous in solid form but its dust sometimes causes an often fatal lung illness.

### RISK AND SYMPTOMS

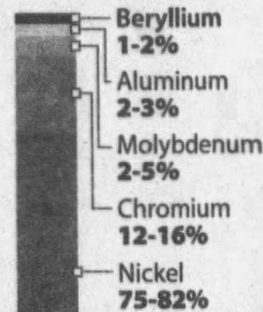
Dental workers who grind, machine or polish alloys with beryllium are at risk to develop **chronic beryllium disease**. It can take up to 40 years after exposure for symptoms to appear:

- Cough
- Fatigue
- Shortness of breath
- Night chills

### EVALUATION, TREATMENT

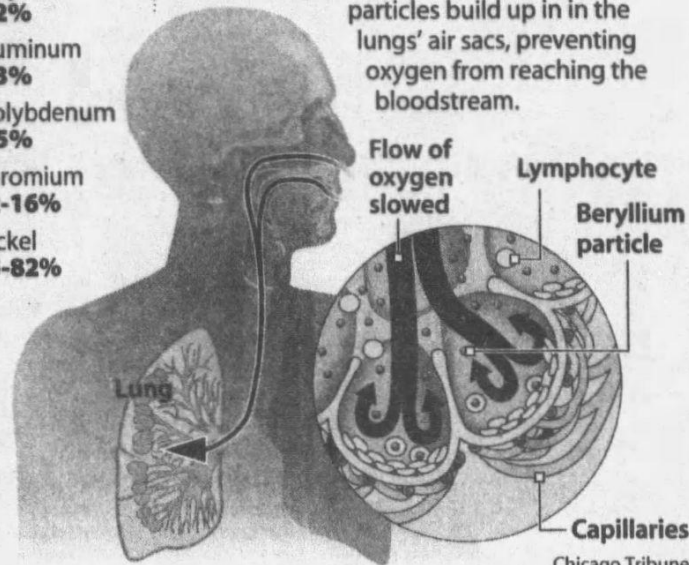
Blood tests and chest X-rays are used to help confirm a diagnosis. The disease can be treated with steroids, but there is no cure for the lung damage it causes.

### WHAT NICKEL ALLOYS USUALLY CONTAIN



### HOW BERYLLIUM AFFECTS AIR FLOW

Inhaled beryllium particles can interfere with breathing. Lymphocytes that engulf the particles build up in the lungs' air sacs, preventing oxygen from reaching the bloodstream.



Sources: Brush Wellman Inc., Ohio Citizen Action

ers should also regularly test the air and, where possible, use substitutes for beryllium.

Workers with possible symptoms of beryllium disease—coughing, shortness of breath and fatigue—are urged to contact their physicians. Others who are concerned are urged to take a blood test to determine whether they have blood abnormalities linked to the disease. Though beryllium disease is incurable, scientists say early detection allows for treatments that can attempt to limit lung damage.

OSHA cited several scientific reports since 1993 that detailed beryllium disease among dental technicians. One case involves a Florida woman who was diagnosed with the illness in 2000 after working at two dental labs. At one lab she wore only a surgical-type paper mask, which does not prevent beryllium inhalation.

OSHA officials said the agency became concerned about

beryllium disease in the dental industry in January 2001, when Dr. Lee Newman of the National Jewish Medical and Research Center in Denver informed the agency of a recent case.

"We are definitely seeing beryllium disease—sometimes severe forms of the disease—in dental laboratory technicians," Newman said. "It was time for OSHA to take some action."

OSHA officials also credited the Tribune report and similar research by the environmental group Ohio Citizen Action for demonstrating the need for a hazard bulletin.

The National Association of Dental Laboratories said it would share OSHA's warning with its 1,700 members. President Richard Harrell said the association "wants its members and the industry to have all available information related to potential health hazards."

This is the first hazard bulletin OSHA has issued this year and the seventh in the last three

years.

In 1999, OSHA issued a bulletin warning workers that government safety standards might not be protecting them from beryllium dust. The legal limit is 2 micrograms per cubic meter of air, equivalent to the amount of dust the size of a pencil tip spread throughout a 6-foot-high box the size of a football field. But several studies have found that workers have contracted the disease at exposures under this amount.

OSHA is studying whether to tighten the legal limit, but the rule-making process could take years.

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# OSHA choice vows beryllium review

## Harmful effects of metal noted

By Sam Roe  
Tribune staff reporter

The nominee to head the federal Occupational Safety and Health Administration told a Senate panel Thursday that if confirmed, he would review reports of American workers being harmed by the highly toxic

metal beryllium and report back to the Senate.

John Henshaw, former safety director of a St. Louis chemical company, made the comment at his confirmation hearing before the Senate Health, Education, Labor and Pensions Committee. Organized labor supports Henshaw's nomination, and he is expected to be confirmed soon.

Sen. Edward Kennedy (D-Mass.), the committee chairman, raised the beryllium issue at the hearing by noting that a

Tribune investigative article published Sunday reported that workers have been harmed by the metal in a variety of businesses, including the machining, recycling and dental industries. Kennedy cited the newspaper's findings that many companies handling beryllium were not following OSHA's rules and guidelines and that the agency rarely inspected such businesses.

Henshaw said he was not familiar with the Tribune's find-

ings. But he said that as head of OSHA, he would try to ensure that beryllium workers and others handling hazardous substances were protected. At Kennedy's request, the nominee said he would review the beryllium issue.

The Tribune investigation found that companies across the country were not taking basic precautions, such as air monitoring, to protect workers from beryllium, a strong, lightweight metal whose toxic dust can

cause an often fatal lung disease. In a spot check of 30 businesses working with beryllium, the newspaper found that none followed all of OSHA's recommended safeguards. OSHA is the government agency that sets and enforces workplace safety standards.

About 1,300 workers nationwide have contracted beryllium disease since the 1940s. Once found primarily in the defense industry because of the metal's use in weapons, the illness is emerging in commercial industries. Cleveland-based Brush Wellman Inc., America's leading beryllium producer, has said that beryllium can be han-

dled safely if proper precautions are taken.

Henshaw, 51, was director of environment, safety and health for Astaris LLC, which manufactures phosphorus-based products.

In opening remarks to the panel, he said that OSHA should enforce its laws and encourage employers to voluntarily reduce workplace hazards.

"OSHA must use all of its tools in its tool bag," he said. "The hammer must always be in our bag and used where necessary. But like a good craftsman, we must know how to use all of our tools and to pick the right tool for the job."

# Groups ask OSHA to cut beryllium limit

By Sam Roe  
Tribune staff reporter

The consumer watchdog group Public Citizen is demanding that the federal government immediately take measures to reduce workers' exposure to the highly toxic metal beryllium.

"The lack of any action is certain to lead to hundreds of unnecessary deaths of American workers, some of whom do not even know they have been exposed," said Dr. Peter Lurie, deputy director of Public Citizen's Health Research Group.

Public Citizen, which was founded by Ralph Nader, and the Paper, Allied-Industrial, Chemical & Energy Workers International Union said they will file a joint petition Monday with the federal Occupational Safety and Health Administration to improve safeguards regarding beryllium, a strong, lightweight metal whose toxic dust can cause an incurable lung disease. The petition asks OSHA to lower its legal exposure limit for beryllium dust and to require employers to offer annual blood tests to exposed workers.

A similar request made by two beryllium researchers two years ago was rejected. But Lurie said OSHA is under pressure to take action because of new scientific findings on beryllium's hazards and increased news media attention, including a Tribune investigation in July.

That story detailed how beryllium disease was emerging in a variety of industries, including machining, recycling and dental businesses. The newspaper found that many companies handling beryllium were not following government safety rules and guidelines and that few employers were providing blood tests.

*'The current beryllium standard is ridiculously outdated and has done little to prevent [beryllium disease].'*

—Dave Ortlieb, director of the Paper, Allied-Industrial, Chemical & Energy Workers International Union's health and safety department

An OSHA spokeswoman said the agency has not received the petition from Public Citizen and the workers union and could not comment.

OSHA's exposure limit is 2 micrograms of beryllium dust per cubic meter of air—roughly equivalent to a marble-size piece of beryllium spread evenly throughout a box 6 feet high, a mile long and a mile wide. But scientific findings as early as 1974 indicated workers were contracting beryllium disease from exposures below the limit.

For the past three years, OSHA has been planning to lower the limit. The agency will update its regulatory priorities this autumn; it is unclear how that might affect rules on beryllium.

In their petition, Public Citizen and the workers union ask OSHA to cut the limit tenfold, to .2 micrograms from 2 micrograms. The petition says scientific papers published this year indicate that disease may occur at far below the current limit and after as little as two months of exposure.

"The current beryllium standard is ridiculously outdated and has done little to prevent [the disease]," said Dave Ortlieb, director of the union's health and safety department.

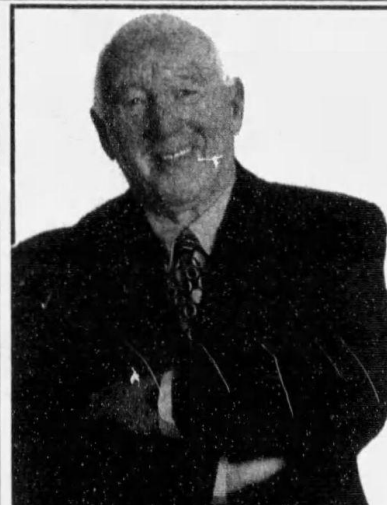
"American workers should not have to spend another Labor Day worrying whether they will contract a fatal disease that the government should be preventing," Ortlieb said.

The petition also demands blood testing so workers who show abnormalities can be reassigned to jobs with no beryllium exposure. Researchers note that virtually every company that has worked with beryllium and has tested employees has found beryllium disease or blood ab-

normalities linked to the illness.

No one knows how many workers are exposed to beryllium dust, but an estimated 1,300 people have contracted beryllium disease since the 1940s. Several hundred have died. Symptoms include coughing, fatigue and shortness of breath.

Public Citizen, a non-profit based in Washington, reports 135,000 members. The workers union has 302,000 members and is based in Nashville.



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# Beryllium workers get tighter U.S. protection

Rule aims to cut risk of lung disease

BY SAM ROE  
Chicago Tribune

Ending decades of denial and inaction, the federal government on Friday issued a tough new exposure standard for one of the most unusual and deadly occupational risks U.S. workers have ever faced: the toxic metal beryllium.

Because of beryllium's remarkable properties — it is lighter than aluminum but stiffer than steel — the metal is highly valued by the defense establishment and is an essential component of nuclear weapons. But when beryllium is ground, sanded or cut, the metal's dust can cause an incurable, often fatal lung disease.

For many years, authorities largely ignored the problem, characterizing workers' illnesses as the result of accidents or acute exposures even though some affected employees seemed to have only incidental contact with the metal. Among them: secretaries in beryllium processing plants.

The U.S. Occupational

Safety and Health Administration said the new standard — 10 times stronger than the old one established in the 1940s — will apply to 62,000 workers.

"We know there are many dozens of workers who get sick every year from chronic beryllium disease," outgoing OSHA head David Michaels said in an interview. "And that will change."

He said OSHA recognized decades ago the need for a stronger standard but faced resistance from defense officials.

"For many years, beryllium was strategically so important that the government and the beryllium industry fought hard against a more protective standard," Michaels said.

Beryllium disease slowly damages the lungs and leaves some victims unable to breathe without the aid of an oxygen tank.

Dr. Lee Newman, a leading beryllium researcher, said the new rule will save lives and reduce suffering.

"Because it is not just about the people who die; it's about the years that people live with the terrible suffering of not being able to breathe, having chronic coughs, having the terrible

fatigue that comes with chronic beryllium disease," Newman said. "It's a very slow, wasting lung disease."

James Heckbert, an attorney who represented numerous beryllium victims in several states, said he welcomed the new rule but wondered if any exposure was safe. "Is there truly a safe level that those who are sensitive to beryllium can withstand?"

Beryllium is used in a variety of industries, including defense, aerospace and electronics. OSHA said workers at risk include those employed in foundry and smelting operations and dental labs.

A Tribune investigation in 2001 found that many businesses across the country were not taking basic precautions, such as air monitoring, to protect workers. In 2002, the Tribune found that U.S. military personnel had been exposed to beryllium at dozens of Army, Air Force, Navy and Marine Corps facilities, with some levels exceeding safety limits.

No one knows precisely how many workers have died of beryllium disease. Scientific papers, government reports and industry records indicate that more

than 1,200 people have contracted the illness since the 1940s, with several hundred deaths. At the University of Chicago, several workers became sick after being exposed to beryllium at a World War II research lab.

The old exposure limit, established in 1949, was based largely on guesswork and dubbed "the taxicab standard" because a government health official and an industry medical consultant came up with the rule in the back of a taxi.

That standard called for workers to be exposed to no more than 2 micrograms of beryllium dust per cubic meter of air, an amount roughly equal to a marble-size piece of beryllium distributed evenly throughout a football stadium.

Officials knew workers might become ill at lower levels, a 1958 Atomic Energy Commission report stated, but "because of the relatively small numbers of people involved," it was seen as "an acceptable risk."

In the decades that followed, when America needed tons of beryllium for the Cold War, workers continued to contract the disease and die.

In 1975, OSHA proposed

cutting the exposure limit in half, from 2 micrograms to 1. But the beryllium industry and U.S. defense officials undermined the plan, according to a Toledo Blade investigative series published in 1999.

Defense officials feared the safety plan would cut off beryllium supplies for weapons, which would "significantly and adversely affect our national defense," U.S. Energy Secretary James Schlesinger wrote to two Cabinet members at the time, the Blade reported.

The new standard will be 0.2 micrograms per cubic meter, much stronger than what OSHA sought in the 1970s. Michaels said the Blade reports were instrumental in sparking OSHA to start work on the new rule as well as in prompting the Energy Department to take similar safety steps for workers at its facilities.

OSHA said the nation's primary beryllium product manufacturer, Materion, and the United Steelworkers, which represents many people working with the metal, approached the agency in 2012 to suggest a stronger standard.

Michaels said he was

surprised that the industry backed a tougher rule. "We were told it was the result of the negotiations between the union and the employer," Michaels said. Materion, based in Mayfield Heights, Ohio, declined to comment on the new safety limit. Materion's beryllium unit is Materion Brush Inc., the successor to Brush Wellman Inc.

For Michaels, the new standard caps years of work. A former top Energy Department official, he also played a key role in that agency adopting beryllium exposure rules in 1999.

"I have met dozens of workers with chronic beryllium disease," he said. "When we held public meetings around the country, we had workers come forward to us who were strapped to oxygen tanks and whose lung function was destroyed by beryllium. I'm very gratified that, finally, we are able to address this."

President Barack Obama appointed Michaels to head OSHA in 2009. Michaels leaves office Wednesday.

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