Comments of the AFL-CIO on OSHA's Notice of Proposed Rulemaking on Occupational Exposure to Beryllium and Beryllium Compounds
(Docket No. OSHA-H005C-2006-0870)
November 5, 2015

The AFL-CIO, a federation of 56 national unions, representing 12.5 million working people in this country, welcomes the opportunity to provide these comments on OSHA's proposed standard to protect workers from beryllium exposure. Several of our unions represent members in general industry, construction and maritime who face significant risk of beryllium exposure in the workplace, putting them at increased risk for illness, disability and death. The AFL-CIO submits these comments, and supports comments submitted by the United Steelworkers (USW) and the North America's Building Trades Unions (NABTU).

The AFL-CIO strongly supports OSHA's proposed beryllium standard. This proposed rule is long overdue, and when finalized, will significantly reduce workers' exposures to deadly beryllium dust and prevent death and disease. The proposal is based on extensive scientific and medical evidence and incorporates well-established proven measures and practices for protecting workers. Several provisions of the proposal could and should be strengthened to provide workers further protection to reduce the risk of disease and death from workplace exposure to beryllium. The AFL-CIO urges OSHA to move expeditiously to complete this rulemaking and to issue a final beryllium standard to protect workers from unnecessary disease and death.

A STRONGER OSHA BERYLLIUM STANDARD IS NEEDED TO PROTECT WORKERS

Most of OSHA's PELs, including the PEL for beryllium, were issued shortly after adoption of the Occupational Safety and Health (OSH) Act in 1970, and have not been updated since that time. Section 6(a) of the OSH Act granted the Agency the authority to adopt existing Federal standards or national consensus standards as enforceable OSHA standards. Beryllium's origins are commonly associated as the "taxicab standard" due to its supposed creation during the conversation in the back of a taxicab, rather than an assessment of its toxic effects. Because of this, the beryllium PEL has been viewed as arbitrary and controversial, relying on outdated information and providing little protection when more substantive evidence for a stronger standard has long existed.

The existing OSHA beryllium standard was influenced by the 1948 Atomic Energy Commission standard and was adopted from the American National Standards Institute's (ANSI) Z37.29-1970 standard, "Acceptable Concentrations of Beryllium and Beryllium Compounds." The existing OSHA beryllium standard prescribes an eight-hour time-weighted average (TWA) permissible exposure limit (PEL) of 2.0 $\mu g/m^3$ with a ceiling concentration of 5.0 $\mu g/m^3$ and allows a peak concentration above the acceptable ceiling concentration for an eight-hour shift of 25 $\mu g/m^3$, for a maximum duration of 30 minutes. At the time, a 1968 joint committee of the World Health Organization and International Labor Organization recommended a permissible level for beryllium and its compounds as 1.0 to 2.0 $\mu g/m^3$ and the American Conference of Governmental Industrial Hygienists (ACGIH) had adopted an eight-hour TWA limit of 2.0 $\mu g/m^3$. The ACGIH now recommends a 0.05 $\mu g/m^3$ TWA threshold limit value (TLV), developed from more recent epidemiological, toxicological, analytical and human exposure data.

<u>The current OSHA standard to limit workplace exposures to beryllium dust are woefully out of date and do not protect workers.</u>

OSHA's current beryllium PEL is based on science from the 1940's. Industrial experience, new developments in technology, and scientific data clearly indicate that adopted beryllium limits are not sufficiently protective of worker health. Additionally, the existing standard only requires a PEL, but requires no additional measures to provide the level of protection necessary to control exposure to a chemical with carcinogenic and sensitizing properties. In its proposal, OSHA estimates that the proposed ancillary provisions would avert between 0 and 45% of baseline chronic beryllium disease (CBD) cases not averted by the proposed PEL alone. It is imperative that OSHA sets a comprehensive rule with strong ancillary provisions to address beryllium exposure; these provisions are important for preventing beryllium sensitization, CBD, and lung cancer, as explained in the significant risk section below.

<u>OSHA's proposed beryllium standard is long overdue and lengthy delays in the rulemaking have cost thousands of workers lives</u>

The AFL-CIO has a long history with beryllium rulemaking through involvement in advocating for stronger beryllium standards since the OSH Act was enacted. OSHA's previous efforts to update its regulations for controlling workplace beryllium exposure failed. OSHA first proposed a comprehensive beryllium standard in 1975 that included an update to the adopted PEL and ancillary provisions for exposure monitoring, medical surveillance, controlling exposure and other provisions similar to the 2015 proposed rule (40 Fed. Reg. 48814, October 17, 1975). Despite support by the AFL-CIO, the United Steelworkers and health experts, the attempt was blocked by industry opposition and

the U.S. Department of Energy (DOE) efforts to prevent interference in the production of nuclear weapons.

Inaction by OSHA in promulgating and publishing a final beryllium rule with a 0.2 μg/m^3 PEL has resulted in an estimated 160 deaths from lung cancer and 3,680 deaths from CBD since 1975. The enactment of a 0.1 μg/m^3 TWA PEL could have prevented an estimated 164 deaths from lung cancer and 4,948 deaths from CBD since 1975.

In 1999, understanding the serious health impacts of beryllium exposure, the DOE enacted the Chronic Beryllium Disease Prevention Program to reduce exposures within DOE facilities, which covered more than 1,600 beryllium-exposed workers. In the 1999 final rule, DOE relied on OSHA to move forward with regulations that would protect all workers against the adverse health effects of beryllium exposure, and DOE expected to update its own regulations soon after OSHA updated its antiquated standard (64 Fed. Reg. 68854, December 8, 1999). Despite OSHA placing a beryllium standard on the regulatory agenda in 1998, during the Clinton administration, little progress was made. DOE has begun developing an update to its own beryllium standard, but still is waiting on OSHA to take final action before moving forward.

In 2012, the USW and Materion Brush, the major producer of beryllium in the United States, cooperated to develop and submit a joint recommendation to OSHA for an updated beryllium standard, which included an update to the PEL. This effort was independent from the government and a result of an understanding from both labor and industry that the current beryllium exposure limits were hazardous to workers' health and a strain on society.

WORKERS FACE A SIGNIFICANT RISK OF HARM FROM BERYLLIUM EXPOSURE AT THE CURRENT AND PROPOSED PERMISSIBLE EXPOSURE LIMITS (PELs)

There is sufficient and overwhelming evidence in the record that exposure to beryllium poses a significant health risk to workers and that a stronger standard will reduce this risk. Beryllium exposure causes immunological sensitivity, CBD and lung cancer. These health effects are debilitating, progressive and irreversible. Workers are exposed to beryllium through respiratory, dermal and gastrointestinal routes. At OSHA's proposed TWA PEL of 0.2 μg/m^3, significant risk remains for health impairment associated with occupational exposure to beryllium. OSHA estimates that even at a duration of beryllium exposure of only five years, the risk of sensitization is 6.4 per 1,000 workers, and the risk of CBD is 2.8 per 1,000 workers. At 0.2 μg/m^3, lung cancer risk remains for all workers between 9/1,000 and 19/1,000. Significant risk of sensitization, CBD and lung

cancer also remains at the alternative TWA PEL 0.1 μg/m^3: OSHA estimates the risk for sensitization at 6.3 per 1,000 workers, and the risk for CBD at 2.8 per 1,000 workers; and lung cancer risk for all workers between 4.4/1,000 and 12/1,000. OSHA must reduce its TWA PEL to reduce these risks. Several recent studies show cases of beryllium sensitization and CBD at daily and lifetime weighted exposure levels below 0.2 μg/m^3 (ACGIH, 2014), showing a decreasing number of cases as the lifetime exposure decreases.

In 2004, Henneberger et al. estimated that 134,000 workers were potentially exposed to beryllium in several public and private industries, with a wide variety of workforces exposed to beryllium concentrations above 0.1 μg/m^3. According to OSHA's preliminary economic analysis (PEA) in the proposed rule, 17,128 workers are currently exposed to beryllium levels equal to or greater than 0.2 μg/m^3 and would be protected by OSHA's proposed TWA PEL. OSHA estimates that an additional 12,101 workers are exposed to beryllium levels between 0.1 and 0.2 μg/m^3 and would be protected if the TWA PEL was lowered to 0.1 μg/m^3; and that a significant number of workers (35,051) are exposed to beryllium at levels less than 0.1 μg/m^3.

Beryllium is a well-recognized lung carcinogen. More than 20 years ago, the International Agency for Research on Cancer (IARC) classified beryllium as a Group 1 carcinogen (carcinogenic to humans), documenting sufficient evidence in humans and experimental animals for lung carcinogenicity of beryllium and beryllium compounds. OSHA must rely on leading scientific principle and opinions believed to reflect the research conclusions of international experts, such as IARC, NIOSH, ACGIH and other globally recognized organizations. OSHA should take into consideration beryllium's classification as an IARC Group 1 lung carcinogen in the final rule.

Very low levels of beryllium exposure can cause beryllium sensitization -- an increased response to future beryllium exposure. Beryllium's sensitization properties cause a permanent change to immune function that renders beryllium workers at a high risk for developing CBD, resulting in material impairment of health. Beryllium is denoted as a respiratory and skin sensitizer by the OSHA proposed standard, a finding supported by NIOSH, ACGIH, peer reviewed health effects literature, and industry. Preventing beryllium from entering the respiratory system or being absorbed through the skin is critical for preventing worker's risk of developing beryllium sensitization, CBD, and lung cancer. In its final beryllium standard, OSHA must take into account workers at significant risk of beryllium sensitivity.

Up to 20% of the population exposed to beryllium is expected to be particularly sensitive to beryllium (ACGIH, 2014). However, these individuals cannot be identified because

they remain asymptomatic until future exposures lead to more serious beryllium-related disease and cancer, compared to individuals who are not sensitized to beryllium. Epidemiological studies examining the development of beryllium sensitivity and CBD in beryllium-exposed workers have shown an increased risk of CBD development after beryllium sensitivity. In Madl et al., 2007, lifetime weighted (LTW) beryllium exposure was calculated for workers with beryllium sensitivity or CBD. One affected worker had a LTW beryllium concentration between 0.02 and 0.05 $\mu g/m^3$; six affected workers had LTW beryllium concentrations between 0.05 and 0.1 $\mu g/m^3$; eight affected workers had LTW concentrations between 0.1 and 0.2 $\mu g/m^3$; and twelve affected workers had LTW concentrations over 0.2 $\mu g/m^3$. An additional study of this population noted that four workers with less than three months of employment at a beryllium workplace and no stated previous beryllium exposure were diagnosed with beryllium sensitivity or CBD (Newman et al., 2001). Very low exposures and in very short time periods, below that of the proposed TWA PEL and action level, can cause significant health effects. In order to reduce the overall health risks and protect sensitized workers from future disease, the ACGIH established an occupational exposure limit of 0.05 $\mu g/m^3$.

It is important to control exposure to beryllium as soon as possible (i.e., at initial exposure) because there is a significant risk of developing sensitization and CBD after a short duration of exposure. OSHA's estimates show that the risk for developing sensitivity or CBD is similar at a five year exposure duration as it is at a 45-year duration of exposure. In order to reduce significant risk from beryllium exposure, OSHA must issue a final standard that protects all workers, with particular attention to those sensitized to beryllium.

Although the implementation of respiratory and engineering controls have lowered respiratory beryllium exposure over the past few decades, beryllium sensitization has not decreased. This can partly be attributed to skin exposure to beryllium. Studies have shown that small beryllium particles can be absorbed through unprotected skin and is linked to sensitization. Therefore, it is important to adequately control against beryllium skin exposure through maintaining an environment as free as practicable from beryllium and applying appropriate personal protective clothing in line with the hierarchy of controls. OSHA should strengthen its characterization of skin exposure as a significant route of beryllium exposure and skin sensitization in the final rule.

Since low beryllium exposure levels can cause sensitization and other disease, extra caution is required to adequately protect vulnerable workers. There is broad agreement among occupational physicians, public health experts and industry that beryllium-related disease is a serious problem and that a stronger OSHA standard is needed to protect workers.

THE SCOPE OF OSHA'S FINAL STANDARD SHOULD BE EXPANDED TO PROTECT ALL WORKERS EXPOSED TO BERYLLIUM

The AFL-CIO supports OSHA's concerns that the scope of the proposed rule is too narrow, and supports a scope that includes all potential occupations with beryllium exposure, including construction, maritime, and industries that use materials with less than 0.1% beryllium by weight.

Workers in a variety of industries and occupations are exposed to toxic beryllium, including mining, general construction, welding, abrasive blasting, primary metal manufacturing, fabricated metal manufacturing, transportation equipment manufacturing, railroad, motor-freight, and air transportation, public utilities, and dental laboratories (Henneberger et al., 2004). OSHA's proposed rule covers only workers in general industry, but OSHA has estimated that 16,800 construction workers and 6,915 maritime workers are exposed to beryllium. Available data in the construction and maritime sector shows that there is a significant risk of sensitization and CBD among these workers. Existing standards on ventilation and arsenic do not take into account serious sensitivity health effects associated with beryllium; OSHA cannot solely rely on compliance with such standards to protect workers from beryllium exposure. The AFL-CIO supports the USW and NABTU comments to include maritime and construction industries in the scope of the final beryllium rule, Regulatory Alternative 2a.

OSHA has proposed the scope to apply to beryllium in all forms, compounds, and mixtures in general industry; with the exclusion of materials containing less than 0.1% beryllium by weight. In the 2012 joint industry and labor beryllium recommendation, the recommended scope was more inclusive than the current proposed rule:

> *"This standard applies to occupational exposure in General Industry to beryllium (Be) and beryllium compounds, where there is potential for airborne exposure to beryllium. This standard does not apply to work operations using materials or products containing 0.1% or less of Be by weight unless objective data or initial monitoring show that airborne concentrations can exceed the Action Level or the Short Term Exposure Limit under reasonably predictable conditions of processing, use or handling."*

While the proposed scope protects the majority of exposed workers, there are several industries which are known to have potential beryllium exposures which are excluded by

the proposed 0.1% beryllium weight cut off. The scope of the proposed rule should be strengthened to cover these workers.

OSHA has stated that there are known over-exposures among industries that use materials with less than 0.1% beryllium by weight, including an estimated 1,665 workers in primary aluminum production and 14,859 coal-fired electric power generation workers. Although most worker exposures in these industries do not exceed 0.1 $\mu g/m^3$, exposure data show exposures above 0.2 $\mu g/m^3$, and even reach as high as 13 $\mu g/m^3$ in facilities with poor housekeeping and work practices. Workers who work in these risky conditions must be protected by inclusion in the scope. Therefore, the AFL-CIO supports the inclusion of Regulatory Alternative 1a in the final beryllium rule, "to eliminate the exemption for materials containing less than 0.1 percent beryllium by weight."

THE PROPOSED PERMISSIBLE EXPOSURE LIMIT (PEL), ACTION LEVEL AND SHORT-TERM EXPOSURE LIMIT (STEL) SHOULD PROTECT WORKERS AGAINST KNOWN HEALTH EFFECTS

While we commend OSHA for taking action to reduce worker exposure to hazardous beryllium by lowering the TWA PEL, action level and STEL, OSHA's proposed 0.2 $\mu g/m^3$ TWA PEL does not fulfill OSHA's responsibility to promulgate the lowest PEL which significantly reduces health risk, as long as it is technologically and economically feasible. Since workers that are sensitive to beryllium cannot be identified, it is imperative to require more protective exposure limits. The AFL-CIO recommends stronger exposure limits to further protect workers from the health effects of beryllium sensitization and chronic beryllium disease.

The AFL-CIO believes the record demonstrates that the PEL for occupational exposure to beryllium should be set at 0.1 $\mu g/m^3$ and the action level set at the 0.05 $\mu g/m^3$ -- as stated in Regulatory Alternative 4 -- and the STEL set at 1.0 $\mu g/m^3$ (i.e., a STEL that is ten times the PEL). OSHA's proposed rule, in addition to evidence in the record on beryllium's sensitization properties and skin exposure, clearly demonstrates a PEL of 0.1 $\mu g/m^3$ would better protect workers from the significant risks of material health impairment than the proposed 0.2 $\mu g/m^3$ limit, and would be feasible. This recommendation also reflects the sensitivity of the sampling and analytical methods in proposing this level of exposure.

The ACGIH recommends a 0.05 $\mu g/m^3$ TWA TLV for beryllium, as inhalable particulate matter, based on protecting beryllium-sensitive worker populations and the fact that

beryllium is a confirmed human carcinogen. The ACGIH independent review of health studies determined that there were very low or no incidences of beryllium sensitization or disease at the 0.05 μg/m^3 level. OSHA must increase its reliance on existing information from other local, federal and international agencies and organizations, such as ACGIH, that have more protective occupational exposure limits reflecting updated toxicity, risk and feasibility information.

The AFL-CIO supports the lower 0.05 μg/m^3 action level to control exposures where significant risk remains and to further protect vulnerable workers sensitized through both respiratory and skin exposure pathways. The AFL-CIO supports provisions triggered by exposure measurements at the action level (such as annual exposure monitoring, separate eating and drinking areas, and medical removal protection), but believes that primary control methods such as engineering controls and a written control plan should be required at any potential beryllium exposure. This will be discussed in a later section.

The AFL-CIO supports OSHA requiring a 15-minute STEL that is ten times the limit of the TWA PEL. An appropriate STEL for beryllium is necessary to control short-duration high-level exposures. Without a STEL, even at the alternative TWA PEL of 0.1 μg/m^3 (e.g., 0.8 μg/m^3), short-term exposures could be as high as 3.2 μg/m^3 for 15-minutes if exposures during the rest of the shift are non-detectable. The STEL, in combination with the TWA PEL, is essential to prevent beryllium sensitization seen in workers with high exposures who only have worked in beryllium-industries for a short time, but are at significant risk of adverse health effects associated with beryllium exposure.

OSHA must be more protective when setting a PEL, action level and STEL for occupational exposure to beryllium. Peer-reviewed studies have shown that sensitivity or CBD has been observed within workers with lifetime-weighted concentration between 0.1 and 0.2 μg/m^3 and between 0.05 and 0.1 μg/m^3 (Madl et al., 2007). These studies and OSHA's risk assessment show a significant risk for workers' material impairment of health remains even at 0.1 μg/m^3 (p. 47659-47661). IARC -- an organization with robust scientific methods and expertise and specifically created to research carcinogens -- and other peer-reviewed literature recognize beryllium as a known human carcinogen. OSHA must reduce the PEL below 0.2 μg/m^3 in order to reduce the significant risk of sensitivity, chronic beryllium disease, and lung cancer from beryllium exposure.

OSHA PEA HAS DEMONSTRATED THAT THE PROPOSED STANDARD IS TECHNOLOGICALLY FEASIBLE FOR REGULATORY ALTERNATIVES THAT STRENGTHEN THE SCOPE AND EXPOSURE LIMITS

No standard is meaningful unless a majority of the industry can comply with it using available or foreseeable controls. Indeed, when significant risk is proven at low exposure levels of 0.1 $\mu g/m^3$, technological feasibility should be the sole criterion for determining legally acceptable exposure. The AFL-CIO believes the record demonstrates that most beryllium operations can comply most of the time with the proposed PEL of 0.2 $\mu g/m^3$ and our recommendation to require the alternative PEL of 0.1 $\mu g/m^3$.

OSHA's proposed Regulatory Alternative 4 reduces the TWA PEL to 0.1 $\mu g/m^3$ with an action level of 0.05 $\mu g/m^3$. OSHA's PEA feasibility analysis has demonstrated that exposures can be controlled to a level of 0.1 $\mu g/m^3$ most of the time in the fabrication of beryllium alloy products, precision turned products which do not use high beryllium content alloys, and dental laboratories.

There is an estimated total of 26,292 affected workers in the fabrication of beryllium alloy product industry; 7,875 in the precision turned product industry; and 12,555 in the dental laboratory industry – all industries that can comply with the alternative PEL. These combined industries make up an estimated 64% of the total 72,562 beryllium-exposed workers.

New evidence in the docket supports the feasibility in sampling and analysis for beryllium testing. The Sampling and Analysis Subcommittee (SAS) of the Beryllium Health and Safety Committee submitted comments to OSHA's beryllium docket which support that a 0.1 $\mu g/m^3$ 8-hour TWA PEL, 0.05 $\mu g/m^3$ 8-hour TWA action level and 1.0 $\mu g/m^3$ 15-minute STEL is technologically feasible to sample and analyze.

With significant risk still exists at levels of 0.1 $\mu g/m^3$, OSHA must enact both what is feasible and reduces significant risk. OSHA's own analysis has shown it is feasible to reduce beryllium exposures to an 8-hour TWA of 0.1 $\mu g/m^3$ in most industries, for most workers, most of the time. Therefore, in order to comply with the OSH Act mandate, OSHA must adopt the feasible stronger TWA PEL of 0.1 $\mu g/m^3$, action level of 0.05 $\mu g/m^3$, and STEL of 1.0 $\mu g/m^3$ to prevent additional cases of beryllium sensitivity, CBD, and lung cancer.

OSHA PEA HAS DEMONSTRATED THAT THE PROPOSED STANDARD IS ECONOMICALLY FEASIBLE FOR REGULATORY ALTERNATIVES THAT STRENGTHEN THE SCOPE AND EXPOSURE LIMITS

OSHA has used overly conservative assumptions in its PEA that result in cost estimates that are overstated, and has substantiated that beryllium is economically feasible for certain high exposure industries exposed to beryllium below 0.1% by weight, construction, maritime, the proposed TWA PEL of 0.2 μg/m^3 and the alternative TWA PEL of 0.1 μg/m^3. OSHA's review of affected industries showed that some employees in construction, maritime, aluminum production, and coal-fired electric power generation may be at significant risk of developing CBD and lung cancer from occupational exposure to beryllium. OSHA's PEA states that in primary aluminum production the additional costs were less than $2 million per year on the upper range of costs and that coal-fired utility costs' would be almost negligible due to industry compliance with the arsenic standard. Expanding the scope to include industries that use materials with less than 0.1% beryllium by weight would provide these workers protection against toxic beryllium exposure.

Beryllium exposure is a hazard for abrasive blasters, pot tenders, welders, and clean-up workers in the construction and shipyard industries. OSHA estimated in the PEA that abrasive blasters already have controls in place and wear appropriate personal protective equipment (PPE) during blasting operations due to compliance with OSHA's ventilation standard and maritime standards. Therefore, in blasting operations, the only added cost is for pot tenders, clean-up workers and other helpers that do not already have stringent protections. However, as discussed in the PEA, many of these workers also are wearing beryllium-protecting PPE due to the large amount of dust produced from blasting activities. Most of the costs for complying with this rule would come from blasting helpers, which previously were not adequately protected from dust hazards and welders. Including these hazardous industries, could add up to $82 million increase in estimated net benefits after compliance costs are deducted. Since few alterations have to be made to comply with the beryllium proposed PEL for these industries, and compliance would reduce significant risk faced by workers, it is within the OSHA mandate to issue a standard including these sectors.

For the sectors excluded from the proposed rule, OSHA reasons that they can be excluded because the workers are protected from beryllium exposure by other standards, such as ventilation, arsenic, and maritime. However, this argument is a fallacy. These other standards have been in place for decades, yet exposure data shows that beryllium exposures, sensitivity, and disease still occur in the construction, maritime, aluminum production, and coal-fired utility industries. The proposed beryllium

standard considers and protects against beryllium's unique respiratory and skin sensitizing properties unlike any current standard. OSHA cannot rely on outdated non-beryllium standards to protect workers from beryllium, and must include all potential industries where beryllium exposure is present.

AFL-CIO POSITION ON ADDITIONAL PROVISIONS OF THE BERYLLIUM STANDARD

Exposure Assessment and Monitoring

The AFL-CIO supports the exposure monitoring requirements in the proposed rule. Initial, periodic, and additional monitoring is adequate to reassure workers that the beryllium exposures are at or below the required occupational exposure limits, and to reevaluate control measures in cases of overexposure. The allowance of employers to use objective data or representative monitoring to satisfy requisite monitoring is also supported.

Methods of Compliance

The AFL-CIO supports OSHA's methods of compliance for establishing, implementing and maintaining a written exposure control plan for beryllium work areas. Requiring employers to properly make use of a written plan is an essential tool for continuously controlling exposures and using proper safety practices.

However, the AFL-CIO feels that OSHA is significantly limiting the standard's ability to decrease exposure when addressing engineering and work practice controls. The hierarchy of controls is important to implement in the final rule, especially since respirators do not address skin exposure to beryllium. The proposed rule states that in beryllium work areas, employers must ensure that at least one engineering and work practice control is in place, unless the employer can demonstrate that exposures are below the action level. The AFL-CIO does not support using the action level as a trigger for engineering controls, and does support language of the USW/Materion joint recommended standard.

> *"Notwithstanding, the employer shall institute feasible engineering and/or work practice controls to minimize employee exposure in beryllium work areas where operations generate airborne beryllium particulate."*

The requirement of implementing feasible engineering and/or work practice controls where any airborne beryllium is present is justified by both the significant health risks seen at the action level and previous OSHA standards. The risk of beryllium sensitivity

and CBD is significant at the proposed action level of 0.1 μg/m^3. While the risk of health effects is significantly reduced at the Regulatory Alternative 4 action level of 0.05 μg/m^3, limited cases of beryllium sensitivity have been documented (Madl et al., 2007). OSHA should not limit the final rule's ability to control exposures to a safe level through primary control methods. In the previous 13 carcinogens standard, OSHA did not require a specific baseline in order to require employers to institute protective provisions (29 CFR 1910.1003). As a lung carcinogen and ability to cause sensitivity and CBD at extremely low concentrations, OSHA's baseline for controls should be modelled after the 13 carcinogens standard and the USW/Materion joint recommended standard.

Personal Protective Clothing and Equipment

The current proposed rule requires employers to provide at no cost PPE and clothing where employee exposure exceeds or can reasonably expected to exceed the TWA PEL or STEL; where work clothing or skin may become visibly contaminated with beryllium, including during maintenance and repair activities or during non-routine tasks; and where employees are exposed to soluble beryllium compounds. The phrase "visibly contaminated" comes directly from Materion's beryllium safety program language and is not an appropriate trigger for a comprehensive beryllium standard. OSHA has not used this terminology in previous standards and it is not well defined.

Beryllium is extremely toxic and the proposed standard is on the microgram order of magnitude. Once beryllium is visible in a workspace, the exposure is significantly higher than our supported action level, 0.05 μg/m^3, or even the proposed STEL, 2 μg/m^3. In order to adequately protect entry of beryllium through the skin, the AFL-CIO strongly supports Regulatory Alternative 13, which requires PPE to be provided worn wherever there is potential for skin contact to beryllium or beryllium-contaminated surfaces. The provision requirement of Regulatory Alternative 13 is similar to that of the hexavalent chromium standard which states that PPE must be provided and worn when the hazard is present, or likely to be present from skin or eye contact with hexavalent chromium (71 Fed. Reg. 63238, October 30, 2006). This language was chosen for the hexavalent chromium standard because of concern for skin exposure increasing worker's health risk. The final beryllium standard should use the same precautions to reduce skin exposure as other chemical standards with skin sensitizing properties.

Hygiene Areas and Practices

The AFL-CIO supports the proposed rule requirements for readily accessible change rooms, shower facilities, and eating and drinking areas. Requiring hygiene areas and practices are essential for preventing migration of beryllium to beryllium-free workspaces or areas outside the workplace. However, the AFL-CIO is concerned with OSHA requiring employers to provide employees "a place to eat and drink where

beryllium exposure is below the action level and where surfaces are maintained as free as practicable of beryllium." OSHA should develop stronger language for the final rule to ensure that areas where food and drink consumption occurs is far below an action level where the known health risk is significant and is truly as free as practicable of beryllium. The AFL-CIO also supports the USW's comments requesting further clarity on the sanitation standard's application to beryllium work areas.

Housekeeping

Because of the hazardous nature of beryllium and the significant risk of developing beryllium sensitization or disease, housekeeping provisions are essential. Poorly kept workplaces where beryllium remains on surfaces puts workers at risk because of beryllium's potential to become airborne and travel into worker's lungs and skin, as well as travel to otherwise beryllium-free workspaces. Contaminated surfaces puts other workers (i.e., those who don't normally work with beryllium) at risk, and those workers are not accounted for in OSHA's estimation of disease and death.

In previous OSHA standards, dry housekeeping methods have been prohibited when the health risk is significant enough to prevent increasing the airborne dust level. In OSHA's 13 carcinogens standard, dry methods were prohibited for many of the carcinogens covered. OSHA's asbestos standard states that compressed air shall not be used unless used in conjunction with a ventilation system which effectively captures the dust cloud and prohibits sanding of asbestos-containing flooring material (60 Fed. Reg. 50411, September 29, 1995). Additionally, Section 850.30 (Housekeeping) of the DOE Chronic Beryllium Disease Prevention Program, prohibits the use of compressed air and dry methods for cleaning floors and surfaces in areas where beryllium is present. Under this requirement, employers are required to clean beryllium-contaminated floors and surfaces using wet methods, vacuuming or other cleaning methods that avoid the production of airborne dust. Vacuum units used to clean beryllium-contaminated areas must use HEPA filters.

OSHA should strengthen language in the final rule to prohibit dry housekeeping methods based on the hazardous nature of beryllium, low exposure levels necessary for sensitization, and precedents set in existing, comprehensive OSHA chemical standards.

Medical Surveillance and Medical Removal Protection

The AFL-CIO supports most provisions contained in the medical surveillance requirements of the proposed rule. Medical surveillance is essential in screening for beryllium sensitivity and for preventing CBD and lung cancer in workers. Workers should be provided a medical screening before they start work in a beryllium area. We support the NABTU comments on beryllium screening.

Since sensitization can occur at such low exposure levels and since beryllium-sensitized individuals are often asymptomatic, regular monitoring of workers is necessary to prevent further progression of beryllium-related disease. The absence of a national surveillance system for beryllium disease makes it especially critical to establish a robust medical surveillance program for all workers potentially exposed to beryllium.

The proposed rule does not make clear the transmission of the information contained in the written opinion of the physician or other licensed health care professional (PLHCP) and the parties privy to this information. OSHA's proposal permits confidential medical records to be submitted directly from the physician to the employer. It is the AFL-CIO's position that the final beryllium standard should require the PLHCP's written opinion to be directly provided to the employee by the PLHCP. The physician conducting the medical examination shall, as soon as possible thereafter, notify the employee in writing of his/her determination as to whether the employee is at increased risk of material impairment of health or functional capacity as a result of exposure to beryllium. Only after written consent of the employee, the employer may be provided with medical information relevant to beryllium exposure.

The American College of Occupational and Environmental Medicine issued guidelines in 2012 clarifying the role of medical confidentiality in the workplace. OSHA should examine these guidelines closely and recognize workers who are potentially exposed to hazardous levels of beryllium need extra protections including medical surveillance and medical removal protection with a high level of confidentiality from their physicians.

If a worker acquires a beryllium-related disease, he/she must be provided protections of work removal and benefit compensation. Medical removal protection is a necessary component of addressing beryllium exposure through a comprehensive rule and the AFL-CIO supports medical removal protection as described in the proposed rule.

Communication of Hazards

Since workers in an area near beryllium operations are at great risk of becoming sensitized to beryllium at low levels while showcasing few clinical symptoms, which can progress into a more serious beryllium-related disease, workers must be able to easily identify where beryllium is used in the workplace. Any work area where beryllium is used should be demarcated with clear, detailed signage -- the same as is required for regulated areas in OSHA's proposal.

Other Provisions

The AFL-CIO fully supports the proposed rule's provisions for respiratory protection, recordkeeping and effective dates. These provisions are essential for a comprehensive beryllium standard and we fully support OSHA's requirements.

CONCLUSION

The AFL-CIO is encouraged to see OSHA move forward with the proposed beryllium rule, but OSHA must issue the most effective standard to protect workers against beryllium sensitivity, chronic beryllium disease, and lung cancer. Illness and death from exposure to beryllium is not just a historical problem but a clear and present threat to the lives of today's workers. OSHA must act swiftly to promulgate a final standard to protect workers from beryllium exposure.

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