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APPROVED: Félix E. Rivera Torres

Undersecretary of State

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Adoption of Federal Rule

Revising the Beryllium Standard for General Industry

85 FR No. 135– July 14, 2020

Part: 4 OSH 1910

Department of State File:

DEPARTMENT OF LABOR AND HUMAN RESOURCES
PUERTO RICO OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
(PR OSHA)

assessment of occupational exposure to beryllium (Document ID 0026, Attachment 2, pp. 9–16). Another took issue with OSHA's risk determination pertaining to dermal contact with beryllium and argued that the current standard did not distinguish between the chemical forms of beryllium and its varying risk of injury from dermal contact (Document ID 0038, pp. 13–15). OSHA addressed these concerns about risk in the 2017 final rule and determined that the beryllium standard addresses a significant risk (see 82 FR at 2545–52). The changes and clarifications proposed by the 2018 NPRM do not affect that determination.

Another commenter took issue with the revised PEL for beryllium set in the 2017 final rule, suggesting that a lower PEL was needed to protect workers from CBD and lung cancer (Document ID 0028, p. 1). Although OSHA determined in the 2017 final rule that there remains a significant risk of material impairment of health at the 0.2 μg/m³ PEL and the 2.0 ug/m³ STEL, the agency further determined that it could not demonstrate that a lower PEL would be technologically feasible (82 FR at 2552). Again, OSHA did not propose to revisit this finding in this rulemaking.

List of Subjects for 29 CFR Part 1910

Beryllium, General industry, Health, Occupational safety and health.

Authority

Loren Sweatt, Principal Deputy Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, directed the preparation of this document. The agency issues the sections under the following authorities: 29 U.S.C. 653, 655, 657; Secretary of Labor's Order 1–2012 (77 FR 3912); 29 CFR part 1911; and 5 U.S.C. 553, as applicable.

Signed at Washington, DC, on May 13, 2020.

Loren Sweatt,

Principal Deputy Assistant Secretary of Labor for Occupational Safety and Health.

Amendments to Standards

For the reasons set forth in the preamble, chapter XVII of title 29, part 1910 is amended to read as follows:

PART 1910—OCCUPATIONAL SAFETY AND HEALTH STANDARDS

■ 1. The authority section for part 1910, subpart Z, continues to read as follows:

Authority: 29 U.S.C. 653, 655, 657; Secretary of Labor's Order No. 12–71 (36 FR 8754), 8–76 (41 FR 25059), 9–83 (48 FR 35736), 1–90 (55 FR 9033), 6–96 (62 FR 111), 3–2000 (65 FR 50017), 5–2002 (67 FR 65008), 5–2007 (72 FR 31160), 4–2010 (75 FR 55355), or 1–2012 (77 FR 3912); and 29 CFR part 1911.

All of subpart Z issued under *29 U.S.C. 655(b),* except those substances that have exposure limits listed in Tables Z–1, Z–2, and Z–3 of § 1910.1000. The latter were issued under *29 U.S.C. 655(a).*

Section 1910.1000, Tables Z–1, Z–2 and Z–3 also issued under *5 U.S.C. 553,* but not under 29 CFR part 1911 except for the arsenic (organic compounds), benzene, cotton dust, and chromium (VI) listings.

Section 1910.1001 also issued under *40 U.S.C. 3704* and *5 U.S.C. 553.*

Section 1910.1002 also issued under *5 U.S.C. 553,* but not under *29 U.S.C. 655* or 29 CFR part 1911.

Sections 1910.1018, 1910.1029, and 1910.1200 also issued under *29 U.S.C. 653.*

Section 1910.1030 also issued under *Public Law 106–430, 114 Stat. 1901.*

Section 1910.1201 also issued under 49 U.S.C. 1801–1819 and 5 U.S.C. 553.

■ 2. Amend § 1910.1024 by:

■ A. Revising the definitions for "Beryllium sensitization," "Beryllium work area," "CBD diagnostic center," "Chronic beryllium disease (CBD)," and "Dermal contact with beryllium".

■ B. Revise paragraphs (f)(1)(i)(D), (f)(ii)(B), (h)(2)(i), (h)(3)(iii), (i)(1) introductory text, (i)(2), (i)(4)(ii), (j)(3), (k)(2)(i)(B), (k)(2)(iii) and (iv), (k)(7)(i) introductory text, (k)(7)(ii) through (vi), (l)(1)(i)(B), (l)(1)(ii), (m)(3), (m)(4)(ii)(A), (m)(4)(ii)(E), (n)(1)(ii)(F), (n)(3)(ii)(A), (n)(4)(i), and Appendix A.

The revisions read as follows:

§ 1910.1024 Beryllium.

* * * * *

(b) * * *

Beryllium sensitization means a response in the immune system of a specific individual who has been exposed to beryllium. There are no associated physical or clinical symptoms and no illness or disability with beryllium sensitization alone, but the response that occurs through beryllium sensitization can enable the immune system to recognize and react to beryllium. While not every beryllium-sensitized person will develop chronic beryllium disease (CBD), beryllium sensitization is essential for development of CBD.

Beryllium work area means any work area where materials that contain at least 0.1 percent beryllium by weight are processed either:

(1) During any of the operations listed in Appendix A of this standard; or

(2) Where employees are, or can reasonably be expected to be, exposed to airborne beryllium at or above the action level.

CBD diagnostic center means a medical diagnostic center that has a pulmonologist or pulmonary specialist on staff and on-site facilities to perform a clinical evaluation for the presence of chronic beryllium disease (CBD). The CBD diagnostic center must have the capacity to perform pulmonary function testing (as outlined by the American Thoracic Society criteria), bronchoalveolar lavage (BAL), and transbronchial biopsy. The CBD diagnostic center must also have the capacity to transfer BAL samples to a laboratory for appropriate diagnostic testing within 24 hours. The pulmonologist or pulmonary specialist must be able to interpret the biopsy pathology and the BAL diagnostic test results.

Chronic beryllium disease (CBD) means a chronic granulomatous lung disease caused by inhalation of airborne beryllium by an individual who is beryllium sensitized.

Confirmed positive means the person tested has had two abnormal BeLPT test results, an abnormal and a borderline test result, or three borderline test results, obtained from tests conducted within a three-year period. It also means the result of a more reliable and accurate test indicating a person has been identified as having beryllium sensitization.

* * * * *

Dermal contact with beryllium means skin exposure to:

(1) Soluble beryllium compounds containing beryllium in concentrations greater than or equal to 0.1 percent by weight;

(2) Solutions containing beryllium in concentrations greater than or equal to 0.1 percent by weight; or

(3) Visible dust, fumes, or mists containing beryllium in concentrations greater than or equal to 0.1 percent by weight. The handling of beryllium materials in non-particulate solid form that are free from visible dust containing beryllium in concentrations greater than or equal to 0.1 percent by weight is not considered dermal contact under the standard.

* * * * *

(f) * * *

(1) * * *

(i) * * *

(D) Procedures for minimizing cross-contamination, including the transfer of beryllium between surfaces, equipment, clothing, materials, and articles within beryllium work areas;

* * * * *

(ii) * * *

(B) The employer is notified that an employee is eligible for medical removal in accordance with paragraph (l)(1) of this standard, referred for evaluation at

a CBD diagnostic center, or shows signs or symptoms associated with exposure to beryllium; or

* * * * *

(h) * * *

(2) * * *

(i) The employer must ensure that each employee removes all beryllium-contaminated personal protective clothing and equipment at the end of the work shift, at the completion of all tasks involving beryllium, or when personal protective clothing or equipment becomes visibly contaminated with beryllium, whichever comes first.

* * * * *

(3) * * *

(iii) The employer must inform in writing the persons or the business entities who launder, clean, or repair the personal protective clothing or equipment required by this standard of the potentially harmful effects of exposure to beryllium and that the personal protective clothing and equipment must be handled in accordance with this standard.

* * * * *

(i) * * *

(1) *General.* For each employee working in a beryllium work area or who can reasonably be expected to have dermal contact with beryllium, the employer must:

* * * * *

(2) *Change rooms.* In addition to the requirements of paragraph (i)(1)(i) of this standard, the employer must provide employees who are required to use personal protective clothing or equipment under paragraph (h)(1)(ii) of this standard with a designated change room in accordance with this standard and the Sanitation standard (§ 1910.141) where employees are required to remove their personal clothing.

* * * * *

(4) * * *

(ii) No employees enter any eating or drinking area with beryllium-contaminated personal protective clothing or equipment unless, prior to entry, it is cleaned, as necessary, to be as free as practicable of beryllium by methods that do not disperse beryllium into the air or onto an employee's body; and

* * * * *

(j) * * *

(3) *Disposal, recycling, and reuse.* (i) Except for intra-plant transfers, when the employer transfers materials that contain at least 0.1 percent beryllium by weight or are contaminated with beryllium for disposal, recycling, or reuse, the employer must label the materials in accordance with paragraph (m)(3) of this standard;

(ii) Except for intra-plant transfers, materials designated for disposal that contain at least 0.1 percent beryllium by weight or are contaminated with beryllium must be cleaned to be as free as practicable of beryllium or placed in enclosures that prevent the release of beryllium-containing particulate or solutions under normal conditions of use, storage, or transport, such as bags or containers; and

(iii) Except for intra-plant transfers, materials designated for recycling or reuse that contain at least 0.1 percent beryllium by weight or are contaminated with beryllium must be cleaned to be as free as practicable of beryllium or placed in enclosures that prevent the release of beryllium-containing particulate or solutions under normal conditions of use, storage, or transport, such as bags or containers.

* * * * *

(k) * * *

(2) * * *

(i) * * *

(B) An employee meets the criteria of paragraph (k)(1)(i)(B) of this standard.

* * * * *

(iii) At the termination of employment for each employee who meets any of the criteria of paragraph (k)(1)(i) of this standard at the time the employee's employment terminates, unless an examination has been provided in accordance with this standard during the six months prior to the date of termination. Each employee who meets the criteria of paragraph (k)(1)(i)(C) of this standard and who has not received an examination since exposure to beryllium during the emergency must be provided an examination at the time the employee's employment terminates.

(iv) For an employee who meets the criteria of paragraph (k)(1)(i)(C) of this standard:

(A) If that employee has not received a medical examination within the previous two years pursuant to paragraph (k)(1)(i) of this standard, then within 30 days after the employee meets the criteria of paragraph (k)(1)(i)(C) of this standard; or

(B) If that employee has received a medical examination within the previous two years pursuant to paragraph (k)(1)(i) of this standard, then at least one year but no more than two years after the employee meets the criteria of paragraph (k)(1)(i)(C) of this standard.

* * * * *

(7) * * *

(i) The employer must provide an evaluation at no cost to the employee at a CBD diagnostic center that is mutually agreed upon by the employer and the employee. The evaluation at the CBD diagnostic center must be scheduled within 30 days, and must occur within a reasonable time, of:

* * * * *

(ii) The employer must ensure that, as part of the evaluation, the employee is offered any tests deemed appropriate by the examining physician at the CBD diagnostic center, such as pulmonary function testing (as outlined by the American Thoracic Society criteria), bronchoalveolar lavage (BAL), and transbronchial biopsy. If any of the tests deemed appropriate by the examining physician are not available at the CBD diagnostic center, they may be performed at another location that is mutually agreed upon by the employer and the employee.

(iii) The employer must ensure that the employee receives a written medical report from the CBD diagnostic center that contains all the information required in paragraph (k)(5)(i), (ii), (iv), and (v) of this standard and that the PLHCP explains the results of the examination to the employee within 30 days of the examination.

(iv) The employer must obtain a written medical opinion from the CBD diagnostic center within 30 days of the medical examination. The written medical opinion must contain only the information in paragraph (k)(6)(i), as applicable, unless the employee provides written authorization to release additional information. If the employee provides written authorization, the written opinion must also contain the information from paragraphs (k)(6)(ii), (iv), and (v), if applicable.

(v) The employer must ensure that each employee receives a copy of the written medical opinion from the CBD diagnostic center described in paragraph (k)(7) of this standard within 30 days of any medical examination performed for that employee.

(vi) After an employee has received the initial clinical evaluation at a CBD diagnostic center described in paragraphs (k)(7)(i) and (ii) of this standard, the employee may choose to have any subsequent medical examinations for which the employee is eligible under paragraph (k) of this standard performed at a CBD diagnostic center mutually agreed upon by the employer and the employee, and the employer must provide such examinations at no cost to the employee.

* * * * *

(l) * * *

(1) * * *

(i) * * *

(B) A written medical report recommending removal from airborne exposure to beryllium in accordance with paragraph (k)(5)(v) or (k)(7)(iii) of this standard; or

(ii) The employer receives a written medical opinion recommending removal from airborne exposure to beryllium in accordance with paragraph (k)(6)(v) or (k)(7)(iv) of this standard.

* * * * *

(m) * * *

(3) *Warning labels.* Consistent with the HCS (§ 1910.1200), the employer must label each immediate container of clothing, equipment, and materials contaminated with beryllium, and must, at a minimum, include the following on the label:

DANGER
CONTAINS BERYLLIUM
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
AVOID CREATING DUST
DO NOT GET ON SKIN

(4) * * *

(ii) * * *

(A) The health hazards associated with airborne exposure to and dermal contact with beryllium, including the signs and symptoms of CBD;

* * * * *

(E) Measures employees can take to protect themselves from airborne exposure to and dermal contact with beryllium, including personal hygiene practices;

* * * * *

(n) * * *

(1) * * *

(ii) * * *

(F) The name and job classification of each employee represented by the monitoring, indicating which employees were actually monitored.

* * * * *

(3) * * *

(ii) * * *

(A) Name and job classification;

* * * * *

(4) * * *

(i) At the completion of any training required by this standard, the employer must prepare a record that indicates the name and job classification of each employee trained, the date the training was completed, and the topic of the training.

* * * * *

(p) *Appendix.* Table A.1 in this appendix sets forth the operations that, where performed under the circumstances described in the column heading above the particular operations, trigger the requirement for a beryllium work area.

Appendix A to § 1910.1024—Operations for Establishing Beryllium Work Areas

Paragraph (b) of this standard defines a *beryllium work area* as any work area where materials that contain at least 0.1 percent beryllium by weight are processed (1) during any of the operations listed in Appendix A of this standard, or (2) where employees are, or can reasonably be expected to be, exposed to airborne beryllium at or above the action level. Table A.1 in this appendix sets forth the operations that, where performed under the circumstances described in the column heading above the particular operations, trigger the requirement for a beryllium work area.

TABLE A.1—OPERATIONS FOR ESTABLISHING BERYLLIUM WORK AREAS WHERE PROCESSING MATERIALS CONTAINING AT LEAST 0.1 PERCENT BERYLLIUM BY WEIGHT

Beryllium metal alloy operations (generally <10% beryllium by weight)	Beryllium composite operations (generally >10% beryllium by weight) and beryllium metal operations	Beryllium oxide operations
Abrasive Blasting.	Abrasive Blasting.	Abrasive Blasting.
Abrasive Processing.	Abrasive Processing.	Abrasive Processing.
Abrasive Sawing.	Abrasive Sawing.	Abrasive Sawing.
Annealing.	Annealing.	Boring.
Bright Cleaning.	Atomizing.	Brazing (>1,100 °C).
Brushing.	Attritioning.	Broaching with green ceramic.
Buffing.	Blanking.	Brushing.
Burnishing.	Bonding.	Buffing.
Casting.	Boring.	Centerless grinding.
Centerless Grinding.	Breaking.	Chemical Cleaning.
Chemical Cleaning.	Bright Cleaning.	Chemical Etching.
Chemical Etching.	Broaching.	CNC Machining.
Chemical Milling.	Brushing.	Cold Isostatic Pressing (CIP).
Dross Handling.	Buffing.	Crushing.
Deburring (grinding).	Burnishing.	Cutting.
Electrical Chemical Machining (ECM).	Casting.	Deburring (grinding).
Electrical Discharge Machining (EDM).	Centerless Grinding.	Deburring (non-grinding).
Extrusion.	Chemical Cleaning.	Destructive Testing.
Forging.	Chemical Etching	Dicing.
Grinding.	Chemical Milling.	Drilling.
Heat Treating (in air).	CNC Machining	Dry/wet Tumbling.
High Speed Machining (>10,000 rpm).	Cold Isostatic Pressing.	Extrusion.
Hot Rolling.	Cold Pilger.	Filing by Hand.
Lapping.	Crushing.	Firing of Green Ceramic.
Laser Cutting.	Cutting.	Firing of Refractory Metallization (>1,100 °C).
Laser Machining.	Deburring.	Grinding.
Laser Scribing.	Dicing.	Honing.
Laser Marking.	Drawing.	Hot Isostatic Pressing (HIP).
Melting.	Drilling.	Lapping.
Photo-Etching.	Dross Handling.	Laser Cutting.
Pickling.	Electrical Chemical Machining (ECM).	Laser Machining.
Point and Chamfer.	Electrical Discharge Machining (EDM).	Laser Scribing.
Polishing.	Extrusion.	Laser Marking.
Torch Cutting (*i.e.*, oxy-acetylene).	Filing by Hand.	Machining.
Tumbling.	Forging.	Milling.
Water-jet Cutting.	Grinding.	Piercing.
Welding.	Heading.	Mixing.

TABLE A.1—OPERATIONS FOR ESTABLISHING BERYLLIUM WORK AREAS WHERE PROCESSING MATERIALS CONTAINING AT LEAST 0.1 PERCENT BERYLLIUM BY WEIGHT—Continued

Beryllium metal alloy operations (generally <10% beryllium by weight)	Beryllium composite operations (generally >10% beryllium by weight) and beryllium metal operations	Beryllium oxide operations
Sanding. Slab Milling.	Heat Treating. Honing. Hot Isostatic Pressing (HIP). Lapping. Laser Cutting. Laser Machining. Laser Scribing. Laser Marking. Machining. Melting. Milling. Mixing. Photo-Etching. Pickling. Piercing. Pilger. Plasma Spray. Point and Chamfer. Polishing. Powder Handling. Powder Pressing. Pressing. Reaming. Roll Bonding. Rolling. Sanding. Sawing (tooth blade). Shearing. Sizing. Skiving. Slitting. Snapping. Sputtering. Stamping. Spray Drying. Tapping. Tensile Testing. Torch Cutting (*i.e.*, oxy acetylene). Trepanning. Tumbling Turning. Vapor Deposition. Water-Jet Cutting. Welding.	Plasma Spray. Polishing. Powder Handling. Powder Pressing. Reaming. Sanding. Sectioning. Shearing. Sintering of Green Ceramic. Sintering of Refractory Metallization (>1,100 °C). Snapping. Spray Drying. Tape Casting. Turning. Water Jet Cutting.

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