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Exempt Action: Final Regulation
Agency Background Document

Agency name	Department of Labor and Industry
Virginia Administrative Code (VAC) Chapter citation(s)	16 VAC25-90-1910.1024
VAC Chapter title(s)	Federal Identical General Industry Standards
Action title	Revising the Beryllium Standard for General Industry
Final agency action date	November 12, 2020
Date this document prepared	November 12, 2020

Although a regulatory action may be exempt from executive branch review pursuant to § 2.2-4002 or § 2.2-4006 of the *Code of Virginia*, the agency is still encouraged to provide information to the public on the Regulatory Town Hall using this form. However, the agency may still be required to comply with the Virginia Register Act, Executive Order 14 (as amended, July 16, 2018), the Regulations for Filing and Publishing Agency Regulations (1VAC7-10), and the *Form and Style Requirements for the Virginia Register of Regulations and Virginia Administrative Code.*

Brief Summary

Provide a brief summary (preferably no more than 2 or 3 paragraphs) of this regulatory change (i.e., new regulation, amendments to an existing regulation, or repeal of an existing regulation). Alert the reader to all substantive matters. If applicable, generally describe the existing regulation.

This action is necessary to meet the requirements of federal law and is therefore exempt from the requirements of the Administrative Process Act (APA) under §2.2-4006.A.4(c).

Federal OSHA is revising the existing general industry standard for occupational exposure to beryllium and beryllium compounds is to clarify certain provisions and simplify or improve compliance.

Broadly, Federal OSHA proposed to add one definition and modify five existing terms in paragraph (b), Definitions; to amend paragraph (f), Methods of compliance; paragraph (h), Personal protective clothing and equipment; paragraph (i), Hygiene areas and practices; paragraph (j), Housekeeping; paragraph (k), Medical surveillance; paragraph (m), Communication of hazards; and paragraph (n), Recordkeeping; and to replace the 2017 final standard's Appendix A with a new appendix designed to supplement the proposed definition of beryllium work area.

Each change is discussed briefly below.

A. Definitions; Paragraph (b)

The final rule changes or adds six terms in the definitions paragraph of the standard. The terms that are changing or are being added are beryllium sensitization, beryllium work area, CBD diagnostic center, chronic beryllium disease, confirmed positive and dermal contact with beryllium.

1. ***Beryllium sensitization***—"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.''

2. ***Beryllium work area***—Paragraph (b) of the final rule defines beryllium work area as "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 the standard; or (2) where employees are, or can reasonably be expected to be, exposed to airborne beryllium at or above the action level."

   The establishment of beryllium work areas serves to ensure that employees and other persons are aware of the potential presence of airborne beryllium; to control access to these areas; and in conjunction with other provisions such as the written control plan, hygiene, and housekeeping requirements, to minimize the transfer of beryllium to other areas of the facility and reduce the potential for exposure to other employees.

3. ***CBD diagnostic center***—The final rule clarifies this term. Federal OSHA is defining *CBD diagnostic center* to mean 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 CBD.

   The revised definition also states that a 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. In the revised definition, the CBD diagnostic center must also have the capacity to transfer BAL samples to a laboratory for appropriate diagnostic testing within 24 hours and the pulmonologist or pulmonary specialist must be able to interpret the biopsy pathology and the BAL diagnostic test results.

4. ***Chronic beryllium disease (CBD)—*** For the purposes of this standard, the term chronic beryllium disease means a "chronic granulomatous lung disease caused by inhalation of airborne beryllium by an individual who is beryllium sensitized." The revisions serve to differentiate CBD from other respiratory diseases associated with beryllium exposure (e.g., lung cancer) and to make clear that beryllium sensitization and the presence of beryllium in the lung are essential in the development of CBD (see 82 FR at 2492).

5. ***Confirmed positive—***Federal OSHA is amending the definition of confirmed positive to mean (1) 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; or (2) the result of a more reliable and accurate test indicating a person has been identified as having beryllium sensitization.

The phrase ‘‘beryllium sensitization’’ is removed from the first sentence of the definition, which previously stated that a person is confirmed positive if that person has beryllium sensitization, as indicated by two abnormal BeLPT test results, an abnormal and a borderline test result, or three borderline test results. Federal OSHA intends that confirmed positive act only as a trigger for requirements such as continued medical monitoring and surveillance for the purposes of this standard, and not as a general-purpose definition of beryllium sensitization.

For purposes of the beryllium standard, any worker with the BeLPT test results specified in the definition of confirmed positive should be offered an evaluation for CBD with continued medical surveillance as well as the option of medical removal protection, even though some small percentage of workers who are confirmed positive by this definition may not in fact be sensitized to beryllium, as is the case for any diagnostic test

6. ***Dermal contact with beryllium***--Paragraph (b) of this final rule defines dermal contact with beryllium as 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 definition also states that 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. Several of the standard’s provisions are triggered where an employee has, or can be reasonably expected to have, dermal contact with beryllium. These include provisions in paragraph (f), Written exposure control plan; paragraph (h), Personal protective clothing and equipment (PPE); paragraph (i), Hygiene areas and practices; paragraph (k), Medical surveillance; and paragraph (m), Communication of hazards.

B. Methods of Compliance; Paragraph (f)

Paragraph (f) of the beryllium standard for general industry contains provisions covering methods for reducing employee exposure to beryllium through the use of a written exposure control plan and engineering and work practice controls. Paragraph (f)(1) sets forth the requirements for written exposure control plans. Paragraph (f)(1)(i) requires employers to establish, implement, and maintain such a plan, and paragraphs (f)(1)(i)(A)– (H) specifies the information and procedures that must be included in the plan. Paragraph (f)(1)(ii) directs employers to review and evaluate each plan at least annually and update it under specified circumstances.

The final rule makes two changes to paragraph (f).

1. Under paragraph (f)(1)(i)(D), employers were previously required to include procedures in their plans for minimizing cross-contamination, ‘‘including preventing the transfer of beryllium’’ between surfaces, equipment, clothing, materials, and articles within beryllium work areas. This final rule removes the word ‘‘preventing’’ from the regulatory text to clarify that these procedures may not totally eliminate the transfer of beryllium, but should minimize cross contamination of beryllium, including between surfaces, equipment, clothing, materials, and articles.

2. The second change involves one of the circumstance when employers must update their written exposure control plans. Paragraph (f)(1)(ii)(B) of the standard directed employers to update the written exposure control plan, as necessary, when they are notified that an employee is eligible for medical removal in accordance with paragraph (l)(1), referred for evaluation at a CBD diagnostic center, or shows signs or symptoms associated with ‘‘airborne exposure to or dermal contact with beryllium.’’ The final rule replaces the

phrase ‘‘airborne exposure to and dermal contact with beryllium’’ with ‘‘exposure to beryllium.’’ Federal OSHA explained that the change would simplify the language of the provision while still capturing all potential exposure scenarios currently covered.

C. Personal Protective Clothing and Equipment; Paragraph (h)

Paragraph (h) of the beryllium standard for general industry requires employers to provide employees with personal protective clothing and equipment (PPE) where employee exposure exceeds, or can reasonably be expected to exceed, the TWA PEL or STEL, or where there is a reasonable expectation of dermal contact with beryllium. Paragraph (h) also contains provisions for the safe removal, storage, cleaning, and replacement of the PPE required by this standard.

The final rule makes two revisions to paragraph (h).

1. The first revision relates to paragraph (h)(2)(i), which addresses removal and storage of PPE. Paragraph (h)(2)(i) previously required employers to ensure that each employee removes all beryllium contaminated PPE at the end of the work shift, ‘‘at the completion of tasks involving beryllium,’’ or when PPE becomes visibly contaminated with beryllium, whichever comes first. This final rule modifies the phrase ‘‘at the completion of tasks involving beryllium’’ by changing ‘‘tasks’’ to ‘‘all tasks,’’ so that it reads ‘‘at the completion of all tasks involving beryllium’’ (83 FR at 63754).

2. The second revision relates to paragraph (h)(3)(iii), which addresses cleaning and replacement of PPE. This paragraph required employers to inform in writing the persons or the business entities who launder, clean, or repair the PPE required by this standard of the potentially harmful effects of ‘‘airborne exposure to and dermal contact with beryllium.’’ The final rule replaces the phrase ‘‘airborne exposure to and dermal contact with beryllium’’ with ‘‘exposure to beryllium’’ (83 FR at 63755). Federal OSHA explained that this change simplifies the language of the provision while still capturing all potential exposure scenarios currently covered; and, as such, the agency concluded that the revised language will maintain safety and health protections for workers.

D. Hygiene Areas and Practices; Paragraph (i)

Paragraph (i) of the beryllium general industry standard requires that the employer provide employees with readily accessible washing facilities, change rooms, and showers when certain conditions are met; requires the employer to take certain steps to minimize exposure in eating and drinking areas; and prohibits certain practices that may contribute to beryllium exposure. As explained in the 2017 final rule, Federal OSHA believes that strict compliance with these provisions will reduce the amount and duration of employees’ airborne exposure and dermal contact with beryllium (82 FR at 2683–88).

The final rule makes three revisions to paragraph (i).

1. First, the final rule makes a change in the wording of paragraph (i)(1), which required that ‘‘[f]or each employee working in a beryllium work area,’’ the employer must provide readily accessible washing facilities to remove beryllium from the hands, face, and neck; and ensure that employees who have dermal contact with beryllium wash any exposed skin at specific designated times. The final rule amends the language to apply to ‘‘each employee . . . who can reasonably be expected to have dermal contact with beryllium,’’ in addition to each employee working in a beryllium work area (83 FR at 63768).

2. Second, the final rule makes a change in the wording of paragraph (i)(2), which required employers to provide ‘‘employees who work in a beryllium work area,’’ with a designated

change room where employees are required to remove their personal clothing. Federal OSHA is revising paragraph (i)(2) to require employers to provide a designated change room to employees who are required to use personal protective clothing or equipment under paragraph (h)(1)(ii) of the beryllium standard, instead of to employees who work in a beryllium work area (83 FR at 63768).

Paragraph (h)(1)(ii) of the beryllium standard requires the provision and use of appropriate PPE where there is a reasonable expectation of dermal contact with beryllium. The requirement to provide change rooms would continue to apply only where employees are required to remove their personal clothing. The changes to paragraphs (i)(1) and (i)(2) were merely intended to ensure that the hygiene provisions related to washing facilities and change rooms would continue to protect employees who are reasonably expected to have dermal contact with beryllium.

3. Finally, the final rule makes a third change, which applies to paragraph (i)(4), in order to clarify the requirements for cleaning beryllium-contaminated PPE prior to entering an eating or drinking area. Paragraph (i)(4)(ii) required the employer to ensure that no employees enter any eating or drinking area with beryllium-contaminated personal protective clothing or equipment unless, prior to entry, surface beryllium has been removed from the clothing or equipment by methods that do not disperse beryllium into the air or onto an employee's body.

   The final rule modifies this paragraph to require the employer to ensure that, before employees enter an eating or drinking area, beryllium contaminated PPE 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 (83 FR at 63768).

   The agency explained that this change would clarify that Federal OSHA does not expect the methods used to clean PPE prior to entering an eating or drinking area to completely eliminate residual beryllium from the surface of the PPE if complete elimination is not practicable (83 FR at 63755–56). This clarification also aligns the language of paragraph (i)(4)(ii) with the language of paragraph (i)(4)(i), which requires employers to ensure that beryllium-contaminated surfaces in eating and drinking areas are as free as practicable of beryllium.

E. Disposal, Recycling and Reuse; Paragraph (j)

Paragraph (j) of the beryllium general industry standard requires employers to adhere to certain housekeeping practices. Paragraphs (j)(1) and (j)(2) require employers to maintain all surfaces in beryllium work areas as free as practicable of beryllium, promptly clean spills and emergency releases of beryllium, and use appropriate cleaning methods, while paragraph (j)(3) requires employers to take certain actions when transferring materials that contain at least 0.1 percent beryllium by weight or that are contaminated with beryllium outside a plant for the purpose of disposal, recycling, or reuse.

The final rule makes seven changes to the previous requirements of paragraph (j)(3).

1. First, the final rule revises (j)(3) such that the provisions address reuse (in addition to disposal and recycling). Paragraph (j)(3) of the 2017 final rule contained requirements for the labeling and enclosure of certain materials designated for disposal and the labeling and either enclosure or cleaning of materials designated for recycling. The preamble to the 2017 final rule made clear that paragraph (j)(3)'s requirements related to recycling also applied to reuse (see 82 FR at 2695–96), but the standard did not explicitly advise employers of this requirement.

To make the agency's original intent clear, Federal OSHA is including provisions addressing reuse. This change was intended to ensure that workers who may be exposed to materials containing or contaminated with beryllium that are directly reused without first being processed into a different form are appropriately protected.

2. Second, the final rule reorganizes paragraph (j)(3)'s original two paragraphs (one on disposal, one on recycling—with the labeling requirements specified in each) into three new paragraphs with each paragraph focusing on a different topic.

3. Third, the final rule simplifies (j)(3) by replacing the phrase materials ''that contain beryllium in concentrations of 0.1 percent by weight or more'' with a shorter phrase: Materials ''that contain at least 0.1 percent beryllium by weight.''

4. Fourth, Federal OSHA added an explicit exemption for materials transferred within a plant from the cleaning and enclosure requirements in new paragraphs (j)(3)(ii) and (iii).

5. Fifth, the final rule revises (j)(3) to make Federal OSHA's intent clear regarding ''sealed, impermeable bags.'' The revisions make it explicitly clear that employers are required to utilize enclosures that prevent the release of beryllium-containing particulate or solutions under normal conditions of use, storage, or transport.

6. Sixth, the final rule adds a "cleaning option" to take into account large items that would not fit in a container. The "cleaning option" would offer protection for workers who handle large items like machines or structures that contain at least .1 percent beryllium by weight. Federal Osha determined that workers handling items designated for disposal, like workers handling items designated for recycling or reuse, would be just as protected from exposure to beryllium if the items were cleaned to be as free as practicable of beryllium as if the items were placed in containers.

7. Seventh, the final rule revises language surrounding the cleaning of materials designated for disposal, recycling or reuse by removing the phrase "surface beryllium contamination." This phrase was used in (j)(3) but was not defined. To avoid confusion stemming from an undefined new term, Federal OSHA determined it would delete the term entirely.

F. Medical Surveillance; Paragraph (k)

Paragraph (k) of the beryllium standard for general industry addresses medical surveillance requirements. The paragraph specifies which employees must be offered medical surveillance, as well as the frequency and content of medical examinations. It also sets forth the information that must be provided to the employee and employer. The purposes of medical surveillance for beryllium are (1) to identify beryllium related adverse health effects so that appropriate intervention measures can be taken; (2) to determine if an employee has any condition that might make him or her more sensitive to beryllium exposure; and (3) to determine the employee's fitness to use personal protective equipment such as respirators.

The final rule makes two sets of changes to paragraph (k), the first set to (k)(2) and the second set to (k)(7).

1. Federal OSHA removed the strict requirement of a medical examination within 30 days of exposure in an emergency in all instances, under paragraph (k)(2)(i)(B), and added new paragraphs (k)(2)(iv)(A) and (B).

   The final rule makes this change after Federal OSHA received stakeholder comment that for individuals exposed one-time during an emergency, 30 days may be insufficient to detect beryllium sensitization, so a longer timeframe for medical examinations is more

appropriate. However, the final rule still needed to account for those employees who are not regularly exposed to beryllium as part of their normal work duties, those who are regularly subject to medical surveillance.

Now, paragraph (k)(2)(iv)(A) accounts for the small population of employees who are not regularly exposed and new paragraph (k)(2)(iv)(B) accounts for those who regularly encounter beryllium in their normal work duties.

The final rule also revises existing paragraph (k)((2)(iii) to take into account employees whose employment is terminated prior to receiving a medical exam.

a. Paragraph (k)(2)(iv)(A) requires that if an employee is exposed to beryllium during an emergency and has not received a medical examination under paragraph (k)(1)(i) within the previous two years, then the employer must provide that employee with a medical examination within 30 days of the date of the emergency.

b. Under paragraph (k)(2)(iv)(B), if an employee has received a medical examination under paragraph (k)(1)(i) within the previous two years, then the employer would be required to offer that employee a medical examination that meets the requirements of the standard at least one year but no more than two years after the employee was exposed to beryllium in an emergency.

c. The final rule also revises (k)(2)(iii) to require that employers offer a medical examination to any employee who has not received an examination since the emergency exposure at the time the employee's employment is terminated.

2. Federal OSHA amends paragraph (k)(7) in three ways:

a. First, OSHA is revising paragraph (k)(7)(i) to require that the evaluation must be scheduled within 30 days, and must occur within a reasonable time, of the employer receiving one of the types of documentation listed in paragraph (k)(7)(i)(A) or (B).

b. Second, the final rule adds a provision, in paragraph (k)(7)(ii), which clarifies that, as part of the evaluation at the CBD diagnostic center, the employer must ensure that 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.

c. Third, the final rule makes a handful of minor, nonsubstantive numbering and reference edits to other provisions in paragraph (k)(7) to account for the addition of new paragraph (k)(7)(ii).

G. Communication of Hazards; Paragraph (m)

Paragraph (m) of the beryllium standard sets forth the employer's obligation to comply with the Hazard Communication standard (HCS) (16 VAC25-90-1910.1200) relative to beryllium and to take additional steps to warn and train employees about the hazards of beryllium.

The final rule makes three revisions to paragraph (m).

1. The first change is related to paragraph (m)(3), which previously required employers to label ''each bag and container'' of clothing, equipment, and materials contaminated with beryllium. The final rule replaces the phrase ''each bag and container'' with the phrase ''each immediate container,'' to clarify that the employer need only label the immediate

bag or container of beryllium-contaminated items and not larger containers holding the labeled bag or container.

2. Paragraph (m)(4) addresses employee information and training. One of the topics is airborne exposure to and contact with beryllium, including the signs and symptoms of CBD. The final rule adds the word “dermal” immediately prior to “contact with beryllium.”

3. The word “dermal” is also added prior to “contact with beryllium” in paragraph (m)(4)(ii)(E).

H. Recordkeeping; Paragraph (n)

Paragraph (n) of the beryllium standard for general industry requires employers to make and maintain air monitoring data, objective data, and medical surveillance records, and prepare and maintain training records. The final rule modifies the recordkeeping requirement by allowing employers to retain the option of using social security numbers to identify employees and adds the option of using some other alternative employee identifier system, as explained in the Standards Improvement Project IV (SIP-IV) final rule (adopted by the SHCB September 17, 2019.)

Mandate and Impetus

Identify the mandate for this regulatory change and any other impetus that specifically prompted its initiation (e.g., new or modified mandate, internal staff review, petition for rulemaking, periodic review, or board decision). “Mandate” is defined as “a directive from the General Assembly, the federal government, or a court that requires that a regulation be promulgated, amended, or repealed in whole or part.”

Under 29 CFR 1953.5(a), where a Federal program change is a new permanent standard, or a more stringent amendment to an existing permanent standard, the State shall promulgate a State standard adopting such new Federal standard, or more stringent amendment to an existing Federal standard, or an at least as effective equivalent thereof, within six months of the date of promulgation of the new Federal standard or more stringent amendment.

Statement of Final Agency Action

Provide a statement of the final action taken by the agency including: 1) the date the action was taken; 2) the name of the agency taking the action; and 3) the title of the regulation.

On November 12, 2020, the Safety and Health Codes Board adopted the final rule for Revising the Beryllium Standard for General Industry as authorized by Virginia Code §§ 40.1-22(5) and 2.2-4006.A.4(c), with an effective date of January 7, 2021.

To access the Revising the Beryllium Standard for General Industry Final Rule, please click on the link below:

https://www.govinfo.gov/content/pkg/FR-2020-07-14/pdf/2020-10678.pdf.

Occupational Exposure to Beryllium in General Industry, §1910.1024
Final Rule

As Adopted by the

Safety and Health Codes Board

Date: November 12, 2020

VIRGINIA OCCUPATIONAL SAFETY AND HEALTH PROGRAM

VIRGINIA DEPARTMENT OF LABOR AND INDUSTRY

Effective Date: January 7, 2021

16VAC25-90-1910.1024, Beryllium, §1910.1024; and Appendix A

When the regulations as set forth in federal OSHA's Final Rule for the Occupational Exposure to Beryllium, Part 1910 is applied to the Commissioner of the Department of Labor and Industry and/or to Virginia employers, the following federal terms shall be considered to read as below:

Federal Terms	VOSH Equivalent
29 CFR	VOSH Standard
Assistant Secretary	Commissioner of Labor and Industry
Agency	Department
July 14, 2020	January 7, 2020

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.

[FR Doc. 2020–10678 Filed 7–13–20; 8:45 am]
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