

BERYLLIUM STANDARD FOR GENERAL INDUSTRY (29 CFR 1910.1024),
CONSTRUCTION(29 CFR 1926.1124) AND MARITIME (29 CFR 1915.1024)
1218-0267
January 2017

Note

Since submission of the Final Beryllium Rule to the Office of the Federal Register for publication, the Agency identified and corrected several errors in the Beryllium Information Collection Request (ICR) burden hour estimates. To the extent discrepancies exist, this ICR represents the more accurate, definitive estimate of burden hours.

**SUPPORTING STATEMENT FOR
THE INFORMATION COLLECTION REQUIREMENTS
IN THE FINAL BERYLLIUM STANDARD FOR
GENERAL INDUSTRY (29 CFR 1910.1024), CONSTRUCTION
(29 CFR 1926.1124), AND MARITIME (29 CFR 1915.1024)¹
OMB CONTROL NO. 1218-0267 (January 2017)**

A. JUSTIFICATION

1. Explain the circumstances that make the collection of information necessary. Identify any legal or administrative requirements that necessitate the collection. Attach a copy of the appropriate section of each statute and regulation mandating or authorizing the collection of information.

The main objective of the Occupational Safety and Health Act (“OSH Act” or “Act”) is to “assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources” (29 U.S.C. 651(a)). To achieve this objective, the OSH Act specifically authorizes “the development and promulgation of occupational safety and health standards” (29 U.S.C. 651(b)(9)). The Act further states that “[t]he Secretary . . . shall . . . prescribe such rules and regulations as [he/she] may deem necessary to carry out [his/her] responsibilities under this Act, including rules and regulations dealing with the inspection of an employer’s establishment” (29 U.S.C. 657(g)(2)).

To protect worker health, the OSH Act authorizes the Secretary of Labor (Secretary) to develop standards that provide for “monitoring or measuring employee exposure” to occupational hazards and “prescribe the type and frequency of medical examinations or other tests which shall be made available, by the employer or at [the employer’s] cost, to employees exposed to such hazards in order to most effectively determine whether the health of such employees is adversely affected by such exposure” (29 U.S.C. 655(b)(7)). Moreover, the Act directs the Secretary to “issue regulations requiring employers to maintain accurate records of employee exposures to potentially toxic materials or harmful physical agents which are required to be monitored or measured,” and further requires that such regulations provide “for each employee or former employee to have access to such records as will indicate [the employee’s] own exposure to toxic materials or harmful physical agents” as appropriate (29 U.S.C. 657(c)(3)). In addition, the OSH Act mandates that “[e]ach employer shall make, keep and preserve, and make available to the Secretary . . . such records regarding [his/her] activities relating to this Act as the Secretary . . . may prescribe by regulation as necessary or appropriate for the enforcement of this Act or for developing information regarding the causes and prevention of occupational accidents and illnesses” (29 U.S.C. 657(c)(1)).

¹ The purpose of this Supporting Statement is to analyze and describe the burden hours and costs associated with provisions of the final standard that contain collections of information (paperwork) requirements; this Supporting Statement does not provide information or guidance on how to comply with, or how to enforce, these provisions.

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Section 6(b)(7) of the Act, 29 U.S.C. 655(b)(7), further specifies that “[a]ny standard promulgated under this subsection shall prescribe the use of labels or other appropriate forms of warning as are necessary to insure that employees are apprised of all hazards to which they are exposed, relevant symptoms and appropriate emergency treatment, and proper conditions and precautions of safe use or exposure.”

Under the authority granted by the OSH Act, the Secretary, through the Occupational Safety and Health Administration (“OSHA” or “the Agency is issuing a final substance-specific standard for general industry, shipyards, and construction regulating occupational exposure to beryllium and beryllium compounds (29 CFR 1910.1024, 29 CFR 1915.1024, and 29 CFR 1926.1124, respectively).

OSHA has determined that employees exposed to beryllium at the previous permissible exposure limits face a significant risk of material impairment to their health.

Items 2 and 12 below list and describe the specific information collection requirements of the final standard.

2. Indicate how, by whom, and for what purpose the information is to be used. Except for a new collection, indicate the actual use the agency has made of the information received from the current collection.

The final standard contains collections of information as follows:

§1910.1024 (d) -- §1915.1024(d) -- §1926.1124 (d) Exposure Assessment

§1910.1024 (d)(2) -- §1915.1024(d)(2) -- §1926.1124 (d)(2) Performance Option.

(2) Performance option. The employer must assess the 8-hour TWA exposure and the 15-minute short-term exposure for each employee on the basis of any combination of air monitoring data and objective data sufficient to accurately characterize airborne exposure to beryllium.

Purpose: The availability of exposure data enables physicians or other licensed healthcare professionals (PLHCPs) performing medical examinations on exposed workers to be informed of the extent of an employee’s occupational exposures. Under the performance option, the employer has the option to use any combination of objective data and air monitoring data. Employers do not have to conduct initial exposure monitoring if they rely on objective data that would satisfy the exposure assessment requirements contained in this standard. OSHA takes the burden for the collection of information under the scheduled option paragraph (d)(3).

§1910.1024 (d)(3), §1915.1024(d)(3), §1926.1124 (d)(3)(i), (ii) & (iii) Scheduled Monitoring Option.

*Initial Monitoring - §1910.1024 (d)(3)(i), (ii) & (iii) --§1915.1024(d)(3)(i), (ii) & (iii)--
§1926.1124 (d)(3)(i), (ii) & (iii).*

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(i) The employer must perform initial monitoring to assess the 8-hour TWA exposure for each employee on the basis of one or more personal breathing zone air samples that reflect the airborne exposure of employees on each shift, for each job classification, and in each work area.

(ii) The employer must perform initial monitoring to assess the short-term exposure from 15-minute personal breathing zone air samples measured in operations that are likely to produce airborne exposure above the STEL for each work shift, for each job classification, and in each work area.

(iii) Where several employees perform the same tasks on the same shift and in the same work area, the employer may sample a representative fraction of these employees in order to meet the requirements of paragraph (d)(3). In representative sampling, the employer must sample the employee(s) expected to have the highest airborne exposure to beryllium.

Purpose: The purpose of initial exposure assessment is to determine the extent and degree of beryllium exposure at the worksite; identification and prevention of employee overexposure; identification of the sources of exposure to beryllium; collection of exposure data so that the employer can select the proper control methods to be used; and evaluation of the effectiveness of those selected methods. Exposure assessment enables employers to meet their legal obligation to ensure that their employees are not exposed to beryllium in excess of the permissible exposure limits and to notify employees of their exposure levels, including any overexposures as required by section 8(c)(3) of the Act (29 U.S.C. § 657(c)(3)). In addition, the availability of exposure data enables physicians or other licensed healthcare professionals (PLHCPs) performing medical examinations to be informed of the extent of an employee's occupational exposures.

Periodic Monitoring: §1910.1024 (d)(3)(v), (vi), (vii) & (viii)--§1915.1024(d)(3) (v), (vi), (vii) & (viii) -- §1926.1124 (d)(3)(v), (vi), (vii) & (viii).

(v) Where the most recent exposure monitoring indicates that airborne exposure is at or above the action level but at or below the TWA PEL, the employer must repeat such monitoring within six months of the most recent monitoring.

(vi) Where the most recent exposure monitoring indicates that airborne exposure is above the TWA PEL, the employer must repeat such monitoring within three months of the most recent 8-hour TWA exposure monitoring.

(vii) Where the most recent (non-initial) exposure monitoring indicates that airborne exposure is below the action level, the employer must repeat such monitoring within six months of the most recent monitoring until two consecutive measurements, taken seven or more days apart, are below the action level, at which time the employer may discontinue 8-hour TWA exposure monitoring for those employees whose exposure is represented by such monitoring, except as otherwise provided in paragraph (d)(4) of this standard.

(viii) Where the most recent exposure monitoring indicates that airborne exposure is above the STEL, the employer must repeat such monitoring within three months of the most recent short-term exposure monitoring until two consecutive measurements, taken seven or more days apart, are below the STEL, at which time the employer may discontinue short-term exposure monitoring for those employees whose exposure is represented by such monitoring, except as otherwise provided in paragraph (d)(4) of this standard.

Purpose: OSHA recognizes that exposures in the workplace may fluctuate. Where initial exposure monitoring demonstrates exposures at or above the action level and at or below the TWA PEL, periodic monitoring helps employers identify changes in the workplace and ensure that workers do not experience exposures that are higher than expected, and facilitates the identification and use of additional control measures where necessary. In addition, periodic monitoring reminds workers and employers of the continued need to protect against the hazards associated with beryllium exposure.

§1910.1024 (d)(4) -- §1915.1024(d)(4)--§1926.1124 (d)(4) Reassessment of Exposure.

(4) The employer must reassess airborne exposure whenever a change in the production, process, control equipment, personnel, or work practices may reasonably be expected to result in new or additional airborne exposure at or above the action level or STEL, or when the employer has any reason to believe that new or additional airborne exposure at or above the action level or STEL has occurred.

Purpose: The additional assessments required under this subsection are necessary to ensure that the exposure monitoring accurately represents existing exposure conditions. The exposure information gained from such assessments will enable the employer to take appropriate action to protect exposed workers. On the other hand, additional monitoring is not required simply because a change occurs, if the change could not reasonably be expected to result in new or additional exposures to beryllium.

**§1910.1024 (d)(6)(i) & (ii) --§1915.1024 (d)(6)(i) & (ii) -- §1926.1124 (d)(6)(i) & (ii)
Employee Notification of Assessment Results.**

(i) Within 15 working days after completing an exposure assessment in accordance with paragraph (d) of this standard, the employer must notify each employee whose airborne exposure is represented by the assessment of the results of that assessment individually in writing or post the results in an appropriate location that is accessible to each of these employees.

(ii) Whenever an exposure assessment indicates that airborne exposure is above the TWA PEL or STEL, the employer must describe in the written notification the corrective action being taken to reduce airborne exposure to or below the exposure limit(s) exceeded where feasible corrective action exists but had not been implemented when the monitoring was conducted.

Purpose: Notifying workers of their exposures allows them to know if the employer is required

to make medical surveillance available to them and can permit and encourage them to be more proactive in working safely to control their own exposures through better work practices and more active participation in safety programs. The time allowed for notification is consistent with the harmonized notification times established for a number of health standards applicable to general industry, construction, and maritime.

§1910.1024 (e)(2)(i) & (ii) Demarcation of Beryllium Work Areas and Regulated Areas -- §1915.1024 (e)(2) Regulated Areas -- §1926.1124 (e)(2); Competent Person

General Industry:

(2) Demarcation. (i) The employer must identify each beryllium work area through signs or any other methods that adequately establish and inform each employee of the boundaries of each beryllium work area.

(ii) The employer must identify each regulated area in accordance with paragraph (m)(2) of this standard.

Shipyards:

(2) Demarcation. The employer must identify each regulated area in accordance with paragraph (m)(2) of this standard.

Construction:

(e) Competent Person. Wherever employees are, or can reasonably be expected to be, exposed to airborne beryllium at levels above the TWA PEL or STEL, the employer must designate a competent person to

* * *

(2) Implement the written exposure control plan under paragraph (f) of the standard.

Purpose: The purpose of a beryllium work area is to inform employees of where a beryllium process or operation can potentially result in airborne exposure, regardless of the exposure level, or dermal contact. The purpose of a regulated area is to ensure that the employer makes workers aware of the presence of beryllium at levels above the PEL, to limit exposure to as few workers as possible, and to remind employees that personal protective equipment (PPE) is required. Establishing a regulated area or written exposure control plan can help to minimize exposure to workers not directly involved in operations that generate beryllium.

OSHA is not taking burden hours or costs for the regulated-areas provisions under Items 12 and 13 of this Supporting Statement. The information collections associated with the beryllium work area requirement are performance oriented because the employer may choose how to establish boundaries for each beryllium work area and restrict access.

For the general industry and shipyards standards, paragraph (m)(2) includes a requirement to post a sign regarding the hazards in regulated areas and is addressed with the discussion of paragraph (m) later in this section.

§1910.1024 (f)(1)(i), (ii), &(iii) -- §1915.1024 (f)(1)(i),(ii), & (iii) -- §1926.1124 (f)(1)(i),(ii), & (iii) -- Methods of Compliance -- Written Exposure Control Plan.

General Industry:

(i) The employer must establish, implement, and maintain a written exposure control plan, which must contain:

- (A) A list of operations and job titles reasonably expected to involve airborne exposure to or dermal contact with beryllium;
- (B) A list of operations and job titles reasonably expected to involve airborne exposure at or above the action level;
- (C) A list of operations and job titles reasonably expected to involve airborne exposure above the TWA PEL or STEL;
- (D) Procedures for minimizing cross-contamination, including preventing the transfer of beryllium between surfaces, equipment, clothing, materials, and articles within beryllium work areas;
- (E) Procedures for keeping surfaces as free as practicable of beryllium;
- (F) Procedures for minimizing the migration of beryllium from beryllium work areas to other locations within or outside the workplace;
- (G) A list of engineering controls, work practices, and respiratory protection required by paragraph (f)(2) of this standard;
- (H) A list of personal protective clothing and equipment required by paragraph (h) of this standard; and
- (I) Procedures for removing, laundering, storing, cleaning, repairing, and disposing of beryllium-contaminated personal protective clothing and equipment, including respirators.

(ii) The employer must review and evaluate the effectiveness of each written exposure control plan at least annually and update it, as necessary, when:

- (A) Any change in production processes, materials, equipment, personnel, work practices, or control methods results, or can reasonably be expected to result, in new or additional airborne exposure to beryllium;
- (B) The employer becomes aware that an employee has a beryllium-related health effect or shows signs or symptoms associated with airborne exposure to or dermal contact with beryllium; or
- (C) The employer has any reason to believe that new or additional airborne exposure is occurring or will occur.

(iii) The employer must make a copy of the written exposure control plan accessible to each employee who is, or can reasonably be expected to be, exposed to airborne beryllium in

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accordance with OSHA's Access to Employee Exposure and Medical Records (Records Access) standard (29 CFR 1910.1020(e)).

Shipyards:

(i) The employer must establish, implement, and maintain a written exposure control plan, which must contain:

- (A) A list of operations and job titles reasonably expected to involve airborne exposure to or dermal contact with beryllium;
- (B) A list of operations and job titles reasonably expected to involve airborne exposure at or above the action level;
- (C) A list of operations and job titles reasonably expected to involve airborne exposure above the TWA PEL or STEL;
- (D) Procedures for minimizing cross-contamination;
- (E) Procedures for minimizing the migration of beryllium within or to locations outside the workplace;
- (F) A list of engineering controls, work practices, and respiratory protection required by paragraph (f)(2) of this standard;
- (G) A list of personal protective clothing and equipment required by paragraph (h) of this standard; and
- (H) Procedures for removing, laundering, storing, cleaning, repairing, and disposing of beryllium-contaminated personal protective clothing and equipment, including respirators.

(ii) The employer must review and evaluate the effectiveness of each written exposure control plan at least annually and update it, as necessary, when:

- (A) Any change in production processes, materials, equipment, personnel, work practices, or control methods results, or can reasonably be expected to result, in new or additional airborne exposure to beryllium;
- (B) The employer becomes aware that an employee has a beryllium-related health effect or shows signs or symptoms associated with airborne exposure to or dermal contact with beryllium; or
- (C) The employer has any reason to believe that new or additional airborne exposure is occurring or will occur.

(iii) The employer must make a copy of the written exposure control plan accessible to each employee who is or can reasonably be expected to be exposed to airborne beryllium in accordance with OSHA's Access to Employee Exposure and Medical Records (Records Access) standard (29 CFR 1910.1020(e)).

Construction:

(1) Written exposure control plan.

(i) The employer must establish, implement, and maintain a written exposure control plan, which

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must contain:

- (A) A list of operations and job titles reasonably expected to involve airborne exposure to or dermal contact with beryllium;
- (B) A list of operations and job titles reasonably expected to involve airborne exposure at or above the action level;
- (C) A list of operations and job titles reasonably expected to involve airborne exposure above the TWA PEL or STEL;
- (D) Procedures for minimizing cross-contamination;
- (E) Procedures for minimizing the migration of beryllium within or to locations outside the workplace;
- (F) A list of engineering controls, work practices, and respiratory protection required by paragraph (f)(2) of this standard;
- (G) A list of personal protective clothing and equipment required by paragraph (h) of this standard;
- (H) Procedures for removing, laundering, storing, cleaning, repairing, and disposing of beryllium-contaminated personal protective clothing and equipment, including respirators; and
- (I) Procedures used to restrict access to work areas when airborne exposures are, or can reasonably be expected to be, above the TWA PEL or STEL, to minimize the number of employees exposed to airborne beryllium and their level of exposure, including exposures generated by other employers or sole proprietors.

(ii) The employer must review and evaluate the effectiveness of each written exposure control plan at least annually and update it, as necessary, when:

- (A) Any change in production processes, materials, equipment, personnel, work practices, or control methods results, or can reasonably be expected to result, in new or additional airborne exposure to beryllium;
- (B) The employer becomes aware that an employee has a beryllium-related health effect or shows signs or symptoms associated with airborne exposure to or dermal contact with beryllium; or
- (C) The employer has any reason to believe that new or additional airborne exposure is occurring or will occur.

(iii) The employer must make a copy of the written exposure control plan accessible to each employee who is, or can reasonably be expected to be, exposed to airborne beryllium in accordance with OSHA's Access to Employee Exposure and Medical Records (Records Access) standard (29 CFR 1910.1020(e)).

Purpose: The purpose of the written exposure control plan is to help reduce skin contact with beryllium, which can lead to beryllium sensitization, and airborne exposure, which can lead to beryllium sensitization, CBD, and lung cancer, by restricting access to work areas, where necessary, to limit exposures and cross contamination.

§1910.1024 (g)(2) -- §1915.1024 (g) -- §1926.1124 (g)-- Respiratory protection program.

Where this standard requires an employer to provide respiratory protection, the selection and use of such respiratory protection must be in accordance with the Respiratory Protection standard (29 CFR 1910.134).

Purpose: The purpose of this requirement is to ensure that employers establish a standardized procedure for selecting, using, and maintaining respirators for each workplace that requires respirator use. Developing written procedures ensures that employers implement the required respirator program in an effective and reliable manner that addresses the unique characteristics (including chemical hazards) of the workplace.

§1910.1024 (h)(2)(v) --§1915.1024 (h)(2)(v) --§1926.1124 (h)(2)(v)* -- Personal Protective Clothing and Equipment -- Removal and Storage.

(v) When personal protective clothing or equipment required by this standard is removed from the workplace for laundering, cleaning, maintenance or disposal, the employer must ensure that personal protective clothing and equipment are stored and transported in sealed bags or other closed containers that are impermeable and are labeled in accordance with paragraph (m)(3) of this standard and the HCS (29 CFR 1910.1200).

** The construction text in §1926.1124(h)(2)(v) is identical except that it refers to paragraph (m)(2) instead of (m)(3).*

Purpose: This provision is intended reduce exposure to beryllium for employees handling beryllium-contaminated materials by requiring these materials to be stored in sealed bags or other closed containers, and by informing those handling the containers that they contain beryllium through labels describing the potentially harmful effects of beryllium exposure.

OSHA has determined the labeling requirements in paragraph (m)(3) are not collections of information since the standard provides specific language is for the labels. Information originally supplied by the Federal government to employers for the purpose of disclosing information to employees is excluded from the definition of a “collection of information.” (5 CFR 1320.3(c)(2), “Controlling paperwork burden on the public”).

§1910.1024 (h)(3)(iii) --§1915.1024 (h)(3)(iii) -- §1926.1124 (h)(3)(iii) --_Personal Protective Clothing and Equipment -- Cleaning and Replacement.

(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 airborne exposure to and dermal contact with beryllium and that the personal protective clothing and equipment must be handled in accordance with this standard.

Purpose: This provision is intended reduce exposure to beryllium for employees handling beryllium-contaminated materials by providing employers and employees handling these materials the information necessary to protect employees from beryllium exposure.

§1910.1024 (j)(3)(i), (ii) -- §1915.1024 (j)(3) --§1926.1124 (j)(3) — Housekeeping — Disposal.

General Industry:

(3) Disposal. The employer must ensure that:

(i) Materials designated for disposal that contain or are contaminated with beryllium are disposed of in sealed, impermeable enclosures, such as bags or containers, that are labeled in accordance with paragraph (m)(3) of this standard; and

(ii) Materials designated for recycling that contain or are contaminated with beryllium are cleaned to be as free as practicable of surface beryllium contamination and labeled in accordance with paragraph (m)(3) of this standard, or placed in sealed, impermeable enclosures, such as bags or containers, that are labeled in accordance with paragraph (m)(3) of this standard.

Shipyards and Construction:*

(3) Disposal. When the employer transfers materials containing beryllium to another party for use or disposal, the employer must provide the recipient with a copy of the warning described in paragraph (m)(3) of this standard.

** The construction text in §1926.1124(j)(3) is identical except that it refers to paragraph (m)(2) instead of (m)(3).*

Purpose: This provision is intended to reduce exposure to beryllium for employees handling beryllium-contaminated materials by requiring these materials to be stored in sealed containers, and warn employers and employees handling the containers of the potentially harmful effects of the beryllium inside those containers to facilitate proper handling and disposal of that material.

OSHA is not taking burden hours or costs for the housekeeping provisions under Items 12 or 13 of this Supporting Statement. Because paragraph (m)(3) of the general industry and shipyard standards, and paragraph (m)(2) of the construction standard, provide specific language for the required warning, they are not collections of information under 5 CFR 1320.3(c)(2) (“Controlling paperwork burden on the public”) and the Agency is exempted from taking burden hours and costs of this provision.

§1910.1024 (k)(1), (2), and (3) -- §1915.1024 (k)(1), (2), and (3) -- §1926.1124 (k)(1), (2), and (3) -- Medical Surveillance.

(1) General.

(i) The employer must make medical surveillance required by this paragraph available at no cost to the employee, and at a reasonable time and place, to each employee:

(A) Who is or is reasonably expected to be exposed at or above the action level for more than 30 days per year;

- (B) Who shows signs or symptoms of CBD or other beryllium-related health effects;
- (C) Who is exposed to beryllium during an emergency; or
- (D) Whose most recent written medical opinion required by paragraph (k)(6) or (k)(7) recommends periodic medical surveillance.

(ii) The employer must ensure that all medical examinations and procedures required by this standard are performed by, or under the direction of, a licensed physician.

(2) Frequency.

The employer must provide a medical examination:

(i) Within 30 days after determining that:

- (A) An employee meets the criteria of paragraph (k)(1)(i)(A), unless the employee has received a medical examination, provided in accordance with this standard, within the last two years; or
- (B) An employee meets the criteria of paragraph (k)(1)(i)(B) or (C).

(ii) At least every two years thereafter for each employee who continues to meet the criteria of paragraph (k)(1)(i)(A), (B), or (D) 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.

(3) Contents of examination.

(i) The employer must ensure that the PLHCP conducting the examination advises the employee of the risks and benefits of participating in the medical surveillance program and the employee's right to opt out of any or all parts of the medical examination.

(ii) The employer must ensure that the employee is offered a medical examination that includes:

- (A) A medical and work history, with emphasis on past and present airborne exposure to or dermal contact with beryllium, smoking history, and any history of respiratory system dysfunction;
- (B) A physical examination with emphasis on the respiratory system;
- (C) A physical examination for skin rashes;
- (D) Pulmonary function tests, performed in accordance with the guidelines established by the American Thoracic Society including forced vital capacity (FVC) and forced expiratory volume in one second (FEV₁);
- (E) A standardized BeLPT or equivalent test, upon the first examination and at least every two years thereafter, unless the employee is confirmed positive. If the results of the BeLPT are other than normal, a follow-up BeLPT must be offered within 30 days, unless the employee has been confirmed positive. Samples must be analyzed in a laboratory

certified under the College of American Pathologists/Clinical Laboratory Improvement Amendments (CLIA) guidelines to perform the BeLPT.

(F) A low dose computed tomography (LDCT) scan, when recommended by the PLHCP after considering the employee's history of exposure to beryllium along with other risk factors, such as smoking history, family medical history, sex, age, and presence of existing lung disease; and

(G) Any other test deemed appropriate by the PLHCP.

Purpose: The initial medical examination serves to identify workers who have beryllium-related medical diseases or other health problems that additional beryllium exposure may exacerbate. The final requirement that employers offer employees a medical examination within 30 days after determining that the employee is or is reasonably expected to be exposed at or above the action level for more than 30 days a year would help employers determine if an employee will be able to work in the job involving beryllium exposure without increased risk of adverse health effects.

The general purposes of the medical surveillance provisions for beryllium include: to determine, when reasonably possible, if an individual worker is at increased risk for adverse health effects with continued exposure to beryllium; to identify beryllium-related adverse health effects for the purpose of taking appropriate intervention measures; and to determine workers' fitness to use personal protective equipment, such as respirators.

The requirement is consistent with Section 6(b)(7) of the OSH Act (29 U.S.C. 655(b)(7)), which requires that, when appropriate, OSHA include medical surveillance programs in its standards to determine whether exposure to the hazard addressed by the final standard adversely affects the health of workers.

§1910.1024 (k)(4) -- §1915.1024 (k)(4) -- §1926.1124 (k)(4) -- Medical Surveillance -- Information Provided to the PLHCP.

(4) The employer must ensure that the examining PLHCP (and the agreed-upon CBD diagnostic center, if an evaluation is required under paragraph (k)(7) of this standard) has a copy of this standard and must provide the following information, if known:

(i) A description of the employee's former and current duties that relate to the employee's airborne exposure to and dermal contact with beryllium;

(ii) The employee's former and current levels of airborne exposure;

(iii) A description of any personal protective clothing and equipment, including respirators, used by the employee, including when and for how long the employee has used that personal protective clothing and equipment; and

(iv) Information from records of employment-related medical examinations previously provided to the employee, currently within the control of the employer, after obtaining written consent

from the employee.

Purpose: This information will help the PLHCP and CBD diagnostic center evaluate employees' health as it relates to their assigned duties and fitness to use personal protective equipment, including respirators, when needed. Providing the PLHCP and CBD diagnostic center with exposure monitoring results, as required under paragraph (k)(4)(ii), will assist them in determining if an employee is likely to be at risk of adverse effects from airborne beryllium exposure at work. A well-documented exposure history would also assist the PLCHP in determining if a condition may be related to beryllium exposure.

§1910.1024 (k)(5)(i), (ii), & (iii) -- §1915.1024 (k)(5)(i), (ii), and (iii) -- §1926.1124 (k)(5)(i), (ii), and (iii) -- Medical Surveillance-- Licensed Physician's Written Medical Report for the Employee.

(5) The employer must ensure that the employee receives a written medical report from the licensed physician within 45 days of the examination (including any follow-up BeLPT required under paragraph (k)(3)(ii)(E) of this standard) and that the PLHCP explains the results of the examination to the employee. The written medical report must contain:

- (i) A statement indicating the results of the medical examination, including the licensed physician's opinion as to whether the employee has
 - (A) Any detected medical condition, such as CBD or beryllium sensitization (i.e., the employee is confirmed positive, as defined in paragraph (b) of this standard), that may place the employee at increased risk from further airborne exposure, and
 - (B) Any medical conditions related to airborne exposure that require further evaluation or treatment.
- (ii) Any recommendations on:
 - (A) The employee's use of respirators, protective clothing, or equipment; or
 - (B) Limitations on the employee's airborne exposure to beryllium.
- (iii) If the employee is confirmed positive or diagnosed with CBD or if the licensed physician otherwise deems it appropriate, the written report must also contain a referral for an evaluation at a CBD diagnostic center.
- (iv) If the employee is confirmed positive or diagnosed with CBD the written report must also contain a recommendation for continued periodic medical surveillance.
- (v) If the employee is confirmed positive or diagnosed with CBD the written report must also contain a recommendation for medical removal from airborne exposure to beryllium, as described in paragraph (l).

Note: The preparation of the report is accounted for under Item 13, cost to the employer for an employee's medical examination.

Purpose: The rule requires that only the employee receive a written medical report that includes

detailed medical information. By providing the licensed physician's written medical report to employees, those who might be at increased risk of health impairment from airborne beryllium exposure will be able to consider interventions (i.e., health management strategies) with guidance from the licensed physician. Such strategies might include employment choices to limit airborne exposures or to use a respirator for additional protection.

The requirement for a written medical report ensures that the employee receives a record of all findings. Employees would also be able to provide the written medical report to future health care providers.

**§1910.1024 (k)(6) --§1915.1024 (k)(6) --§1926.1124 (k)(6) -- Medical Surveillance--
Licensed Physician's Written Medical Opinion for the Employer.**

- (i) The employer must obtain a written medical opinion from the licensed physician within 45 days of the medical examination (including any follow-up BeLPT required under paragraph (k)(3)(ii)(E) of this standard). The written medical opinion must contain only the following:
 - (A) The date of the examination;
 - (B) A statement that the examination has met the requirements of this standard;
 - (C) Any recommended limitations on the employee's use of respirators, protective clothing, or equipment; and
 - (D) A statement that the PLHCP has explained the results of the medical examination to the employee, including any tests conducted, any medical conditions related to airborne exposure that require further evaluation or treatment, and any special provisions for use of personal protective clothing or equipment;
- (ii) If the employee provides written authorization, the written opinion must also contain any recommended limitations on the employee's airborne exposure to beryllium.
- (iii) If the employee is confirmed positive or diagnosed with CBD or if the licensed physician otherwise deems it appropriate, and the employee provides written authorization, the written opinion must also contain a referral for an evaluation at a CBD diagnostic center.
- (iv) If the employee is confirmed positive or diagnosed with CBD and the employee provides written authorization, the written opinion must also contain a recommendation for continued periodic medical surveillance.
- (v) If the employee is confirmed positive or diagnosed with CBD and the employee provides written authorization, the written opinion must also contain a recommendation for medical removal from airborne exposure to beryllium, as described in paragraph (l).
- (vi) The employer must ensure that each employee receives a copy of the written medical opinion described in paragraph (k)(6) of this standard within 45 days of any medical examination (including any follow-up BeLPT required under paragraph (k)(3)(ii)(E) of this standard)

performed for that employee.

Purpose: In response to commenters' concerns about employee privacy, the written medical opinion in the final rule contains information that allows employers to protect employee health, such as recommended limitations on the employee's use of respirators, while at the same time protecting employee privacy as much as possible by allowing certain information to be included only with the employee's written authorization. The date of the examination and a statement about the examination meeting the requirements of this standard are also included to provide the employer with evidence that compliance with the medical surveillance requirements are current.

The employer must obtain the written opinion within 45 days of the examination; OSHA believes this requirement will provide the licensed physician sufficient time to receive and consider the results of any tests included in the examination, including a follow-up BeLPT, and allow the employer to take any necessary protective measures in a timely manner. The final requirement that the opinion be in written form would ensure that employers and workers have the benefit of this information. The final standard requires the employer to ensure that the worker gets a copy of the licensed physician's written medical opinion within 45 days of the medical examination. This will allow workers to present it as proof of a current medical examination to future employers.

§1910.1024 (k)(7) --§ 1915.1024 (k)(7) --§1926.1124 (k)(7) -- Medical Surveillance-- Referral to the CBD Diagnostic Center.

(7) CBD diagnostic center. (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 examination must be provided within 30 days of:

- (A) The employer's receipt of a physician's written medical opinion to the employer that recommends referral to a CBD diagnostic center; or
- (B) The employee presenting to the employer a physician's written medical report indicating that the employee has been confirmed positive or diagnosed with CBD, or recommending referral to a CBD diagnostic center.

(ii) 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) and that the PLHCP explains the results of the examination to the employee within 30 days of the examination.

(iii) 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 paragraphs (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.

(iv) 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.

Purpose: The referral to the CBD diagnostic center for additional medical examination serves to identify workers who have beryllium-related medical disorders or other health problems that could be exacerbated by additional beryllium exposure. The referral will also help to determine if that employee will be able to work in the job involving beryllium exposure without increased risk of adverse health effects.

The general purposes of the medical surveillance provisions for beryllium include: to determine, when reasonably possible, if an individual worker is at increased risk for adverse health effects with continued exposure to beryllium; to identify beryllium-related adverse health effects for the purpose of taking appropriate intervention measures; and to determine workers' fitness to use personal protective equipment, such as respirators.

The requirement is consistent with Section 6(b)(7) of the OSH Act (29 U.S.C. 655(b)(7)), which requires that, when appropriate, OSHA include medical surveillance programs in its standards to determine whether exposure to the hazard addressed by the final standard adversely affects the health of workers.

§1910.1024 (l)(1) and (l)(2) -- §1915.1024 (l)(1) and (l)(2) -- §1926.1124 (l)(1) and (l)(2) --

Medical removal.

(1) An employee is eligible for medical removal, if the employee works in a job with airborne exposure at or above the action level and either:

(i) The employee provides the employer with:

(A) A written medical report indicating a confirmed positive finding or CBD diagnosis; or

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

(2) If an employee is eligible for medical removal, the employer must provide the employee with the employee's choice of:

(i) Removal as described in paragraph (l)(3) of this standard; or

(ii) Remaining in a job with airborne exposure at or above the action level, provided that the employer provides, and ensures that the employee uses, respiratory protection that complies with paragraph (g) of this standard whenever airborne exposures are at or above the action level.

Purpose: The purpose of these provisions is to provide an option for medical removal of workers in jobs with airborne exposure to beryllium at or above the action level and who are diagnosed with CBD, confirmed positive, or otherwise recommended for removal by a physician. The medical removal provision is structured to allow the employee to retain discretion over whether the employer is informed of the employee's illness or diagnosis, so the purpose of the requirement for the employer's receipt of documentation is to trigger the removal requirements while ensuring the employer has notice.

§1910.1024 (m)(1) --§1915.1024 (m)(1) -- §1926.1124 (m) (1) -- Communication of hazards.

(1) General. (i) Chemical manufacturers, importers, distributors, and employers must comply with all requirements of the HCS (29 CFR 1910.1200) for beryllium.

(ii) Employers must include beryllium in the hazard communication program established to comply with the HCS. Employers must ensure that each employee has access to labels on containers of beryllium and to safety data sheets, and is trained in accordance with the requirements of the HCS (29 CFR 1910.1200) and paragraph (m)(4) of this standard.²

Purpose: The purpose of ensuring that each employee has training and access to labels and safety sheets is to enable workers and downstream employers to take the precautions necessary to implement special practices to prevent or reduce beryllium exposure. Requirements that employers provide training to workers, both in this provision and elsewhere such as in paragraph (m)(3), are not collections of information.

§1910.1024(m)(2) -- §1915.1024(m)(2) – Warning Signs

(2) Warning signs. (i) Posting. The employer must provide and display warning signs at each approach to a regulated area so that each employee is able to read and understand the signs and take necessary protective steps before entering the area.

(ii) Sign specification.

(A) The employer must ensure that the warning signs required by paragraph (m)(2)(i) of this standard are legible and readily visible.

(B) The employer must ensure each warning sign required by paragraph (m)(2)(i) of this standard bears the following legend:

DANGER

REGULATED AREA

² The Agency accounts for the burden hours and costs associated with compliance with the HCS, such as the development of a hazard communication program, under the Information Collection Request (ICR) for the HCS. OMB Control No. 1218-0072.

BERYLLIUM

MAY CAUSE CANCER

CAUSES DAMAGE TO LUNGS

AUTHORIZED PERSONNEL ONLY

**WEAR RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING AND
EQUIPMENT IN THIS AREA**

Purpose: Posting warning signs informs workers that they are entering a regulated area, and that they must have proper authorization before entering such an area. Warning signs allow workers and others to take the precautions necessary to avoid harmful beryllium exposures.

Under PRA, information originally supplied by the Federal government to the recipient for the purpose of disclosure to the public is not considered to be a collection of information (5 CFR 1320.3(c)(2)). The Agency had determined that §1915.1024(m)(2) warning signs is not a collection of information.

§1910.1024(m)(3) --§ 1915.1024(m)(3) --§ 1926.1124(m)(2) – Warning labels

Warning labels. Consistent with the HCS (29 CFR 1910.1200), the employer must label each bag and 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

Purpose: Warning labels inform workers and downstream employers of the hazards associated with beryllium, and that they may need to implement special practices to prevent or reduce beryllium exposure. Furthermore, the labels alert downstream employers that they may have an obligation to protect their workers under the standard.

BERYLLIUM STANDARD FOR GENERAL INDUSTRY (29 CFR 1910.1024),
CONSTRUCTION (29 CFR 1926.1124) AND MARITIME (29 CFR 1915.1024)
1218-0267
January 2017

As noted in §1915.1024(m)(2), information originally supplied by the Federal government to the recipient for the purpose of disclosure to the public is not considered to be a collection of information (5 CFR 1320.3(c)(2)). The Agency has determined 1910.1024(m)(3) -- §1915.1024(m)(3) -- §1926.1124(m)(2) -- warning labels are not collections of information.

§1910.1024(m)(4)(iv) -- §1915.1024(m)(4)(iv) -- §1926.1124(m)(3)(iv) – Employee Information

(iv) Employee Information. The employer must make a copy of this standard and its appendices readily available at no cost to each employee and designated employee representative(s).

Purpose: The purpose of the requirement to make a copy of the standard available to employees is to ensure that employees are aware of their employer's obligations under the standard and to assist employees in recognizing, and protecting against, the hazards of beryllium. OSHA considers the requirement to make a copy of the Standard and its appendices available to workers to be a public disclosure of information originally supplied by the Federal government to the employer for the purpose of disclosure to the public, and thus not a collection of information pursuant to 5 CFR 1320.3(c)(2). Therefore, OSHA is taking no burden hours or cost for this requirement.

§1910.1024 (n) -- §1915.1024 (n) -- §1926.1124 (n) -- Recordkeeping.

§1910.1024 (n)(1)(i), (ii), & (iii) -- §1915.1024 (n)(1)(i), (ii), & (iii) -- §1926.1124 (n)(i), (ii), & (iii) -- Recordkeeping -- Air Monitoring Data.

(i) The employer must make and maintain a record of all exposure measurements taken to assess airborne exposure as prescribed in paragraph (d) of this standard.

(ii) This record must include at least the following information:

- (A) The date of measurement for each sample taken;
- (B) The task that is being monitored;
- (C) The sampling and analytical methods used and evidence of their accuracy;
- (D) The number, duration, and results of samples taken;
- (E) The type of personal protective clothing and equipment, including respirators, worn by monitored employees at the time of monitoring; and
- (F) The name, social security number, and job classification of each employee represented by the monitoring, indicating which employees were actually monitored.

(iii) The employer must ensure that exposure records are maintained and made available in accordance with the Records Access standard (29 CFR 1910.1020).

§1910.1024 (n)(2)(i), (ii), & (iii) -- §1915.1024 (n)(2)(i), (ii), & (iii) -- §1926.1124 (n)(2) (i), (ii), & (iii) -- Recordkeeping -- Objective Data.

(i) Where an employer uses objective data to satisfy the exposure assessment requirements under paragraph (d)(2) of this standard, the employer must make and maintain a record of the objective data relied upon.

(ii) This record must include at least the following information:

- (A) The data relied upon;
- (B) The beryllium-containing material in question;
- (C) The source of the objective data;
- (D) A description of the process, task, or activity on which the objective data were based; and
- (E) Other data relevant to the process, task, activity, material, or airborne exposure on which the objective data were based.

(iii) The employer must ensure that objective data are maintained and made available in accordance with the Records Access standard (29 CFR 1910.1020).

Purpose: These exposure records are necessary and appropriate for protection of worker health, enforcement of the final standard, and development of information regarding the causes and prevention of occupational illnesses. Also, the Agency and others can use the records to identify illnesses and deaths that may be attributable to beryllium exposure, evaluate compliance programs, and assess the efficacy of the final standard. Establishing and maintaining records of air-monitoring data permit employers, workers, OSHA, and other interested parties (i.e., industry trade associations and worker unions, or comparable organizations) to identify the levels, durations, and extent of beryllium exposure, determine if existing controls are protecting workers or whether additional controls are necessary to provide the required protection, and assess the relationship between beryllium exposure and the subsequent development of diseases. These records also allow OSHA to ascertain whether employers are complying with the final standard, thereby ensuring that workers are receiving adequate protection from beryllium exposure.

§1910.1024 (n)(3) (i), (ii), & (iii) -- §1915.1024 (n)(3)(i),(ii),&(iii) -- §1926.1124 (n)(3) (i), (ii), & (iii)-- Recordkeeping-- Medical Surveillance.

(i) The employer must make and maintain a record for each employee covered by medical surveillance under paragraph (k) of this standard.

(ii) The record must include the following information about the employee:

- (A) Name, social security number, and job classification;
- (B) A copy of all licensed physicians' written medical opinions for each employee; and
- (C) A copy of the information provided to the PLHCP as required by paragraph (k) (4) of this standard.

(iii) The employer must ensure that medical records are maintained made available in accordance with the Records Access standard (29 CFR 1910.1020).

Purpose: These medical-surveillance records, like exposure records, are necessary and appropriate for protection of worker health, enforcement of the Standards, and development of information regarding the causes and prevention of occupational illnesses. Worker access to medical-surveillance records helps protect workers because such records contribute to the evaluation of workers' health and enable workers and their healthcare providers to make informed health care decisions. Furthermore, the employer can evaluate medical-surveillance data they receive for indications that workplace conditions are associated with increased risk of beryllium-related illnesses, and take appropriate corrective actions. Finally, the Agency and others can use medical surveillance records to identify illnesses and deaths that may be attributable to respirable beryllium exposure, evaluate compliance programs, and assess the efficacy of the Standards.

The proposal is consistent with Section 6(b)(7) of the OSH Act (29 U.S.C. 655(b)(7)), which requires that, when appropriate, OSHA include medical-surveillance programs in its standards to determine whether exposure to the hazard addressed by the standard adversely affects the health of workers.

**§1910.1024 (n)(4)(i) & (ii) -- §1915.1024 (n)(4)(i)&(ii) --§1926.1124 (n)(4)(i) &(ii) --
Recordkeeping -- Training.**

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

(ii) This record must be maintained for three years after the completion of training.

Purpose: The creation and maintenance of the training records will permit both OSHA and employers to ensure that required training has occurred on schedule.

**§1910.1024 (n)(5) --§1915.1024 (n)(5) -- §1926.1124 (n)(5) -- Recordkeeping --Employee
Access to Records.**

(5) Access to records. Upon request, the employer must make all records maintained as a requirement of this standard available for examination and copying to the Assistant Secretary, the Director, each employee, and each employee's designated representative(s) in accordance the Records Access standard (29 CFR 1910.1020).

Purpose: OSHA is requiring access to the records to ensure enforcement of the Standards and to assist employees and their representatives in the development of information regarding the causes and prevention of occupational illnesses.

§1910.1024 (n)(6) --§ 1915.1024 (n)(6) -- §1926.1124 (n)(6) -- Recordkeeping -- Transfer of Records.

(6) Transfer of records. The employer must comply with the requirements involving transfer of records set forth in the Records Access standard (29 CFR 1910.1020).

Paragraph (h) of § 1910.1020 requires employers who cease to do business to transfer medical and exposure-monitoring records to the successor employer, who then must receive and maintain the records. If no successor employer is available, the employer must, at least three months before ceasing business, notify current workers who have records of their right to access these records.

Purpose: OSHA considers the employer's transfer of records to a successor employer to be usual and customary communications during the transition from one employer to a successor employer, and is not taking any burden or cost for this provision in Item 12. In this regard, the employer would communicate the location of all records, including employee exposure-monitoring and medical records, at the facility to the successor employer during the transfer of business operations, as a matter of usual and customary business practice.

3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g., permitting electronic submission of responses, and the basis for the decision for adopting this means of collection. Also, describe any consideration of using information technology to reduce the burden.

Employers may use improved information technology when establishing and maintaining the required records. The Agency wrote the paperwork requirements of the proposed standard in performance-oriented language, i.e., in terms of what data to collect, not how to record the data.

4. Describe efforts to identify duplication. Show specifically why any similar information already available cannot be used or modified for use of the purposes described in Item 2 above.

The information collection requirements of the proposed standard are specific to each employer and worker involved, and no other source or agency duplicates these requirements or can make the required information available to the Agency (i.e., the required information is available only from employers).

5. If the collection of information impacts small businesses or other small entities, describe any methods used to minimize burden.

As part of the 2007 Small Business Regulatory Enforcement Fairness Act (SBREFA) panel process, the SBREFA Panel recommended that OSHA analyze a PEL-only standard as a regulatory alternative. The Panel also recommended that OSHA consider applying ancillary provisions of the proposed standard so as to minimize costs for small businesses where exposure levels are low (*Small Business Advisory Review (SBAR) Panel Report with Appendices A, B, and*

*D. Final Version*³.) OSHA solicited public comments on all relevant issues, including health effects, risk assessment, significance of risk, technological and economic feasibility, and the provisions of the proposed regulatory text.

Medical surveillance was a subject of special concern to small entity representatives (SERs) during the SBREFA process, and the SBREFA Panel offered many comments and recommendations related to medical surveillance for OSHA's consideration. Table IX-30 of the Preamble to the Final Rule addresses the SBAR Panel recommendations and OSHA's response to those recommendations. OSHA seeks to ensure that the requirements of the final standard offer workers adequate medical surveillance while limiting the costs to employers.

6. Describe the consequences to Federal program or policy activities if the collection is not conducted or is conducted less frequently, as well as any technical or legal obstacles to reducing burden.

The information collection frequencies specified by the final standard are the minimum frequencies that the Agency believes are necessary to ensure that employers and OSHA can effectively monitor the exposure and health status of workers, thereby preventing serious illness or death resulting from hazardous exposure to beryllium.

7. Explain any special circumstances that would cause an information collection to be conducted in a manner:

- **Requiring respondents to report information to the agency more often than quarterly;**
- **Requiring respondents to prepare a written response to a collection of information in fewer than 30 days after receipt of it;**
- **Requiring respondents to submit more than an original and two copies of any document;**
- **Requiring respondents to retain records, other than health, medical, government contract, grant-in-aid, or tax records, for more than three years;**
- **In connection with a statistical survey, that is not designed to produce valid and reliable results that can be generalized to the universe of study;**
- **Requiring the use of a statistical data classification that has not been approved by OMB;**
- **That includes a pledge of confidentiality that is not supported by authority established in statute or regulation, that is not supported by disclosure and data security policies that are consistent with the pledge, or which unnecessarily impedes sharing of data with other agencies for compatible confidential use; or**

³ <https://www.regulations.gov/searchResults?rpp=25&po=0&s=OSHA-H005C-2006-0870-0345&fp=true&ns=true>

- **Requiring respondents to submit proprietary trade secret, or other confidential information unless the agency can demonstrate that it has instituted procedures to protect the information's confidentiality to the extent permitted by law.**

Under paragraph (d)(6) of the final standard, employers must inform workers, in writing or by posting, of the exposure-assessment results no later than 15 working days after obtaining the results. If these results indicate that a worker's exposures are above the PEL, the notification must state what corrective actions the employer is taking to reduce the worker's exposure to or below the PEL.

8. If applicable, provide a copy and identify the data and page number of publication in the Federal Register of the agency's notice, required by 5 CFR 1320.8(d), soliciting comments on the information collection prior to submission to OMB. Summarize public comments received in response to that notice and describe actions taken by the agency in response to these comments. Specifically address comments received on cost and hour burden.

Describe efforts to consult with persons outside the agency to obtain their views on the availability of data, frequency of collection, the clarity of instructions and recordkeeping, disclosure, or reporting format (if any), and on the data elements to be recorded, disclosed, or reported.

Consultation with representatives of those from whom information is to be obtained or those who must compile records should occur at least once every three years -- even if the collection of information activity is the same as in prior periods. There may be circumstances that may preclude consultation in a specific situation. These circumstances should be explained.

The final Beryllium Standards (29 CFR 1910.1024; 29 CFR 1915.1024; and 29 CFR 1926.1124) contain collections of information that are subject to review by the Office of Management and Budget (OMB). In accordance with the requirements of the Paperwork Reduction Act (PRA) (44 U.S.C. 3506(c)(2)), the proposed rule solicited comments on the collections of information included in the proposal (80 FR 47566; August 7, 2015). The Department also submitted an information collection request (ICR), titled "Beryllium Standard for General Industry to OMB for review in accordance with 44 U.S.C. 3507(d) on August 7, 2015, the same date the proposed rule was published.

On October 21, 2015, OMB informed the Department of Labor to use OMB Control Number 1218-0267 in future paperwork submissions involving this rulemaking. OMB also commented, "OMB is withholding approval at this time. Prior to publication of the final rule, the agency should provide a summary of any comments related to the information collection and their response, including any changes made to the ICR as a result of comments. In addition, the agency must enter the correct burden estimates." (see: <https://www.reginfo.gov/public/do/DownloadNOA?requestID=266209>).

Although OSHA received no public comments on the Beryllium Standard ICR for the proposed rule, it did receive a number of comments responding to the Notice of Proposed Rulemaking. Some of the comments received contained information relevant to the burden hour and costs analysis that OSHA considered when it developed the revised ICR associated with this final rule.

The major comments directed to the subjects addressed in the ICR are list in Attachments A of this Supporting Statement Summary of Major Changes from Proposal to Final Rule. Below is a summary of the collection of information requirements contained in the final rule, and a description of the most significant changes between the proposal and the final rule portions of the regulatory text containing collection of information requirements. One of the most significant changes between the NPRM and this final rule is that OSHA extended the scope of the rule so that the most of the provisions now also apply to construction and shipyard work. As a result, while most of the provisions are identical across all three standards (general industry, construction, and shipyards), there are technically more collections of information. However, for purposes of the review and explanation that follows, OSHA has focused on the changes to the general industry provisions and has not separately identified the additions to the construction and shipyard standard unless they deviate from the requirements in the general industry standard. A more detailed discussion of all the changes made to the proposed rule, including the requirements that include identified collection of information requirements, are in Section XVIII: Summary and Explanation of the Final's Collections of Information. The impact on information collections is also discussed in more detail in Item 8 of the ICR.

Exposure Assessment

Proposed paragraph (d) used the term “Exposure monitoring.” In the final rule, this term was revised to “Exposure assessment” and used throughout the paragraph. This change was made to align the provision’s purpose with the broader concept of exposure assessment beyond conducting air monitoring, including the use of objective data. OSHA did not receive comment on the change in terminology.

1910.1024(d)(2) --§ 1915.1024(d)(2)--§ 1926.1124 (d)(2) Performance Option.

Proposed paragraph (d)(2) set forth initial exposure monitoring requirements and the circumstances under which employers do not need to conduct initial exposure monitoring. In the proposal, employers did not have to conduct initial exposure monitoring if they relied on historical data or objective data. The proposal also set forth requirements for the sufficiency of any historical data or objective data used to satisfy proposed paragraph (d)(2). OSHA decided to remove this provision from the final rule as part of the change to allow employers to choose between the scheduled monitoring option and the performance option for all exposure assessment.

Paragraph (d)(2) of the final standards for general industry, construction, and shipyards describe the exposure assessment performance option. When the employer elects the performance option, the employer must initially conduct the exposure assessment and must demonstrate that employee exposures have been accurately characterized. As evident in final paragraph (d)(3), OSHA considers exposures to be accurately characterized when they reflect the exposures of employees on each shift, for each job classification, in each work area. OSHA included this option because it provides employers flexibility to assess the 8-hour TWA and the 15-minute short term exposure for each employee on the basis of any combination of air monitoring data or

objective data sufficient to accurately characterize employee exposures to beryllium. The performance option is intended to allow employers flexibility in assessing the beryllium exposures of their employees.

§1910.1024 (d)(3), §1915.1024(d)(3), §1926.1124 (d)(3)(i), (ii) & (iii) Scheduled Monitoring Option.

Proposed paragraph (d)(3) would have required periodic monitoring at least annually if initial exposure monitoring indicated that exposures were at or above the action level and at or below the TWA PEL. The proposal did not require periodic exposure monitoring if initial monitoring indicated that exposures were below the action level or above the TWA PEL. During the hearings, Peggy Mroz with NJH testified that periodic monitoring conducted at least every 180 days when exposures are at or above the action level is “the most protective for workers” (Document ID 1756, Tr. 99-100). Both NIOSH and NJH recommended more frequent monitoring for employers to fully understand levels of exposure that may vary over time and to assess whether proper controls are in place after a high exposure level is documented (Document ID 1725, p. 29; 1720, p. 5). In contrast, Ameren agreed with the proposal’s requirement to conduct monitoring annually if exposures are at or above the action level, because the proposal already requires additional monitoring when work conditions change (Document ID 1675, p. 4).

OSHA was persuaded by the commenters recommending more frequent periodic monitoring and has changed the frequency required for exposures between the action level and the TWA PEL in the scheduled monitoring option in the final standards, as well as adding monitoring where exposures exceed the TWA PEL, for the scheduled monitoring option. Paragraph (d)(3)(v) of the final rule requires monitoring every six months if recent exposure monitoring indicates that exposures are at or above the action level but at or below the TWA PEL, and paragraph (d)(3) (vi) requires monitoring every three months if recent exposure monitoring indicates that exposures is above the TWA PEL.

§1910.1024 (d)(4) -- §1915.1024(d)(4) --§1926.1124 (d)(4) Reassessment of Exposure.

Proposed paragraph (d)(4) would have required employers to conduct exposure monitoring within 30 days after a change in production processes, equipment, materials, personnel, work practices, or control methods that could reasonably be expected to result in new or additional exposures. Commenters generally advocated for monitoring to assess any new exposures. NJH commented that “periodic sampling, even of low exposure potential tasks, ensures that despite changes in processes, personnel, exhaust systems, and other control measures, the exposure remains low and workers remain safe” (Document ID 1664, p. 6).

The Agency has decided to retain the requirement of proposed paragraph (d)(4) that employers reassess exposures, but has made minor changes to the regulatory text. OSHA has changed the title “Additional Monitoring” in proposed paragraph (d)(4) to “Reassessment of exposures” in paragraph (d)(4) of the final standards to be consistent with the change in paragraph (d) terminology from “exposure monitoring” to “exposure assessment.”

OSHA has also changed the proposed requirement that employers conduct exposure monitoring within 30 days after a change in “production processes, equipment, materials, personnel, work practices, or control methods” that could reasonably be expected to result in new or additional exposures. The final rule requires that employers must perform reassessment of exposures when there is a change in “production, process, control equipment, personnel, or work practices” that may reasonably be expected to result in new or additional exposures at or above the action level or STEL. OSHA made these changes to provide clarity and consistency with other OSHA health standards.

Beryllium exposure occurs in the construction and shipyard industries primarily during abrasive blasting operations that use coal and copper slags containing trace amounts of beryllium (Document ID 1815, Attachment 85, pp. 70-72; 0767, p. 6). Reassessment of exposures will also be required when a shipyard or construction employer introduces a new beryllium-containing slag for use in an abrasive blasting operation. Once reassessment of exposures is performed and if exposures are above the action level, TWA PEL, or STEL, the employer can take appropriate action to protect exposed employees and must perform periodic monitoring as discussed above.

§1910.1024 (d)(6)(i)&(ii) -- §1915.1024 (d)(6)(i) & (ii) -- §1926.1124 (d)(6)(i) & (ii) Employee Notification of Assessment Results.

Proposed paragraph (d)(5)(i) is now paragraph (d)(6)(i) in the final rule. Proposed paragraph (d)(5)(i) required employers to notify each employee of his or her monitoring results within 15 working days after receiving the results of any exposure monitoring. Both the employees whose exposures were measured directly and those whose exposures were represented by the monitoring had to be notified. The employer had to notify each employee individually in writing or post the monitoring results in an appropriate location accessible to all employees required to be notified. This can be in print or electronically as long as the affected employees have access to the information and have been informed of the posting location.

Proposed paragraph (d)(5)(i), paragraph (d)(6)(i) in the final rule, and has been edited to reflect the change in language from “exposure monitoring” to “exposure assessment.” Final paragraph (d)(6)(i) is substantively unchanged from the proposal, and similar provisions are included in the final standards for construction and shipyards.

Proposed paragraph (d)(5)(ii) required that, whenever exposures exceeded the TWA PEL or STEL, the written notification required by proposed paragraph (d)(5)(i) include: suspected or known sources of exposure, and a description of the corrective action(s) that have been taken or will be taken by the employer to reduce the employee’s exposure to or below the TWA PEL or STEL where feasible corrective action exists but was not implemented at the time of the monitoring. OSHA did not receive comment on this specific provision, and after reviewing the record, including comments supporting paragraph (d), OSHA has decided to retain a notification requirement focused on individual exposure assessments and the corrective actions being taken for exposures above the PEL or STEL. In order to provide consistency with other OSHA health

standards, OSHA has removed the requirement in proposed paragraph (d)(5)(ii) that employers include suspected or known sources of exposure in the written notification. Proposed paragraph (d)(5)(ii), as revised, is now paragraph (d)(6)(ii) in the final standards.

§1910.1024 (e)(2)(i) & (ii) Demarcation of Beryllium Work Areas and Regulated Areas -- §1915.1024 (e)(2) Regulated Areas -- §1926.1124 (e)(2); Competent Person

Proposed paragraph (e)(2) included the requirements for the demarcation of beryllium work areas and regulated areas. Under proposed paragraph (e)(2)(i), employers were required to identify each beryllium work area through signs or any other methods that adequately establish and inform each employee of the boundaries of each beryllium work area. OSHA explained that the demarcation must effectively alert workers and other persons that airborne beryllium may be present. Proposed paragraph (e)(2)(ii) required employers to demarcate each regulated area in accordance with the paragraph (m)(2) hazard communication provisions of this standard.

Final paragraph (e) of the standards for general industry and shipyards sets forth the requirements for establishing, maintaining, demarcating, and limiting access to certain areas of the workplace to aid in minimizing employee exposure to beryllium. The general industry standard includes requirements for both "beryllium work areas" and "regulated areas." The shipyard standard includes requirements for regulated areas, but not for beryllium work areas.

Paragraph (e) of the construction standard does not require either beryllium work areas or regulated areas, but instead includes requirements for a "competent person," who has responsibility for demarcating certain areas of beryllium exposure for similar purposes.

Paragraph (e)(2)(i) requires that beryllium work areas be identified through signs or any other methods that adequately establish and inform each employee of the boundaries of each beryllium work area. OSHA believes this requirement is performance-oriented and does not take burden hours or costs for the demarcating a beryllium work area. OSHA believes, that allowing employers to choose how to best demarcate regulated areas (as well as beryllium work areas) is consistent with its preference for performance-based approaches where, as here, the Agency has determined that employers, based on their knowledge of the specific conditions of their workplace, are in the best position to make such determinations. For example, if an employer knows that exposures in a particular work area might exceed the PEL on one particular day only, that employer might choose a temporary method of demarcation. Conversely, an employer might choose to use a more permanent method of demarcation for a beryllium work area that contains a potentially beryllium-releasing operation that occurs daily and may choose to use barricades, in others textured flooring, roped-off areas.

Paragraph (e)(2)(ii) requires that employers identify each regulated area in accordance with (m)(2) of the standard. Paragraph (m)(2) provides required language for signs to be used on regulated areas. OSHA has determined this is not a collection of information since the Federal government is providing specific language to employers for public disclosure to employees (5 CFR 1320.3(c)(2)).

1910.1024 (f)(1)(i), (ii), &(iii) -- §1915.1024 (f)(1)(i),(ii), & (iii) -- §1926.1124 (f)(1)(i), (ii), & (iii) -- Methods of Compliance --Written Exposure Control Plan.

Proposed paragraph (f)(1)(i) of the proposed rule would have required employers to establish, implement, and maintain a written exposure control plan for beryllium work areas, containing an inventory of operations and job titles reasonably expected to have exposure at or above the action level; an inventory of operations and job titles reasonably expected to have exposure above the TWA PEL or STEL; procedures for minimizing cross-contamination, keeping surfaces in the beryllium work area as free as practicable of beryllium; minimizing the migration of beryllium from beryllium work areas to other locations within or outside the workplace, and removal, laundering, storage, cleaning, repairing, and disposal of beryllium-contaminated personal protective clothing and equipment, including respirators; and an inventory of engineering and work practice controls required by paragraph (f)(2) of the proposed standard.

Several commenters offered broad support for the inclusion of paragraph (f)(1)'s provisions in the final rule (e.g., Document ID 1681, Attachment 1, p. 9; 1689, p. 11; 1690, p. 1). For example, United Steelworkers (USW) stated: “[a] written plan will help to ensure that exposure controls and safety practices are continually followed. This will also provide workers and other stakeholders with information necessary in evaluating the health and safety protections and provisions provided by the employer” (Document ID 1681, p. 9).

The American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) also supported the inclusion of written exposure control plan requirements (Document ID 1689, p. 11). It argued that “[r]equiring employers to properly make use of a written plan is an essential tool for continuously controlling exposures and using proper safety practices.” OSHA agrees with the opinions expressed by these commenters. Requiring employers to articulate where exposures occur and how those exposures will be controlled will help to ensure that they have a complete understanding of the controls needed to comply with the rule.

Paragraph (f)(1)(i) in the final rule differs from the proposal in several ways. First, it requires a written exposure control plan for each facility, whereas the proposal would have required a written exposure control plan for beryllium work areas within each facility. Second, OSHA modified the proposed requirements to include an inventory of operations and job titles reasonably expected to have exposure, including by dermal contact. Third, OSHA modified the proposed requirement to inventory engineering and work practice controls required by paragraph (f)(2) of this standard to include respiratory protection. Finally, OSHA has included one additional provision in the final rule for general industry that was not contained in the proposal. Specifically, paragraph (f)(1)(i)(H) of the final rule requires employers to include within their written exposure control plan a list of personal protective clothing and equipment required by paragraph (h) of this standard. Additional comments regarding the written control plan's trigger and specific provisions may be found in the Final rule's preamble *Section XVI, Summary and Explanation of the Standards*.

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OSHA has incorporated most provisions of the proposed paragraph (f)(1)(i) into the final rules for construction and shipyards, with certain modifications due to the work processes and worksites particular to these sectors. OSHA has determined that abrasive blasting operations are the primary source of beryllium exposure in the construction and shipyard sectors and has chosen not to include provisions related to surface cleaning in the final standards for these sectors due to the extreme difficulty of maintaining clean surfaces during blasting operations. OSHA has therefore decided to exclude the provision regarding procedures for keeping surfaces as free as practicable of beryllium (proposed paragraph (f)(1)(i)(E)) from the construction and shipyard standards. And due to the difficulty of controlling contamination during blasting operations, OSHA has decided to include a more performance-oriented provision on cross-contamination in the rules for construction and shipyards than in paragraph (f)(1)(i)(D) of the general industry rule. Employers are still required to establish and implement procedures for minimizing cross-contamination of beryllium in construction and shipyard industries. However, the written exposure control plan provision on cross-contamination simply requires “procedures for minimizing cross-contamination”; it does not specify “procedures for minimizing cross-contamination, including preventing the transfer of beryllium between surfaces, equipment, clothing, materials, and articles within beryllium work areas” as in general industry. OSHA has included the proposed provision for minimizing the migration of beryllium in the standards for construction and shipyards, but has removed the reference to beryllium work areas since these are not established in construction and shipyards industries. The written exposure control plan provision on migration in these sectors requires the plan to include “procedures for minimizing the migration of beryllium within or to locations outside the workplace.” OSHA has also included paragraph (f)(1)(i)(I) in the construction standard only, requiring employers in the construction sector to establish, implement and maintain procedures to restrict access where airborne exposures are, or can reasonably be expected to be, above the TWA PEL or STEL. Proposed paragraph (f)(1)(ii) would have required the employer to update the exposure control plan when: (A) any change in production processes, materials, equipment, personnel, work practices, or control methods results or can reasonably be expected to result in new or additional exposures to beryllium; (B) an employee is confirmed positive, is diagnosed with CBD, or shows signs or symptoms associated with exposure; or (C) the employer has any reason to believe that new or additional exposures are occurring or will occur.

Employers such as Materion and Axsys Technologies, who have worked to identify and document the exposure sources associated with cases of sensitization and CBD in their facilities, have used this information to develop and update beryllium exposure control plans (Document ID 0634; 0473; 0599). OSHA found that this process, whereby an employer uses employee health outcome data to check and improve the effectiveness of the employer's exposure control plan, is consistent with other performance-oriented aspects of these standards. Thus, after considering the record on this issue, OSHA has decided to retain proposed paragraph (f)(1)(ii) in the final rule, with the modifications discussed below, to ensure that the employer's plan reflects the current conditions in the workplace.

OSHA made several changes to the proposed paragraph (f)(1)(ii). The first modification is that OSHA added a requirement to review and evaluate the effectiveness of each written exposure

control plan at least annually. OSHA finds that an annual review is appropriate because workplace conditions can change. In addition, by requiring employers to check the effectiveness of their plans annually, the standards offer employers the opportunity to better protect their employees by reflecting on any lessons learned throughout the previous year. Second, OSHA changed the proposed language of (f)(1)(ii)(B), which would have required employers to update their written exposure control plans when an employee is confirmed positive for beryllium sensitization, is diagnosed with CBD, or shows signs or symptoms associated with exposure. This change is related to another change from the proposed standard, which would have required notification of employers whenever an employee is confirmed positive for beryllium sensitization. OSHA has modified this provision so that employers are not automatically notified of cases of sensitization or CBD among their employees. Final paragraph (f)(1)(ii)(B) has been revised from the proposal to reflect the circumstances under the final standards where an employer will be notified that an employee has, or may have, a beryllium-related health effect. This includes when the employer is notified that an employee is eligible for medical removal in accordance with paragraph (l)(1) of the standard (i.e., when the employee provides the employer with a written medical report indicating a confirmed positive finding or CBD diagnosis, or the employer receives a written medical opinion recommending removal from exposure to beryllium); when the employer is notified that an employee is referred for evaluation at a CBD Diagnostic Center, or when an employee shows signs and symptoms associated with exposure. Third, OSHA further modified (f)(1)(ii)(B) to clarify the Agency's understanding that signs and symptoms may be related to inhalation or dermal exposure therefore refers to signs and symptoms of "airborne exposure to or dermal contact with beryllium". Fourth, OSHA modified the wording of (f)(1)(ii) to require the employer to update "each" written exposure control plan rather than "the" written exposure control plan, since an employer who operates multiple facilities is required to establish, implement and maintain a written exposure control plan for each facility.

Paragraph (f)(1)(iii) of the proposed rule would have required the employer to make a copy of the exposure control plan accessible to each employee who is or can reasonably be expected to be exposed to airborne beryllium in accordance with OSHA's Access to Employee Exposure and Medical Records (Records Access) standard (29 CFR 1910.1020(e)). Access to the exposure control plan will enable employees to partner with their employers in keeping the workplace safe. OSHA did not receive comments specific to this provision, and has decided to retain it in the final rule.

§1910.1024 (g)(2) -- §1915.1024 (g) -- §1926.1124 (g) -- Respiratory protection program.

Proposed paragraph (g) of the standard would have established the requirements for the use of respiratory protection. OSHA added language to the paragraph (g)(2) to clarify that both the selection and use of respiratory protection must be in accordance with the Respiratory Protection standard. The Respiratory Protection standard is designed to ensure that employers properly select and use respiratory protection in a manner that effectively protects exposed employees. Under 29 CFR 1910.134(c)(1), the employer's respiratory protection program must include:

- Procedures for selecting appropriate respirators for use in the workplace;

- Medical evaluations of employees required to use respirators;
- Respirator fit testing procedures for tight-fitting respirators;
- Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations;
- Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators;
- Procedures to ensure adequate quality, quantity, and flow of breathing air for atmosphere-supplying respirators;
- Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations, and in the proper use of respirators; and
- Procedures for evaluating the effectiveness of the program.

§1910.1024(h)(3)(iii) -- §1915.1024(h)(3)(iii) -- 1926.1124(h)(3)(iii) -- Personal Protective Clothing and Equipment -- Cleaning and Replacement.

Final paragraph (h)(3)(iii), like the proposed requires employers to inform in writing the persons or the business entities who launder, clean or repair the protective clothing or equipment required by this standard of the potentially harmful effects of exposure to airborne beryllium and contact with soluble beryllium compounds and how the protective clothing and equipment must be handled in accordance with the standard. This provision is intended to limit dermal and inhalation exposure to beryllium, and to emphasize the need for hazard awareness and protective measures consistent with these standards among persons who clean, launder, or repair beryllium-contaminated items. No substantive revisions were made to this paragraph.

§1910.1024 (k)(1), (2), and (3) --§ 1915.1024 (k)(1), (2), and (3)--§ 1926.1124 (k)(1), (2), and (3) -- Medical Surveillance.

In paragraphs (k)(1)(i)(A)-(D) of the proposal, OSHA specified that employers must “make medical surveillance as required by this paragraph available” for each employee:

- (A) who has worked in a regulated area for more than 30 days in the last 12 months;
- (B) showing signs or symptoms of CBD, such as shortness of breath after a short walk or climbing stairs, persistent dry cough, chest pain, or fatigue; or
- (C) exposed to beryllium during an emergency; and
- (D) who was exposed to airborne beryllium above .2 $\mu\text{g}/\text{m}^3$ for more than 30 days in a 12-month period for 5 years or more, limited to the procedures described in paragraph (k)(3)(ii)(F) of this section unless the employee also qualifies for an examination under paragraph (k)(1)(i)(A), (B), or (C) of this section.

A number of stakeholders commented on the proposed trigger of working in a regulated area. For example, NIOSH argued that employees exposed above an action level of 0.1 $\mu\text{g}/\text{m}^3$ for 30 days a year should be eligible for medical surveillance because “substantial risk for [sensitization] and [chronic beryllium disease (CBD)] exists even at the [a]ction [l]evel” (Document ID 1725, p. 32; 1755, Tr. 40). Public Citizen also advocated for an action level trigger based on risk of sensitization below the proposed PEL, arguing that triggering medical

surveillance at the PEL, where significant risk remains, would be inconsistent with other OSHA health standards (Document ID 1964, p. 3). In contrast, Materion argued medical surveillance should be triggered by exposures above the PEL because Johnson et al. (2001) (Document ID 1505) concluded that 2.0 $\mu\text{g}/\text{m}^3$ is sufficient to protect employees from developing clinical CBD, most recent scientific studies suggest that 0.2 $\mu\text{g}/\text{m}^3$ is sufficient to protect against CBD, and the coke oven emissions standard and formaldehyde standards trigger medical surveillance at the PEL (Document ID 1661, p. 10). NGK Metals Corporation (NGK) was also opposed to setting the medical surveillance trigger at the action level, claiming that this would be burdensome, costly, and cause distress in employees who receive false positive results (Document ID 1663, p. 5)).

Based on the comments and other record evidence, OSHA revised the first proposed medical surveillance trigger to require the offering of medical surveillance based on exposures at or above the action level, rather than the PEL (i.e., work in a regulated area). OSHA finds that triggering medical surveillance at the action level of 0.1 $\mu\text{g}/\text{m}^3$ better addresses residual significant risk and varying susceptibility of employees that can result in sensitization and CBD at lower exposure levels. OSHA is also concerned that a PEL trigger is not sufficient to identify disease at an early stage in employees who are genetically susceptible to developing disease. In addition, OSHA finds that an action level trigger for medical surveillance encourages employers to maintain exposures below that level, which in turns provides reasonable assurance that exposures will not exceed the PEL on days when exposures are not measured.

Comments were also received on the 30-day duration as part of the medical surveillance trigger. NIOSH supported it (Document ID 1725, p. 32; 1755, Tr. 40). However, NJH, NSSP, and ACOEM did not support OSHA's proposed duration trigger of more than 30 days a year, stating that eligible employees exposed less than 30 days a year should be offered medical surveillance (Document ID 1664, p. 9; 1677, p. 3; 1685, p. 4). Other stakeholders did not support extending medical surveillance to employees exposed for fewer than 30 days per year. For example, DOD commented that “[w]hile it is conceivable that workers can be sensitized to beryllium after brief exposures, it is unlikely that infrequent, brief exposures will cause either sensitization or chronic beryllium disease” (Document ID 1684, Attachment 2, p. 1-2).

After careful consideration of these comments and other evidence in the record, OSHA found that maintaining the 30-day exposure-duration trigger is appropriate in the final standards because the Agency's risk assessment shows increasing risk of health effects from exposure at increasing cumulative exposures, which considers both exposure level and duration (See Section VI, Risk Assessment). In addition, OSHA revised the proposed trigger to require employers to make medical surveillance available to each employee “who is or is reasonably expected to be exposed . . . for more than 30 days a year,” rather than waiting for the 30th day of exposure to occur.

Proposed paragraph (k)(1)(i)(B) would have required employers to “make medical surveillance as required by this paragraph available” to each employee showing signs or symptoms of CBD, such as shortness of breath after a short walk or climbing stairs, persistent dry cough, chest pain,

or fatigue.

One commenter, ORCHSE, argued that a symptom trigger should only apply to confirmed positive, i.e., sensitized, employees because the types of symptoms listed are non-specific for CBD and would require employers to offer medical surveillance to employees who were never exposed to beryllium (Document ID 1691, Attachment 1, pp. 5-6). However, the majority of the stakeholders who opined on the signs-or-symptoms trigger supported its inclusion in the final rule. For example, NJH, ATS, and NIOSH supported a symptom trigger for medical surveillance (Document ID 1664, p. 4, 8; 1688, p. 3; 1725, p. 32). ACOEM and NJH indicated that skin symptoms should trigger medical examinations for employees exposed to beryllium (Document ID 1664, p. 4; 1685, p. 4). NJH and ACOEM also offered examples of specific symptoms or signs of skin disease, including rashes or nodules and dermatitis that are unresponsive to treatment but responsive to removal from exposure (Document ID 1664, pp. 4, 8; 1688, p. 3; 1725, p. 32).

After carefully considering these comments, OSHA reaffirms its preliminary finding that the proposed signs-or-symptoms trigger serves as a valuable complement to the use of airborne exposure triggers as a mechanism for initiating medical surveillance. A signs-or-symptoms trigger is appropriate for employees covered by the standard because the risk of material impairment of health remains significant at the action level (see Section VI, Risk Assessment). OSHA did however make some changes to the provision. Because signs or symptoms of beryllium-related health effects other than CBD should also trigger medical surveillance, OSHA has revised paragraph (k)(1)(i)(B) to include signs or symptoms of other beryllium-related health effects. OSHA also removed the specific examples of signs or symptoms of CBD that were included in the proposal to make it less likely that the provision will be misinterpreted to require medical surveillance for employees experiencing signs or symptoms not related to beryllium exposure.

Proposed paragraph (k)(1)(i)(C) required employers to offer medical surveillance to employees exposed during an emergency, and that trigger is retained in the final rule. In the final rule, employees exposed in an emergency, who are covered by paragraph (k)(1)(i)(C), are not included in the biennial examination requirement unless they also meet the criteria of paragraph (k)(1)(i)(A) or (B), because OSHA expects that most effects of airborne exposure will be detected during the medical examination provided within 30 days of the emergency, pursuant to paragraph (k)(2)(i)(A). This is consistent with the proposal. An exception to this is beryllium sensitization, which OSHA finds may result from exposure in an emergency, but may not be detected within 30 days of the emergency. OSHA received no comments on this issue. To address possible delayed sensitization in employees exposed in an emergency, final paragraph (k)(3)(ii)(E) requires biennial BeLPTs for employees who have not been confirmed positive, including those exposed in emergencies. This paragraph is discussed in more detail in the preamble.

Paragraph (k)(1)(i)(D) of the final rule requires that medical surveillance be made available when the most recent written medical opinion to the employer recommends continued medical

surveillance under final paragraphs (k)(6) and (k)(7). These paragraphs require that the written medical opinion for the employer must contain a recommendation for continued periodic medical surveillance if the employee is confirmed positive or diagnosed with CBD, and the employee provides written authorization. Under these provisions, the employer will only receive the recommendation for continued periodic medical surveillance with the employee's written consent. However, even where the employee provides his or her written consent, the written opinion must not include any specific findings or diagnoses that led to the recommendation for continued surveillance. Instead, the licensed physician or CBD diagnostic center's written opinion would simply recommend continued periodic medical surveillance. OSHA chose this method to convey the need for continued medical evaluations for employees who are confirmed positive or diagnosed with CBD, while protecting the employee's privacy by not revealing to the employer the specific finding that triggered the recommendation for continuing medical examinations.

Proposed paragraph (k)(1)(i)(D) included a trigger to provide LDCT to some employees who met certain criteria regarding exposure levels, exposure duration, and age. The requirement is now included under final paragraph (k)(3)(ii)(F) as a test that can be selected by the PLHCP for employees based on certain risk factors.

Frequency.

Proposed paragraph (k)(2) specified when and how frequently medical examinations were to be offered to those employees covered by the medical surveillance program. Under proposed paragraph (k)(2)(i)(A), employers would have been required to provide each employee with a medical examination within 30 days after making a determination that the employee had worked in a regulated area for more than 30 days in the past 12 months, unless the employee had received a medical examination provided in accordance with this standard within the previous 12 months.

A number of stakeholders supported a baseline examination. For example, ACOEM recommended that the criteria for inclusion in the medical surveillance program be revised to clearly indicate a baseline examination and BeLPT for employees assigned to regulated areas (Document ID 1685, p. 4). Similarly, NABTU and AFL-CIO commented that medical screening of employees should be done before they start working in a beryllium area (Document ID 1679, p. 12; 1689, p. 13). Ameren and NSSP commented that 30 days from initial assignment is a reasonable period to provide an examination; however, NSSP recommended a baseline BeLPT at the time of employment, while Ameren indicated that a baseline BeLPT should be at the employer's discretion based on employment history (Document ID 1675, pp. 15-16; 1677, p. 6) OSHA determined that it is appropriate to trigger medical surveillance within 30 days after making the determinations described in final rule paragraphs (k)(2)(i)(A) and (B). As a result of changes made to final paragraph (k)(1)(i)(A), the initial exam required under final paragraph (k)(2)(i)(A) is now triggered within 30 days after the employer determines that the employee is or is reasonably expected to be exposed at or above the action level for more than 30 days of year.

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Under the proposed paragraph (k)(2)(i)(A), the employer did not have to offer an examination to the employee if the employee had received an equivalent examination within the last 12 months. In the final rule, this was increased to within two years to align that provision with the frequency of periodic examinations, which is every two years in the final.

Proposed paragraph (k)(2)(i)(B) would have required employers to provide medical examinations to employees exposed to beryllium during an emergency, and to those who are showing signs or symptoms of CBD, within 30 days of the employer becoming aware that these employees meet the criteria of proposed paragraph (k)(1)(i)(B) or (C), regardless of whether these employees received an exam in the previous 2 years. OSHA is not aware of any comments from stakeholders about the time period to offer medical examinations following a report of symptoms or exposure in an emergency. OSHA is therefore retaining paragraph (k)(2)(i)(B), as proposed, in the final rule.

Proposed paragraph (k)(2)(ii) required employers to provide an examination annually (after the first examination is made available) to employees who continue to meet the criteria of proposed paragraph (k)(1)(i)(A) or (B).

Ameren agreed with the proposed frequency of annual examinations, and USW commented that the proposed medical surveillance requirements would allow for timely detection of sensitization and health outcomes (Document ID 1675, p. 16; 1681, p. 13). However, other commenters argued that annual surveillance was not routinely required. For example, NJH and ACOEM supported offering medical examinations to eligible employees every two years (Document ID 1664, p. 4; 1685, p. 4); NJH indicated that after initial testing, biennial medical surveillance is adequate to identify any new cases of sensitization that may develop in the workplace. OSHA agrees with commenters who recommended that a BeLPT every two years is appropriate. In addition, based on its review of beryllium health effects, which shows that CBD generally progresses slowly (See Section V, Health Effects), the Agency found that a two-year frequency period is also appropriate for the remaining parts of the medical examinations. To align the requirements for BeLPTs with the medical and work history, the physical examination, and pulmonary function testing, OSHA is requiring that all those components of the examination be offered every two years. OSHA concludes that this approach is more convenient for employers to administer, while maintaining adequate protection of employees.

OSHA revised the paragraph to specify that medical examinations were to be made available “at least” every two years and to include employees who continue to meet the criteria of final paragraph (k)(1)(i)(D), i.e., each employee whose most recent written medical opinion required by paragraph (k)(6) or (k)(7) recommends periodic medical surveillance.

Proposed paragraph (k)(2)(iii) required the employer to offer a medical examination at the termination of employment, if the departing employee met any of the criteria of proposed paragraphs (k)(1)(i)(A), (B), or (C) at the time the employee's employment was terminated, unless the employer provided the departing employee with an exam during the six months prior to the date of termination.

Commenters generally supported the inclusion of this provision in the final standard. NJH and NSSP agreed with the proposed requirement to perform a BeLPT at the time of termination and Ameren stated that a BeLPT is not needed if the employee was tested within the last six months (Document ID 1664, p. 7; 1675, p.16; 1677, p. 6). However, NABTU indicated that the BeLPT need not be repeated if the employee's last test was done within the previous 60 days because the experience of their medical professionals indicates that a different test result is unlikely to occur within that time period (Document ID 1805, Attachment 1, p. 5).

After considering these comments, OSHA reaffirmed its preliminary decision to require employers to make medical surveillance available at the time of termination to eligible employers. Final paragraph (k)(2)(iii) requires the employer to make a medical examination available to each employee who meets the criteria of final paragraph (k)(1)(i) at the termination of employment, unless the employee received an exam meeting the requirements of the standards within the last 6 months. OSHA also found that it is appropriate to extend the requirement to employees who meet the criteria of final paragraph (k)(1)(i)(D), i.e., each employee whose most recent written medical opinion required by paragraph (k)(6) or (k)(7) recommends periodic medical surveillance. Like the other employees covered by this provision, those employees could potentially have beryllium-related disease that was not present or detectable at their last examination or that has advanced.

Contents of Examination.

Proposed paragraphs (k)(3)(ii)(A)-(D) detailed the content of the medical examination. Stakeholders from the medical community and industry responded to OSHA's request for comment on the proposed contents for medical examinations. A detailed discussion regarding all of the changes to the content of the Medical examinations may be found in the Final Rule, section XVI. *Summary and Explanation of the Standards*, under (k) Medical.

The final made several changes to the content of the employee medical examination including, but not limited to revising paragraphs: (k)(3)(ii)(A), to include emphasis on past and present airborne exposure to or dermal contact with beryllium; (k)(3)(ii)(C) to require a physical examination for skin rashes, rather than an examination for breaks and wound; (k)(3)(ii)(E) to allow BeLPT test to be offered "at least" every two years, rather than every two years, to allow for a test that is equivalent to a BeLPT test, and to require that samples be analyzed by a certified laboratory; and addition of (k)(3)(ii)(F) to allow for an LDCT scan when recommended by the PLHCP.

§1910.1024 (k)(4)-- § 1915.1024 (k)(4)--§ 1926.1124 (k)(4)-- Medical Surveillance-- Information Provided to the PLHCP.

Proposed paragraph (k)(4) detailed which information must be provided to the PLHCP. Specifically, the proposed standard required the employer to ensure the examining PLHCP has a copy of the standard, and to provide to the examining PLHCP the following information, if

known to the employer: a description of the employee's former and current duties that relate to the employee's occupational exposure ((k)(4)(i)); the employee's former and current levels of occupational exposure ((k)(4)(ii)); a description of any personal protective clothing and equipment, including respirators, used by the employee, including when and for how long the employee has used that clothing and equipment ((k)(4)(iii)); and information the employer has obtained from previous medical examinations provided to the employee, that is currently within the employer's control, if the employee provides a medical release of the information ((k)(4)(iv)). OSHA made several changes to this paragraph. First, OSHA updated paragraph (k)(4)(i) to require the employer to provide a description of the employee's former and current duties that relate to both the employee's airborne exposure to and dermal contact with beryllium, instead of merely requiring the provision of information related to occupational exposure. OSHA found that this change is appropriate because the record indicates that dermal contact with beryllium can lead to respiratory and dermal sensitization.

Second, OSHA revised the requirement that the employer obtain a "written consent" before providing the PLHCP with information from records of employment-related medical examinations. ORCHSE recommended that paragraph (k)(4)(iv) be revised to indicate that the requirement to provide medical information to the PLHCP be waived if the employee refuses to sign a medical release (Document ID 1691, Attachment 1, pp. 10-11). After considering this comment, OSHA found that a change to the provision is not needed because the employer can demonstrate a good faith effort in meeting this requirement by documenting the employee's refusal to provide a medical release. However, the Agency has chosen to use the phrase "written consent" instead of "medical release" in the final standards. This non-substantive change brings the language in this provision in line with the language used in final paragraphs (k)(6) and (k)(7). Third, OSHA revised the provision to require that the employer must ensure that the same information provided to the PLHCP is also provided to the agreed-upon CBD diagnostic center, if an evaluation is required under paragraph (k)(7) of the standard. OSHA made this change because the CBD diagnostic center will need the same information as the PLHCP in order to effectively evaluate the employee.

Licensed Physician's Written Medical Opinion:

Proposed paragraphs (k)(5)(i)(A)-(C) would have required the employer to obtain from the licensed physician a written medical opinion containing: (1) the licensed physician's opinion as to whether the employee has any detected medical condition that would place the employee at increased risk of CBD from further airborne exposure to beryllium; (2) any recommended limitations on the employee's airborne exposure to beryllium, including the use and limitations of protective clothing or equipment, including respirators; and (3) a statement that the PLHCP explained the results of the medical examination to the employee, including tests conducted, any medical conditions related to airborne exposure that require further evaluation or treatment, and any special provisions related to use of protective clothing or equipment.

Proposed paragraph (k)(5)(ii) would have required the employer to ensure that neither the licensed physician nor any other PLCHP revealed to the employer specific findings or diagnoses

unrelated to airborne beryllium exposure or contact with soluble beryllium compounds. Finally, proposed paragraph (k)(5)(iii) would have required the employer to provide the employee with a copy of the opinion within two weeks of receiving it.

Some commenters offered suggestions to address privacy concerns regarding the content of the proposed licensed physician's written medical opinion and the proposed requirement that the opinion be given to the employer instead of the employee. (Document ID 1725, p. 33; 1815, Attachment 82) Commenters also testified that employers have fired employees who are in the early stages of occupational disease (Document ID 1751, p. 284). Dr. Weissman testified that if medical results are given directly to the employer, employees may fear that it would result in loss of their jobs and that would discourage them from participating in medical surveillance (Document ID 1755, Tr. 47-48). Dr. Weissman also expressed concerns about employers' ability to ensure the confidentiality of the medical information obtained from workers (Document ID 1725, pp. 33-34)

A number of stakeholders, including Southern Company, Ameren, and NSSP highlighted the importance of reporting beryllium-related findings to the employer for reasons such as evaluating the effectiveness of workplace programs and making workplace changes to protect employees (Document ID 1668, p. 7; 1675, p. 18; 1677, p. 7)

OSHA understands that the need to inform employers about a licensed physician's recommendations on work limitations associated with an employee's exposure to beryllium must be balanced against the employee's privacy interests. OSHA found it appropriate to distinguish between the licensed physician's recommendations and the underlying medical reasons for those recommendations. In doing so, OSHA intends for the licensed physician to limit disclosure to the employer to what the employer needs to know to protect the employee, which does not include an employee's diagnosis. The final standards differentiate the types of information the employer and employee receive by including two separate paragraphs within the medical surveillance section that require a written medical report to go to the employee, and a more limited written medical opinion to go to the employer.

Licensed physicians written medical report for the employee:

OSHA did not propose a separate report be provided directly by the licensed physician to the employee, but several commenters requested that a report containing medical information be given to the employee only. The contents of the licensed physician's written medical report for the employee are set forth in final paragraphs (k)(5)(i)-(v) include: the results of the medical examination, including any medical condition(s), such as CBD or beryllium sensitization (i.e., the employee is confirmed positive, as is defined in paragraph (b) of the standard), that may place the employee at increased risk from further airborne exposure; any medical conditions related to airborne exposure that require further evaluation or treatment; any recommendations on the employee's use of respirators, protective clothing, or equipment; and any recommended limitations on airborne beryllium exposure. If the employee is confirmed positive or diagnosed with CBD, the written medical report must also contain any recommendations for referral to a

CBD diagnostic center, continued medical surveillance, and medical removal from airborne beryllium exposures, as described in paragraph (l) of the standard. Paragraph (l) specifies that medical removal applies only to work scenarios where airborne exposures exceed the action level. Paragraph (k)(5)(iii) also states that the licensed physician may recommend evaluations at a CBD diagnostic center based on any other reason deemed appropriate. For example, the physician might recommend an evaluation at a CBD diagnostic center because he or she suspects that results from the BeLPT are questionable based on signs or symptoms in the employee or other clinical findings that are consistent with CBD and wants a specialist in beryllium disease to examine the employee. However, OSHA notes that recommendations for referrals for evaluations at CBD diagnostic centers under this standard should only be given for health-related reasons that pertain to beryllium.

Licensed physician's written medical opinion for the employer:

The written medical opinion for the employer must contain only the date of the examination, a statement that the examination has met the requirements of this standard, and any recommended limitations on the employee's use of respirators, protective clothing, and equipment; and a statement that the PLHCP explained the results of the examination to the employee, including any tests conducted, any medical conditions related to airborne exposure that require further evaluation or treatment, and any special provisions for use of personal protective clothing or equipment. These requirements are set forth in paragraph (k)(6)(i) of the standards. Paragraph (k)(6)(ii) states that if the employee provides written authorization, the written medical opinion for the employer must also contain any recommended limitations on the employee's airborne exposure to beryllium. Paragraphs (k)(6)(iii)-(v) state that if an employee is confirmed positive or diagnosed with CBD and the employee provides written authorization, the written opinion must also contain recommendations for evaluation at a CBD diagnostic center, continued medical surveillance, and medical removal from airborne exposure to beryllium as described in paragraph (l). If otherwise deemed appropriate by the licensed physician and the employee authorizes the information to be included in the written medical opinion, the opinion must also contain a referral for an evaluation at the CBD diagnostic center.

Beryllium Sensitization Test Results Research:

Proposed paragraph (k)(7) would have required employers to convey the results of beryllium sensitization tests to OSHA for evaluation and analysis at the request of OSHA. The employer was to remove all personally identifiable information (e.g., names, social security numbers) before sending the results to OSHA. Some commenters did not support the inclusion of this requirement in the final rule. For example, Ameren commented that the proposed requirement would be burdensome because it would be cumbersome to get signed releases for this information (Document ID 1675, p. 20). ORCHSE also argued that employees would have a difficult time complying with this requirement because employees would not likely sign a release (Document ID 1691, p. 13). On the other hand, NJH supported this requirement because it believed the information would help OSHA identify industries where sensitization is occurring (Document ID 1664, p. 9). However, NJH added that small companies may need help

complying with this requirement (Document ID 1664, p. 9).

As a result of the enhanced privacy requirements of the final rule, many employers may not have beryllium sensitization information to submit to OSHA. OSHA has other ways to obtain medical findings if needed. For example, as noted in the Summary and Explanation for paragraph (n), Recordkeeping, OSHA's Access to Employee Exposure and Medical Records standard (29 CFR 1910.1020) requires employers to ensure that most employee medical records are retained for the duration of employment plus 30 years for employees employed more than one year, and requires that those records be made available to OSHA upon request (29 CFR 1910.1020 (d)(1)(i) and (e) (3)). OSHA therefore deleted proposed paragraph (k)(7) from the final standard.

Referral to a CBD Diagnostic Center

Proposed paragraph (k)(6)(i) would have required the licensed physician to consult with the employee to discuss referral to a CBD diagnostic center that was mutually agreed upon by the employer and employee within 30 days after an employer learned that an employee was confirmed positive. Proposed paragraph (k)(6)(ii) would have required that following the consultation, if the employee wanted a clinical evaluation at a CBD diagnostic center, the employer was to provide the examination at no cost to the employee.

Southern Company disagreed with the proposed requirement that both the employee and employer agree upon the CBD diagnostic center, asserting that the requirement could conflict with selection of a physician under workers' compensation laws, because OSHA does not have a mechanism to settle disputes, and because similar requirements are not included in other OSHA standards (Document ID 1668, pp. 6-7). Ameren and ORCHSE also opposed the requirement for mutual agreement on a CBD diagnostic center and recommended that location be considered when the employee and employer cannot reach agreement (Document ID 1675, p. 17; 1691, p. 10). NJH supported mutual agreement on the CBD diagnostic center between the employee and employer and stated that location, expertise of the center, and feasibility should all be accounted for when agreement cannot be reached (Document ID 1664, p. 8).

OSHA acknowledges the concerns of these stakeholders, but maintains that the employee should be given a choice in the selection of a CBD diagnostic center because of the risks involved with procedures that the employee may have to undergo and because of the life-changing decisions that the employee might have to make based on the results of the evaluation. The employer and employee should make a good faith effort to agree on a CBD diagnostic center that is acceptable to them both.

OSHA did make changes to the final to make it consistent with other requirements of the final standard. First, OSHA changed the trigger for referral to a CBD diagnostic center to include both confirmed positive and a CBD diagnosis for consistency with paragraphs (k)(5)(iii) and (k) (6)(iii). Second, OSHA removed the requirement for a consultation between the physician and employee within 30 days after the employer learned that the employee was confirmed positive. Under paragraph (k)(6)(i)(D), the employer already must ensure that the PLHCP explains findings to the employee, including conditions related to airborne beryllium exposures that

require further evaluation or treatment within 30 days of the medical examination. The discussion about recommended referral can occur as part of that conversation. The third major change to this provision was detailing how the employer would be informed that the employee is eligible for an evaluation at a CBD diagnostic center. The change reflects updates made to paragraph (k)(6) to allow the employee more privacy and control over the type of information the employer receives.

Under final paragraph (k)(6), the employee must authorize the written medical opinion to contain recommendations for an evaluation at a CBD diagnostic center, and the licensed physician would then provide the employer that recommendation in the written medical opinion. Under paragraph (k)(5), the employee's written medical report is to contain medical findings, including a confirmed positive test result and a CBD diagnosis. The report must also contain a referral for an evaluation at a CBD diagnostic center if the employee is confirmed positive or diagnosed with CBD or if the licensed physician otherwise deems it appropriate. The employee has the option of providing the employer with a copy of the written medical report indicating a confirmed positive finding or diagnosis of CBD, or recommending referral. OSHA is providing the option for a written medical report listing a confirmed positive finding or diagnoses of CBD to be offered as proof of eligibility for an evaluation at a CBD diagnostic center, in the event that a licensed physician did not recommend a referral to a CBD diagnostic center in either the written medical report or the written medical opinion.

Under paragraph (k)(7)(ii) of the standards the employer must ensure that the CBD diagnostic center explains medical findings to the employee and gives the employee a written medical report within 30 days of the examination. Like the licensed physician's written medical report, the written medical report from the CBD diagnostic center must contain the results of the examination, including conditions such as sensitization or CBD that might increase the employee's risk from airborne exposure to beryllium; any medical conditions related to beryllium that require further follow-up; any recommendations on the employee's use of respirators, protective clothing, or equipment; and any recommended limitations on beryllium exposure. If the employee is confirmed positive or diagnosed with CBD, the written medical report must also contain recommendations for continued periodic medical surveillance and recommendations for removal from exposure to beryllium, as described in paragraph (l). The reasons why the CBD diagnostic center is to give the employee this information are the same as discussed above, under the requirements for the licensed physician's written medical report for the employee. This provision was added to the final standards to ensure that the employee gets a written record from the CBD diagnostic center and to allow the employee to consult with the CBD diagnostic center about the findings.

Paragraph (k)(7)(iii) requires that the CBD diagnostic center provides the employer with a written medical opinion within 30 days of the medical examination. The written medical opinion must contain the date of the examination, any recommended limitations on the employee's use of respirators, protective clothing, or equipment, and a statement that a PLHCP explained the results of the medical examination to the employee. It must also contain a statement that the examination met the requirements of the standard, if a periodic examination was conducted for

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an employee who chooses examinations conducted at the CBD diagnostic center as specified under paragraph (7)(iv). If the employee provides written authorization, the written medical opinion for the employer must also contain any recommended limitations on the employee's airborne exposure to beryllium. If an employee is confirmed positive or diagnosed with CBD and the employee provides written authorization, the written opinion must also contain recommendations for continued medical surveillance, and/or medical removal from exposure to beryllium, as described in paragraph (l).

This provision was not in the proposed standard or the joint draft recommended standard by Materion and USW but was added to the final standards to allow for transmittal of CBD diagnostic center recommendations to the employer without revealing the specific medical reason for those recommendations. The structure parallels the written medical opinion from the licensed physician, which was developed based on stakeholder requests to increase confidentiality of medical findings. A separate written medical opinion from the CBD diagnostic center is needed because the recommendations may differ from those of the licensed physician and usually comes from a different provider. For example, the employee may have wanted only a recommendation for evaluation at a CBD diagnostic center to be included on the written medical opinion from the physician, but, after evaluation at a CBD diagnostic center, may decide to include the recommendation for medical removal from exposure on the CBD diagnostic center's written medical opinion.

Paragraph (k)(7)(iv) requires the employer to 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. As discussed above with regard to paragraph (k)(6)(vi), requiring the provision of all written medical opinions to employees can permit employees to provide that information to future employers without divulging private medical information and also present the opinion as proof of a current examination that meets the requirements of the beryllium standard.

§1910.1024 (l)(1) and (l)(2) -- §1915.1024 (l)(1) and (l)(2) -- §1926.1124 (l)(1) and (l)(2) --
Medical removal.

Final paragraph (l)(1), consistent with the proposal, states that the employee is eligible for medical removal if the employee works in a job with exposure at or above the action level, but contains more specificity about the types of documentation that are submitted to the employer to demonstrate eligibility for medical removal. This change was made to track employee privacy protections included in the licensed physician's medical opinion in paragraph (k)(6) and the CBD diagnostic center's medical opinion in paragraph (k)(7)(iii). Under paragraphs (k)(5) and (k)(7)(ii), the standards now specify that the licensed physician or CBD diagnostic center provides only the employee a medical report that contains detailed medical findings, such as confirmed positive findings or a diagnosis of CBD. In cases where the employee is confirmed positive or diagnosed with CBD, the physician or CBD diagnostic center also includes recommendations for removal from exposure in the written medical report. However, under paragraphs (k)(6) and (k)(7)(iii), employers do not receive a written medical opinion that

contains an employee's medical information (other than any recommended limitations on the employee's use of respirators) without the employee's written consent. The written opinion to the employer may contain a recommendation for removal from exposure, without the medical reason for the recommendation, only if the employee authorizes that recommendation to be included in the opinion. This allows an employee who is eligible for medical removal and chooses that option to provide official documentation requesting removal, without disclosing a specific medical condition.

Thus, paragraph (l)(1) allows an employee's eligibility for removal to be established by four different types of documentation:

- The employee may provide a (k)(5) or (k)(7)(ii) written medical report indicating a confirmed positive finding or diagnoses of CBD and recommending removal because of that finding or diagnosis.
- The employee may provide a (k)(5) or (k)(7)(ii) written medical report in which the confirmed positive finding or diagnosis has been obscured or removed, but still contains the recommendation of removal because of that finding or diagnosis. An employee might do this if, consistent with the approach of paragraph (k), the employee wishes to keep the details of the condition private.
- The employee may provide any reliable medical documentation establishing a confirmed positive finding or diagnosis of CBD, regardless of whether it was issued in compliance with paragraph (k)(5). An employee might do this if, for example, the documentation predates this standard. This documentation would be a "written medical report" for purposes of (l)(1)(i)(A).
- The employer receives a (k)(6) or (k)(7)(iii) written medical opinion recommending removal from the licensed physician or CBD diagnostic center.

OSHA added the language "in accordance with paragraph (k)(5)(v) or (k)(7)(ii) of this standard" to (l)(1)(i)(B) and "in accordance with paragraph (k)(6)(v) or (k)(7)(iii) of the standard" to (l)(1)(ii) to be clear that medical removal is required under those provisions only when the removal recommendation is based on a confirmed positive finding or a diagnosis of CBD.

Paragraph (l)(2) of the final standards tracks OSHA's intent as expressed in the proposal. However, final paragraph (l)(2) explicitly places the responsibility for providing the choices on the employer, while the proposal merely implied that the employer would do so. OSHA believes that this clarification eliminates the possibility of confusion.

Communication of Hazards:

Proposed paragraph (m)(1)(i) would have required chemical manufacturers, importers, distributors, and employers to comply with all requirements of the Hazard Communication Standard (HCS) for beryllium (29 CFR 1910.1200). Stakeholders did not offer any comments on this provision. OSHA finds that beryllium is a hazardous chemical for purposes of the HCS. Therefore, the Agency includes paragraph (m)(1)(i) of the final rules for general industry, construction, and shipyards to require chemical manufacturers, importers, distributors, and employers to comply with their duties under HCS. The final provision in these standards is substantively unchanged from the proposed provision.

Paragraph (m)(1)(ii) of the proposal required employers to address at least the following, in classifying the hazards of beryllium: cancer; lung effects (chronic beryllium disease and acute beryllium disease); beryllium sensitization; skin sensitization; and skin, eye, and respiratory tract irritation. According to the HCS, employers must classify hazards if they do not rely on the classifications of chemical manufacturers, importers, and distributors (see 29 CFR 1910.1200(d)(1)). Commenters did not object to this provision. OSHA has retained this proposed revision substantively unchanged in final paragraph (m)(1)(ii) of the standards for general industry and shipyards. OSHA has chosen not to include an equivalent requirement in the final standards for construction and shipyards since employers in construction and shipyards are downstream users of beryllium products (blasting media) and would not therefore be classifying chemicals.

Proposed paragraph (m)(1)(iii) required employers to include beryllium in the hazard communication program established to comply with the HCS. The final provisions are substantively unchanged from the proposal. OSHA has decided to include the final paragraph (m)(1)(iii) of the final standards for general industry and shipyards and final paragraph (m)(1)(ii) of the standard for construction.

Recordkeeping:

Air Monitoring Data

Proposed paragraph (n)(1)(i) required employers to maintain records of all measurements taken to monitor employee exposure to beryllium as required by paragraph (d) of the standard. OSHA did not receive comments on this provision and has decided to retain it in the final rule, in part, because it will enable both employers and OSHA to ensure compliance with exposure assessment requirements under paragraph (d) of the standards. The Agency added the words “make and” prior to “maintain” in order to clarify that the employer’s obligation is to create and preserve such records.

Proposed paragraph (n)(1)(ii) required that records of all measurements taken to monitor employee exposure include at least the following information: the date of measurement for each sample taken; the operation being monitored; the sampling and analytical methods used and evidence of their accuracy; the number, duration, and results of samples taken; the type of personal protective clothing and equipment, including respirators, worn by monitored employees at the time of monitoring; and the name, social security number, and job classification of each employee represented by the monitoring, indicating which employees were actually monitored. One commenter recommended that the recordkeeping provision should include the purpose and rationale for the sampling performed as this would show that the exposure monitoring requirements are being met (Document ID 1665, p. 2). The air monitoring requirements described in paragraph (d) and the air monitoring data retention described in this section (paragraph (n)) provide adequate information to show whether the exposure monitoring requirements are being met. OSHA decided not to require these records. OSHA received several comments regarding the requirement that the employer include

employee social security numbers in exposure measurement records.

The American Dental Association (ADA), the Boeing Company (Boeing), and ORCHSE Strategies (ORCHSE) cited employee privacy and identity theft concerns (Document ID 1597, p. 4 (pdf); 1667, pp. 7-8; 1691, Attachment 1, p. 19). Boeing and ORCHSE suggested the use of an identifier other than the social security number, such as an employee identification number or another unique personal identification number. The ADA recommended that employers with fewer than ten employees should not be required to include employee social security numbers in records required by the standard. It further stated that some state statutes “impose data security and breach notification requirements on those who collect social security numbers,” and in small businesses, “the risk to employees of identity theft outweighs the difficulty of identifying employee records” (Document ID 1597, p. 2-4 (pdf)).

OSHA has considered these comments and decided to retain the requirement for including the employee’s social security number in the recordkeeping requirements of the rule. OSHA has concluded that this rule should adhere to the past, consistent practice of requiring employee social security numbers on exposure records mandated by every OSHA substance-specific health standard, and that any change to the Agency’s requirements for including employee social security numbers on exposure records should be comprehensive and apply to all OSHA standards, not just the standards for beryllium. OSHA is proposing to delete the requirement that employers include employee social security numbers in records required by its substance-specific standards in the Agency’s Standards Improvement Project—Phase IV (SIP-IV) proposed rule (81 FR 68504, 68526-68528 (10/4/16)). OSHA will revisit, if necessary, its decision to require employers to maintain employee social security numbers in beryllium records in light of the decision it makes in the SIP-IV rulemaking. In the meantime, OSHA has included the requirement to use and retain social security numbers in the final standards.

The ADA also urged OSHA to pursue Regulatory Alternative #1b, which would exempt, except for recordkeeping purposes, operations where the employer can show that employee exposures will not meet or exceed the action level or exceed the STEL. It further argued under this option that OSHA should limit employers’ recordkeeping requirements to those records that show that employees’ exposure will not meet or exceed the action level or exceed the STEL (Document ID 1597, p. 3 (pdf)). It maintained that this is reasonable because the “employees are not at significant risk of exposure” and “the record retention period is onerous” (Document ID 1597, p. 3 (pdf)).

OSHA disagrees with this suggestion for several reasons. First, the OSH Act states that standards adopted by OSHA must require employers maintain “accurate records of employee exposures to potentially toxic materials or harmful physical agents which are required to be monitored or measured under section 6.” OSH Act § 8(c)(3). Thus, on its face, the Act requires records of all exposure measurements required by the final standards to be maintained, not just high ones. The OSH Act also requires that employees have access to exposure records, (id.), and requiring the employer to maintain those records helps to fulfill that right. Paragraph (n)(1)(ii) in the final rule substantively unchanged from the proposed rule.

Proposed paragraph (n)(1)(iii) required the employer to maintain exposure records in accordance with OSHA's Records Access standard, which specifies that exposure records must be maintained for 30 years (29 CFR 1910.1020(d)(1)(ii)). The Agency did not receive comment on this provision. However, OSHA has changed the requirement that the employer "maintain this record as required by" OSHA's Records Access standard to "ensure that exposure records are maintained and made available in accordance with" that standard. OSHA believes that the language of the final standard more clearly conveys the Agency's intent that in addition to maintaining records, employers must make records available to employees and others as specified in the Records Access standard.

Historical Data:

Proposed paragraph (n)(2) contained the requirement to retain records of any historical monitoring data used to satisfy the proposed standard's the initial monitoring requirements. As explained in the Summary and Explanation of paragraphs (b) and (d) in this preamble, the definition of the term "objective data" in the final rule includes all information that demonstrates airborne exposure to beryllium associated with a particular product or material or a specific process, task, or activity. Historical data that reflects workplace conditions closely resembling or with a higher airborne exposure potential than the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations would be considered objective data under the final rule. The requirement to keep records of objective data is addressed under a separate paragraph. Therefore, OSHA has chosen to delete the separate recordkeeping requirement for historical data.

Objective Data:

Proposed paragraph (n)(3) (Paragraph (n)(2) in the Final Rule) contained the requirements to keep accurate records of objective data. Proposed paragraph (n)(3)(i) required employers to establish and maintain accurate records of the objective data relied upon to satisfy the requirement for initial monitoring in proposed paragraph (d)(2). Under proposed paragraph (n)(3)(ii), the record was required to contain at least the following information: the data relied upon; the beryllium-containing material in question; source of the data; a description of the operation exempted from initial monitoring and how the data supported the exemption; other information demonstrating that the data met the requirements for objective data in accordance with paragraph (d)(2)(ii).

OSHA did not receive comments regarding this provision, and the Agency included it in the final rule. Since objective data may be used to exempt the employer from certain types of monitoring, as specified in paragraph (d), it is critical that the use of these types of data be carefully documented. Objective data are intended to provide the same degree of assurance that employee exposures have been correctly characterized as would exposure assessment. The specified content elements are required to ensure that the records are capable of demonstrating to OSHA a reasonable basis for the conclusions drawn by the employer from the objective data.

Therefore, OSHA has included proposed paragraph (n)(3) as paragraph (n)(2) in the final standards, with minor alterations. OSHA changed paragraphs (n)(2)(ii)(D) to require the record to contain “[a] description of the process, task, or activity on which the objective data were based,” and paragraph (n)(2)(ii)(E) to require the record to contain “[o]ther data relevant to the process, task, activity, material, or airborne exposure on which the objective data were based.” These changes are editorial, and intended to clarify the maintenance and availability of objective data records. They are only intended to aid employers in determining the precise information to be retained. They do not affect the employer’s obligations as set forth in the proposed rule. Proposed paragraph (n)(3)(iii) required the employer to maintain a record of objective data relied upon as required by the Records Access standard, which specifies that exposure records must be maintained for 30 years (29 CFR 1910.1020(d)(1)(ii)). The Agency did not receive comment on this provision. Objective data may include employee exposure records that must be maintained, and therefore, the Agency has retained it in the final standards as paragraph (n)(2)(iii).

Medical Surveillance Recordkeeping:

Paragraph (n)(4) of the proposal, like paragraph (n)(3) of the final rule, addresses medical surveillance records. Under proposed paragraph (n)(4)(i), employers had to establish and maintain medical surveillance records for each employee covered by the medical surveillance requirements in paragraph (k) of the proposed standard. Proposed paragraph (n)(4)(ii) listed the categories of information that an employer was required to record: the employee’s name, social security number, and job classification; a copy of all licensed physicians’ written medical opinions; and a copy of the information provided to the PLHCP as required by paragraph (k)(4) of the proposed standard.

The ADA and ORCHSE questioned the requirement that the employee’s social security number be included in medical surveillance records (Document ID 1597, pp. 2-4 (pdf); 1691, Attachment 1, p. 19). As noted above in the discussion on exposure measurement records, OSHA finds the privacy and security issues associated with the required use of social security numbers are of concern. However, for the same reasons discussed above, the Agency has decided to retain the requirement for use of social security numbers in medical records. OSHA is examining the requirements for social security numbers separately from this rulemaking.

OSHA concludes that medical surveillance records are necessary and appropriate for protection of employee health, enforcement of the standards, and development of information regarding the causes and prevention of occupational illnesses. Therefore, OSHA has decided to retain proposed paragraph (n)(4)(ii)’s requirements regarding medical surveillance records in paragraph (n)(3)(ii) of the final standards. However, OSHA has changed the requirement in proposed paragraph (n)(4)(ii)(B) that the record include copies of all licensed physicians’ written opinions to the requirement that the record include copies of all licensed physicians’ written medical opinions for each employee in paragraph (n)(3)(ii)(B) of the final standards. These changes are editorial and intended to clarify that employees are entitled to their own written medical opinion, not all written opinions. This change neither increases nor decreases an employer’s obligations as set

forth in the proposed rule.

OSHA has changed the requirement in proposed paragraph (n)(4)(ii)(B) that the record include copies of all licensed physicians' written opinions to the requirement that the record include copies of all licensed physicians' written medical opinions for each employee in paragraph (n)(3)(ii)(B) of the final standards.

Proposed paragraph (n)(4)(iii) required the employer to maintain employee medical records for at least the duration of the employee's employment plus 30 years in accordance with OSHA's Records Access Standard at 29 CFR 1910.1020(d)(1)(i). OSHA has added "and made available" after "maintained" in final paragraph (n)(3)(iii) of the standards.

Training Records:

Proposed paragraph (n)(5), which is paragraph (n)(4) of the final rule, addresses training records. Proposed paragraph (n)(5)(i) required employers to prepare records of any training required by these standards. At the completion of training, the employer was required to prepare a record that included the name, social security number, and job classification of each employee trained; the date the training was completed; and the topic of the training. This record maintenance requirement also applied to records of annual retraining or additional training as described in paragraph (m)(4).

The ADA and ORCHSE questioned the requirement that the employee's social security number be included in training records (Document ID 1597, p. 2-4 (pdf); 1691, Attachment 1, p. 19). As noted above in the discussions on exposure measurement and medical surveillance records, OSHA finds the privacy and security issues associated with the required use of social security numbers are of concern. However, for the same reasons discussed above, the Agency has decided to retain the requirement for use of social security numbers in training records. As stated above, OSHA is examining the requirements for social security numbers separately from this rulemaking. This paragraph is substantively unchanged from the proposal.

Access to Records:

Proposed paragraph (n)(6), which is paragraph (n)(5) in the final rule, required employers to make all records mandated by these standards available for examination and copying to the Assistant Secretary, the Director of NIOSH, each employee, and each employee's designated representative as stipulated by OSHA's Records Access standard (29 CFR 1910.1020). OSHA did not receive comment on this provision. This paragraph is substantively unchanged from the proposal.

Transfer of Records:

Proposed paragraph (n)(7), which is paragraph (n)(6) of the final rule, required that employers comply with the Records Access standard regarding the transfer of records. The requirements

for the transfer of records are explained in 29 CFR 1910.1020(h), which instructs employers either to transfer records to successor employers or, if there is no successor employer, to inform employees of their access rights at least three months before the cessation of the employer's business. OSHA did not receive comment on this provision. This paragraph is substantively unchanged from the proposal.

9. Explain any decision to provide any payment or gift to respondents, other than remuneration of contractors or grantees.

The Agency will not provide payments or gifts to the respondents.

10. Describe any assurance of confidentiality provided to respondents and the basis for the assurance in statute, regulation, or agency policy.

To ensure that the personal information contained in medical records required by the proposed standard remains confidential, the Agency developed and implemented 29 CFR 1913.10 (“Rules of Agency Practice and Procedure Concerning OSHA Access to Employee Medical Records”) to regulate access to these records.

11. Provide additional justification for any questions of a sensitive nature, such as sexual behavior and attitudes, religious beliefs, and other matters that are commonly considered private. This justification should include the reasons why the agency considers the questions necessary, the specific uses to be made of the information, the explanation to be given to persons from whom the information is requested, and any steps to be taken to obtain their consent.

Perceived questions of a sensitive nature may be included in medical questions posed by the PLHCP to properly diagnose the patient and make appropriate recommendations regarding further testing and the employee’s occupational exposure to beryllium.

12. Provide estimates of the hour burden of the collection of information. The statement should:

Indicate the number of respondents, frequency of response, annual hour burden, and an explanation of how the burden was estimated. Unless directed to do so, agencies should not conduct special surveys to obtain information on which to base hour burden estimates. Consultation with a sample (fewer than 10) of potential respondents is desirable. If the hour burden on respondents is expected to vary widely because of differences in activity, size, or complexity, show the range of estimated hour burden, and explain the reasons for the variance. Generally, estimates should not include burden hours for customary and usual business practices.

- **If this request for approval covers more than one form, provide separate hour burden estimates for each form and aggregate the hour burdens.**
- **Provide estimates of annualized costs to respondents for the hour burdens for collections of information, identifying and using appropriate wage rate categories.**

OSHA based the burden hour and cost determinations on the Final Economic Analysis (“FEA”)

for the Final Beryllium Standard rulemaking, which is available in the rulemaking docket.⁴ The full FEA has been placed in OSHA rulemaking docket OSHA-H005C-2006-0870. This Supporting Statement provides a summary of the determinations made by the Agency for the burden hours, burden-hour cost, and capital (operation and maintenance) costs under Items 12 and 13 of this Supporting Statement.⁵

The final rule will affect employers and employees in many different industries across the economy. As described in Section IX.C and reported in Table IX-2 of the preamble, OSHA estimates that a total of 61,747 employees in 5,872 establishments are potentially at risk from exposure to beryllium (see Table III-13 in the FEA).

For the sole purpose of calculating burden hours and costs under the Paperwork Reduction Act, this supporting statement has rounded certain numbers obtained from the FEA, as well as totals stated in the supporting statement equations. Such presentation makes it easier for the public to read and validate the supporting statement's burden hour and cost estimates.

Wage Rates

The Agency obtained the wage rates from the final Beryllium Standard FEA. In all but a handful of cases (with the exceptions noted in the FEA), all wage costs come from the 2015 Occupational Employment Statistics (OES) of the Bureau of Labor Statistics (BLS, 2015) and utilize the median wage for the appropriate occupation and NAICS. The Standard Occupational Classification code (SOC) has been provided for each occupational title. The wages used include a 43.57 percent markup for fringe benefits as a percentage of total compensation, which is the average percentage markup for fringe benefits for all civilian workers from the Bureau of Labor Statistics' 2016 Employer Costs for Employee Compensation.

Human Resources (HR) Manager (SOC: 11-3121)	\$70.48
Supervisors of Production and Operating Workers (SOC: 51-1011 ⁶)	\$40.08
Production Worker (SOC: 51-0000)	\$23.49
Clerical Worker (SOC: 43-4071)	\$21.22

⁴The rulemaking docket is available for public inspection and copying in the OSHA Docket Office and at <http://www.regulations.gov> (Docket Number: OSHA-H005C-2006-0870).

⁵ The FEA tables referenced in this Supporting Statement may be downloaded from www.regulations.gov.

⁶ As stated earlier, all wage rates with no explicit source other than the given Standard Occupational Classification (SOC) are from the 2015 Occupational Employment Statistics (OES) of the Bureau of Labor Statistics (BLS, 2015), and is the median wage for that SOC.

Paragraph (d) sets forth requirements for assessing employee exposures to beryllium. Paragraph (d)(1) requires employers to choose either the performance option in paragraph (d)(2) or the scheduled monitoring option in paragraph (d)(3). The collections of information and associated burden are therefore accounted for in paragraph (d)(2) and (d)(3).

§1910.1024 (d)(2) -- §1915.1024(d)(2) -- §1926.1124 (d)(2) Performance Option.

When the employer elects the performance option, the employer must assess the 8-hour TWA exposure and the 15-minute short-term exposure for each employee on the basis of any combination of air monitoring data and objective data sufficient to accurately characterize airborne exposure to beryllium. Employers do not have to conduct initial exposure monitoring if they relied on any combination of air monitoring and objective data.

OSHA has not taken any separate burden associated with the performance option, assuming for the purposes of this analysis that all employers would elect the more burdensome scheduled monitoring system. OSHA recognizes that the performance option is less burdensome and has thus overestimated the burden hours for the monitoring option under this approach.

§1910.1024 (d)(3)(i), (ii)&(iii) --§1915.1024(d)(3) (i),(ii)&(iii)--§1926.1124 (d)(3) (i),(ii)&(iii) Scheduled Monitoring Option.

1. Initial Monitoring

Final paragraph (d)(3)(i) requires the employer to perform initial monitoring to assess the 8-hour TWA exposure for each employee on the basis of one or more personal breathing zone air samples that reflect the airborne exposure of employees on each shift, for each job classification, and in each work area.

Final paragraph (d)(3)(ii) requires the employer to perform initial monitoring to assess the short-term exposure from 15-minute personal breathing zone air samples measured in operations that are likely to produce airborne exposure above the STEL for each work shift, for each job classification, and in each work area. Final paragraph (d)(3)(iii) allows the employer to sample a representative fraction of these employees in order to meet the requirements of paragraph (d)(3) of this standard where several employees perform the same tasks on the same shift and in the same work area. And, final paragraph (d)(3)(iv) allows the employer to discontinue monitoring for those employees whose airborne exposure is represented by such monitoring if initial monitoring indicates that airborne exposure is below the action level and at or below the STEL.

The total number of workers affected is 61,747.⁷ Of these affected workers, there are 6,804 dental laboratory workers who will not be sampled since laboratories will substitute to a different material in lieu of continuing to work with beryllium. Workers in abrasive blasting (in both construction and maritime) are estimated to be sampled 20 percent more to account for the failure rate. The number of abrasive blasting worker samples is 11,460 times 120 percent, or

⁷ The total number of affected workers can be found in Table III-13 of the FEA.

13,752. Excluding the abrasive blasting workers and the substituting dental laboratory workers, the number of all other affected workers is 43,483. The number of workers that will be directly subjected to initial monitoring (14,309) is the number of affected workers in each NAICS, divided by 4 because there are 4 workers represented by each sample $\{[0+(11,460 \times 1.20)+43,483]/4=14,309\}$. Each sampled production worker will incur 30 minutes (0.5 hours) of lost work time during air monitoring,⁸ at an hourly wage rate of \$23.49. Baseline non-compliance with this requirement is estimated to be 96 percent. The burden hours and cost associated with these provisions are:

Burden hours: 14,309 (samples) \times 0.96 (non-compliance rate) \times 0.5 (hours of Production Worker time) = **6,868 hours**

One-Time Cost: 6,868 (hours) \times \$23.49 (Production Worker wage) = **\$161,329**

2. Periodic Exposure Monitoring

§1910.1024 (d)(3)(v),(vi),(vii) & (viii) --§1915.1024(d)(3) (v),(vi), (vii)&(viii) -- §1926.1124 (d)(3) (i),(ii)&(iii) Scheduled Monitoring Option.

Final paragraph (d)(3)(v) requires the employer to repeat such monitoring within six months of the most recent monitoring where the most recent exposure monitoring indicates that airborne exposure is at or above the action level but at or below the TWA PEL. Final paragraph (d)(3)(vi) requires the employer to repeat such monitoring within three months of the most recent 8-hour TWA exposure monitoring where the most recent exposure monitoring indicates that airborne exposure is above the TWA PEL. Final paragraph (d)(3)(vii) requires the employer must repeat such monitoring within six months of the most recent monitoring until two consecutive measurements, taken seven or more days apart, are below the action level, at which time the employer may discontinue 8-hour TWA exposure monitoring for those employees whose exposure is represented by such monitoring, except as otherwise provided in paragraph (d)(4) of this standard where the most recent (non-initial) exposure monitoring indicates that airborne exposure is below the action level. And, final paragraph (d)(3)(viii) requires the employer must repeat such monitoring within three months of the most recent short-term exposure monitoring until two consecutive measurements, taken seven or more days apart, are below the STEL, at which time the employer may discontinue short-term exposure monitoring for those employees whose exposure is represented by such monitoring, except as otherwise provided in paragraph (d)(4) of this standard where the most recent exposure monitoring indicates that airborne exposure is above the STEL.

Between AL and PEL:

The Agency estimates that 8,667 workers will be subject to periodic exposure monitoring. This total includes workers over the AL ($0.1 \mu\text{g}/\text{m}^3$), workers between the AL and PEL ($0.2 \mu\text{g}/\text{m}^3$)

⁸ Although the samples are estimated to represent, on average, the exposures of four employees per sample, the sampling will typically be conducted in the direct breathing area of only a single employee per sample. Thus, the productivity loss would only affect one worker per sample.

that are sampled twice per year, and those workers over the PEL that are sampled four times per year.

There are 20,732⁹ at-risk workers above the action level and below the PEL. The 5,877 workers in dental labs above the action level and below the PEL are excluded because sampling is not expected for these workers. The number of semi-annual exposure monitoring samples being taken is divided into two worker categories: abrasive blasters and others.

The number of semi-annual blasting exposure monitoring samples is calculated by taking the total number of blasting workers between AL and PEL (5,743), dividing it by four workers represented per sample, multiplying the samples by 120%,¹⁰ and then multiplying by two per year because this is done every six months. This amounts to 3,446 samples (5,743 AL to PEL /4 workers per area x 120% x 2 samples per year = 3,446).

The number of monitoring samples being taken for other workers is calculated by dividing the number of other workers (9,111) by four workers represented per sample, then multiplying the samples by two per year (4,556).

Total monitoring samples per year: 3,446 blasting samples + 4,556 other samples = 8,002 samples.

Above the PEL:

There are 1,056 workers above the PEL. The 434 workers in dental labs with exposures above the PEL are excluded because sampling is not expected for those workers. There are 217 blasting workers above the PEL. The total number of samples for blasting is calculated by taking the total number of blasting workers (217), dividing it by four workers per sample, multiplying it by 120%, and then multiplying by four times per year. This results in 260 samples per year.

Excluding blasters and dental workers, there are 406 other workers above the PEL, so additional samples would be required: 406 workers divided by four workers per sample, then multiplied by four times per year equals 406 samples.

The total number of samples required for workers exposed above the PEL, accounting for both groups, is 666 (260 samples plus 406 samples).

Therefore, the total number of samples for periodic exposure monitoring is the sum of the periodic samples between the action level and the PEL (8,002) and the samples above the PEL (666), or 8,667 (rounding to match FEA).

OSHA estimates that each employer will conduct periodic exposure monitoring (once every six months when initial or subsequent exposure monitoring reveals that worker exposures are at or above the action level, but at or below the PEL; and above the PEL. Each periodic exposure monitoring sample (8,667 samples) will result in 30 minutes (0.5 hours) of lost work time during air monitoring. Baseline non-compliance with this requirement is estimated to be 96 percent. The burden hours and cost associated with these provisions are:

⁹ Source: Table III-13 of the FEA.

¹⁰ The abrasive blasting workers sampling requires an additional 20% more samples to account for the high failure rate resulting from clogged sampling equipment.

Burden hours: $8,667 \text{ (samples)} \times 0.96 \text{ (non-compliance rate)} \times 0.5 \text{ (hours of Production Worker time)} = \mathbf{4,160 \text{ hours}}$

Annual Cost: $4,160 \text{ (hours)} \times \$23.49 \text{ (Production Worker wage)} = \mathbf{\$97,718}$

3. Additional Exposure Monitoring

§1910.1024 (d)(4) --§ 1915.1024(d)(4)--§ 1926.1124(d)(4) Reassessment of Exposure.

The employer must reassess airborne exposure whenever a change in the production, process, control equipment, personnel, or work practices may reasonably be expected to result in new or additional airborne exposure at or above the action level or STEL, or when the employer has any reason to believe that new or additional airborne exposure at or above the action level or STEL has occurred.

Of the number of at risk workers subject to initial monitoring, 14,309 workers (see previous paragraph, Initial Monitoring), OSHA estimates 10% will require additional monitoring resulting from changes in the production process, materials, equipment, personnel, work practices, or control methods. Each worker will incur 30 minutes (0.5 hours) of lost work time during air monitoring. Baseline non-compliance with this requirement is estimated to be 96 percent. The burden hours and cost associated with these provisions are:

Burden hours: $14,309 \times 10\% \text{ (workers sampled)} \times 1 \text{ (assessment per year)} \times 0.96 \text{ (non-compliance rate)} \times 0.5 \text{ (hours of Production Worker time)} = 687 \text{ hours}$

Cost: $687 \text{ (hours)} \times \$23.49 \text{ (Production Worker wage)} = \$16,138$

4. Employee Notification

§1910.1024 (d)(6)(i)&(ii) --§ 1915.1024 (d)(6)(i) & (ii) --§ 1926.11241926.1124 (d)(6)(i) & (ii) Employee Notification of Assessment Results.

Final paragraph (d)(6)(i) requires employers, within 15 working days after completing an exposure assessment in accordance with paragraph (d) of this standard, to notify each employee whose airborne exposure is represented by the assessment of the results of that assessment individually in writing or by posting the results in an appropriate location that is accessible to each of these employees.

Whenever an exposure assessment indicates that airborne exposure is above the TWA PEL or STEL, final paragraph(d)(6)(ii) requires the employer to describe in the written notification the corrective action being taken to reduce airborne exposure to or below the exposure limit(s) exceeded where feasible corrective action exists but had not been implemented when the monitoring was conducted.

These burden hours are included in the Human Resources Manager time under Item 12 B.1

Recordkeeping §1910.1024 (n)(1). As a result, employee notification does not appear as a separate entry on *Table B. Summary of Burden Hours, Burden-Hour Cost and Capital Cost Under Item 12 of this Supporting Statement*

A. Beryllium Work Areas and Regulated Areas

1. Written Exposure Control Plan (§§ 1910.1024(f)(1), (i), (ii), & (iii))

§1910.1024 (f)(1)(i), (ii), & (iii) --§1915.1024 (f)(1)(i),(ii), & (iii) --§1926.1124(f)(1)(i),(ii), & (iii) -- Methods of Compliance --Written Exposure Control Plan.

Paragraph (f)(1) requires the employer to establish, implement, and maintain a written exposure control plan for beryllium work areas. The employer is required to review and evaluate the effectiveness of each written exposure control plan at least annually and update it as necessary. Also, the employer is required to make a copy of the written exposure control plan and make it accessible to each employee who is, or can reasonably be expected to be, exposed to airborne beryllium.

There are 5,872 affected establishments. This is the total number of affected establishments minus the substituting dental labs (which have no program costs because they substitute away from beryllium). Table III-13 of the FEA, and specifically the column labeled “Affected Establishments [b],” shows this calculation (7,333 minus 1,278 minus 182 equals 5,872). The industry profile chapter of the FEA (chapter III) shows how the number of establishments was derived for each sector.

a. Developing and Implementing a Written Exposure Control Plan

Baseline Per-Establishment Costs:

OSHA estimates that 5,872 establishments are potentially at risk from exposure to beryllium. The Agency estimates a Human Resource Manager, earning an hourly wage of \$70.48, spends eight hours per establishment to develop and implement a written exposure control plan. Baseline non-compliance with this requirement is estimated to be 57 percent.

Burden hours: $5,872 \text{ (written plans)} \times 0.57 \text{ (non-compliance rate)} \times 8 \text{ (hours of HR Manager time)} = \mathbf{26,776 \text{ hours}}$

One-Time Cost: $26,776 \text{ (hours)} \times \$70.48 \text{ (HR Manager wage)} = \mathbf{\$1,887,172}$

Additional Costs based on Size of Establishment

The cost to develop a written exposure control plan would also vary with the number of employees, with larger establishments having higher costs than smaller establishments. Therefore OSHA has added additional burden and cost on a per-employee basis. OSHA

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estimates that there are a total of 54,943¹¹ workers at risk with a non-compliance rate of 62%. Managers are estimated to need 0.5 hours per employee to write the plan.

Burden hours: 54,943 (employees) × 0.62 (non-compliance rate) × 0.5 (hours of HR Manager time) = **17,032 hours**

One time Cost: 17,032 (hours) × \$70.48 (HR Manager wage) = **\$1,200,415**

Total cost: \$1,887,172 + \$1,200,415 = **\$3,087,587**

b. Maintaining and Updating a Written Exposure Control Plan

The employer must maintain and update the exposure control plan when: any change in production processes, materials, equipment, personnel, work practices, or control methods results or can reasonably be expected to result in new or additional exposures to beryllium; an employee is confirmed positive, is diagnosed with CBD, or shows signs or symptoms associated with exposure; or the employer has any reason to believe that new or additional exposures are occurring or will occur.

Employers must make a copy of the written exposure control plan accessible to each employee who is or can reasonably be expected to be exposed to airborne beryllium in accordance with OSHA's Access to Employee Exposure and Medical Records (Records Access) standard (29 CFR 1910.1020(e)). Burden hours and costs for employers to allow employees access to the written exposure control plan are included in this item of the supporting statement under section D, Employee Access to Exposure Monitoring and Medical Records, subsection 2, Access to Records (§1910.1024(n)(6)).

OSHA estimates that there are a total of 54,943 employees at risk of exposures at or above the action level annually. Managers are estimated to need 12 minutes (0.2 hours) per affected employee per quarter, or 48 minutes (4 x 12) (0.8 hours) per affected employee per year to review and update the plan. Baseline non-compliance with this requirement is estimated to be 62 percent.

Burden hours: 54,943 (employees) × 0.62 (non-compliance rate) × 0.8 (hours of HR Manager time) = **27,252 hours**

Annual Cost: 27,252 (hours) × \$70.48 (HR Manager wage) = **\$1,920,721**

¹¹This is the number of at-risk workers (61,747), less the substituting dental labs (less the 5,954 and 851 for the two substituting dental labs NAICS), totaling 54,943. In Table III-13 in the FEA in the column labeled "Affected Employees [b]," it's the 61,747 in the bottom row. The industry profile chapter of the FEA (chapter III) goes through how all the numbers were derived for each sector.

2. Respiratory Protection (g)

§1910.1024 (g)(2) -- §1915.1024 (g) -- §1926.1124 (g)-- Respiratory protection program.

Where this standard requires an employer to provide respiratory protection, the selection and use of such respiratory protection must be in accordance with the Respiratory Protection standard (29 CFR 1910.134).

Develop and Implement Written respiratory program

There is a cost per establishment to set up a written respirator program in accordance with the respiratory protection standard (29 CFR 1910.134). The respiratory protection standard requires written procedures for the proper selection, use, cleaning, storage, and maintenance of OSHA estimates that 465¹² establishments are potentially at risk from exposure to beryllium that could exceed the PEL. There are 465 establishments that will need to develop and implement a respirator program. It estimates that a Human Resource Manager, earning an hourly wage of \$70.48, would spend eight hours per establishment to develop and implement a written respirator program. Baseline non-compliance with this requirement is estimated to be 41 percent.

Burden hours: 465 (respirator program per establishment) × 0.41 (non-compliance rate) × 8 (hours of HR Manager time) = **1,525 hours**

One-Time Cost: 1,525 (hours) × \$70.48 (HR Manager wage) = **\$107,482**

Updating and Maintaining:

There are 465 establishments that will need to update and maintain a respirator program. OSHA estimates that a Human Resource Manager, earning an hourly wage of \$70.48, would spend two hours per establishment to maintain and update a written respirator program. Baseline non-compliance with this requirement is estimated to be 41 percent.

Burden hours: 465 (respirator program per establishment) × 0.41 (non-compliance rate) × 2 hours (HR Manager time) = **381 hours**

One-Time Cost: 381 (hours) × \$70.48 (HR Manager wage) = **\$26,853**

3. Respirator Fit testing:

In-House Fit Testing for the Employees

The employers will conduct respirator fit testing for the 650 workers¹³ who will need to wear

¹² Source: FEA spreadsheets, Tab "Rule". This number is derived from subtracting the number of substituting dental firms from the total number of firms with exposures above the PEL.

¹³ Source: Table V-14, *Number of Workers needing Respirators and Respirator Costs, by sector and NACIS Industry*, of the FEA.

respirators. OSHA estimates that it will take 30 minutes (0.5 hours) for a worker to be fit-tested per respirator and 100% of the 650 workers will need to be fit tested.

Burden hours: $650 \text{ (employees)} \times 1 \text{ (non-compliance rate)} \times 0.5 \text{ (hours of employee time)} = 325 \text{ hours}$

Annual Cost: $325 \text{ (hours)} \times \$23.49 \text{ (Employee wage)} = \$7,634$

In-House Fit Testing by Supervisors

The employers will conduct in-house fit testing for the 650 workers who will need to wear respirators. OSHA estimates that the in-house supervisors will administer the 650 fit-tests and it will take 30 minutes (0.5 hours) for a worker to be fit-tested per respirator and 100% of the 650 workers will need to be fit tested.

Burden hours: $650 \text{ (Supervisor)} \times 1 \text{ (non-compliance rate)} \times 0.5 \text{ (hours of Supervisor time)} = 325 \text{ hours}$

Annual Cost: $325 \text{ (hours)} \times \$40.08 \text{ (Supervisor wage)} = \$13,026$

4. Personal Protective Clothing and Equipment

§1910.1024 (h)(3)(iii) --§ 1915.1024 (h)(3)(iii) --§ 1926.1124 (h)(3)(iii) -- Personal Protective Clothing and Equipment --Cleaning and Replacement.

Final paragraph (h)(3)(iii) requires the employer to 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 airborne exposure to and dermal contact with beryllium and that the personal protective clothing and equipment must be handled in accordance with this standard.

The employer must inform in writing the persons or the business entities that launder, clean, or repair the personal protective clothing or equipment required by this standard of the potentially harmful effects of airborne exposure to beryllium and dermal contact with beryllium compounds, as well as how the personal protective clothing and equipment must be handled in accordance with this standard.

There are 5,872 establishments potentially at risk from exposure to beryllium that will need to send out clothing and equipment for laundering, cleaning, or repair. OSHA estimates that it will take approximately 10 minutes (0.17 hours) of a Clerical worker's time to inform the person or business in writing of the potentially harmful effects of the laundering, cleaning or repair of the clothing or equipment. Baseline non-compliance with this requirement is estimated to be 21 percent.

Burden hours: $5,872 \text{ (establishments)} \times 0.21 \text{ (non-compliance rate)} \times 0.17 \text{ (hours of Clerical worker time)} = 210 \text{ hours}$

Annual Cost: 210 (hours) × \$21.22 (Clerical worker's wage) = **\$4,456**

5. Medical Surveillance

§1910.1024 (k)(1), (2), and (3) --§ 1915.1024 (k)(1), (2), and (3)--§ 1926.1124 (k)(1), (2), and (3) -- Medical Surveillance.

Final paragraph (k)(1) requires the employer to make medical surveillance required by this paragraph available at no cost to the employee, and at a reasonable time and place, to each employee: (A) Who is or is reasonably expected to be exposed at or above the action level for more than 30 days per year; (B) Who shows signs or symptoms of CBD or other beryllium-related health effects; (C) Who is exposed to beryllium during an emergency; or (D) Whose most recent written medical opinion required by paragraph (k)(6) or (k)(7) recommends periodic medical surveillance.

Also, the employer must ensure that all medical examinations and procedures required by this standard are performed by, or under the direction of, a licensed physician.

In final paragraph (k)(2), the employer must provide a medical examination within 30 days of either: (A) An employee meets the criteria of paragraph (k)(1)(i)(A), unless the employee has received a medical examination, provided in accordance with this standard, within the last two years; or (B) An employee meets the criteria of paragraph (k)(1)(i)(B) or (C). And at least every two years thereafter for each employee who continues to meet the criteria of paragraph (k)(1)(i)(A),(B), or (D). Also, 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.

The number of workers subject to initial medical surveillance in the first year and periodic surveillance in each year includes both those who are over the AL and those showing signs and symptoms (of CBD or sensitization). There are 21,788 over the AL in all application groups, less 6,311 the dental labs. (21,788-6,311 = 15,477 over the AL).

The number of workers who receive medical surveillance solely due to signs and symptoms is the number of at-risk workers minus the number over the AL times the general 15 percent that are estimated to show signs and symptoms. Substituting dental labs are again excluded because workers would not be exposed to beryllium and would therefore not be eligible for medical surveillance. This is calculated as the 54,943 (see written exposure plan bullet above) – the 15,477 over the AL x 15 percent = 5,920 showing signs and symptoms. The number over the AL and the number showing signs and symptoms are summed to get the total: 15,477 + 5,920 = 21,397.

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The medical surveillance for the number of exams is 21,397. OSHA estimated the examination¹⁴ requires 125 minutes (or 2.08 hours) away from work for each employee each year to complete an initial medical examination. This includes time for traveling, a health history review, the physical exam, a beryllium lymphocyte proliferation test (BeLPT), the pulmonary function test, and employee time when the PLHCP explains the results of the medical examination to the employee. Baseline non-compliance with this requirement is estimated to be 55 percent. The burden hours and annual cost associated with these provisions are:

Annual Exams

Burden hours: 21,397 (examinations) x 0.55 (non-compliance rate) x 2.08 (hours of Production Worker time) = **24,478 hours**

Annual Cost: 24,478 hours x \$23.49 (Production worker wage) = **\$574,988**

Note: The Agency estimates that 10 percent of the standard medical examinations will lead to further tests recommended by the PLHCP¹⁵ and are included in the cost and time of the 21,397 employees.

Referral exams

§1910.1024 (k)(7) --§ 1915.1024 (k)(7) --§ 1926.1124 (k)(7)

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 examination must be provided within 30 days of; (A) The employer's receipt of a physician's written medical opinion to the employer that recommends referral to a CBD diagnostic center; or (B) The employee presenting to the employer a physician's written medical report indicating that the employee has been confirmed positive or diagnosed with CBD, or recommending referral to a CBD diagnostic center.

Referral exams to the CBD Diagnostic Center --Traveling Workers

The estimated annual number of referrals to the CBD diagnostic center is 1,011. It will take 24 hours and 15 minutes for each employee to travel by plane to the center and complete the medical examination.

Burden hours: 1,011 referrals traveling x 1 (non-compliance) x 24.25 hours = 24,517 hours

Cost: 24,517 hours x \$23.49 (Production worker wage) = \$575,904

Referral exams to the CBD Diagnostic Center --Non-Traveling Workers

¹⁴ Final paragraph (k)(3) provides the content of examinations.

¹⁵ These exposure monitoring unit costs are summarized in Table V-17 of the FEA.

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The estimated annual number of referrals exams to the CBD diagnostic center is 337. It will take 4 hours and 15 minutes for each employee to travel to the center in town and complete the medical examination.

Burden hours: 337 referrals non travel x 1(non-compliance) x 4.25 hours = 1,432 hours

Cost: 1,432 hours x \$23.49 (Production worker wage) = \$33,638

6. Information Provided to the PLHCP

**§1910.1024 (k)(4)-- § 1915.1024 (k)(4)--§ 1926.1124 (k)(4)-- Medical Surveillance--
Information Provided to the PLHCP.**

(4)The employer must ensure that the examining PLHCP (and the agreed-upon CBD diagnostic center, if an evaluation is required under paragraph (k)(7) of this standard) has a copy of this standard and must provide the following information, if known:

(i) A description of the employee's former and current duties that relate to the employee's airborne exposure to and dermal contact with beryllium;

(ii) The employee's former and current levels of airborne exposure;

(iii) A description of any personal protective clothing and equipment, including respirators, used by the employee, including when and for how long the employee has used that personal protective clothing and equipment; and

(iv) Information from records of employment-related medical examinations previously provided to the employee, currently within the control of the employer, after obtaining written consent from the employee.

In the final standard, the employer must ensure that the examining PLHCP (and the agreed-upon CBD diagnostic center, if an evaluation is required under paragraph (k)(7) of this standard) has a copy of this standard and shall provide the following information, if known: a description of the employee's former and current duties that relate to the employee's occupational exposure; the employee's former and current levels of occupational exposure; a description of any personal protective clothing and equipment, including respirators, used by the employee, including when and for how long the employee has used that personal protective clothing and equipment; and information from records of employment-related medical examinations previously provided to the employee, currently within the control of the employer, after obtaining a medical release from the employee.

OSHA estimates that it will take 15 minutes (.25 hours) of a Supervisor's time to gather and provide the information needed for the PLHCP. Baseline non-compliance with this requirement is estimated to be 55 percent.

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Burden hours: 21,397 (employees) × 0.55 (non-compliance rate) × 0.25 (hours of Supervisor time) = **2,942 hours**

Annual Cost: 2,942 (hours) × \$40.08 (Supervisor wage) = **\$117,915**

7. Licensed Physician's Written Medical Opinion for the Employer

**§1910.1024 (k)(6) --§ 1915.1024 (k)(6) --§ 1926.1124 (k)(6) -- Medical Surveillance--
Licensed Physician's Written Medical Opinion for the Employer.**

Final paragraph (k)(6) requires the employer to obtain a written medical opinion from the licensed physician within 45 days of the medical examination (including any follow-up BeLPT required under paragraph (k)(3)(ii)(E) of this standard).

There are 21,397 affected employees that the employer will need to provide a copy of the licensed physician's written opinion. OSHA estimates that it will take 5 minutes (0.08 hour) of a Supervisor's time to provide a copy of the information to the employee. Baseline non-compliance with this requirement is estimated to be 55 percent.

Supervisor:

Burden hours: 21,397 (employees) × 0.55 (non-compliance rate) × 0.08 (hours of Supervisor time) = **941 hours**

Annual Cost: 941 (hours) × \$40.08 (Supervisor wage) = **\$37,715**

8. Medical Removal

§1910.1024 (l)(1) and (2) -- §1915.1024 (l)(1) and (2) -- §1926.1124 (l)(1) and (2) --Medical removal.

(1) An employee is eligible for medical removal, if the employee works in a job with airborne exposure at or above the action level and either:

(i) The employee provides the employer with:

(A) A written medical report indicating a confirmed positive finding or CBD diagnosis; or

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

(2) If an employee is eligible for medical removal, the employer must provide the employee with the employee's choice of:

- (i) Removal as described in paragraph (l)(3) of this standard; or
- (ii) Remaining in a job with airborne exposure at or above the action level, provided that the employer provides, and ensures that the employee uses, respiratory protection that complies with paragraph (g) of this standard whenever airborne exposures are at or above the action level.

In accordance with the spreadsheets for the FEA under the “Rule” tab of the Cost spreadsheet, there are 778 employees who will request medical removal because of a positive finding of CBD. OSHA estimates that it will take five minutes (0.08 hour) of a Supervisor’s time to receive and process (including conveying the two options under (l)(2)) for each medical removal request. OSHA anticipates that this will typically involve the employee authorizing that the PLHCP share a recommendation for removal with the employer. Baseline non-compliance with this requirement is estimated to be 100 percent.

Burden hours: 778 employees x 1 (non-compliance) x 0.08 hours = 62 hours

Cost: 62 hours x \$40.08 (Supervisor wage) = \$2,485

B. Recordkeeping

1. Exposure Assessment.

§1910.1024 (n)(1)(i), (ii), & (iii) --§ 1915.1024 (n)(1)(i),(ii),&(iii) --§ 1926.1124 (n) (i), (ii),&(iii)-- Recordkeeping --Air Monitoring Data.

a. Initial Exposure Monitoring (paragraph (d)(2) of §1910.1024)

As determined under Initial Exposure Monitoring, paragraph (d)(2), the Agency estimates there are 14,309 exposure monitoring records being generated for this purpose. The Agency estimates that an HR manager will spend 15 minutes (0.25 hours) developing and maintaining records for employee records at a loaded hourly wage of \$70.44, which includes time to notify employees of the results of the exposure monitoring (typically accomplished by posting the results).¹⁶ Baseline non-compliance with this requirement is estimated to be 96 percent. The burden hours and cost associated with these provisions are:

Burden hours: 14,309 (workers sampled) × 0.96 (non-compliance rate) × 0.25 (hours of HR Manager time) = **3,434 hours**

One-Time Cost: 3,434 (hours) × \$70.48 (HR Manager wage) = **\$242,028**

b. Periodic Exposure Monitoring (paragraph (d)(3) of §1910.1024)

¹⁶ Where exposures exceed the TWA PEL or STEL, the written exposure monitoring notification shall include suspected or known sources of exposure and the corrective action(s) the employer has taken or will take to reduce exposure to or below the PELs, and where feasible corrective action exists but had not been implemented when the monitoring was conducted.

As determined under Periodic Exposure Monitoring, paragraph (d)(3), the Agency estimates there are 8,667 periodic monitoring samples being developed.¹⁷ The Agency estimates that an HR manager will spend 15 minutes (0.25 hours) developing and maintaining employee monitoring records at a loaded hourly wage of \$70.48, which includes time to notify employees of the results of the exposure monitoring (typically accomplished by posting the results). Baseline non-compliance with this requirement is estimated to be 96 percent. The burden hours and cost associated with these provisions are:

Burden hours: $8,667$ (workers sampled per year) \times 0.96 (non-compliance rate) \times 0.25 (hours of HR Manager time) = **2,080 hours**

Annual Cost: $2,080$ (hours) \times $\$70.48$ (HR Manager wage) = **\$146,598**

c. Additional Exposure Monitoring (paragraphs (d)(4) of § 1910.1024)

Of the number of at risk workers subject to initial monitoring, 14,309 workers (see previous paragraph, Initial Monitoring), OSHA estimates 10%, 1,431 workers, will require additional monitoring resulting from changes in the production process, materials, equipment, personnel, work practices, or control methods. The Agency estimates that an HR manager will spend 15 minutes (0.25 hours) maintaining the relevant records at a loaded hourly wage of \$70.48, which includes time to notify employees of the results of the exposure monitoring. Baseline non-compliance with this requirement is estimated to be 96 percent. The burden hours and cost associated with these provisions are:

Burden hours: $1,431$ (workers sampled) (workers sampled per year) \times 0.96 (non-compliance rate) \times 0.25 (hours of HR Manager time) = **343 hours**

Annual Cost: 343 (hours) \times $\$70.48$ (HR Manager wage) = **\$24,175**

2. Medical Surveillance

1910.1024 (n)(3) (i), (ii), & (iii) --§ 1915.1024 (n)(3)(i),(ii),&(iii) --§ 1926.1124 (n)(3) (i), (ii),&(iii)-- Recordkeeping-- Medical Surveillance.

In final paragraph (n)(3)(i), the employer must make and maintain a record for each employee covered by medical surveillance under paragraph (k) of this standard.

a. Human Resource manager

A Human Resource manager would expend 15 minutes (.25 hour) to read, copy the PLHCP's opinion, provide and discuss the opinion with the employee, and discuss any necessary post-

¹⁷ As discussed earlier, OSHA has estimated burdens and costs for all affected employers to conduct initial exposure monitoring rather than relying on objective data. OSHA has therefore overestimated the burden and costs for employers to the extent that any employers have developed and maintained objective data that meet the proposed standard's requirements and do not need to conduct initial exposure monitoring or subsequent periodic monitoring.

exam consultation with the employee. The number of post-exam records is 21,397; also there are 1,338 referral exam records¹⁸ for a total of 22,745. Baseline non-compliance with this requirement is estimated to be 96 percent.

Burden hours: $22,745(\text{exam records}) \times 0.96 (\text{non-compliance rate}) \times 0.25 (\text{hours of HR Manager time}) = \mathbf{5,459 \text{ hours}}$

Annual Cost: $5,459 (\text{hours}) \times \$70.48 (\text{HR Manager wage}) = \mathbf{\$384,750}$

b. Clerical Worker Time

Each file would require 5 minutes (0.08 hours) of a clerical worker's time to generate and maintain. The total number of medical exam records per year is 22,745. Baseline non-compliance with this requirement is estimated to be 96 percent.

Burden hours: $22,745 (\text{exam records}) \times 0.96 (\text{non-compliance rate}) \times 0.08 \text{ hours} = \mathbf{1,747 \text{ hours}}$

Annual Cost: $1,747 \text{ hours} \times \$21.22 (\text{Clerical worker wage}) = \mathbf{\$37,071}$

3. Training

§1910.1024 (n)(4)(i) & (ii) --§ 1915.1024 (n)(4)(i)&(ii) --§ 1926.1124 (n)(4) (i)&(ii)-- Recordkeeping -- Training.

Final paragraph (n)(4)(i) requires the employer to prepare a record of the training. This record must be maintained for three years after the completion of training.

OSHA estimates that there are 54,943 employees that will require a training record to be generated and maintained. A clerical worker will take 5 minutes (0.08 hours) to prepare and maintain these records for each employee receiving training. Baseline non-compliance with this requirement is estimated to be 57 percent.

Burden hours: $54,943 (\text{training records}) \times .57 (\text{non-compliance rate}) \times 0.08 (\text{hours of Clerical worker time}) = \mathbf{2,505 \text{ hours}}$

Annual Cost: $2,505 (\text{hours}) \times \$21.22 (\text{Clerical worker wage}) = \mathbf{\$53,156}$

4. Fit Testing Records

Under the respiratory protection program, the employer must keep records of all respirator fit testing for every employee affected. OSHA estimates that there are 650 employees that will be fit tested for respirators. A clerical workers will have generate and maintain these records. It will

¹⁸ Under the Medical Surveillance section of Item 12, the Agency estimates there are 1,011 referral examinations where workers travel on average 12 hours to a CBD Diagnostic Center ; and 337 referral examinations where employees travel on average 4.25 hours to the CBD Diagnostic center

take a clerical worker 5 minutes (0.08 hours) to prepare and maintain these records for each employee being tested. The baseline for non-compliance is estimated at 100 percent.

Burden hours: $650 \text{ (fit testing records)} \times 1 \text{ (non-compliance rate)} \times 0.08 \text{ (hours of Clerical worker time)} = 52 \text{ hours}$

Cost: $52 \text{ (hours)} \times \$21.22 \text{ (Clerical worker wage)} = \mathbf{\$1,103}$

C. Access to Records

1. Employee Access to Written Exposure Control Plan 1910.1024(f)(iii)

The employer must make a copy of the exposure control plan accessible to each employee who is or can reasonably be expected to be exposed to airborne beryllium in accordance with OSHA's Access to Employee Exposure and Medical Records (Records Access) standard (29 CFR 1910.1020(e)).

OSHA estimates it takes 5 minutes (0.08 hours) of a clerical worker's time to make the exposure control plan accessible to the worker. OSHA estimates that approximately 5% of the 61,747 at-risk workers, or 3,087 workers, will request access to their records per year. Baseline non-compliance with this requirement is estimated to be 62 percent.

Burden hours: $3,087 \text{ (worker requests for medical documentation)} \times 0.62 \text{ (non-compliance rate)} \times 0.08 \text{ (hours of Clerical worker time)} = 153 \text{ hours}$

One-Time Cost: $153 \text{ (hours)} \times \$21.22 \text{ (Clerical worker wage)} = \mathbf{\$3,247}$

2. Employee Access to Exposure Monitoring and Medical Records

§1910.1024 (n)(5) --§ 1915.1024 (n)(5) --§ 1926.1124 (n) (5)-- Employee Access to Records.

Upon request, the employer must make all records maintained as a requirement of this standard available for examination and copying to the Assistant Secretary, the Director, each employee, and each employee's designated representative(s) in accordance with the Records Access standard (29 CFR 1910.1020). Employers must maintain exposure records and make them available in accordance with 29 CFR 1910.1020.

OSHA estimates that approximately 5% of the 61,747 at-risk workers, or 3,087 workers, will request access to their records per year. OSHA estimates that it takes 5 minutes (0.08 hours) of a Clerical worker's time to disclose these records. Baseline non-compliance with this requirement is estimated to be 100 percent. The annual burden hours and cost for this task are estimated to be:

Burden hours: $3,087 \text{ (worker requests for medical documentation)} \times 1 \text{ (non-compliance rate)} \times 0.08 \text{ (hours of Clerical worker time)} = 247 \text{ hours}$

Annual Cost: 247 (hours) × \$21.22 (Clerical worker wage) = **\$5,241**

D. Rule Familiarization

The Agency expects that the employer will assign responsibility for investigating the details of the final rule, and for determining how to implement it, to one or more supervisors. OSHA assumes that the time supervisors will require for rule familiarization will be based on a number of factors, including establishment size. The agency estimates that supervisors in small establishments will require 4 hours to become familiar with the final rule, while supervisors in medium establishment will require 8 hours and those in large establishment will require 40 hours. OSHA's estimate of familiarization costs therefore reflects the total supervisor familiarization time (cost at a supervisory wage) for each covered employer, with the number of employees at each establishment also serving as a proxy to represent the diversity of beryllium activities. The estimates of the different sizes of establishments and the numbers of employees are explained in footnote 42 of FEA Chapter III (the total number of affected establishments is identified in Table III-13).

Small establishment (fewer than 20 employees)

Burden hours: 5,644 affected small establishments x 4 (hours of supervisor time) =
22,576 hours
Cost: 22,576 x \$40.08 (Supervisor wage) = **\$904,846**

Medium establishment (20 to 499 employees)

Burden hours: 1,619 affected medium establishments x 8 (hours of supervisor time) =
12,952 hours
Cost: 12,952 x \$40.08 (Supervisor wage) = **\$519,116**

Large establishment (500 or more employees)

Burden hours: 70 affected establishments in large establishments x 40 (hours of
supervisor time) = **2,800 hours**
Cost: 2,800 x \$40.08 (Supervisor wage) = **\$112,224**

Total Burden hours: 22,576+ 12,952 + 2,800 = **38,328**

Total Cost: \$904,846 + \$519,116 + \$112,224 = **\$1,536,186**

13. Provide an estimate of the total annual cost burden to respondents or recordkeepers resulting from the collection of information. (Do not include the cost of any hour burden shown in Items 12 and 14.)

The cost estimate should be split into two components: (a) a total capital and start-up cost component (annualized over its expected useful life) and (b) a total operation and maintenance and purchase of services component. The estimates should take into account costs associated

with generating, maintaining, and disclosing or providing the information. Include descriptions of methods used to estimate major cost factors including system and technology acquisition, expected useful life on capital equipment, the discount rate(s), and the time period over which costs will be incurred. Capital and start-up costs include, among other items, preparations for collecting information such as purchasing computers and software; monitoring, sampling, drilling and testing equipment; and record storage facilities.

If cost estimates are expected to vary widely, agencies should present ranges of cost burdens and explain the reasons for the variance. The cost of purchasing or contracting out information collections services should be part of this cost burden estimate. In developing cost burden estimates, agencies may consult with a sample of respondents (fewer than 10), utilize the 60-day pre-OMB submission public comment process and use existing economic or regulatory impact analysis associated with the rulemaking containing the information collection, as appropriate.

Generally, estimates should not include purchases of equipment or services, or portions thereof, made: (1) prior to October 1, 1995, (2) to achieve regulatory compliance with requirements not associated with the information collection, (3) for reasons other than to provide information or keep records for the government, or (4) as part of customary and usual business or private practices.

1. Exposure Monitoring

The Agency has taken a unit cost for analyzing the samples taken for exposure monitoring. This exposure monitoring requires that three samples be taken per worker: one time-weighted average (TWA) sample and two short-term exposure limit (STEL) samples. The costs differ for initial exposure monitoring (which is conducted by certified IH) and additional/periodic monitoring (which is conducted by a lower wage IH). The unit cost for an initial TWA sample is estimated to be \$583.27, which is the sum of the cost for contract industrial hygienist services (\$434.73) and the associated lab fees (\$148.54). The unit cost to obtain the two STEL samples is estimated to be \$1,166.54 (2 x (\$148.54 + \$434.73)) per sampled worker. The unit cost for additional/periodic TWA samples is estimated to be \$365.90, which is the sum of the cost for contract industrial hygienist services (\$217.37) and the associated lab fees (\$365.90). The unit cost to obtain additional/periodic STEL samples is estimated to be \$731.81 (2 x (\$148.54 + \$217.37)).¹⁹

Table A shows the number of responses per year, non-compliance rate, and total cost associated with each type of exposure monitoring sample. The number of workers affected by the exposure monitoring requirements varies, with 14,309 workers affected in the first year, 1,431 workers subject to periodic exposure monitoring, and 8,667 workers subject to additional exposure monitoring.²⁰ The total cost is calculated by multiplying the number of workers affected by the cost per sample by the non-compliance rate. First-year costs are then annualized, and the costs for each type of sample are summed to arrive at the total costs.

¹⁹ These exposure monitoring unit costs are summarized in Table V-16 of the FEA.

²⁰ The derivation of the number of affected workers described in Section 12 above.

Table A. Direct Costs of Exposure Monitoring

	Frequency	Responses per Year	Non-Compliance Rate	Non-Compliance Responses per year	Unit Cost	Total Cost
Initial						
TWA Sample	First Year	14,309	96%	13,737	\$583.27	\$8,012,380
2 STEL Samples	First Year	14,309	96%	13,737	\$1,166.54	\$16,024,760
Subtotal	First Year	14,309		13,737		\$24,037,140
Periodic						
TWA Sample	Annual	8,667	96%	8,320	\$365.90	\$3,044,288
2 STEL Samples	Annual	8,667	96%	8,320	\$731.81	\$6,088,659
Subtotal	Annual	8,667		8,320		\$9,132,947
Additional						
TWA Sample	Annual	1,431	96%	1,374	\$365.90	\$502,747
2 STEL Samples	Annual	1,431	96%	1,374	\$731.81	\$1,005,507
Subtotal	Annual	1,431		1,374		\$1,508,254
Total						\$34,678,341

2. Initial Medical Examinations

The Agency assumes that employers will incur an initial medical cost for the exams associated with the medical surveillance provision of the rule. The initial medical cost associated with initial medical exams is \$558.84, which includes \$42.19 for gathering or updating work and medical history, \$126.56 for a full physical exam (encompassing both respiratory and skin requirements), \$59.31 for a pulmonary function test, \$309.08 for a BeLPT, and \$216.90 for all additional tests (collectively) that the PLHCP may recommend. For this last element, the Agency estimates that 10 percent of the standard medical examinations will lead to further tests recommended by the PLHCP.²¹ The cost for the PLHCP or other medical provider to provide a written medical report to the employee is included in the cost for the medical exams.

The Agency estimates that 21,397 workers will be subject to annual medical surveillance,²² and OSHA estimates a non-compliance rate of 0.96 (20,541 workers) so the total cost for these workers is \$11,479,132 (20,541 x \$558.84). The cost for the additional exams is included.

Total Annual Cost: \$11,479,132

²¹ These exposure monitoring unit costs are summarized in Table V-17 of the FEA.

²² The derivation of the number of affected workers described in Section 12A5 above.

3. Respirator Fit-Test Materials

The Agency estimates that it costs employers \$1.22 for respirator materials to fit-test each of the 650 employees. This cost was not significant enough for separate identification in the FEA, but is derived from the respirator fit-test materials costs identified in *the Quantitative Fit Testing Protocol: Amendment to the Final Rule on Respiratory Protection* NPRM Supporting Statement.²³

Annual Cost: 650 (employees) x \$1.22 (cost for materials) = \$793

4. Total Capital Costs

The total costs for this item are the sum of the costs for exposure monitoring and medical examinations.

Total Cost: \$34,678,341+ \$11,479,132 +\$793 = **\$46,158,266**

14. Provide estimates of annualized cost to the Federal Government. Also, provide a description of the method used to estimate cost, which should include quantification of hours, operational expenses (such as equipment, overhead, printing, and support staff), and any other expense that would not have been incurred without this collection of information. Agencies may also aggregate cost estimates from Items 12, 13, and 14 in a single table.

There are no costs to the Federal Government.

15. Explain the reasons for any program changes or adjustments.

This is a new collection of information. The standard includes collection of information requirements for: conducting worker exposure monitoring, establishing, implementing, and updating a written exposure control plans, conducting medical surveillance of workers, providing examining physicians with specific information, obtaining written physician's opinions and providing those opinions to workers, ensuring physician provide employee medical reports to employees, and establishing and maintaining workers' exposure monitoring and medical surveillance records. The burden hours for the collection of information requirements contained in the standard result in a total program change of 194,261 hours and a program change cost of \$46,158,266 for mainly the exposure monitoring and the medical examinations provided under the final standard is \$9,219,144. The estimated 194,069 hours include initial activities that many employers will complete in the first year. The Agency will submit a non-material change to remove these burden hours after the first year.

²³ *Respiratory Protection QNFT NPRM* supporting statement, published Oct. 7, 2016, available at https://www.reginfo.gov/public/do/PRAViewDocument?ref_nbr=201511-1218-005 , p. 27.

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16. For collection of information whose results will be published, outline plans for tabulation and publication. Address any complex analytical techniques that will be used. Provide the time schedule for the entire project, including beginning and ending dates of the collection of information, completion of report, publication dates, and other actions.

OSHA will not publish the information collected under the final standard.

17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.

OSHA lists current valid control numbers in §§1910.8, 1915.8, 1917.4, 1918.4, and 1926.5 and publishes the expiration date in the Federal Register notice announcing OMB approval of the information collection requirement (see 5 CFR 1320.3(f)(3)). OSHA believes that this is the most appropriate and accurate mechanism to inform interested parties of these expiration dates.

18. Explain each exception to the certification statement.

OSHA is not requesting an exception to the certification statement.

B. COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS

This Supporting Statement does not contain any collection of information requirements that employ statistical methods.

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Table B. Summary of Burden Hours, Burden-Hour Cost and Capital Cost Under Item 12 of this Supporting Statement

	Frequency	Basis	Respondent	Responses per Year	Non-Compliance Rate	Hours per Response	Hours per Year	Loaded Hourly Wage	Total Cost	Total Responses
				<i>a</i>	<i>b</i>	<i>c</i>	$d = a \times b \times c$	<i>e</i>	$f = d \times e$	$g = a \times b$
A. Exposure Monitoring										
1. Performance Option										
Objective Data	Annual	Employee	Production Worker	0	0%	0.00	0	\$23.49	\$0	0
2. Scheduled Monitoring Option										
Initial	First Year	Employee	Production Worker	14,309	96%	0.50	6,868	\$23.49	\$161,329	13,737
Periodic	Annual	Employee	Production Worker	8,667	96%	0.50	4,160	\$23.49	\$97,718	8,320
Additional	Annual	Employee	Production Worker	1,431	96%	0.50	687	\$23.49	\$16,138	1,374
B. Beryllium Work Areas and Regulated Areas										
1. Written Exposure Control Plan										
Develop Plan	First Year	Establishment	HR Manager	5,872	57%	8.00	26,776	\$70.48	\$1,887,172	3,347
Develop Plan	First Year	Employee	HR Manager	54,943	62%	0.50	17,032	\$70.48	\$1,200,415	34,065
Update Plan	Annual	Employee	HR Manager	54,943	62%	0.80	27,252	\$70.48	\$1,920,721	34,065
2. Respirator Program										
Develop Plan	First Year	Establishment	HR Manager	465	41%	8.00	1,525	\$70.48	\$107,482	191
Update Plan	Annual	Establishment	HR Manager	465	41%	2.00	381	\$70.48	\$26,853	191
3. Respirator Fit Testing										
Respirator Fit Testing - Labor	Annual	Employee	Production Worker	650	100%	0.50	325	\$23.49	\$7,634	650
Respirator Fit Testing - Labor	Annual	Employee	Supervisor	650	100%	0.50	325	\$40.08	\$13,026	650
4. PPE										
Notify Cleaners in Writing	Annual	Establishment	Clerical	5,872	21%	0.17	210	\$21.22	\$4,456	1,233
5 Medical Surveillance										
Medical Exam - Initial and Annual	Annual	Employee	Production Worker	21,397	55%	2.08	24,478	\$23.49	\$574,988	11,768
Referral Exam -	Annual	Employee	Production Worker	1,011	100%	24.25	24,517	\$23.49	\$575,904	1,011

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Table B. Summary of Burden Hours, Burden-Hour Cost and Capital Cost Under Item 12 of this Supporting Statement

	Frequency	Basis	Respondent	Responses per Year	Non-Compliance Rate	Hours per Response	Hours per Year	Loaded Hourly Wage	Total Cost	Total Responses
				<i>a</i>	<i>b</i>	<i>c</i>	$d = \frac{a \times b}{x \ c}$	<i>e</i>	$f = d \times e$	$g = a \times b$
Travelling Workers										
Referral Exam - Non-Travelling Workers	Annual	Employee	Production Worker	337	100%	4.25	1,432	\$23.49	\$33,638	337
6. Information Provided to the PLHCP										
Provide Information - Supervisor	Annual	Employee	Supervisor	21,397	55%	0.25	2,942	\$40.08	\$117,915	11,768
7. Licensed Physician's Written Medical Opinion										
Process Information - Supervisor	Annual	Employee	Supervisor	21,397	55%	0.08	941	\$40.08	\$37,715	11,768
8. Medical Removal										
Medical Removal	First Year	Employee	Supervisor	778	100%	0.08	62	\$40.08	\$2,485	778
C. Recordkeeping										
1. Exposure Monitoring										
Initial	First Year	Employee	HR Manager	14,309	96%	0.25	3,434	\$70.48	\$242,028	13,737
Periodic	Annual	Employee	HR Manager	8,667	96%	0.25	2,080	\$70.48	\$146,598	8,320
Additional	Annual	Employee	HR Manager	1,431	96%	0.25	343	\$70.48	\$24,175	1,374
2. Medical Surveillance										
Medical Surveillance - HR Manager	Annual	Employee	HR Manager	22,745	96%	0.25	5,459	\$70.48	\$384,750	21,835
Medical Surveillance - Clerical	Annual	Employee	Clerical	22,745	96%	0.08	1,747	\$21.22	\$37,071	21,835
3. Training										
Training	Annual	Employee	Clerical	54,943	57%	0.08	2,505	\$21.22	\$53,156	31,318
4. Respirator Fit Testing Records										
Respirator Fit Testing	Annual	Employee	Clerical	650	100%	0.08	52	\$21.22	\$1,103	650
D. Employee Access to Exposure Monitoring and Medical Records										

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Table B. Summary of Burden Hours, Burden-Hour Cost and Capital Cost Under Item 12 of this Supporting Statement

	Frequency	Basis	Respondent	Responses per Year	Non-Compliance Rate	Hours per Response	Hours per Year	Loaded Hourly Wage	Total Cost	Total Responses
				<i>a</i>	<i>b</i>	<i>c</i>	$d = \frac{a \times b}{c}$	<i>e</i>	$f = d \times e$	$g = a \times b$
Written Exposure Control Plan	Annual	Employee	Clerical	3,087	62%	0.08	153	\$21.22	\$3,247	1,914
Access to Records	Annual	Employee	Clerical	3,087	100%	0.08	247	\$21.22	\$5,241	3,087
E. Rule Familiarization										
Small Establishments (< 20 Employees)	First Year	Establishment	Supervisor	5,644	100%	4.00	22,576	\$40.08	\$904,846	5,644
Medium Establishments (20 - 499 Employees)	First Year	Establishment	Supervisor	1,619	100%	8.00	12,952	\$40.08	\$519,116	1,619
Large Establishments (≥ 500 Employees)	First Year	Establishment	Supervisor	70	100%	40.00	2,800	\$40.08	\$112,224	70
Total										
First Year				98,009			94,025		\$5,137,097	73,188
Annual				255,572			100,236		\$4,082,047	173,468
Total				353,581			194,261		\$9,219,144	246,656

Table C -- Comments Received that are Related to the ICR:

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OSHA-H005C-2006-0870-1592	Schwerdt	Tom	Self	Comment from Schwerdt, Tom; Self	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1592
OSHA-H005C-2006-0870-1625	Colton	Craig	3M Company	Comment from Colton, Craig; 3M Personal Safety Division	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1625
OSHA-H005C-2006-0870-1655	Brisson	Michael	Beryllium Health and Safety - Sampling and Analysis Subcommittee Task Group	Comment from Brisson, Michael; Beryllium Health and Safety - Sampling and Analysis Subcommittee Task Group. Please see OSHA-H005C-2006-0870-1665 for corrected submission.	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1655
OSHA-H005C-2006-0870-1658	Shoemaker	Evan	Private Citizen	Comment from Shoemaker, Evan	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1658
OSHA-H005C-2006-0870-1664			National Jewish Health	Comment from Division of Occupational and Environmental Health Sciences (DEOHS), National Jewish Health; National Jewish Health	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1664
OSHA-H005C-2006-0870-1670	Almashat	Sammy	Public Citizen	Comment from Almashat, Sammy; Public Citizen	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1670
OSHA-H005C-2006-0870-1671	Schulte	Paul	National Institute for Occupational Safety and Health (NIOSH)	Comment from Schulte Paul; National Institute for Occupational Safety and Health (NIOSH)	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1671
OSHA-H005C-2006-0870-1672	Godinez	Christine	Committee on Education and the Workforce Democrats	Comment from Godinez, Christine; Committee on Education and the Workforce Democrats	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1672
OSHA-H005C-2006-0870-1675	Orr	William	Ameren	Comment from Orr, William; Ameren	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1675

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OSHA-H005C-2006-0870-1676	Kline	Joann	Kimberly-Clark Professional	Comment from Kline, Joann; Kimberly- Clark Professional	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1676
OSHA-H005C-2006-0870-1677	Stange	Bill	National Supplemental Screening Program (NSSP)	Comment from Stange, Bill; National Supplemental Screening Program (NSSP)	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1677
OSHA-H005C-2006-0870-1679	Trahan	Christine	North America's Building Trades Unions (NABTU)	Comment from Trahan, Chris; North America's Building Trades Unions (NABTU)	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1679
OSHA-H005C-2006-0870-1681	Brooks	Sara	United Steelworkers	Comment from Brooks, Sara; United Steelworkers (USW)	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1681
OSHA-H005C-2006-0870-1683	Oreck	Zoe	American Association for Justice (AAJ)	Comment from Oreck, Zoe; American Association for Justice (AAJ)	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1683
OSHA-H005C-2006-0870-1684	Seibert	John	Department of Defense	Comment from Seibert, John; Department of Defense (DoD) on behalf of Maureen Sullivan	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1684
OSHA-H005C-2006-0870-1685	O Connor	Patrick	American College of Occupational and Environmental Medicine (ACOEM)	Comment from O'Connor, Patrick; American College of Occupational and Environmental Medicine (ACOEM)	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1685
OSHA-H005C-2006-0870-1686	Trippler	Aaron	American Industrial Hygiene Association (AIHA)	Comment from Trippler, Aaron; American Industrial Hygiene Association (AIHA)	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1686
OSHA-H005C-2006-0870-1689	Reindel	Rebecca	AFL-CIO	Comment from Reindel, Rebecca; AFL-CIO	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1689
OSHA-H005C-2006-0870-1690	Dooley	Peter	National Council on Occupational Safety and Health (National COSH)	Comment from Dooley, Peter; National Council on Occupational Safety and Health (National COSH)	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1690
OSHA-H005C-	Comai	Andrew	International Union, United	Comment from Comai, Andrew;	https://www.regulations.gov/document?D=OSHA-

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2006-0870-1693			Automobile, Aerospace & Agricultural Implement Workers of America (UAW)	International Union, United Automobile, Aerospace & Agricultural Implement Workers of America (UAW)	H005C-2006-0870-1693
OSHA-H005C-2006-0870-1703	Brady	Robert	Congress of the United States	Comment from Congressman Robert Brady	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1703
OSHA-H005C-2006-0870-1705	Johnson	Dennis	Northrop Grumman	Public Comment from Johnson, Dennis Wade; Northrop Grumman	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1705
OSHA-H005C-2006-0870-1583	Sideris	Dino	Andres Construction Services	Comment from Sideris, Dino; Andres Construction Services	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1583
OSHA-H005C-2006-0870-1673	Tanenbaum	Jeffrey	Abrasive Blasting Manufacturers Alliance	Comment from Tanenbaum, Jeffrey; Abrasive Blasting Manufacturers Alliance	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1673
OSHA-H005C-2006-0870-1582	Allen	Kellie	Jack Allen, Inc.	Comment from Allen, Kellie; Jack Allen, Inc.	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1582
OSHA-H005C-2006-0870-1595	Knowles	Robert	General Dynamics	Comment from Knowles, Robert; General Dynamics: Bath Iron Works	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1595
OSHA-H005C-2006-0870-1618	Paxton	Matthew	Shipbuilders Council of America	Comment from Paxton, Matthew; Shipbuilders Council of America	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1618
OSHA-H005C-2006-0870-1657	Branche	Dru	Newport News Shipbuilding	Comment from Branche, Dru; Newport News Shipbuilding	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1657
OSHA-H005C-2006-0870-1663	Lones	Jamie	NGK Metals Corporation	Comment from Lones, Jamie; NGK Metals Corporation	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1663
OSHA-H005C-2006-0870-1680	Fitch	Ashlee	United Steelworkers and Materion	Comment from Fitch, Ashlee; United Steelworkers and Materion	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1680
OSHA-H005C-2006-0870-1661	Kolanz	March	Materion Brush Inc.	Comment from Kolanz, Marc; Materion Brush Inc.	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1661

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OSHA-H005C-2006-0870-1591	Wambach	Paul	N/A	Comment from Wambach, Paul	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1591
OSHA-H005C-2006-0870-1665	Brisson	Michael	Beryllium Health and Safety Sampling and Analysis Subcommittee Task Group	Comment from Brisson, Michael; Beryllium Health and Safety Sampling and Analysis Subcommittee Task Group	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1665
OSHA-H005C-2006-0870-1668	Nichols	Kathryn	Southern Company	Comment from Nichols, Kathryn; Southern Company	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1668
OSHA-H005C-2006-0870-1720	Maier	Lisa	National Jewish Health	Advance Testimony from Maier, Lisa; National Jewish Health	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1720
OSHA-H005C-2006-0870-1809	Reindel	Rebecca	AFL-CIO	Beryllium Post-Hearing Comment from Reindel, Rebecca; AFL-CIO	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1809
OSHA-H005C-2006-0870-1612	Hersman	Deborah	National Safety Council	Comment from Hersman, Deborah; National Safety Council (NSC)	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1612
OSHA-H005C-2006-0870-1688	Ewart	Gary	American Thoracic Society	Comment from Ewart, Gary on behalf of Malhotra, Atul; American Thoracic Society (ATS)	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1688
OSHA-H005C-2006-0870-1691	Woodhull	Dee	ORCHSE Strategies, LLC	Comment from Woodhull, Dee; ORCHSE Strategies, LLC	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1691
OSHA-H005C-2006-0870-1964	Almashat	Sammy	Public Citizen	Beryllium Post-Hearing Comment from Almashat, Sammy; Public Citizen	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1964
OSHA-H005C-2006-0870-1806	Maier	Lisa	National Jewish Health	Beryllium Post-Hearing Comment from Peggy Mroz on behalf of Maier, Lisa; National Jewish Health	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1806
OSHA-H005C-2006-0870-1807	Kolanz	March	Materion Brush Inc.	Beryllium Post-Hearing Comment from Kolanz, Marc; Materion Brush Inc.	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1807

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OSHA-H005C-2006-0870-1674	Miller	Mary	Edison Electric Institute (EEI)	Comment from Miller, Mary; Edison Electric Institute (EEI)	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1674
OSHA-H005C-2006-0870-1615	LeGresley	Clive	AWE	Comment from LeGresley, Clive; AWE	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1615
OSHA-H005C-2006-0870-1667	Ferguson	Edward	Boeing Company	Comment from Ferguson, Edward; Boeing Company	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1667
OSHA-H005C-2006-0870-1815	Schulte	Paul	National Institute for Occupational Safety and health (NIOSH)	Beryllium Post-Hearing Comment from Schulte, Paul; National Institute for Occupational Safety and Health (NIOSH)	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1815
OSHA-H005C-2006-0870-1756	OSHA		Occupational Safety and Health Administration	Beryllium Informal Public Hearings Proposed Rule (PR) of Occupational Exposure to Beryllium and Beryllium Compounds, March 22, 2016	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1756
OSHA-H005C-2006-0870-1505				Johnson, J.S., K. Foote, M. McClean, and G. Cogbill, 2001. Beryllium Exposure Control Program at the Cardiff Atomic Weapons Establishment in the United Kingdom	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1505
OSHA-H005C-2006-0870-0754	Wright, Civic	Michael, Terence	United Steelworkers/Materion Brush Inc.	Materion and Steelworkers, 2012. Letter dated February 8, 2012 addressed to Dr. David Michaels; DOL/OSHA from Michael Wright; United Steelworkers and Terence Civic; Materion Brush Inc.	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-0754
OSHA-H005C-2006-0870-1725	OSHA		Occupational Safety and Health Administration	Beryllium Hearing Exhibit 005: National Institute for Occupational Safety and Health	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1725

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				(NIOSH) Testimony	
OSHA-H005C-2006-0870-1755	OSHA		Occupational Safety and Health Administration	Beryllium Informal Public Hearings Proposed Rule (PR) of Occupational Exposure to Beryllium and Beryllium Compounds, March 21, 2016.	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1755
OSHA-H005C-2006-0870-1791	OSHA		Occupational Safety and Health Administration	USPSTF (2014) Screening for Lung Cancer: US Preventive Services Task Force Recommendation Statement	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1791
OSHA-H005C-2006-0870-1786	OSHA		Occupational Safety and Health Administration	AFL-CIO, 2014, "Post-Hearing Brief of American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) on the Occupational Safety and Health Administration's Proposed Rule on Occupational Exposure to Respirable Crystalline Silica,"	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1786
OSHA-H005C-2006-0870-1751	OSHA		Occupational Safety and Health Administration	Crystalline Silica Hearing Exhibit 029: Presentation of Dr. Franklin Mirer	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1751
OSHA-H005C-2006-0870-1756	OSHA		Occupational Safety and Health Administration	Beryllium Informal Public Hearings Proposed Rule (PR) of Occupational Exposure to beryllium and Beryllium Compounds, March 22, 2016.	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1756
OSHA-H005C-2006-0870-0767	OSHA		Occupational Safety and Health Administration	NSRP 0529, N1-93-1,1999. The National Shipbuilding Research Program. Feasibility and Economics Study of the Treatment, Recycling and Disposal of Spent Abrasives.	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-0767

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				April.	
OSHA-H005C-2006-0870-0634	OSHA		Occupational Safety and Health Administration	[NMAB-452] National Materials Advisory Board (NMAB) 1989. Beryllium Metal Supply Options: Report of the Committee on Technologies for Preparing Beryllium Metal.	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-0634
OSHA-H005C-2006-0870-0473	OSHA		Occupational Safety and Health Administration	Schuler CR, Virji MA, Deubner DC, Stanton ML, Stefaniak AB, Day GA, Park JY, Kent MS, Sparks R, Kathleen K. (2012) Sensitization and chronic beryllium disease at a primary manufacturing facility, part 3: exposure-response among short-term workers.	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-0473
OSHA-H005C-2006-0870-0599	OSHA		Occupational Safety and Health Administration	(2007) Exposure-Response Analysis For Beryllium Sensitization and Chronic Beryllium Disease Among Workers in a Beryllium Metal Machining Plant	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-0599
OSHA-H005C-2006-0870-1805	Trahan	Chris	North America's Building Trades Unions (NABTU)	Beryllium Post-Hearing Comment from Trahan, Chris; North America's Building Trades Unions (NABTU)	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1805
OSHA-H005C-2006-0870-1597	Feinberg	Maxine	American Dental Association	Comment from Feinberg, Maxine and O'Loughlin, Kathleen; American Dental Association (ADA)	https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1597