

BERYLLIUM STANDARD FOR GENERAL INDUSTRY (29 CFR 1910.1024),
CONSTRUCTION (29 CFR 1926.1124), AND MARITIME (29 CFR 1915.1024)
1218-0267
June 2020

Note

The Occupational Safety and Health Administration (OSHA) is revising the beryllium standard for general industry (29 CFR 1910.1024), which contains collections of information that are subject to review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (PRA), 44 U.S.C. 3501 *et seq.*, and OMB regulations at 5 CFR part 1320. This standard, and the beryllium standards for the construction and shipyard industries (29 CFR 1926.1124 and 1915.1024, respectively), contain collection of information (paperwork) requirements that have been previously approved by OMB under OMB control number 1218-0267.

This Information Collection Request (ICR) pertains to changes in the collection of information of the Occupational Exposure to Beryllium and Beryllium Compounds in the general industry standard only. The beryllium standards for maritime (specifically referred to as “shipyards” in this analysis) and construction sectors are not affected by this rule, and in this ICR, the information collection requirements of these sectors remain the same as approved by OMB in the previous ICR. OSHA has updated the wage rates for all three sectors to reflect the May 2018 occupational employment statistics from the Bureau of Labor Statistics. This paperwork package is divided into two categories; one is for the general industry sector and the other is for the construction and shipyard sectors.

This supporting statement is the update of the December 2018 proposed rulemaking supporting statement.

**SUPPORTING STATEMENT FOR
THE INFORMATION COLLECTION REQUIREMENTS
IN THE STANDARD FOR THE OCCUPATIONAL EXPOSURE
TO BERYLLIUM IN GENERAL INDUSTRY (29 CFR 1910.1024), CONSTRUCTION
(29 CFR 1926.1124), AND MARITIME (29 CFR 1915.1024)¹
OMB CONTROL NUMBER 1218-0267 (June 2020)**

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)).

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

¹The purpose of this Supporting Statement is to analyze and describe the burden hours and costs associated with provisions of the 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.

warning as are necessary to ensure 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 rule to revise the occupational exposure to beryllium and beryllium compounds standard for general industry (29 CFR 1910.1024).

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.

OSHA is revising several collection of information requirements contained in the beryllium standard for general industry. The revised standard removes and adds language to several collections of information in the previously approved information collection request, including for the written exposure control plan, personal protection equipment, medical surveillance, and recordkeeping provisions of the standard.

The following discussion provides detail on each collection of information requirement in the general industry, construction, and shipyards standards. The rulemaking only made changes to the standard for general industry. Those changes are noted in the discussion of the general industry standard.

General Industry:

§ 1910.1024(d) -- Exposure Assessment

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

(2) Performance option. The employer must assess the 8-hour time-weighted average (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 general purposes of requiring an assessment of airborne exposure to beryllium include: determination of the extent and degree of exposure at the worksite; identification and prevention of employee overexposure; identification of the sources of exposure; 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. Assessment enables employers to meet their legal obligation to ensure that their employees are not exposed in excess of the permissible exposure limit (PEL) and to ensure employees have access to accurate information about their exposure levels, as required by section 8(c)(3) of the Act, 29 U.S.C. 657(c)(3). In addition,

exposure data enables the physicians or other licensed health care professionals (PLHCP) performing medical examinations to be informed of the extent of occupational exposures.

The performance option is intended to allow employers flexibility in assessing the beryllium exposures of their employees. Under this option, the employer has the option to use any combination of objective data and air monitoring data. Where employers want a more structured approach for meeting their exposure assessment obligations, OSHA also provides the scheduled monitoring option. OSHA takes the burden for the exposure assessment collection of information under the scheduled option paragraph (d)(3).

§ 1910.1024(d)(3) -- Scheduled Monitoring Option.

Initial Monitoring:

§ 1910.1024(d)(3)(i), (ii) & (iii).

(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 short-term exposure limit (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 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).

(v) Where the most recent exposure monitoring indicates that airborne exposure is at or above the action level but at or below the TWA permissible exposure limit (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. Periodic monitoring helps employers identify changes in the workplace that influence exposures, and helps employers ensure that workers do not experience exposures that are higher than expected. Periodic monitoring also 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. The standard allows for employers to discontinue monitoring under certain circumstances.

§ 1910.1024(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) -- 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, as well as whether the standard requires them to wear respiratory protection and/or personal protective clothing and equipment. Notification can also permit and encourage workers 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.

§ 1910.1024(e)(2)(i) & (ii) -- Demarcation of Beryllium Work Areas and Regulated Areas.

(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.

Purpose: The purpose of a beryllium work area is to inform employees and other persons of the potential presence of airborne beryllium; to control access to these areas; and in conjunction with other provisions such as the written control plan, hygiene, and housekeeping requirements, to minimize the transfer of beryllium to other areas of the facility and reduce the potential for exposure to other employees. 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 can help to minimize exposure to workers not directly involved in operations that generate beryllium.

OSHA is not taking burden hours or costs under Items 12 and 13 of this Supporting Statement for the requirement in paragraph (e)(2)(i) to demarcate beryllium work areas. The beryllium work area requirement is performance oriented, allowing the employer to choose how to establish boundaries for each beryllium work area and restrict access. Because the employer may comply with this provision through the use of barriers or other forms of demarcation, rather than through signage, OSHA does not consider this requirement to be a collection of information under 5 CFR 132(c)(2) (“Controlling paperwork burden on the public”).

OSHA is also not taking burden hours or costs under Items 12 and 13 of this Supporting Statement for the requirement in paragraph (e)(2)(ii) to identify regulated areas in accordance with paragraph (m)(2). As explained in the discussion of paragraph (m) below, paragraph (m)(2), which requires the posting of a sign to warn employees of the presence of beryllium, requires specific language provided by the agency in the standard. Because paragraph (m)(3), and by extension paragraph (e)(ii)(2), provides specific language for the required warning, it is not a collection 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(f)(1)(i), (ii), & (iii) -- Methods of Compliance -- Written Exposure Control Plan.

(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 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 is notified that an employee is eligible for medical removal in accordance with paragraph (l)(1) of this standard for evaluation at a CBD diagnostic center, or shows signs or symptoms associated with exposure to 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:

Paragraph (f)(1)(i): Written exposure control plans are instrumental in ensuring that employers comprehensively and consistently protect employees exposed to beryllium. Requiring employers to articulate conditions resulting in exposure 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. Even in cases where employees are well trained, the written plan can help to ensure that controls are consistently used and become part of employees' routine skill sets. Employers can also use the plans to ensure that maintenance checks are routinely performed and optimal conditions are maintained. In addition, written exposure control plans are a useful method for communicating protections to employees.

OSHA notes that paragraph (f)(1) of the general industry standard has been revised. Under paragraph (f)(1)(i)(D), employers were previously required to include procedures in their plans for minimizing cross-contamination, "including preventing the transfer of beryllium" between surfaces, equipment, clothing, materials, and articles within beryllium work areas. OSHA has removed the word "preventing" from the regulatory text to clarify that these procedures may not totally eliminate the transfer of beryllium, but should minimize cross-contamination of beryllium.

Paragraph (f)(1)(ii): The written exposure control plan needs to be periodically reviewed and, if needed, updated because work conditions can change (e.g., the employer purchases a new type of

equipment). A yearly review is needed to ensure that all current scenarios are captured in the plan.

OSHA revised paragraph (f)(1)(ii)(B) of the general industry standard by replacing the previously used phrase “airborne exposure to and dermal contact with beryllium” with “exposure to beryllium,” which OSHA explained would simplify the language of the provision while still capturing all potential exposure scenarios previously covered.

Paragraph (f)(1)(iii): Requiring the written exposure control plan to be accessible also serves an important purpose. Written exposure control plans are effective methods for communicating protections to employees. Making the written plan accessible empowers and protects employees by providing them with written information about sources of exposure, controls, and personal protective clothing and equipment, as well as certain other procedures to minimize employee exposure.

§ 1910.1024(g)(2) -- Respiratory Protection Program.

(2) 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 respiratory protection program ensures that respirators are properly used in the workplace and are effective in protecting employees. As required under 29 CFR 1910.134(c)(1), employers providing employees with respiratory protection pursuant to the beryllium standard must establish a written respiratory protection program. This written program must include: procedures for selecting respirators for use in the workplace; medical evaluations of employees required to use respirators; fit-testing procedures for tight-fitting respirators; procedures for proper use of respirators in routine and reasonably foreseeable emergency situations; procedures and schedules for maintaining respirators; procedures to ensure adequate quality, quantity, and flow of breathing air for atmosphere-supplying respirators; training of employees in respiratory hazards to which they might be exposed and the proper use of respirators; and procedures for evaluating the effectiveness of the program.

§ 1910.1024(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 Hazard Communication standard (HCS) (29 CFR 1910.1200).

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 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 requirement in paragraph (m)(3) is not a collection of information because the standard provides specific language 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) -- 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 exposure to 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.

OSHA notes that this paragraph has been revised to replace the previously used phrase “airborne exposure to and dermal contact with beryllium” with “exposure to beryllium.” OSHA explained that this change simplifies the language of the provision while still capturing all potential exposure scenarios currently covered.

§ 1910.1024(j)(3)(i) - (iii) -- Housekeeping – Disposal, Recycling, and Reuse.

(3) Disposal, recycling, and reuse:

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

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

(iii) Except for intra-plant transfers, materials designated for recycling or reuse

that contain at least 0.1 percent beryllium by weight or are contaminated with beryllium must be cleaned to be as free as practicable of beryllium or placed in enclosures that prevent the release of beryllium-containing particulate or solutions under normal conditions of use, storage, or transport, such as bags or containers.

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 notes that this paragraph has been revised in several ways from the 2017 standard for general industry. As originally promulgated in the 2017 final rule, paragraph (j)(3)(i) required that materials designated for disposal be disposed of in sealed, impermeable enclosures, such as bags or containers, that are labeled according to paragraph (m)(3) of the beryllium standard, but did not allow employers the alternative option of cleaning such material to be as free as practicable of beryllium. Further, both paragraphs (j)(3)(i) and (j)(3)(ii) required that materials be transferred in sealed, impermeable bags, but did not further define this requirement. Finally, the original paragraph (j)(3) did not explicitly address transfers of materials for the purpose of reuse.²

OSHA proposed a number of changes in the 2018 general industry NPRM: adding provisions explicitly addressing transferring materials for reuse; clarifying that the rule's requirements for disposal, recycling, and reuse do not apply to intra-plant transfers; and allowing for the cleaning of materials bound for disposal. The agency also proposed reorganizing the paragraph's two paragraphs into three that focused on specific topics and making minor changes in terminology to improve the clarity and internal consistency of the standard. Only one of the changes is substantive, which is the inclusion of the option for cleaning instead of enclosure; the remaining edits merely clarify OSHA's original intent. In the final standard for general industry, OSHA has finalized the changes proposed in the 2018 NPRM, with only one clarifying revision, which explicitly incorporates the intra-plant exception found in paragraphs (j)(3)(ii) and (j)(3)(iii).

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) provides 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), & (3) -- Medical Surveillance.

² Subsequent to the 2017 final rule, the 2018 DFR clarified that the requirements of paragraph (j)(3) do not apply to materials containing only trace amounts of beryllium (less than 0.1 percent by weight).

(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) of this standard 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).

(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. Each employee who meets the criteria of paragraph (k)(1)(i)(C) and who has not received an examination since exposure to beryllium during the emergency must be provided an examination at the time the employee's employment terminates.

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

- (A) If that employee has not received a medical examination within the previous two years pursuant to paragraph (k)(1)(i), then within 30 days after the employee meets the criteria of paragraph (k)(1)(i)(C); or
- (B) If that employee has received a medical examination within the previous two years pursuant to paragraph (k)(1)(i), then at least one year but no more than two years after the employee meets the criteria of paragraph (k)(1)(i)(C).

(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 guidelines to perform the BeLPT.
 - (F) A low dose computed tomography 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 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 inclusion of medical surveillance requirements in the general industry standard 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. Nearly all of OSHA's health standards include medical surveillance requirements.

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 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 requirement to offer an examination to employees who show signs or symptoms of CBD or other beryllium-related health effects is necessary because the risk of material impairment of health remains significant at the action level. Consequently, even employees exposed at the action level for fewer than 30 days in a year may be at risk of developing CBD and other beryllium-related diseases and adverse health effects. In addition, beryllium sensitization and CBD could develop in employees who are especially sensitive to beryllium, may have been unknowingly exposed, or may have been exposed to greater amounts than the exposure assessment suggests. By requiring covered employers to make a medical exam available when an employee exhibits signs or symptoms, the standard protects all employees who may have developed CBD, including employees who have been exposed to beryllium for less than 30 days a year above the action level.

The requirement to offer an examination to employees whose most recent written medical opinion recommends periodic medical surveillance is critical to ensure the evaluation of those workers who have been identified by a PLHCP as in need of further evaluation, but may not otherwise meet a trigger for medical surveillance under paragraphs (k)(1)(i)(A), (B) or (C).

The requirement to offer a medical examination at least every two years after the initial examination to employees who continue to meet the criteria is intended to facilitate the detection of health effects at an early stage so that interventions can be taken to improve health. The requirement to offer an examination at termination under the specified circumstances is intended to ensure that no employee terminates employment while carrying a detectable, but undiagnosed, health condition related to beryllium exposure.

The specified contents of the examination are those that are necessary for the PLHCP to opine on any recommended limitations on the employee's use of respirators, protective clothing, or equipment or on the employee's airborne exposure to beryllium and whether the employee has any detected medical condition, such as CBD or beryllium sensitization, or any medical conditions related to airborne exposure that require further evaluation or treatment. The provision for "any other tests deemed appropriate" gives the examining PLHCP the flexibility to determine additional tests that are medically necessary and related to beryllium exposure. This flexibility is needed because there are no tests beyond those listed in paragraphs (k)(3)(ii)(A)–(E) that are necessarily applicable to all employees covered by the medical surveillance requirement.

OSHA notes that this paragraph has been revised from the 2017 standard for general industry. Paragraph (k)(2)(i)(B) of the 2017 standard required the employer to provide a medical examination within 30 days after determining that the employee shows signs or symptoms of CBD or other beryllium-related health effects or that the employee has been exposed to beryllium in an emergency. After publication of the 2017 final rule, stakeholders suggested to OSHA that, for individuals exposed one-time during an emergency, 30 days may be insufficient

to detect beryllium sensitization, so a longer timeframe for medical examinations may be more appropriate (83 FR at 63757).

In the 2018 NPRM, OSHA therefore proposed removing the requirement for a medical examination within 30 days of exposure in an emergency, under paragraph (k)(2)(i)(B), and adding paragraph (k)(2)(iv), which would require the employer to offer a medical examination at least one year after but no more than two years after the employee is exposed to beryllium in an emergency. The final standard for general industry finalized this requirement, with a slight modification to paragraph (k)(2)(iv) to customize protections for two general groups of employees who could be exposed to beryllium in an emergency. Paragraph (k)(2)(iv)(A) now requires the employer to offer a medical examination to an employee within 30 days after the employee was exposed to beryllium in an emergency, if the employee has not had an examination under paragraph (k)(1)(i) within the last two years. Paragraph (k)(2)(iv)(B) requires the employer to offer a medical examination to an employee within one to two years after the employee was exposed to beryllium in an emergency, if the employee had an examination under paragraph (k)(1)(i) of the beryllium standard within the last two years.

§ 1910.1024(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 required to be provided to the PLHCP and, when applicable, the CBD diagnostic center, 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 will also assist the PLCHP in determining if a condition may be related to beryllium exposure.

§ 1910.1024(k)(5)(i), (ii), & (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) of this standard.

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 will also be able to provide the written medical report to future health care providers.

The preparation of the report is accounted for under Item 12, cost to the employer for an employee's medical examination.

§ 1910.1024(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) of this standard.

(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: The written medical opinion in the general industry standard 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 requirement that the opinion be in written form ensures that employers and workers have the benefit of this information. The 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) -- 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 evaluation at the CBD diagnostic center must be scheduled within 30 days, and must occur within a reasonable time, 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 evaluation must include any tests deemed appropriate by the examining physician at the CBD diagnostic center, such as pulmonary function testing (as outlined by the American Thoracic Society criteria), bronchoalveolar lavage (BAL), and transbronchial biopsy. If any of the tests deemed appropriate by the examining physician are not available at the CBD diagnostic center, they may be performed at another location that is mutually agreed upon by the employer and the employee.

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

(iv) The employer must obtain a written medical opinion from the CBD diagnostic center within 30 days of the medical examination. The written medical opinion must contain only the

information in paragraph (k)(6)(i), as applicable, unless the employee provides written authorization to release additional information. If the employee provides written authorization, the written opinion must also contain the information from paragraphs (k)(6)(ii), (iv), and (v), if applicable.

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

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

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.

Evaluation at a CBD diagnostic center allows employees who are confirmed positive or diagnosed with CBD to receive specialized evaluation to determine the appropriate tests to monitor for possible progression from sensitization to CBD and to monitor the progression of CBD if it does occur. The requirements in (k)(7)(iii), (iv), and (v) regarding the written medical report and written medical opinion serve the purposes described above in the discussions of (k) (5) and (k)(6). 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 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 standard adversely affects the health of workers.

OSHA notes that this paragraph has been revised from the 2017 standard for general industry. In the final rule, OSHA amended paragraph (k)(7) in three ways. First, OSHA revised paragraph (k) (7)(i) to require that the evaluation must be *scheduled* within 30 days, and must occur within a reasonable time, of the employer receiving one of the types of documentation listed in paragraph (k)(7)(i)(A) or (B). Previously, the standard required employers to *provide* the examination within 30 days of the employer receiving one of the types of documentation listed in paragraph (k)(7)(i)(A) or (B). Second, OSHA added a provision, in paragraph (k)(7)(ii), which specifies that the employer must ensure that, as part of the evaluation, the employee is offered any tests deemed appropriate by the examining physician at the CBD diagnostic center, such as pulmonary function testing (as outlined by the American Thoracic Society criteria), bronchoalveolar lavage

(BAL), and transbronchial biopsy. The new provision also states that if any of the tests deemed appropriate by the examining physician are not available at the CBD diagnostic center, they may be performed at another location that is mutually agreed upon by the employer and the employee. Third, OSHA made minor, non-substantive numbering and reference edits to other provisions in paragraph (k)(7) to account for the addition of new paragraph (k)(7)(ii). Specifically, OSHA renumbered current paragraphs (k)(7)(ii), (iii), (iv), and (v) as (k)(7)(iii), (iv), (v), and (vi), and added a reference to new paragraph (k)(7)(ii) to the newly renumbered paragraph (k)(7)(vi).

§ 1910.1024(l)(1) & (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)(iii) of this standard; or

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

(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: Medical removal, generally, serves three main purposes. First, it increases employee participation and confidence in the standard's medical surveillance program. Second, by requiring the employer to remove employees with the highest risk of suffering material impairment of health (if the employee chooses removal), medical removal may benefit sensitized employees and those with CBD. Finally, medical removal may provide employers with an additional incentive to keep employee exposures low.

The purpose of the provisions in paragraphs (l)(1) and (l)(2) 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 in accordance with paragraph (k)(5)(v), (k)(6)(v), (k)(7)(iii), or (k)(7)(iv) of this standard. By making employees eligible for removal when a written medical report indicates a confirmed positive finding or CBD diagnosis or recommends removal from airborne exposure to

beryllium based on a CBD diagnosis or a confirmed positive finding, the standard offers protection to employees who could benefit from such removal. The same protection is offered to employees for whom the written medical opinion contains, with their authorization, a recommendation for medical removal in accordance with paragraph (k)(6)(v) or (k)(7)(iv). 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 and maintaining the employee's privacy.

§ 1910.1024(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.

(iii) 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.³

Purpose: The purpose of ensuring that each employee has training and access to labels and safety data sheets is to enable workers to take the precautions necessary to implement special practices to prevent or reduce beryllium exposure. Requirements that employers provide training to workers, both in paragraph (m)(1)(iii) and elsewhere, such as in paragraph (m)(3), are not collections of information.

§ 1910.1024(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.

³The 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.

(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
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 of information originally supplied by the Federal government to the employer 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 that the warning signs required by paragraph (m)(2) is not a collection of information. Therefore, OSHA is taking no burden hours or cost for this requirement.

§ 1910.1024(m)(3) – Warning labels

(3) Warning labels. Consistent with the HCS (29 CFR 1910.1200), the employer must label each immediate container of clothing, equipment, and materials contaminated with beryllium, and must, at a minimum, include the following on the label:

DANGER
CONTAINS BERYLLIUM

MAY CAUSE CANCER

CAUSES DAMAGE TO LUNGS

AVOID CREATING DUST

DO NOT GET ON SKIN

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.

OSHA notes that this provision has been revised in this final rule. Paragraph (m)(3) of the 2017 general industry standard required employers to label “each bag and container” of clothing, equipment, and materials contaminated with beryllium. In the 2018 NPRM, OSHA proposed to replace the phrase “each bag and container” with the phrase “each immediate container,” to clarify that the employer need only label the immediate bag or container of beryllium-contaminated items and not larger containers holding the labeled bag or container.” OSHA is finalizing this revision as proposed.

Under PRA, information originally supplied by the Federal government to the employer 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 that the warning labels required by paragraph (m)(3) is not a collection of information. Therefore, OSHA is taking no burden hours or cost for this requirement.

§ 1910.1024(m)(4)(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) -- Recordkeeping.

§ 1910.1024(n)(1)(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 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).

Purpose: OSHA believes that 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. 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 standards. 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 occupational hazards related to beryllium exposure. The records will allow interested parties to determine if existing controls are protecting workers or whether additional controls are necessary to provide the required protection. These records also allow OSHA to ascertain whether employers are complying with the standards, thereby ensuring that workers are receiving adequate protection from occupational exposure to beryllium and beryllium compounds.

OSHA notes that this paragraph has been revised from the 2017 standard for general industry, which previously required employers' air monitoring data ((n)(1)(ii)(F)), medical surveillance ((n)(3)(ii)(A)), and training ((n)(4)(i)) records to include employee Social Security Numbers (SSNs). In the 2018 NPRM, OSHA proposed to modify paragraph (n) to remove that requirement. This final rule removes that requirement, but allows employers the option to still use SSNs or to use some other alternative employee identifier system.

§ 1910.1024(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: The records of objective data required under paragraph (n)(2) are necessary and appropriate for protection of worker health, enforcement of the standard, and development of information regarding the causes and prevention of occupational illnesses. 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 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 standard, thereby ensuring that workers are receiving adequate protection from beryllium exposure.

There is no burden taken for the items in paragraph (n)(2) because OSHA assumes any burden for the purposes of this Supporting Statement is incurred under the scheduled monitoring option.

§ 1910.1024(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 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 and 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 standard, 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 standard.

In the final rule, OSHA's deletion of the requirement, in paragraph (n)(3)(ii)(A), to remove the requirement for employees' SSNs in their medical surveillance records does not change costs or burden hours.

§ 1910.1024(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 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.

In the final rule, OSHA's deletion of the requirement, in paragraph (n)(4)(i), to remove the requirement for employees' SSNs in their training records does not change costs or burden hours.

§ 1910.1024(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 standard and to assist employees and their representatives in the development of information regarding the causes and prevention of occupational illnesses.

§ 1910.1024(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.

Construction and Shipyard Sectors:

Below, OSHA has retained the approved collection of information requirements for the maritime and construction sectors until parallel rulemakings for those sectors are approved by OMB. No changes have yet been made to the regulatory requirements as previously approved by OMB.

Exposure Assessment.

§ 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 general purposes of requiring an assessment of airborne exposure to beryllium include: determination of the extent and degree of exposure at the worksite; identification and prevention of employee overexposure; identification of the sources of exposure; 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. Assessment enables employers to meet their legal obligation to ensure that their employees are not exposed in excess of the permissible exposure limit (PEL) and to ensure employees have access to accurate information about their exposure levels, as required by section 8(c)(3) of the Act, 29 U.S.C. 657(c)(3). In addition, exposure data enables the physicians or other licensed health care professionals (PLHCP) performing medical examinations to be informed of the extent of occupational exposures. The performance option is intended to allow employers flexibility in assessing the beryllium exposures of their employees. 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).

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

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

- (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 monitoring is to determine the extent and degree of beryllium exposure at the worksite; identify and prevent employee overexposure; identify the sources of exposure to beryllium; collect of exposure data so that the employer can select the proper control methods to be used; and evaluate 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 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. Periodic monitoring helps employers identify changes in the workplace that influence exposures, and helps employers ensure that workers do not experience exposures that are higher than expected. Periodic monitoring also 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. The standard allows for employers to discontinue monitoring under certain circumstances.

§ 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.

§ 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, as well as whether the standard requires them to wear respiratory protection and/or personal protective clothing and equipment. Notification can also permit and encourage workers 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 shipyard sector.

§ 1915.1024(e)(2) Regulated Areas -- § 1926.1124(e)(2); Competent Person

Shipyards:

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

Purpose: 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 or STEL, to limit exposure to as few workers as possible, and to remind employees that personal protective equipment (PPE) is required. Establishing a regulated area 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 provision under items 12 and 13 of this Supporting Statement.

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.

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 competent person is to provide further protection for employees wherever employees may be exposed to airborne beryllium at levels above the PELs through

inspections, implementation of the written exposure control plan, and ensuring the use of respiratory protection and protective clothing and equipment.

Any burdens associated with the competent person are discussed as part of the written exposure control plan discussion in Item 12.

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

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 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 dermal 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.

§ 1915.1024(g) -- § 1926.1124(g) -- Respiratory Protection Program.

(2) 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.

§ 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").

§ 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.

This requirement has zero burden because the types of personal protective equipment used in construction and shipyard sectors do not require laundering or repair.

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.

§ 1915.1024(j)(3) --§ 1926.1124(j)(3) — Housekeeping — Disposal.

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.

§ 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 will 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.

§ 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 will also assist the PLCHP in determining if a condition may be related to beryllium exposure.

§ 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 will also be able to provide the written medical report to future health care providers.

§ 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.

§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) 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.

§ 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.

§ 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.

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.

§ 1915.1024(m)(2) – Warning Signs

Shipyards:

(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

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.

§ 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.

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 that 1910.1024(m)(3) – § 1915.1024(m)(3) -- § 1926.1124(m)(2) – warning labels are not collections of information.

§ 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.

§ 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).

§ 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.

§ 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 final 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.

§ 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.

§ 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.

§ 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 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 beryllium general industry 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.

The information collection requirements of the standard do not have a significant impact on a substantial number of small entities.

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 general industry 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**
- **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 general industry 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.

The standard also requires that exposure records, paragraph (n)(1)(iii), objective data, paragraph (n)(2)(iii), and medical records, paragraph (n)(3)(iii), be maintained pursuant to OSHA's Records Access standard (29 CFR 1910.1020). Under the records access standard, 29 CFR 1910.1020(d)(1)(i), the medical records for each employee must be preserved and maintained for at least the duration of employment plus 30 years, with certain exceptions (see 29 CFR 1910.1020(d)(1)(i)(A)-(C)). Similarly, under 29 CFR 1910.1020(d)(1)(ii) and (iii), employee exposure records, as well as analyses using exposure or medical records, must be preserved and maintained for 30 years.

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.

On January 9, 2017, OSHA published a final rule establishing new permissible exposure limits and other provisions to protect employees from beryllium exposure, such as requirements for exposure assessment, respiratory protection, personal protective clothing and equipment, housekeeping, medical surveillance, hazard communication, and recordkeeping for the general industry, construction, and shipyard sectors. OMB approved the collection of information contained in the final rule under OMB Control Number 1218-0267.

On December 11, 2018, OSHA published a proposed rule (83 FR 63746) to modify the general industry standard by clarifying certain provisions to improve and simplify compliance. The 2018 general industry proposal would revise the collection of information contained in the general industry standard approved by OMB by clarifying provisions related to the written exposure

control plan, the cleaning and replacement of personal protection equipment, the housekeeping for the disposal, recycling and reuse of contaminated materials, the frequency for medical examinations for employees who have been exposed to beryllium during an emergency or show signs and symptoms of CBD, the referrals to the CBD diagnostic center and the collection and recording of social security numbers in medical surveillance and recordkeeping. OSHA prepared and submitted to OMB an ICR for the 2018 proposed rule for review in accordance with 44 U.S.C. 3507(d).

In accordance with the PRA (44 U.S.C. 3506(c)(2)), OSHA solicited public comments on the collection of information contained in the 2018 proposed rule. OSHA encouraged commenters to submit their comments on the information collection requirements contained in the proposed rule under docket number OSHA-2018-0003, along with their comments on other parts of the proposed rule. In addition to generally soliciting comments on the collection of information requirements, the proposed rule indicated that OSHA and OMB were particularly interested in comments that addressed the following:

- Whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;
- The accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;
- The quality, utility, and clarity of the information to be collected; and
- Ways to minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g., permitting electronic submission of responses.

(84 FR at 63766).

On March 29, 2019, OMB issued a Notice of Action (NOA) stating, “Terms of the previous clearance remain in effect. 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.” A copy of the proposed ICR is available to the public at <http://www.reginfo.gov/public/do/PRAOMBHistory?ombControlNumber=1218-0267>.

No public comments were received in response to the proposed ICR submitted to OMB for review. However, the agency received 21 public comments in response to the proposed rule. The comments submitted in response to the proposed rule did recommend modifying some provisions containing collections of information. These comments were considered when OSHA revised the ICR for the final rule.

Summaries of these comments and OSHA's responses are found in the preamble to the final rule in Sections XI, Summary and Explanation of the Final Rule, and IV, Final Economic Analysis and Regulatory Flexibility Certification, and in the final ICR. Concurrent with publication of this final rule, the Department of Labor has submitted the final ICR, containing the full analysis and description of the burden hours and costs associated with the final rule, to OMB for approval. A copy of this ICR will be available on the internet at http://www.reginfo.gov/public/do/PRAViewICR?ref_nbr=202006-1218-006 on the day following publication of the final rule.

Attachment A provides a discussion of the significant public comments related to the final rule's information collection requirements and the agency response.

Attachment B lists the comments sent in response to the proposed rule.

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 final 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.

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.**

Respondent Burden-Hour and Cost Burden Determinations

The burden hours and cost determinations are based on OSHA's Final Economic Analysis (FEA) for this final rule, Occupational Exposure to Beryllium and Beryllium Compounds in General Industry, and the FEA for the 2017 final rule, where applicable. The 2017 FEA can be found on regulations.gov at docket ID OSHA-H005C-2006-0870-2043. 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. The non-compliance rates and some assumptions are based on the 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), published January 9, 2017.⁴

The agency estimates that a total of 61,747 employees in 7,333 establishments are potentially at risk from exposure to beryllium (see Table VIII-2 in the 2017 final rule (82 FR 2569)). This includes all entities covered by the three beryllium standards (general industry, shipyards, and construction). In the general industry sector only, the subject of the ICR for this rulemaking, the agency estimates there are a total of 50,261 employees affected in 4,538 establishments.⁵ The agency also estimates that there are 11,486 employees and 2,796 establishments potentially at risk from exposure to beryllium and beryllium compounds in the construction and shipyard sectors.

For the sole purpose of calculating burden hours and costs under the Paperwork Reduction Act, this supporting statement has rounded certain numbers up to obtain the 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.

⁴The 2017 FEA tables referenced in this Supporting Statement, may be downloaded from www.reginfo.gov.

⁵ Source: Docket number OSHA-H005C-2006-0870-2043, Table VIII-2 of the 2017 Final Rule (82 FR at 2554). Also available at <https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-2042>, Chapter 3, Table III-13, p. III-129.

Wage Rates

The agency obtained the wage rates from the May 2018 Occupational Employment Statistics (OES) of the Bureau of Labor Statistics (BLS, 2019a), released in March of 2019, utilizing the median wage for the appropriate occupation and the North American Industry Classification System (NAICS). The Standard Occupational Classification (SOC) code has been provided for each occupational title. For purposes of this supporting statement, the Manufacturing Industry was used as the reference industry (NAICS sectors 31, 32, 33). OSHA applied a fringe benefit of 31.8 percent to the base wages. Loaded hourly wages by application group and SOC are shown below.

Table A summarizes how the wage rate estimates were derived for the information collection requirements specified by the standard.

Table A – Estimated Wage Rates

| Occupation | SOC | Median Hourly Rate | Fringe Benefit ⁶ | Loaded Hourly Wage |
|------------------------------|---------|-----------------------|-----------------------------|--------------------|
| Supervisor/professional | 51-1011 | \$29.59 ⁷ | 31.8% (1.4663) | \$43.39 |
| Production Worker | 51-0000 | \$17.37 ⁸ | 31.8% (1.4663) | \$25.47 |
| Clerical Worker | 43-4071 | \$16.85 ⁹ | 31.8% (1.4663) | \$24.71 |
| Human Resources (HR) Manager | 11-3121 | \$53.38 ¹⁰ | 31.8% (1.4663) | \$78.27 |

⁶ Source: Employer Costs for Employee Compensation (BLS March 2018), released June 8, 2018. https://www.bls.gov/news.release/archives/eccec_06082018.pdf. The multiplier applied to the loaded wages is 1.4663 [1/(1-31.80 percent)].

⁷ Source: NAICS 313000-339000, SOC 51-1011, first line supervisor median average wage of \$29.59. The median hourly wage rate for first line supervisors is a weighted average of wage rates for several NAICS codes in the manufacturing sector (specifically NAICS 313, 314, 315, 316, 321, 322, 323, 324, 325, 326, 327, 335, 336, 337, and 339), weighted by the number of employees. This weighted average is calculated by multiplying the wage for each NAICS code by the number of employees in that NAICS category, summing those products, and then dividing by the sum of the number of employees in all included NAICS categories.

⁸ Source: NAICS 31-33, SOC 51-0000, Median hourly wage rate for a production worker of \$17.37. https://www.bls.gov/oes/current/naics2_31-33.htm#51-0000

⁹ Source: NAICS 31-33, SOC 43-4071, Median hourly wage rate for a file clerk of \$16.85. https://www.bls.gov/oes/current/naics2_31-33.htm#43-4071

¹⁰ Source: NAICS 31-33, SOC 11-3121, Median hourly wage rate for a human resources manager of \$53.38. https://www.bls.gov/oes/current/naics2_31-33.htm#11-3121

The following burden hours and cost estimates are **for general industry only**:

A. Exposure Assessment

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) -- 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 thus the agency may have overestimated the burden hours for the monitoring option under this approach.

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

1. Initial Monitoring

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.

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. 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 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.

As noted above in Item 12 of this Supporting Statement, the total number of workers affected is 50,261. Of these affected workers, there are 6,804 dental laboratory workers who will not be sampled because laboratories will substitute a different material in lieu of continuing to work with beryllium. Excluding these dental laboratory workers, the number of affected workers for initial monitoring is 43,457. Note: $50,261 - 6,804$ dental labs workers = 43,457. The number of workers that will be directly subjected to initial monitoring (10,864) is the number of affected workers in each NAICS, divided by 4 because there are 4 workers represented by each sample [$43,457/4=10,864$]. Each sampled production worker will incur 30 minutes (0.5 hours) of lost work time during air monitoring,¹¹ at an hourly wage rate of \$25.47. Baseline non-compliance with this requirement is estimated to be 94 percent. The burden hours and cost associated with these provisions are:

Burden hours: $10,864$ (samples) \times 0.94 (non-compliance rate) \times 0.5 (hours of Production Worker time) = **5,106 hours**

One-Time Cost: $5,106$ (hours) \times $\$25.47$ (Production Worker wage) = **\$130,050**

2. Periodic Exposure Monitoring

§ 1910.1024(d)(3)(v), (vi), (vii), & (viii) -- Scheduled Monitoring Option.

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. 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. Paragraph (d)(3)(vii) requires that 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, paragraph (d)(3)(viii) requires that 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.

All Industries Between AL and PEL:

¹¹ 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.

The existing ICR estimates there are 20,732 at-risk workers above the action level and below the PEL. The 5,877 workers in dental labs currently above the action level and below the PEL are excluded because they are expected to stop working with beryllium (see the FEA for the 2017 Final Rule, Chapter V, p. V-127, available at <https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-2042>). The remaining workers are 5,744¹² abrasive blasters in shipyards, 11 shipyard sector welding workers, and 9,101 general industry workers.

All Industries Above the PEL:

The existing ICR estimates there are 1,056 workers above the PEL. The 434 workers in dental labs with exposures above the PEL are excluded because they are expected to stop working with beryllium (see the FEA for the 2017 Final Rule, Chapter V, p. V-127, available at <https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-2042>). The remaining workers are 217 abrasive blasters and 405 general industry workers above the PEL.

General Industry Workers

Workers between AL and PEL:

For periodic monitoring, OSHA calculated the number of monitoring samples being taken for general industry workers (excluding dental laboratory workers) by dividing the number of workers (9,101) by four workers represented per sample, then multiplying the samples by two per year for 4,550 samples. (9,101 workers/4 x 2 samples per year = 4,550 samples)

Above the PEL:

OSHA calculated the number of monitoring samples for the 405 general industry workers above the PEL (excluding dental laboratory workers) by dividing the number of 405 workers by four workers per sample, then multiplying by four times per year to equal 405 samples. (405/4 x 4 samples per year = 405)

Summary

Therefore, the agency estimates that there will be a total of 4,955 samples per year taken in general industry. This total includes workers between the AL (0.1 µg/m³) and PEL (0.2 µg/m³) that are sampled twice per year, and those workers over the PEL that are sampled four times per year (4,550 samples + 405 samples = 4,955 samples).

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

¹² Note the approved ICR estimates 5,744 abrasive blasting workers.

monitoring sample (4,955 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 92 percent. The burden hours and cost associated with these provisions are:

Burden hours: $4,955 \text{ (samples)} \times 0.92 \text{ (non-compliance rate)} \times 0.5 \text{ (hours of Production Worker time)} = \mathbf{2,279 \text{ hours}}$

Annual Cost: $2,279 \text{ (hours)} \times \$25.47 \text{ (Production Worker wage)} = \mathbf{\$58,046}$

3. Additional Exposure Monitoring

§ 1910.1024(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, 10,864 workers (see previous paragraph, Initial Monitoring), OSHA estimates 10 percent (1,086) 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 94 percent. The burden hours and cost associated with these provisions are:

Burden hours: $1,086 \text{ (workers sampled)} \times 1 \text{ (assessment per year)} \times 0.94 \text{ (non-compliance rate)} \times 0.5 \text{ (hours of Production Worker time)} = \mathbf{510 \text{ hours}}$

Cost: $510 \text{ (hours)} \times \$25.47 \text{ (Production Worker wage)} = \mathbf{\$12,990}$

4. Employee Notification

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

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, 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 C.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*

B. Written Exposure Control Plan, Respiratory Protection, Medical Surveillance, and Medical Removal

§ 1910.1024(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 3,077¹³ affected establishments for general industry.

a. Developing and Implementing a Written Exposure Control Plan

Baseline Per-Establishment Costs to Develop Plan:

OSHA estimates that 3,077 establishments in general industry are potentially at risk from exposure to beryllium. The agency estimates a Human Resource Manager, earning an hourly wage of \$78.27, spends eight hours per establishment to develop a written exposure control plan. Baseline non-compliance with this requirement is estimated to be 87 percent.

Burden hours: $3,077 \text{ (written plans)} \times 0.87 \text{ (non-compliance rate)} \times 8 \text{ (hours of HR Manager time)} = \mathbf{21,416 \text{ hours}}$

One-Time Cost: $21,416 \text{ (hours)} \times \$78.27 \text{ (HR Manager wage)} = \mathbf{\$1,676,230}$

Additional Costs based on Size of Establishment to Implement Plan:

The cost to implement a written exposure control plan will also vary with the number of employees, with larger establishments having higher costs than smaller

¹³ The 4,538 in-scope establishments minus 1,461 establishments in dental labs gives the 3,077 establishments that need to develop the plan.

establishments. Therefore OSHA has added additional burden and cost on a per-employee basis. OSHA estimates that there are a total of 43,457¹⁴ general industry workers at risk with a non-compliance rate of 72 percent. Managers are estimated to need 0.5 hours per employee to write the plan.

Burden hours: $43,457 \text{ (employees)} \times 0.72 \text{ (non-compliance rate)} \times 0.5 \text{ (hours of HR Manager time)} = \mathbf{15,645 \text{ hours}}$

One time Cost: $15,645 \text{ (hours)} \times \$78.27 \text{ (HR Manager wage)} = \mathbf{\$1,224,534}$

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 43,457 general industry 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 72 percent.

Burden hours: $43,457 \text{ (employees)} \times 0.72 \text{ (non-compliance rate)} \times 0.8 \text{ (hours of HR Manager time)} = \mathbf{25,031 \text{ hours}}$

Annual Cost: $25,031 \text{ (hours)} \times \$78.27 \text{ (HR Manager wage)} = \mathbf{\$1,959,176}$

2. Respiratory Protection (g)

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

¹⁴This is the number of at-risk workers (50,261), less the substituting dental labs (less the 5,954 and 850 for the two substituting dental labs NAICS), totaling 43,457.

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 Protection Program

There is a cost per establishment to set up a written respiratory protection 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 respirators. OSHA estimates that 465¹⁵ general industry establishments are potentially at risk from exposure to beryllium that could exceed the PEL. There are 186 general industry establishments that will need to develop and implement a respirator program. It estimates that a Human Resource Manager, earning an hourly wage of \$78.27, would spend eight hours per establishment to develop and implement a written respirator program. Baseline non-compliance with this requirement is estimated to be 65 percent.

Burden hours: 186 (respirator program per establishment) × 0.65 (non-compliance rate) × 8 (hours of HR Manager time) = **967 hours**

One-Time Cost: 967 (hours) × \$78.27 (HR Manager wage) = **\$75,687**

Updating and Maintaining:

There are 186 establishments that will need to update and maintain a respirator program. OSHA estimates that a Human Resource Manager, earning an hourly wage of \$78.27, would spend two hours per establishment to maintain and update a written respirator program. Baseline non-compliance with this requirement is estimated to be 65 percent.

Burden hours: 186 (respirator program per establishment) × 0.65 (non-compliance rate) × 2 hours (HR Manager time) = **242 hours**

Annual Cost: 242 (hours) × \$78.27 (HR Manager wage) = **\$18,941**

3. Respirator Fit Testing

In-House Fit Testing for the Employees

¹⁵ Source: FEA spreadsheets, Tab “Rule” (OSHA-H005C-2006-0870-2044). This number is derived from subtracting the number of substituting dental firms from the total number of firms with exposures above the PEL.

The employers will conduct respirator fit testing for the 433 general industry workers¹⁶ who will need to wear respirators. OSHA estimates that it will take 30 minutes (0.5 hours) for a worker to be fit-tested per respirator and 100 percent of the 433 workers will need to be fit tested.

Burden hours: $433 \text{ (employees)} \times 1 \text{ (non-compliance rate)} \times 0.5 \text{ (hours of employee time)} = \mathbf{217 \text{ hours}}$

Annual Cost: $217 \text{ (hours)} \times \$25.47 \text{ (Employee wage)} = \mathbf{\$5,527}$

In-House Fit Testing by Supervisors

The employers will conduct in-house fit testing for the 433 general industry workers who will need to wear respirators. OSHA estimates that in-house supervisors will administer the 433 fit-tests and it will take 30 minutes (0.5 hours) for a worker to be fit-tested per respirator and 100 percent of the 433 workers will need to be fit tested.

Burden hours: $433 \text{ (Supervisor)} \times 1 \text{ (non-compliance rate)} \times 0.5 \text{ (hours of Supervisor time)} = \mathbf{217 \text{ hours}}$

Annual Cost: $217 \text{ (hours)} \times \$43.39 \text{ (Supervisor wage)} = \mathbf{\$9,416}$

4. Personal Protective Clothing and Equipment

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

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.

There are 2,558¹⁷ general industry 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 15 percent.

Burden hours: $2,558 \text{ (establishments)} \times 0.15 \text{ (non-compliance rate)} \times 0.17 \text{ (hours of Clerical worker time)} = \mathbf{65 \text{ hours}}$

¹⁶ Source: Table V-14, *Number of Workers Needing Respirators and Respirator Costs, by sector and NAICS Industry*, of the FEA.

¹⁷ The 519 coal-fired power plants don't have any beryllium-specific PPE required, so they are subtracted out of the 3,077 establishments. $(3,077 - 519 = 2,558 \text{ establishments})$.

Annual Cost: 65 (hours) × \$24.71 (Clerical worker's wage) = **\$1,606**

5. Medical Surveillance

§ 1910.1024(k)(1), (2), & (3) -- Medical Surveillance.

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.

Paragraph (k)(2) requires the employer to 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). (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. Each employee who meets the criteria of paragraph (k)(1)(i)(C) and who has not received an examination since exposure to beryllium during the emergency must be provided an examination at the time the employee's employment terminates. (iv) For an employee who meets the criteria of paragraph (k)(1)(i)(C): (A) If that employee has not received a medical examination within the previous two years pursuant to paragraph (k)(1)(i), then within 30 days the employee meets the criteria of paragraph (k)(1)(i)(C); or (B) If that employee has received a medical examination within the previous two years pursuant to paragraph (k)(1)(i), then at least one year but no more than two years after the employee meets the criteria of paragraph (k)(1)(i)(C).

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).

Employers will be required to provide medical examinations for 14,598¹⁸ employees. OSHA estimated the examination¹⁹ 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 69 percent. The burden hours and annual cost associated with these provisions are:

Medical Exams

Initial and Periodic Exams

Burden hours: 14,598 (examinations) x 0.69 (non-compliance rate) x 2.08 (hours of Production Worker time) = **20,951 hours**

Biennial Cost: 20,951 hours x \$25.47 (Production worker wage) = **\$533,622**

Note: The agency estimates that 10 percent of the standard medical examinations will lead to further tests recommended by the PLHCP²⁰ and are included in the cost and time of the 14,598 employees unless otherwise provided below.

6. Referral to CBD Diagnostic Center

§ 1910.1024(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 evaluation at the CBD diagnostic center must be scheduled within 30 days, and must occur within a reasonable time, 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.

¹⁸ In the January 2017 Beryllium Final Rule, OSHA estimated that there were 21,397 total respondents for this item over all industries. (See the spreadsheets accompanying the 2017 FEA, Docket Number: OSHA-H005C-2006-0870-2044). Removing the 6,799 respondents for construction and shipyards yields 14,598 respondents in general industry. (21,397 – 6,799 = 14,598).

¹⁹ Paragraph (k)(3) provides the content of examinations.

²⁰ These exposure monitoring unit costs are summarized in the spreadsheets accompanying the PEA for the 2017 rule (Docket number OSHA-H005C-2006-0870-0385).

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

Referral exams to the CBD Diagnostic Center -- Traveling Workers

The estimated annual number of referrals that will require traveling more than a day to the CBD diagnostic center is 690. It will take 24 hours and 15 minutes for each employee to travel by plane to and from the center and complete the medical examination.

Burden hours: 690 referrals traveling x 1 (non-compliance) x 24.25 hours = **16,733 hours**

Cost: 16,733 hours x \$25.47 (Production worker wage) = **\$426,190**

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

The estimated annual number of referrals exams taking less than a day to travel to the CBD diagnostic center is 230. It will take 4 hours and 15 minutes for each employee to travel to and from the local center and complete the medical examination.

Burden hours: 230 referrals non travel x 1 (non-compliance) x 4.25 hours = **978 hours**

Cost: 978 hours x \$25.47 (Production worker wage) = **\$24,910**

7. Information Provided to the PLHCP

§ 1910.1024(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 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 69 percent.

Burden hours: $14,598 \text{ (employees)} \times 0.69 \text{ (non-compliance rate)} \times 0.25 \text{ (hours of Supervisor time)} = \mathbf{2,518 \text{ hours}}$

Biennial Cost: $2,518 \text{ (hours)} \times \$43.39 \text{ (Supervisor wage)} = \mathbf{\$109,256}$

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

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

Paragraph (k)(6)(i) 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 14,598 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 69 percent.

Supervisor:

Burden hours: $14,598 \text{ (employees)} \times 0.69 \text{ (non-compliance rate)} \times 0.08 \text{ (hours of Supervisor time)} = \mathbf{806 \text{ hours}}$

Biennial Cost: 806 (hours) × \$43.39 (Supervisor wage) = **\$34,972**

9. Medical Removal

§ 1910.1024(l)(1) & (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)(iii) of this standard; or

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

(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.

OSHA estimates that 445 employees²¹ will request medical removal because of a positive finding of CBD. OSHA also 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: 445 employees x 1 (non-compliance) x 0.08 hours = **36 hours**

Cost: 36 hours x \$43.39 (Supervisor wage) = **\$1,562**

²¹ In the current ICR, there are 778 affected employees in all industries. Removing the 333 employees in construction and maritime (see spreadsheets accompanying the 2017 shipyards and construction proposal, Docket Number: OSHA-H005C-2006-0870-0385) leaves 445 affected employees in general industry.

C. Recordkeeping

1. Exposure Assessment.

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

Under paragraph (n)(1)(i), the employer must make and maintain a record of all exposure measurements taken to assess airborne exposures as required by paragraph (d) of the standard. Paragraph (n)(1)(ii) states the required elements of the exposure measurement records. Under paragraph (n)(1)(iii), employers must ensure that these exposure records are maintained and made available in accordance with the Records Access standard (29 CFR 1910.1020).

a. Initial Exposure Monitoring (paragraph (d)(3) of § 1910.1024)

As determined under Initial Exposure Monitoring, paragraph (d)(3), the agency estimates there are 10,864 exposure monitoring records being generated for this purpose in general industry. 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 \$78.27, which includes time to notify employees of the results of the exposure monitoring (typically accomplished by posting the results).²² Baseline non-compliance with this requirement is estimated to be 94 percent. The burden hours and cost associated with these provisions are:

Burden hours: 10,864 (workers sampled) × 0.94 (non-compliance rate) × 0.25 (hours of HR Manager time) = **2,553 hours**

One-Time Cost: 2,553 (hours) × \$78.27 (HR Manager wage) = **\$199,823**

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

As determined under Periodic Exposure Monitoring, paragraph (d)(3), the agency estimates there are 4,955 required periodic monitoring samples.²³ 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 \$78.27, 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 92 percent. The burden hours and cost associated with these provisions are:

²² 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.

²³ 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 standard's requirements and do not need to conduct initial exposure monitoring or subsequent periodic monitoring.

Burden hours: $4,955$ (workers sampled per year) \times 0.92 (non-compliance rate) \times 0.25 (hours of HR Manager time) = **1,140 hours**

Annual Cost: $1,140$ (hours) \times $\$78.27$ (HR Manager wage) = **\\$89,228**

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

Of the number of at-risk workers subject to initial monitoring, 10,864 workers (see previous paragraph, Initial Monitoring), OSHA estimates 10 percent, 1,086 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 \$78.27, which includes time to notify employees of the results of the exposure monitoring. Baseline non-compliance with this requirement is estimated to be 94 percent. The burden hours and cost associated with these provisions are:

Burden hours: $1,086$ (workers sampled per year) \times 0.94 (non-compliance rate) \times 0.25 (hours of HR Manager time) = **255 hours**

Annual Cost: 255 (hours) \times $\$78.27$ (HR Manager wage) = **\\$19,959**

2. Medical Surveillance

1910.1024(n)(3) (i), (ii), & (iii) – Recordkeeping -- Medical Surveillance.

In the 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 spend 15 minutes (.25 hour) to read and copy the PLHCP's opinion, provide and discuss the opinion with the employee and confirm that the employee received a medical report from the PLHCP, and discuss any necessary post-exam consultation with the employee. OSHA estimates that the number of post-exam records is 14,598 and that there are 920 referral exam records²⁴ for a total of 15,518. Baseline non-compliance with this requirement is estimated to be 71 percent.

Burden hours: $15,518$ (exam records) \times 0.71 (non-compliance rate) \times 0.25 (hours of HR Manager time) = **2,754 hours**

Annual Cost: $2,754$ (hours) \times $\$78.27$ (HR Manager wage) = **\\$215,556**

²⁴ Under the Medical Surveillance section of Item 12, the agency estimates there are 690 referral examinations where workers travel on average 24.25 hours to a CBD Diagnostic Center; and 230 referral examinations where employees travel on average 4.25 hours to the CBD Diagnostic center.

b. Clerical Worker Time

Each file would require 5 minutes (0.08 hours) of a clerical worker's time to generate and maintain. OSHA estimates that the total number of medical exam records per year is 15,518. Baseline non-compliance with this requirement is estimated to be 71 percent.

Burden hours: 15,518 (exam records) \times 0.71 (non-compliance rate) \times 0.08 hours = **881 hours**

Annual Cost: 881 hours \times \$24.71 (Clerical worker wage) = **\$21,770**

3. Training

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

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 43,457 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 66 percent.

Burden hours: 43,457 (training records) \times .66 (non-compliance rate) \times 0.08 (hours of Clerical worker time) = **2,295 hours**

Annual Cost: 2,295 (hours) \times \$24.71 (Clerical worker wage) = **\$56,709**

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 433 employees that will be fit tested for respirators. A clerical worker will have to generate and maintain these records. OSHA estimates that it will 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 to be 100 percent.

Burden hours: 433 (fit testing records) \times 1 (non-compliance rate) \times 0.08 (hours of Clerical worker time) = **35 hours**

Cost: 35 (hours) \times \$24.71 (Clerical worker wage) = **\$865**

D. 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 percent of the 43,456 at-risk workers, or 2,173 workers, will request access to their records per year. Baseline non-compliance with this requirement is estimated to be 72 percent.

Burden hours: 2,173 (worker requests for medical documentation) \times 0.72 (non-compliance rate) \times 0.08 (hours of Clerical worker time) = **125 hours**

One-Time Cost: 125 (hours) \times \$24.71 (Clerical worker wage) = **\$3,089**

2. Employee Access to Exposure Monitoring and Medical Records

§ 1910.1024(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 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 percent of the 43,456 at-risk workers, or 2,173 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: 2,173 (worker requests for medical documentation) \times 1 (non-compliance rate) \times 0.08 (hours of Clerical worker time) = **174 hours**

Annual Cost: 174 (hours) \times \$24.71 (Clerical worker wage) = **\$4,300**

E. 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 estimates that supervisors in small, medium, and large establishments will only require 1 hour to become familiar with this final rule, because they have already familiarized themselves with the 2017 final rule. OSHA's estimate of familiarization costs reflects the total supervisor familiarization time (cost at a supervisory wage) for each covered employer. The estimates of the different sizes of affected establishments and the numbers of affected establishments are identified in Tables III-13 through III-15 of the PEA for the 2017 final rule (PEA, Chapter III, pp. III-118 to III-152, available at <https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-0426>).

Small establishment (fewer than 20 employees)

Burden hours: 3,245 affected small establishments x 1 hour (Supervisor time) = **3,245 hours**

Cost: 3,245 (hours) x \$43.39 (Supervisor wage) = **\$140,801**

Medium establishment (20 to 499 employees)

Burden hours: 1,250 affected medium establishments x 1 hour (Supervisor time) = **1,250 hours**

Cost: 1,250 (hours) x \$43.39 (Supervisor wage) = **\$54,238**

Large establishment (500 or more employees)

Burden hours: 42 affected large establishments x 1 hour (Supervisor time) = **42 hours**

Cost: 42 (hours) x \$43.39 (Supervisor wage) = **\$1,822**

BERYLLIUM STANDARD FOR GENERAL INDUSTRY (29 CFR 1910.1024), CONSTRUCTION (29 CFR 1926.1124), AND MARITIME (29 CFR 1915.1024)
 1218-0267
 June 2020

Table B. Summary of Burden Hours and Cost Under Item 12 for General Industry

| | 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 | 0 | \$0 | 0 |
| 2. Scheduled Monitoring Option | | | | | | | | | | |
| Initial | First Year | Employee | Production Worker | 10,864 | 94% | 0.50 | 5,106 | \$25.47 | \$130,050 | 10,212 |
| Periodic | Annual | Employee | Production Worker | 4,955 | 92% | 0.50 | 2,279 | \$25.47 | \$58,046 | 4,559 |
| Additional | Annual | Employee | Production Worker | 1,086 | 94% | 0.50 | 510 | \$25.47 | \$12,990 | 1,021 |
| | | | | | | | | | | |
| B. Written Exposure Control Plan, Respiratory Protection, Medical Surveillance, and Medical Removal | | | | | | | | | | |
| 1. Written Exposure Control Plan | | | | | | | | | | |
| Develop Plan | First Year | Establishment | HR Manager | 3,077 | 87% | 8.00 | 21,416 | \$78.27 | \$1,676,230 | 2,677 |
| Implement Plan | First Year | Employee | HR Manager | 43,457 | 72% | 0.50 | 15,645 | \$78.27 | \$1,224,534 | 31,289 |
| Update Plan | Annual | Employee | HR Manager | 43,457 | 72% | 0.80 | 25,031 | \$78.27 | \$1,959,176 | 31,289 |
| 2. Respirator Program | | | | | | | | | | |
| Develop Plan | First Year | Establishment | HR Manager | 186 | 65% | 8.00 | 967 | \$78.27 | \$75,687 | 121 |
| Update Plan | Annual | Establishment | HR | 186 | 65% | 2.00 | 242 | \$78.27 | \$18,941 | 121 |

BERYLLIUM STANDARD FOR GENERAL INDUSTRY (29 CFR 1910.1024), CONSTRUCTION (29 CFR 1926.1124), AND MARITIME (29 CFR 1915.1024)
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Table B. Summary of Burden Hours and Cost Under Item 12 for General Industry

| | 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> | $f = d \times e$ | $g = a \times b$ |
| | | | Manager | | | | | | | |
| 3. Respirator Fit Testing | | | | | | | | | | |
| Respirator Fit Testing - Labor | Annual | Employee | Production Worker | 433 | 100% | 0.50 | 217 | \$25.47 | \$5,527 | 433 |
| Respirator Fit Testing - Labor | Annual | Employee | Supervisor | 433 | 100% | 0.50 | 217 | \$43.39 | \$9,416 | 433 |
| 4. PPE | | | | | | | | | | |
| Notify Cleaners in Writing | Annual | Establishment | Clerical | 2,558 | 15% | 0.17 | 65 | \$24.71 | \$1,606 | 384 |
| 5. Medical Surveillance | | | | | | | | | | |
| Medical Exam - Initial and Periodic | Biennial | Employee | Production Worker | 14,598 | 69% | 2.08 | 20,951 | \$25.47 | \$533,622 | 10,073 |
| 6. Referral to Diagnostic Center | | | | | | | | | | |
| Referral Exam - Travelling Workers | Annual | Employee | Production Worker | 690 | 100% | 24.25 | 16,733 | \$25.47 | \$426,190 | 690 |
| Referral Exam - Non-Travelling Workers | Annual | Employee | Production Worker | 230 | 100% | 4.25 | 978 | \$25.47 | \$24,910 | 230 |
| 7. Information Provided to the PLHCP | | | | | | | | | | |
| Provide Information - Supervisor | Biennial | Employee | Supervisor | 14,598 | 69% | 0.25 | 2,518 | \$43.39 | \$109,256 | 10,073 |

BERYLLIUM STANDARD FOR GENERAL INDUSTRY (29 CFR 1910.1024), CONSTRUCTION (29 CFR 1926.1124), AND MARITIME (29 CFR 1915.1024)
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|---|------------|----------|------------|--------------------|---------------------|--------------------|---------------------------|--------------------|------------------|------------------|
| | | | | <i>a</i> | <i>B</i> | <i>C</i> | $d = a \times b \times c$ | <i>e</i> | $f = d \times e$ | $g = a \times b$ |
| 8. Licensed Physician's Written Medical Opinion* | | | | | | | | | | |
| Process Information - Supervisor | Biennial | Employee | Supervisor | 14,598 | 69% | 0.08 | 806 | \$43.39 | \$34,972 | 10,073 |
| 9. Medical Removal | | | | | | | | | | |
| Medical Removal | First Year | Employee | Supervisor | 445 | 100% | 0.08 | 36 | \$43.39 | \$1,562 | 445 |
| C. Recordkeeping | | | | | | | | | | |
| 1. Exposure Monitoring | | | | | | | | | | |
| Initial | First Year | Employee | HR Manager | 10,864 | 94% | 0.25 | 2,553 | \$78.27 | \$199,823 | 10,212 |
| Periodic | Annual | Employee | HR Manager | 4,955 | 92% | 0.25 | 1,140 | \$78.27 | \$89,228 | 4,559 |
| Additional | Annual | Employee | HR Manager | 1,086 | 94% | 0.25 | 255 | \$78.27 | \$19,959 | 1,021 |
| | | | | | | | | | | |
| 2. Medical Surveillance | | | | | | | | | | |
| Medical Surveillance - HR Manager | Annual | Employee | HR Manager | 15,518 | 71% | 0.25 | 2,754 | \$78.27 | \$215,556 | 11,018 |
| Medical Surveillance - Clerical | Annual | Employee | Clerical | 15,518 | 71% | 0.08 | 881 | \$24.71 | \$21,770 | 11,018 |
| 3. Training | | | | | | | | | | |
| Training | Annual | Employee | Clerical | 43,457 | 66% | 0.08 | 2,295 | \$24.71 | \$56,709 | 28,682 |
| 4. Respirator Fit Testing Records | | | | | | | | | | |

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Table B. Summary of Burden Hours and Cost Under Item 12 for General Industry

| | 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> | $f = d \times e$ | $g = a \times b$ |
| Respirator Fit Testing | Annual | Employee | Clerical | 433 | 100% | 0.08 | 35 | \$24.71 | \$865 | 433 |
| D. Employee Access to Exposure Monitoring and Medical Records | | | | | | | | | | |
| Written Exposure Control Plan | Annual | Employee | Clerical | 2,173 | 72% | 0.08 | 125 | \$24.71 | \$3,089 | 1,565 |
| Access to Records | Annual | Employee | Clerical | 2,173 | 100% | 0.08 | 174 | \$24.71 | \$4,300 | 2,173 |
| E. Rule Familiarization | | | | | | | | | | |
| Small Establishments (< 20 Employees) | First Year | Establishment | Supervisor | 3,245 | 100% | 1.0 | 3,245 | \$43.39 | \$140,801 | 3,245 |
| Medium Establishments (20 - 499 Employees) | First Year | Establishment | Supervisor | 1,250 | 100% | 1.0 | 1,250 | \$43.39 | \$54,238 | 1,250 |
| Large Establishments (≥ 500 Employees) | First Year | Establishment | Supervisor | 42 | 100% | 1.0 | 42 | \$43.39 | \$1,822 | 42 |
| Total | | | | | | | | | | |
| First Year | | | | 73,430 | | | 50,260 | | \$3,504,747 | 59,493 |
| Annual | | | | 139,341 | | | 53,931 | | \$2,928,278 | 99,629 |
| Biennial | | | | 43,794 | | | 24,275 | | \$677,850 | 30,219 |
| Total | | | | 256,565 | | | 128,466 | | \$7,110,875 | 189,341 |

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Table B. Summary of Burden Hours and Cost Under Item 12 for General Industry

| | 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> | $f = d \times e$ | $g = a \times b$ |
| Total ICR Three Year Average | | | | 185,715 | | | 82,822 | | \$4,435,452 | 134,570 |

*Some numbers may differ due to rounding.

The follow burden hours and cost estimates are for construction only:

Below, OSHA has retained the approved collection of information for the construction sectors until parallel rulemakings for those sectors are approved by OMB. The wage rates have been updated to be consistent with the general industry final economic analysis.

A. Exposure Monitoring

§ 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.

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

1. Initial Monitoring

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.

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, 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 8,400 (see Table III-13 of the 2017 FEA, available at <https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-2042>). Workers in abrasive blasting (in both construction and shipyards) are estimated to be sampled 20 percent more to account for the failure rate due to increased dust at the worksite. The number of abrasive blasting worker samples is 8,400 times 120 percent, or 10,080. The number of workers that will

be subjected to initial monitoring (2,520) is the number of affected workers in each NAICS, divided by 4 because there are 4 workers represented by each sample $[(8,400 \times 1.20)/4=2,520]$. Each sampled production worker will incur 30 minutes (0.5 hours) of lost work time during air monitoring,²⁵ at an hourly wage rate of \$25.47. Baseline non-compliance with this requirement is estimated to be 96 percent. The burden hours and cost associated with these provisions are:

Burden hours: $2,520 \text{ (samples)} \times 0.96 \text{ (non-compliance rate)} \times 0.5 \text{ hours (Production worker time)} = \mathbf{1,210 \text{ hours}}$

One-Time Cost: $1,210 \text{ (hours)} \times \$25.47 \text{ (Production worker wage)} = \mathbf{\$30,819}$

2. Periodic Exposure Monitoring

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

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. 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. 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, 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.

Workers between the AL and PEL:

For periodic monitoring, the number of samples per year varies depending on whether workers are between the AL and PEL or over the PEL. OSHA estimates that there will be 4,210 workers between the AL and PEL after the rule is implemented. These workers will be sampled twice a year. OSHA takes the total number of workers between the AL and PEL (4,210), divides it by four workers represented per sample, multiplies the samples by 120 percent²⁶ (to account for a 20 percent failure rate), and then multiplies the samples by two per year. This results in a total of

²⁵ 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.

²⁶ The abrasive blasting workers sampling requires an additional 20 percent more samples to account for the high failure rate resulting from clogged sampling equipment.

2,526 samples for workers between the AL and PEL (4,210 workers ÷ 4 workers × 120% × 2 samples = 2,526).

Workers above the PEL:

OSHA estimates that there will be 159 workers still exposed above the PEL after the rule is implemented. These workers above the PEL are sampled four times per year (twice as often as workers between the AL and PEL). This number is also divided by four workers represented per sample and multiplied by 120 percent to account for the failure rate. This results in a total of 190 samples for workers above the PEL (159 workers ÷ 4 workers × 120% × 4 samples = 190).

Total samples between AL and PEL and above PEL:

Summing the number of samples for workers between the AL and PEL and over the PEL results in a total of 2,716 samples (2,526 + 190 = 2,716).

Each periodic exposure monitoring sample (2,716 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:

Burden hours: 2,716 (samples) × 0.96 (non-compliance rate) × 0.5 hours (Production worker time) = **1,304 hours**

Annual Cost: 1,304 (hours) × \$25.47 (Production worker wage) = **\$33,213**

3. Additional Exposure Monitoring

§ 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, 2,520 workers (see previous paragraph, Initial Monitoring), OSHA estimates 10 percent 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: 2,520 × 10% (workers sampled) × 1 (assessment per year) × 0.96 (non-compliance rate) × 0.5 (hours of Production Worker time) = **121 hours**

Cost: 121 (hours) × \$25.47 (Production Worker wage) = **\$3,082**

4. Employee Notification

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

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, 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. 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*

B. Written Exposure Control Plan, Respiratory Protection, Medical Surveillance, and Medical Removal

1. Written Exposure Control Plan

§ 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. 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 2,100 affected establishments in the construction industry (see Table III-13 of the 2017 FEA, available at <https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-2042>). 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 2,100 establishments in the construction industry are potentially at risk from exposure to beryllium. The Agency estimates a Human Resource Manager, earning an hourly wage of \$78.27, spends eight hours per establishment to develop and

implement a written exposure control plan. Baseline non-compliance with this requirement is estimated to be 25 percent.

Burden hours: $2,100$ (written plans) \times 0.25 (non-compliance rate) \times 8 (hours of HR Manager time) = **4,200 hours**

One-Time Cost: $4,200$ (hours) \times $\$78.27$ (HR Manager wage) = **\\$328,734**

Implement plan - 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 estimates that there are a total of 8,400²⁷ workers at risk with a non-compliance rate of 25 percent. Managers are estimated to need 0.5 hours per employee to write the plan.

Burden hours: $8,400$ (employees) \times 0.25 (non-compliance rate) \times 0.5 (hours of HR Manager time) = **1,050 hours**

One time Cost: $1,050$ (hours) \times $\$78.27$ (HR Manager wage) = **\\$82,184**

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.

OSHA estimates that there are a total of 8,400 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 25 percent.

²⁷ See Table III-13 in the 2017 FEA (Document ID OSHA-H005C-2006-0870-2042, available at <https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-2042>).

Burden hours: 8,400 (employees) × 0.25 (non-compliance rate) × 0.8 (hours of HR Manager time) = **1,680 hours**

Annual Cost: 1,680 (hours) × \$78.27 (HR Manager wage) = **\$131,494**

2. Respiratory Protection (g)

§ 1926.1124(g) -- Respiratory protection program.

Under paragraph (g)(2), where the 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). The Respiratory Protection standard, 29 CFR 1910.134(c)(1), requires employers to establish and implement a written respiratory protection program containing worksite-specific procedures. The program must be updated as necessary to reflect changes in workplace conditions that affect respirator use. 29 CFR 1910.134(c)(1)(i)-(ix) lists the information that must be included in the employer's written respiratory protection program.

Develop and Implement Plan

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. OSHA estimates that there are 210 construction establishments potentially at risk from exposure to beryllium that could exceed the PEL. This is 10 percent of the 2,100 construction establishments and they will need to develop a respiratory protection plan. The agency estimates that it takes an HR Manager eight hours to develop a respiratory protection plan for each of the 210 employers. Baseline non-compliance with this requirement is estimated to be 25 percent.

Burden hours: 210 (establishments with respirator program) × 0.25 (non-compliance rate) × 8.0 hours (HR manager time) = **420 hours**

One-time Cost: 420 (hours) × \$78.27 (HR manager wage) = **\$32,873**

Update Plan:

OSHA estimates that it takes an HR Manager two hours to update the respiratory protection plan for each of the 210 employers. Baseline non-compliance with this requirement is estimated to be 25 percent.

Burden hours: 210 (establishments with respirator program) × 0.25 (non-compliance rate) × 2.0 hours (HR manager time) = **105 hours**

Annual Cost: 105 (hours) × \$78.27 (HR manager wage) = **\$8,218**

3. Respirator Fit Testing

The employer will conduct respiratory fit testing for the 159 construction workers who will need to wear respirators. OSHA estimates that it will take 30 minutes (0.5 hours) for a worker to be fit-tested per respirator and 100 percent (baseline non-compliance rate) of the 159 workers will need to be fit-tested.

Burden hours: 159 (production workers) × 1.0 (non-compliance rate) × 0.5 hours (Production worker time) = **80 hours**

Annual Cost: 80 (hours) × \$25.47 (Production worker wage) = **\$2,038**

OSHA estimates that it will take a supervisor 30 minutes to fit-test the worker. The baseline for non-compliance is 100 percent.

Burden hours: 159 (Supervisor) × 1.0 (non-compliance rate) × 0.5 hours (Supervisor time) = **80 hours**

Annual Cost: 80 (hours) × \$43.39 (Supervisor wage) = **\$3,471**

4. Personal Protective Clothing and Equipment

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

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 burden in construction and shipyards is zero because types of personal protective equipment used do not require laundering or repair.

5. Medical Surveillance

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

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 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 (every two years) includes both those who are over the AL and those showing signs and symptoms (of CBD or other beryllium-related health effects sensitization).²⁸ The Construction industry requires exams for 4,973 workers. OSHA estimates that each examination²⁹ 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:

Periodic Exams

Burden hours: 4,973 (examinations) × 0.55 (non-compliance rate) × 2.08 (hours of Production Worker time) = **5,689 hours**

Biennial Cost: 5,689 hours × \$25.47 (Production worker wage) = **\$144,899**

Note: The Agency estimates that 10 percent of the standard medical examinations will lead to further tests recommended by the PLHCP³⁰ and are included in the cost and time of the 4,973 employees.

6. Referral to Diagnostic Center

§ 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

²⁸ 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.

²⁹ Final paragraph (k)(3) provides the content of examinations.

³⁰ These medical surveillance unit costs are summarized in Table V-19 of the 2017 FEA.

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 235. It will take 24 hours and 15 minutes for each employee to travel by plane to the center and complete the medical examination. Baseline non-compliance rate is estimated to be 100 percent.

Burden hours: 235 referrals traveling \times 1 (non-compliance) \times 24.25 hours = **5,699 hours**

Cost: 5,699 hours \times \$25.47 (Production worker wage) = **\$145,154**

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

The estimated annual number of referrals exams to the CBD diagnostic center is 78. It will take 4 hours and 15 minutes for each employee to travel to the center in town and complete the medical examination. Baseline non-compliance rate is estimated to be 100 percent.

Burden hours: 78 referrals non travel \times 1(non-compliance) \times 4.25 hours = **332 hours**

Cost: 332 hours \times \$25.47 (Production worker wage) = **\$8,456**

7. Information Provided to the PLHCP

§ 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.

Burden hours: $4,973 \text{ (employees)} \times 0.55 \text{ (non-compliance rate)} \times 0.25 \text{ (hours of Supervisor time)} = 684 \text{ hours}$

Biennial Cost: $684 \text{ (hours)} \times \$43.39 \text{ (Supervisor wage)} = \$29,679$

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

§ 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 4,973 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: $4,973 \text{ (employees)} \times 0.55 \text{ (non-compliance rate)} \times 0.08 \text{ (hours of Supervisor time)} = 219 \text{ hours}$

Biennial Cost: $219 \text{ (hours)} \times \$43.39 \text{ (Supervisor wage)} = \$9,502$

9. Medical Removal

§ 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 spreadsheet for the FEA under the "Rule" tab of the Cost spreadsheet, there are 244 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: 244 employees × 1 (non-compliance) × 0.08 hours = **20 hours**

Cost: 20 hours × \$43.39 (Supervisor wage) = **\$868**

C. Recordkeeping

1. Exposure Assessment.

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

a. Initial Exposure Monitoring

As determined under Initial Exposure Monitoring, paragraph (d)(2), the Agency estimates there are 2,520 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 \$78.27, which includes time to notify employees of the results of the exposure monitoring (typically accomplished by posting the results).³¹ Baseline

³¹ 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.

non-compliance with this requirement is estimated to be 96 percent. The burden hours and cost associated with these provisions are:

Burden hours: 2,520 (workers sampled) × 0.96 (non-compliance rate) × 0.25 (hours of HR Manager time) = **605 hours**

One-Time Cost: 605 (hours) × \$78.27 (HR Manager wage) = **\$47,353**

b. Periodic Exposure Monitoring

As determined under Periodic Exposure Monitoring, paragraph (d)(3), the Agency estimates there are 2,716 periodic monitoring samples taken.³² 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 \$78.27, 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: 2,716 (workers sampled per year) × 0.96 (non-compliance rate) × 0.25 (hours of HR Manager time) = **652 hours**

Annual Cost: 652 (hours) × \$78.27 (HR Manager wage) = **\$51,032**

c. Additional Exposure Monitoring

Of the number of at risk workers subject to initial monitoring, 2,520 workers (see previous paragraph, Initial Monitoring), OSHA estimates 10 percent, 252 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 \$78.27, 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: 252 (workers sampled) (workers sampled per year) × 0.96 (non-compliance rate) × 0.25 (hours of HR Manager time) = **60 hours**

Annual Cost: 60 (hours) × \$78.27 (HR Manager wage) = **\$4,696**

2. Medical Surveillance

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

³² 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 standard's requirements and do not need to conduct initial exposure monitoring or subsequent periodic monitoring.

In 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 spend 15 minutes (.25 hour) to read, copy the PLHCP's opinion, provide and discuss the opinion with the employee, and discuss any necessary post-exam consultation with the employee. The number of post-exam records is 4,973; also there are 314 referral exam records³³ for a total of 5,287. Baseline non-compliance with this requirement is estimated to be 96 percent.

Burden hours: 5,287 (exam records) × 0.96 (non-compliance rate) × 0.25 (hours of HR Manager time) = **1,269 hours**

Annual Cost: 1,269 (hours) × \$78.27 (HR Manager wage) = **\$99,325**

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 5,287. Baseline non-compliance with this requirement is estimated to be 96 percent.

Burden hours: 5,287 (exam records) × 0.96 (non-compliance rate) × 0.08 hours = **406 hours**

Annual Cost: 406 hours × \$24.71 (Clerical worker wage) = **\$10,032**

3. Training

§ 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 8,400 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 25 percent.

Burden hours: 8,400 (training records) × 0.25 (non-compliance rate) × 0.08 (hours of Clerical worker time) = **168 hours**

Annual Cost: 168 (hours) × \$24.71 (Clerical worker wage) = **\$4,151**

³³ Under the Medical Surveillance section of Item 12, the agency estimates there are 235 referral examinations where workers travel on average 24.25 hours to a CBD Diagnostic Center; and 78 referral examinations where employees travel on average 4.25 hours to the CBD Diagnostic center.

4. Fit Testing Records

OSHA estimates that there are 159 workers that will require fit testing records to be generated and maintained. It will take a clerical worker 5 minutes to prepare and maintain these records for each employee. The baseline for non-compliance is 100 percent.

Burden hours: $159 \text{ (Supervisor)} \times 1.0 \text{ (non-compliance rate)} \times 0.08 \text{ hours (Clerical worker time)} = \mathbf{13 \text{ hours}}$

Annual Cost: $13 \text{ (hours)} \times \$24.71 \text{ (Clerical worker wage)} = \mathbf{\$321}$

D. Employee Access to Exposure Monitoring and Medical Records

1. Employee Access to Written Exposure Control Plan

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 percent of the 8,400 at-risk workers, or 420 workers, will request access to their records per year. Baseline non-compliance with this requirement is estimated to be 25 percent.

Burden hours: $420 \text{ (worker requests for medical documentation)} \times 0.25 \text{ (non-compliance rate)} \times 0.08 \text{ (hours of Clerical worker time)} = \mathbf{8 \text{ hours}}$

One-Time Cost: $8 \text{ (hours)} \times \$24.71 \text{ (Clerical worker wage)} = \mathbf{\$198}$

2. Employee Access to Exposure Monitoring and Medical Records

§ 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 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 percent of the 8,400 at-risk workers, or 420 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: 420 (worker requests for medical documentation) × 1 (non-compliance rate) × 0.08 (hours of Clerical worker time) = **34 hours**

Annual Cost: 34 (hours) × \$24.71 (Clerical worker wage) = **\$840**

E. 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 estimates that supervisors in small, medium, and large establishments will only require 1 hour to become familiar with the final rule, because they already familiarized themselves with the 2017 final rule. OSHA's estimate of familiarization costs therefore reflects the total supervisor familiarization time (cost at a supervisory wage) for each covered employer. The estimates of the different sizes of establishments and the number of employers 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: 1,990 affected small establishments × 1.0 (hours of supervisor time) = **1,990 hours**

Cost: 1,990 × \$43.39 (Supervisor wage) = **\$86,346**

Medium establishment (20 to 499 employees)

Burden hours: 109 affected medium establishments × 1.0 (hours of supervisor time) = **109 hours**

Cost: 109 × \$43.39 (Supervisor wage) = **\$4,730**

Large establishment (500 or more employees)

Burden hours: 1 affected large establishments × 1.0 (hours of supervisor time) = **1 hours**

Cost: 1 × \$43.39 (Supervisor wage) = **\$43**

BERYLLIUM STANDARD FOR GENERAL INDUSTRY (29 CFR 1910.1024), CONSTRUCTION (29 CFR 1926.1124), AND MARITIME (29 CFR 1915.1024)
 1218-0267
 May 2020

Table C1. Summary of Burden Hours, Burden-Hour Cost Under Item 12 for Construction

| | Frequency | Basis | Respondent | Responses per Year | Non-Compliance Rate | Hours per Response | Hours per Year | Loaded Hourly Wage | Total Cost | Total Responses |
|--|------------|---------------|-------------------|--------------------|---------------------|--------------------|---------------------------|--------------------|------------------|------------------|
| | | | | A | b | c | $d = a \times b \times c$ | e | $f = d \times e$ | $g = a \times b$ |
| A. Exposure Monitoring | | | | | | | | | | |
| 1. Performance Option | | | | | | | | | | |
| Objective Data | Annual | Employee | Production Worker | 0 | 0% | 0.00 | 0 | \$25.47 | \$0 | 0 |
| 2. Scheduled Monitoring Option | | | | | | | | | | |
| Initial | First Year | Employee | Production Worker | 2,520 | 96% | 0.50 | 1,210 | \$25.47 | \$30,819 | 2,419 |
| Periodic | Annual | Employee | Production Worker | 2,716 | 96% | 0.50 | 1,304 | \$25.47 | \$33,213 | 2,607 |
| Additional | Annual | Employee | Production Worker | 252 | 96% | 0.50 | 121 | \$25.47 | \$3,082 | 242 |
| B. Written Exposure Control Plan, Respiratory Protection, Medical Surveillance, and Medical Removal | | | | | | | | | | |
| 1. Written Exposure Control Plan | | | | | | | | | | |
| Develop Plan | First Year | Establishment | HR Manager | 2,100 | 25% | 8.00 | 4,200 | \$78.27 | \$328,734 | 525 |
| Develop Plan | First Year | Employee | HR Manager | 8,400 | 25% | 0.50 | 1,050 | \$78.27 | \$82,184 | 2,100 |
| Update Plan | Annual | Employee | HR Manager | 8,400 | 25% | 0.80 | 1,680 | \$78.27 | \$131,494 | 2,100 |
| 2. Respirator Program | | | | | | | | | | |
| Develop Plan | First Year | Establishment | HR Manager | 210 | 25% | 8.00 | 420 | \$78.27 | \$32,873 | 53 |
| Update Plan | Annual | Establishment | HR Manager | 210 | 25% | 2.00 | 105 | \$78.27 | \$8,218 | 53 |
| 3. Respirator Fit Testing | | | | | | | | | | |
| Respirator Fit | Annual | Employee | Production | 159 | 100% | 0.50 | 80 | \$25.47 | \$2,038 | 159 |

BERYLLIUM STANDARD FOR GENERAL INDUSTRY (29 CFR 1910.1024), CONSTRUCTION (29 CFR 1926.1124), AND MARITIME (29 CFR 1915.1024)

1218-0267

May 2020

Table C1. Summary of Burden Hours, Burden-Hour Cost Under Item 12 for Construction

| | Frequency | Basis | Respondent | Responses per Year | Non-Compliance Rate | Hours per Response | Hours per Year | Loaded Hourly Wage | Total Cost | Total Responses |
|--|-----------|---------------|-------------------|--------------------|---------------------|--------------------|---------------------------|--------------------|------------------|------------------|
| | | | | A | b | c | $d = a \times b \times c$ | e | $f = d \times e$ | $g = a \times b$ |
| Testing - Labor | | | Worker | | | | | | | |
| Respirator Fit Testing - Labor | Annual | Employee | Supervisor | 159 | 100% | 0.50 | 80 | \$43.39 | \$3,471 | 159 |
| 4. PPE | | | | | | | | | | |
| Notify Cleaners in Writing | Annual | Establishment | Clerical | 0 | 0% | 0.17 | 0 | \$24.71 | \$0 | 0 |
| 5. Medical Surveillance | | | | | | | | | | |
| Medical Exam - Initial and Biennial | Biennial | Employee | Production Worker | 4,973 | 55% | 2.08 | 5,689 | \$25.47 | \$144,899 | 2,735 |
| 6. Referral to Diagnostic Center | | | | | | | | | | |
| Referral Exam - Travelling Workers | Annual | Employee | Production Worker | 235 | 100% | 24.25 | 5,699 | \$25.47 | \$145,154 | 235 |
| Referral Exam - Non-Travelling Workers | Annual | Employee | Production Worker | 78 | 100% | 4.25 | 332 | \$25.47 | \$8,456 | 78 |
| 7. Information Provided to the PLHCP | | | | | | | | | | |
| Provide Information - Supervisor | Biennial | Employee | Supervisor | 4,973 | 55% | 0.25 | 684 | \$43.39 | \$29,679 | 2,735 |
| 8. Licensed Physician's Written Medical Opinion | | | | | | | | | | |
| Process Information - Supervisor | Biennial | Employee | Supervisor | 4,973 | 55% | 0.08 | 219 | \$43.39 | \$9,502 | 2,735 |
| 9. Medical Removal | | | | | | | | | | |

BERYLLIUM STANDARD FOR GENERAL INDUSTRY (29 CFR 1910.1024), CONSTRUCTION (29 CFR 1926.1124), AND MARITIME (29 CFR 1915.1024)
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 May 2020

Table C1. Summary of Burden Hours, Burden-Hour Cost Under Item 12 for Construction

| | Frequency | Basis | Respondent | Responses per Year | Non-Compliance Rate | Hours per Response | Hours per Year | Loaded Hourly Wage | Total Cost | Total Responses |
|--|------------|----------|------------|--------------------|---------------------|--------------------|---------------------------|--------------------|------------------|------------------|
| | | | | A | b | c | $d = a \times b \times c$ | e | $f = d \times e$ | $g = a \times b$ |
| Medical Removal | First Year | Employee | Supervisor | 244 | 100% | 0.08 | 20 | \$43.39 | \$868 | 244 |
| C. Recordkeeping | | | | | | | | | | |
| 1. Exposure Monitoring | | | | | | | | | | |
| Initial | First Year | Employee | HR Manager | 2,520 | 96% | 0.25 | 605 | \$78.27 | \$47,353 | 2,419 |
| Periodic | Annual | Employee | HR Manager | 2,716 | 96% | 0.25 | 652 | \$78.27 | \$51,032 | 2,607 |
| Additional | Annual | Employee | HR Manager | 252 | 96% | 0.25 | 60 | \$78.27 | \$4,696 | 242 |
| 2. Medical Surveillance | | | | | | | | | | |
| Medical Surveillance - HR Manager | Annual | Employee | HR Manager | 5,287 | 96% | 0.25 | 1,269 | \$78.27 | \$99,325 | 5,076 |
| Medical Surveillance - Clerical | Annual | Employee | Clerical | 5,287 | 96% | 0.08 | 406 | \$24.71 | \$10,032 | 5,076 |
| 3. Training | | | | | | | | | | |
| Training | Annual | Employee | Clerical | 8,400 | 25% | 0.08 | 168 | \$24.71 | \$4,151 | 2,100 |
| 4. Respirator Fit Testing Records | | | | | | | | | | |
| Respirator Fit Testing | Annual | Employee | Clerical | 159 | 100% | 0.08 | 13 | \$24.71 | \$321 | 159 |
| D. Employee Access to Exposure Monitoring and Medical Records | | | | | | | | | | |
| Written Exposure Control Plan | Annual | Employee | Clerical | 420 | 25% | 0.08 | 8 | \$24.71 | \$198 | 105 |
| Access to Records | Annual | Employee | Clerical | 420 | 100% | 0.08 | 34 | \$24.71 | \$840 | 420 |

BERYLLIUM STANDARD FOR GENERAL INDUSTRY (29 CFR 1910.1024), CONSTRUCTION (29 CFR 1926.1124), AND MARITIME (29 CFR 1915.1024)

1218-0267

May 2020

Table C1. Summary of Burden Hours, Burden-Hour Cost Under Item 12 for Construction

| | Frequency | Basis | Respondent | Responses per Year | Non-Compliance Rate | Hours per Response | Hours per Year | Loaded Hourly Wage | Total Cost | Total Responses |
|--|------------|---------------|------------|--------------------|---------------------|--------------------|---------------------------|--------------------|--------------------|------------------|
| | | | | A | b | c | $d = a \times b \times c$ | e | $f = d \times e$ | $g = a \times b$ |
| E. Rule Familiarization | | | | | | | | | | |
| Small Establishments (< 20 Employees) | First Year | Establishment | Supervisor | 1,990 | 100% | 1.00 | 1,990 | \$43.39 | \$86,346 | 1,990 |
| Medium Establishments (20 - 499 Employees) | First Year | Establishment | Supervisor | 109 | 100% | 1.00 | 109 | \$43.39 | \$4,730 | 109 |
| Large Establishments (≥ 500 Employees) | First Year | Establishment | Supervisor | 1 | 100% | 1.00 | 1 | \$43.39 | \$43 | 1 |
| Total | | | | | | | | | | |
| First Year | | | | 18,094 | | | 9,605 | | \$613,950 | 9,860 |
| Annual | | | | 35,150 | | | 12,011 | | \$505,721 | 21,418 |
| Biennial | | | | 14,919 | | | 6,592 | | \$184,080 | 8,205 |
| Total | | | | 68,163 | | | 28,208 | | \$1,303,751 | 39,483 |
| Total ICR Three Year Average | | | | 48,641 | | | 18,509 | | \$802,411 | 28,807 |

The follow burden hours and cost estimates are for the shipyards sector only:

Below, OSHA has retained the approved collection of information for the maritime until parallel rulemakings for those sectors are approved by OMB. The wage rates have been updated to be consistent with the general industry final economic analysis.

A. Exposure Monitoring

§ 1915.1024(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.

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

1. Initial Monitoring

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.

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, 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 3,086.³⁴ Workers in abrasive blasting in shipyard are estimated to be sampled 20 percent more to account for the failure rate due to increased dust at

³⁴The total number of affected workers can be found in Table III-13 of the FEA (minus general industry in the January 9, 2017 Beryllium Final).

the worksite. The number of abrasive blasting worker samples is 3,060 times 120 percent, or 3,672. Also, there are 26 welders that will be affected as well. The number of workers that will be directly subjected to initial monitoring (925) is the number of affected workers in each NAICS, divided by 4 because there are 4 workers represented by each sample $\{[(3,060 \times 1.20)/4=918]+[(26 \text{ welders} \times 1.0/4=6.5)]=924.5=925\}$. Each sampled production worker will incur 30 minutes (0.5 hours) of lost work time during air monitoring,³⁵ at an hourly wage rate of \$25.47. Baseline non-compliance with this requirement is estimated to be 96 percent. The burden hours and cost associated with these provisions are:

Burden hours: $925 \text{ (samples)} \times 0.96 \text{ (non-compliance rate)} \times 0.5 \text{ (hours of Production Worker time)} = \mathbf{444 \text{ hours}}$

One-Time Cost: $444 \text{ (hours)} \times \$25.47 \text{ (Production Worker wage)} = \mathbf{\$11,309}$

2. Periodic Exposure Monitoring

§ 1915.1024(d)(3)(v), (vi), (vii) & (viii) Scheduled Monitoring Option.

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. 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. 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, 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 996 workers will be subject to periodic exposure monitoring. For periodic monitoring, the number of samples per year varies depending on whether workers are between the AL and PEL or over the PEL, and also whether the workers perform abrasive

³⁵ 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.

blasting or not. OSHA estimates that there are 1,534 abrasive blasting workers between AL and PEL after the rule is implemented. These workers between the AL and PEL are sampled twice a year. This number is then divided by four, as one sample covers four workers working in the same area. Finally, this number is multiplied by 120 percent to account for the sampling failure rate in abrasive blasting. This results in a total of 920 samples for workers between the AL and PEL ($1,534 \text{ workers} \times 2 \text{ samples} \div 4 \text{ workers} \times 120\% \text{ failure rate} = 920$).

For maritime welders, the calculations are the same except that the number of samples is not multiplied by 120 percent because this setting does not face the same difficulties with sampling. OSHA estimates that there are 11 welders between AL and PEL after the rule is implemented. These workers between the AL and PEL are sampled twice a year. This number is then divided by four, as one sample covers four workers working in the same area. This results in a total of 6 samples for workers between the AL and PEL ($11 \text{ workers} \times 2 \text{ samples} \div 4 \text{ workers} = 5.5 = 6$).

Above the PEL:

For abrasive blasting workers above the PEL, OSHA estimates that there are 58 workers still exposed above the PEL after the rule is implemented. These workers above the PEL are sampled four times per year (twice as often as workers between the AL and PEL). This number is also divide by four workers per area and multiplied by the 120 percent failure rate. This results in a total of 69 samples for workers above the PEL ($58 \text{ workers} \times 4 \text{ samples} \div 4 \text{ workers} \times 120\% \text{ failure rate} = 69$).

OSHA estimates that is one welder exposed above the PEL after the rule is implemented. Workers above the PEL are sampled four times per year (twice as often as workers between the AL and PEL). Although there is only one worker, OSHA applies the same estimation method as for other workers, and divides by four workers per area. This results in an estimate of 1 sample for workers above the PEL ($1 \text{ worker} \times 4 \text{ samples} \div 4 \text{ workers} = 1$).

Total samples between AL and PEL and above PEL:

Summing the number of samples for workers between the AL and PEL and over the PEL for both abrasive blasting and welding results in a total of 996 samples ($920 + 69 + 6 + 1 = 996$).

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 once every 3 months if above the PEL.) Each periodic exposure monitoring sample (996 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:

Burden hours: $996 \text{ (samples)} \times 0.96 \text{ (non-compliance rate)} \times 0.5 \text{ hours (Production worker time)} = \mathbf{478 \text{ hours}}$

Annual Cost: $478 \text{ (hours)} \times \$25.47 \text{ (Production worker wage)} = \mathbf{\$12,175}$

3. Additional Exposure Monitoring

§ 1915.1024(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, 925 workers (see previous paragraph, Initial Monitoring), OSHA estimates 10 percent 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: $925 \times 10\% \text{ (workers sampled)} \times 1 \text{ (assessment per year)} \times 0.96 \text{ (non-compliance rate)} \times 0.5 \text{ (hours of Production Worker time)} = \mathbf{44 \text{ hours}}$

Cost: $44 \text{ (hours)} \times \$25.47 \text{ (Production Worker wage)} = \mathbf{\$1,121}$

4. Employee Notification

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

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, 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. 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*

B. Written Exposure Control Plan, Respiratory Protection, Medical Surveillance, and Medical Removal§ 1915.1024(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 696 affected establishments in maritime industries. See Table III-13 of the FEA, available at <https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-2042>. 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 696 establishments in the shipyards industry are potentially at risk from exposure to beryllium. The Agency estimates a Human Resource Manager, earning an hourly wage of \$78.27, spends eight hours per establishment to develop and implement a written exposure control plan. Baseline non-compliance with this requirement is estimated to be 26 percent.

Burden hours: $696 \text{ (written plans)} \times 0.26 \text{ (non-compliance rate)} \times 8 \text{ (hours of HR Manager time)} = \mathbf{1,448 \text{ hours}}$

One-Time Cost: $1,448 \text{ (hours)} \times \$78.27 \text{ (HR Manager wage)} = \mathbf{\$113,335}$

Implement plan - 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 estimates that there are a total of 3,086³⁶ workers at risk with a non-compliance rate of 25 percent. Managers are estimated to need 0.5 hours per employee to write the plan.

Burden hours: $3,086 \text{ (employees)} \times 0.26 \text{ (non-compliance rate)} \times 0.5 \text{ (hours of HR Manager time)} = \mathbf{401 \text{ hours}}$

One time Cost: $401 \text{ (hours)} \times \$78.27 \text{ (HR Manager wage)} = \mathbf{\$31,386}$

a. Maintaining and Updating a Written Exposure Control Plan

³⁶ See Table III-13 in the 2017 FEA (Document ID OSHA-H005C-2006-0870-2042, available at <https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-2042>). The industry profile chapter of the 2017 FEA (chapter III) explains how all the numbers were derived for each sector.

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 3,086 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 25 percent.

Burden hours: 3,086 (employees) × 0.26 (non-compliance rate) × 0.8 (hours of HR Manager time) = **642 hours**

Annual Cost: 642 (hours) × \$78.27 (HR Manager wage) = **\$50,249**

2. Respiratory Protection (g)

§ 1915.1024(g) Respiratory protection program.

Under paragraph (g)(2), where the 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). The Respiratory Protection standard, 29 CFR 1910.134(c)(1), requires employers to establish and implement a written respiratory protection program containing worksite-specific procedures. The program must be updated as necessary to reflect changes in workplace conditions that affect respirator use. 29 CFR 1910.134(c)(1)(i)-(ix) lists the information that must be included in the employer's written respiratory protection program.

Develop and Implement Plan

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. OSHA estimates that there are 70 shipyard establishments potentially at risk from exposure to beryllium

that could exceed the PEL. This is 10 percent of the 696 shipyard establishments and they will need to develop a respiratory protection plan. The agency estimates that it takes an HR Manager eight hours to develop a respiratory protection plan for each of the 280 employers. Baseline non-compliance with this requirement is estimated to be 26 percent.

Burden hours: 70 (establishments with respirator program) \times 0.26 (non-compliance rate) \times 8.0 hours (HR manager time) = **146 hours**

One-time Cost: 146 (hours) \times \$78.27 (HR manager wage) = **\$11,427**

Update Plan:

OSHA estimates that it takes an HR Manager two hours to update the respiratory protection plan for each of the 70 employers. Baseline non-compliance with this requirement is estimated to be 26 percent.

Burden hours: 70 (establishments with respirator program) \times 0.26 (non-compliance rate) \times 2.0 hours (HR manager time) = **36 hours**

Annual Cost: 36 (hours) \times \$78.27 (HR manager wage) = **\$2,818**

3. *Respirator Fit Testing:*

The employer will conduct respiratory fit testing for the 59 construction and shipyard workers who will need to wear respirators. OSHA estimates that it will take 30 minutes (0.5 hours) for a worker to be fit-tested per respirator and 100 percent (baseline non-compliance rate) of the 59 workers will need to be fit-tested.

Burden hours: 59 (production workers) \times 1.0 (non-compliance rate) \times 0.5 hours (Production worker time) = **30 hours**

Annual Cost: 30 (hours) \times \$25.47 (Production worker wage) = **\$764**

OSHA estimates that it will take a supervisor 30 minutes to fit-test the worker. The baseline for non-compliance is 100 percent.

Burden hours: 59 (Supervisor) \times 1.0 (non-compliance rate) \times 0.5 hours (Supervisor time) = **30 hours**

Annual Cost: 30 (hours) \times \$43.39 (Supervisor wage) = **\$1,302**

4. Personal Protective Clothing and Equipment

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

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 burden in shipyards is zero because types of personal protective equipment used do not require laundering or repair.

5. Medical Surveillance

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

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 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 (every two years) includes both those who are over the AL and those showing signs and symptoms (of CBD or other beryllium-related health effects sensitization).³⁷

³⁷ 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.

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The shipyard sector requires exams for 1,825 workers. OSHA estimates that each examination³⁸ 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:

Periodic Exams

Burden hours: 1,825 (examinations) × 0.55 (non-compliance rate) × 2.08 (hours of Production Worker time) = **2,088 hours**

Biennial Cost: 2,088 hours × \$25.47 (Production worker wage) = **\$53,181**

Note: The Agency estimates that 10 percent of the standard medical examinations will lead to further tests recommended by the PLHCP³⁹ and are included in the cost and time of the 1,825 employees.

6. Referral to Diagnostic Center

§ 1915.1024(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 86. It will take 24 hours and 15 minutes for each employee to travel by plane to the center and complete the medical examination. Baseline non-compliance rate is estimated to be 100 percent.

Burden hours: 86 referrals traveling x 1 (non-compliance) x 24.25 hours = **2,086 hours**

Cost: 2,086 hours x \$25.47 (Production worker wage) = **\$53,130**

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

³⁸ Final paragraph (k)(3) provides the content of examinations.

³⁹ These medical surveillance unit costs are summarized in Table V-19 of the 2017 FEA.

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The estimated annual number of referrals exams to the CBD diagnostic center is 29. It will take 4 hours and 15 minutes for each employee to travel to the center in town and complete the medical examination. Baseline non-compliance rate is estimated to be 100 percent.

Burden hours: 29 referrals non travel \times 1(non-compliance) \times 4.25 hours = **123 hours**

Cost: 123 hours \times \$25.47 (Production worker wage) = **\$3,133**

7. Information Provided to the PLHCP

§ 1915.1024(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.

Burden hours: $1,825 \text{ (employees)} \times 0.55 \text{ (non-compliance rate)} \times 0.25 \text{ (hours of Supervisor time)} = \mathbf{251 \text{ hours}}$

Biennial Cost: $251 \text{ (hours)} \times \$43.39 \text{ (Supervisor wage)} = \mathbf{\$10,891}$

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

§ 1915.1024(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 1,825 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: $1,825 \text{ (employees)} \times 0.55 \text{ (non-compliance rate)} \times 0.08 \text{ (hours of Supervisor time)} = \mathbf{80 \text{ hours}}$

Biennial Cost: $80 \text{ (hours)} \times \$43.39 \text{ (Supervisor wage)} = \mathbf{\$3,471}$

9. Medical Removal

§ 1915.1024(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 spreadsheet for the FEA under the “Rule” tab of the Cost spreadsheet, there are 89 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: 89 employees x 1 (non-compliance) x 0.08 hours = 7 hours

Cost: 7 hours x \$43.39 (Supervisor wage) = **\$304**

C. Recordkeeping

1. Exposure Assessment.

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

a. *Initial Exposure Monitoring*

As determined under Initial Exposure Monitoring, paragraph (d)(2), the Agency estimates there are 925 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 \$78.27, which includes time to notify employees of the results of the exposure monitoring (typically accomplished by posting the results).⁴⁰ Baseline non-compliance with this requirement is estimated to be 96 percent. The burden hours and cost associated with these provisions are:

Burden hours: 925 (workers sampled) × 0.96 (non-compliance rate) × 0.25 (hours of HR Manager time) = **222 hours**

One-Time Cost: 222 (hours) × \$78.27 (HR Manager wage) = **\$17,376**

b. *Periodic Exposure Monitoring*

⁴⁰Where 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.

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As determined under Periodic Exposure Monitoring, paragraph (d)(3), the Agency estimates there are 996 periodic monitoring samples taken.⁴¹ 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 \$78.27, 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: $996 \text{ (workers sampled per year)} \times 0.96 \text{ (non-compliance rate)} \times 0.25 \text{ (hours of HR Manager time)} = \mathbf{239 \text{ hours}}$

Annual Cost: $239 \text{ (hours)} \times \$78.27 \text{ (HR Manager wage)} = \mathbf{\$18,707}$

c. Additional Exposure Monitoring

Of the number of at risk workers subject to initial monitoring, 925 workers (see previous paragraph, Initial Monitoring), OSHA estimates 10 percent, 92.5 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 \$78.27, 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: $92 \text{ (workers sampled)} \text{ (workers sampled per year)} \times 0.96 \text{ (non-compliance rate)} \times 0.25 \text{ (hours of HR Manager time)} = \mathbf{22 \text{ hours}}$

Annual Cost: $22 \text{ (hours)} \times \$78.27 \text{ (HR Manager wage)} = \mathbf{\$1,722}$

2. Medical Surveillance

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

In 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 spend 15 minutes (.25 hour) to read, copy the PLHCP's opinion, provide and discuss the opinion with the employee, and discuss any necessary post-exam consultation with the employee. The number of post-exam records is 1,825; also there are

⁴¹ 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 standard's requirements and do not need to conduct initial exposure monitoring or subsequent periodic monitoring.

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115 referral exam records⁴² for a total of 1,940. Baseline non-compliance with this requirement is estimated to be 96 percent.

Burden hours: 1,940 (exam records) × 0.96 (non-compliance rate) × 0.25 (hours of HR Manager time) = **466 hours**

Annual Cost: 466 (hours) × \$78.27 (HR Manager wage) = **\$36,474**

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 1,940. Baseline non-compliance with this requirement is estimated to be 96 percent.

Burden hours: 1,940 (exam records) × 0.96 (non-compliance rate) × 0.08 hours = **149 hours**

Annual Cost: 149 hours × \$24.71 (Clerical worker wage) = **\$3,682**

3. Training

§ 1915.1024(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 3,086 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 26 percent.

Burden hours: 3,086 (training records) × 0.26 (non-compliance rate) × 0.08 (hours of Clerical worker time) = **64 hours**

Annual Cost: 64 (hours) × \$24.71 (Clerical worker wage) = **\$1,581**

4. Fit Testing Records

OSHA estimates that there are 59 workers that will require fit testing records to be generated and maintained. It will take a clerical worker 5 minutes to prepare and maintain these records for each employee. The baseline for non-compliance is 100 percent.

⁴² Under the Medical Surveillance section of Item 12, the Agency estimates there are 86 referral examinations where workers travel on average 24.25 hours to a CBD Diagnostic Center; and 29 referral examinations where employees travel on average 4.25 hours to the CBD Diagnostic center.

Burden hours: 59 (Supervisor) \times 1.0 (non-compliance rate) \times 0.08 hours (Clerical worker time) = **5 hours**

Annual Cost: 5 (hours) \times \$24.71 (Clerical worker wage) = **\$124**

D. Employee Access to Exposure Monitoring and Medical Records

1. Employee Access to Written Exposure Control Plan

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 percent of the 3,086 at-risk workers, or 154 workers, will request access to their records per year. Baseline non-compliance with this requirement is estimated to be 26 percent.

Burden hours: 154 (worker requests for medical documentation) \times 0.26 (non-compliance rate) \times 0.08 (hours of Clerical worker time) = **3 hours**

One-Time Cost: 3 (hours) \times \$24.71 (Clerical worker wage) = **\$74**

2. Employee Access to Exposure Monitoring and Medical Records

§ 1915.1024(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 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 percent of the 3,086 at-risk workers, or 154 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: 154 (worker requests for medical documentation) \times 1 (non-compliance rate) \times 0.08 (hours of Clerical worker time) = **12 hours**

Annual Cost: 12 (hours) \times \$24.71 (Clerical worker wage) = **\$297**

E. 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 estimates that supervisors in small, medium, and large establishments will only require 1 hour to become familiar with the final rule, because they already familiarized themselves with the 2017 final rule. OSHA's estimate of familiarization costs therefore reflects the total supervisor familiarization time (cost at a supervisory wage) for each covered employer. The estimates of the different sizes of establishments and the number of employers 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: 409 affected small establishments x 1.0 (hours of supervisor time) = **409 hours**

Cost: 409 x \$43.39 (Supervisor wage) = **\$17,747**

Medium establishment (20 to 499 employees)

Burden hours: 259 affected medium establishments x 1.0 (hours of supervisor time) = **259 hours**

Cost: 259 x \$43.39 (Supervisor wage) = **\$11,238**

Large establishment (500 or more employees)

Burden hours: 27 affected large establishments x 1.0 (hours of supervisor time) = **27 hours**

Cost: 27 x \$43.39 (Supervisor wage) = **\$1,172**

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Table C2. Summary of Burden Hours, Burden-Hour Cost Under Item 12 for the Shipyard Sectors

| | Frequency | Basis | Respondent | Responses per Year | Non-Compliance Rate | Hours per Response | Total 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 | \$25.47 | \$0 | 0 |
| 2. Scheduled Monitoring Option | | | | | | | | | | |
| Initial | First Year | Employee | Production Worker | 925 | 96% | 0.50 | 444 | \$25.47 | \$11,309 | 888 |
| Periodic | Annual | Employee | Production Worker | 996 | 96% | 0.50 | 478 | \$25.47 | \$12,175 | 956 |
| Additional | Annual | Employee | Production Worker | 92 | 96% | 0.50 | 44 | \$25.47 | \$1,121 | 88 |
| B. Written Exposure Control Plan, Respiratory Protection, Medical Surveillance, and Medical Removal | | | | | | | | | | |
| 1. Written Exposure Control Plan | | | | | | | | | | |
| Develop Plan | First Year | Establishment | HR Manager | 696 | 26% | 8.00 | 1,448 | \$78.27 | \$113,335 | 181 |
| Develop Plan | First Year | Employee | HR Manager | 3,086 | 26% | 0.50 | 401 | \$78.27 | \$31,386 | 802 |
| Update Plan | Annual | Employee | HR Manager | 3,086 | 26% | 0.80 | 642 | \$78.27 | \$50,249 | 802 |
| 2. Respirator Program | | | | | | | | | | |
| Develop Plan | First Year | Establishment | HR Manager | 70 | 26% | 8.00 | 146 | \$78.27 | \$11,427 | 18 |
| Update Plan | Annual | Establishment | HR Manager | 70 | 26% | 2.00 | 36 | \$78.27 | \$2,818 | 18 |
| 3. Respirator Fit Testing | | | | | | | | | | |
| Respirator Fit Testing - Labor | Annual | Employee | Production Worker | 59 | 100% | 0.50 | 30 | \$25.47 | \$764 | 59 |

BERYLLIUM STANDARD FOR GENERAL INDUSTRY (29 CFR 1910.1024), CONSTRUCTION (29 CFR 1926.1124), AND MARITIME (29 CFR 1915.1024)

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Table C2. Summary of Burden Hours, Burden-Hour Cost Under Item 12 for the Shipyard Sectors

| | Frequency | Basis | Respondent | Responses per Year | Non-Compliance Rate | Hours per Response | Total 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> | $f = d \times e$ | $g = a \times b$ |
| Respirator Fit Testing - Labor | Annual | Employee | Supervisor | 59 | 100% | 0.50 | 30 | \$43.39 | \$1,302 | 59 |
| 4. PPE | | | | | | | | | | |
| Notify Cleaners in Writing | Annual | Establishment | Clerical | 0 | 0% | 0.17 | 0 | \$24.71 | \$0 | 0 |
| 5. Medical Surveillance | | | | | | | | | | |
| Medical Exam - Initial and Biennial | Biennial | Employee | Production Worker | 1,825 | 55% | 2.08 | 2,088 | \$25.47 | \$53,181 | 1,004 |
| 6. Referral to Diagnostic Center | | | | | | | | | | |
| Referral Exam - Travelling Workers | Annual | Employee | Production Worker | 86 | 100% | 24.25 | 2,086 | \$25.47 | \$53,130 | 86 |
| Referral Exam - Non-Travelling Workers | Annual | Employee | Production Worker | 29 | 100% | 4.25 | 123 | \$25.47 | \$3,133 | 29 |
| 7. Information Provided to the PLHCP | | | | | | | | | | |
| Provide Information - Supervisor | Biennial | Employee | Supervisor | 1,825 | 55% | 0.25 | 251 | \$43.39 | \$10,891 | 1,004 |
| 8. Licensed Physician's Written Medical Opinion | | | | | | | | | | |
| Process Information - Supervisor | Biennial | Employee | Supervisor | 1,825 | 55% | 0.08 | 80 | \$43.39 | \$3,471 | 1,004 |
| 9. Medical Removal | | | | | | | | | | |

BERYLLIUM STANDARD FOR GENERAL INDUSTRY (29 CFR 1910.1024), CONSTRUCTION (29 CFR 1926.1124), AND MARITIME (29 CFR 1915.1024)
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Table C2. Summary of Burden Hours, Burden-Hour Cost Under Item 12 for the Shipyard Sectors

| | Frequency | Basis | Respondent | Responses per Year | Non-Compliance Rate | Hours per Response | Total 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> | $f = d \times e$ | $g = a \times b$ |
| Medical Removal | First Year | Employee | Supervisor | 89 | 100% | 0.08 | 7 | \$43.39 | \$304 | 89 |
| C. Recordkeeping | | | | | | | | | | |
| 1. Exposure Monitoring | | | | | | | | | | |
| Initial | First Year | Employee | HR Manager | 925 | 96% | 0.25 | 222 | \$78.27 | \$17,376 | 888 |
| Periodic | Annual | Employee | HR Manager | 996 | 96% | 0.25 | 239 | \$78.27 | \$18,707 | 956 |
| Additional | Annual | Employee | HR Manager | 92 | 96% | 0.25 | 22 | \$78.27 | \$1,722 | 88 |
| 2. Medical Surveillance | | | | | | | | | | |
| Medical Surveillance - HR Manager | Annual | Employee | HR Manager | 1,940 | 96% | 0.25 | 466 | \$78.27 | \$36,474 | 1,862 |
| Medical Surveillance - Clerical | Annual | Employee | Clerical | 1,940 | 96% | | 149 | \$24.71 | \$3,682 | 1,862 |
| 3. Training | | | | | | | | | | |
| Training | Annual | Employee | Clerical | 3,086 | 26% | 0.08 | 64 | \$24.71 | \$1,581 | 802 |
| 4. Respirator Fit Testing Records | | | | | | | | | | |
| Respirator Fit Testing | Annual | Employee | Clerical | 59 | 100% | 0.08 | 5 | \$24.71 | \$124 | 59 |
| D. Employee Access to Exposure Monitoring and Medical Records | | | | | | | | | | |
| Written Exposure Control Plan | Annual | Employee | Clerical | 154 | 26% | 0.08 | 3 | \$24.71 | \$74 | 40 |
| Access to | Annual | Employee | Clerical | 154 | 100% | 0.08 | 12 | \$24.71 | \$297 | 154 |

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Table C2. Summary of Burden Hours, Burden-Hour Cost Under Item 12 for the Shipyard Sectors

| | Frequency | Basis | Respondent | Responses per Year | Non-Compliance Rate | Hours per Response | Total 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> | $f = d \times e$ | $g = a \times b$ |
| Records | | | | | | | | | | |
| E. Rule Familiarization | | | | | | | | | | |
| Small Establishments (< 20 Employees) | First Year | Establishment | Supervisor | 409 | 100% | 1.00 | 409 | \$43.39 | \$17,747 | 409 |
| Medium Establishments (20 - 499 Employees) | First Year | Establishment | Supervisor | 259 | 100% | 1.00 | 259 | \$43.39 | \$11,238 | 259 |
| Large Establishments (≥ 500 Employees) | First Year | Establishment | Supervisor | 27 | 100% | 1.00 | 27 | \$43.39 | \$1,172 | 27 |
| Total | | | | | | | | | | |
| First Year | | | | 6,486 | | | 3,363 | | \$215,294 | 3,561 |
| Annual | | | | 12,898 | | | 4,429 | | \$187,353 | 7,920 |
| Biennial | | | | 5,475 | | | 2,419 | | \$67,543 | 3,012 |
| Total | | | | 24,859 | | | 10,211 | | \$470,190 | 14,493 |
| Total ICR Three Year Average | | | | 17,798 | | | 6,760 | | \$292,890 | 10,613 |

Total burden hours and cost including all three industries general industry, maritime, and construction is as follows:

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Table D – Summary of the Estimated Burden Hours and Cost for All Three Industries

| Collection of Information | Responses per Year | Non-Compliance Rate | Hours per Response | Hours per Year | Loaded Hourly Wage | Total Cost | Total Responses |
|---|--------------------|---------------------|--------------------|----------------|--------------------|-------------|-----------------|
| Total ICR Three Year Average for General Industry | 185,715 | various | various | 82,822 | Various | \$4,435,452 | 134,570 |
| Total ICR Three Year Average for Construction a | 48,641 | various | various | 18,509 | Various | \$802,411 | 28,807 |
| Total ICR Three Year Average for Shipyards | 17,798 | various | various | 6,760 | Various | \$292,890 | 10,613 |
| Total ICR Three Year Average all three industries | 252,154 | | | 108,091 | | 5,530,753 | 173,990 |

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 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 \$617.26, which is the sum of the cost for contract industrial hygienist services (\$459.95) and the associated lab fees (\$157.31). The unit cost to obtain the two STEL samples is estimated to be \$1,234.52 (2 x (\$157.31 + \$459.95)) per sampled worker. The unit cost for additional/periodic TWA samples is estimated to be \$387.29, which is the sum of the cost for contract industrial hygienist services

(\$229.98) and the associated lab fees (\$157.31). The unit cost to obtain additional/periodic STEL samples is estimated to be \$774.57 (2 x (\$157.31 + \$229.98)).⁴³

Table E1 shows the number of responses per year, non-compliance rate, and total cost associated with each type of exposure monitoring sample for general industry. The number of workers affected by the exposure monitoring requirements varies, with 10,864 workers affected in the first year, 4,955 workers subject to periodic exposure monitoring, and 1,086 workers subject to additional exposure monitoring.⁴⁴ The total cost is calculated by multiplying the cost per sample by the number of non-compliance responses. First-year costs and the costs for each type of sample are summed to arrive at the total costs.

**Table E1. Direct Costs of Exposure Monitoring*
 (General Industry Only)**

| | Frequency | Responses per Year | Non-Compliance Rate | Non-Compliance Responses per year | Unit Cost | Total Cost |
|-------------------|------------|--------------------|---------------------|-----------------------------------|------------|---------------------|
| Initial | | | | | | |
| TWA Sample | First Year | 10,864 | 94% | 10,212 | \$617.26 | \$6,303,459 |
| 2 STEL Samples | First Year | 10,864 | 94% | 10,212 | \$1,234.52 | \$12,606,918 |
| Subtotal | First Year | 10,864 | | 10,212 | | \$18,910,377 |
| Periodic | | | | | | |
| TWA Sample | Annual | 4,955 | 92% | 4,559 | \$387.29 | \$1,765,655 |
| 2 STEL Samples | Annual | 4,955 | 92% | 4,559 | \$774.57 | \$3,531,265 |
| Subtotal | Annual | 4,955 | | 4,559 | | \$5,296,920 |
| Additional | | | | | | |
| TWA Sample | Annual | 1,086 | 94% | 1,021 | \$387.29 | \$395,423 |
| 2 STEL Samples | Annual | 1,086 | 94% | 1,021 | \$774.57 | \$790,836 |
| Subtotal | Annual | 1,086 | | 1,021 | | \$1,186,259 |
| Total | | | | | | \$25,393,556 |

*Samples are taken twice a year for workers between the AL and PEL and quarterly for workers above the PEL.

Total average over three years for General Industry is:
 (\$18,910,377/3) + \$5,296,920 + \$1,186,259 = **\$12,786,638**

⁴³ These exposure monitoring unit costs are summarized in the spreadsheets accompanying the PEA for the 2017 rule (Docket Number OSHA-H005C-2006-0870-0385).

⁴⁴ The derivation of the number of affected workers is described in Section 12 above.

Table E2 shows the number of responses per year, non-compliance rate, and total cost associated with each type of exposure monitoring sample for construction. The number of workers affected by the exposure monitoring requirements varies, with 2,540 workers affected in the first year, 2,716 workers subject to periodic exposure monitoring, and 252 workers subject to additional exposure monitoring.⁴⁵ The total cost is calculated by multiplying the cost per sample by the number of non-compliance responses. First-year costs and the costs for each type of sample are summed to arrive at the total costs.

Table E2. Direct Costs of Exposure Monitoring for Construction*

| | Frequency | Basis | Unit Cost | Responses per Year | Non-Compliance Rate | Adjusted Responses | Total Cost |
|-------------------|------------|----------|------------|--------------------|---------------------|--------------------|--------------------|
| Initial | | | | | | | |
| TWA Sample | First Year | Employee | \$617.26 | 2,520 | 96% | 2,419 | \$1,493,152 |
| 2 STEL Samples | First Year | Employee | \$1,234.52 | 2,520 | 96% | 2,419 | \$2,986,304 |
| Subtotal | First Year | Employee | | 5,040 | | 4,838 | \$4,479,456 |
| Additional | | | | | | | |
| TWA Sample | Annual | Employee | \$387.29 | 2,716 | 96% | 2,607 | \$1,009,665 |
| 2 STEL Samples | Annual | Employee | \$774.57 | 2,716 | 96% | 2,607 | \$2,019,304 |
| Subtotal | Annual | Employee | | 5,432 | | 5,214 | \$3,028,969 |
| Periodic | | | | | | | |
| TWA Sample | Annual | Employee | \$387.29 | 252 | 96% | 242 | \$93,724 |
| 2 STEL Samples | Annual | Employee | \$774.57 | 252 | 96% | 242 | \$187,446 |
| Subtotal | Annual | Employee | | 504 | | 484 | \$281,170 |
| Total | | | | | | | |
| First Year | | | | 5,040 | | | \$4,479,456 |
| Annual | | | | 5,936 | | | \$3,310,139 |
| | | | | | | | |
| Total | | | | 10,976 | | | \$7,789,595 |

* Samples are taken twice a year for workers between the AL and PEL and quarterly for workers above the PEL.

Total average over three years for Construction is:
 $(4,479,456/3) + 3,028,969 + 281,170 = \mathbf{4,803,291}$

Table E3 shows the number of responses per year, non-compliance rate, and total cost associated with each type of exposure monitoring sample for construction. The number of workers affected

⁴⁵ The derivation of the number of affected workers is described in Section 12 above.

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by the exposure monitoring requirements varies, with 925 workers affected in the first year, 996 workers subject to periodic exposure monitoring, and 92 workers subject to additional exposure monitoring.⁴⁶ The total cost is calculated by multiplying the cost per sample by the number of non-compliance responses. First-year costs and the costs for each type of sample are summed to arrive at the total costs.

Table E3. Direct Costs of Exposure Monitoring for Shipyards*

| | Frequency | Basis | Unit Cost | Responses per Year | Non-Compliance Rate | Adjusted Responses | Total Cost |
|-------------------|------------|----------|------------|--------------------|---------------------|--------------------|--------------------|
| Initial | | | | | | | |
| TWA Sample | First Year | Employee | \$617.26 | 925 | 96% | 888 | \$548,127 |
| 2 STEL Samples | First Year | Employee | \$1,234.52 | 925 | 96% | 888 | \$1,096,254 |
| Subtotal | First Year | Employee | | 1,850 | | 1,776 | \$1,644,381 |
| Additional | | | | | | | |
| TWA Sample | Annual | Employee | \$387.29 | 996 | 96% | 956 | \$370,249 |
| 2 STEL Samples | Annual | Employee | \$774.57 | 996 | 96% | 956 | \$740,489 |
| Subtotal | Annual | Employee | | 1,992 | | 1,912 | \$1,110,738 |
| Periodic | | | | | | | |
| TWA Sample | Annual | Employee | \$387.29 | 92 | 96% | 88 | \$34,082 |
| 2 STEL Samples | Annual | Employee | \$774.57 | 92 | 96% | 88 | \$68,162 |
| Subtotal | Annual | Employee | | 184 | | 176 | \$102,244 |
| Total | | | | | | | |
| First Year | | | | 1,850 | | | \$1,644,381 |
| Annual | | | | 2,176 | | | \$1,212,982 |
| | | | | | | | |
| Total | | | | 4,026 | | | \$2,857,363 |

* Samples are taken twice a year for workers between the AL and PEL and quarterly for workers above the PEL.

Total average over three years for Shipyards is:
 $(1,644,381/3) + 1,110,738 + 102,244 = \mathbf{1,761,109}$

⁴⁶The derivation of the number of affected workers is described in Section 12 above.

2. Medical Examinations

For general industry, 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 \$591.12, which includes \$44.57 for gathering or updating work and medical history, \$133.71 for a full physical exam (encompassing both respiratory and skin requirements), \$62.82 for a pulmonary function test, \$327.05 for a BeLPT, and \$229.98 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.⁴⁷ 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 14,598 workers in general industry will be subject to biennial medical surveillance, and OSHA estimates a non-compliance rate of 69 percent (10,073 workers) so the total cost for these workers is \$5,954,352 (10,073 x \$591.12). (See Table E4) The cost for the additional exams is included.

Table E4 – Medical Exam Costs for General Industry

| | Frequency | Basis | Unit Cost | Responses per Year | Non-Compliance Rate | Adjusted Responses | Total Cost |
|--------------------|-----------|----------|-----------|--------------------|---------------------|--------------------|-------------|
| Medical Exam Costs | Biennial | Employee | \$591.12 | 14,598 | 69% | 10,073 | \$5,954,352 |

The agency estimates that 4,973 workers in construction will be subject to biennial medical surveillance, and OSHA estimates a non-compliance rate of 0.55 (4,973 workers) so the total cost for these workers is \$1,616,713 (2,735 x \$591.12). (See Table E5) The cost for the additional exams is included.

Table E5 – Medical Exam Costs for Construction

| | Frequency | Basis | Unit Cost | Responses per Year | Non-Compliance Rate | Adjusted Responses | Total Cost |
|--------------------|-----------|----------|-----------|--------------------|---------------------|--------------------|-------------|
| Medical Exam Costs | Biennial | Employee | \$591.12 | 4,973 | 55% | 2,735 | \$1,616,713 |

⁴⁷These medical exams unit costs are summarized in Table V-19 of the FEA.

The agency estimates that 1,825 workers in shipyard will be subject to biennial medical surveillance, and OSHA estimates a non-compliance rate of 0.55 (1,825 workers) so the total cost for these workers is \$593,484 (1,004 x \$591.12) (See Table E6). The cost for the additional exams is included.

Table E6 – Medical Exam Costs for Shipyards

| | Frequency | Basis | Unit Cost | Responses per Year | Non-Compliance Rate | Adjusted Responses | Total Cost |
|--------------------|-----------|----------|-----------|--------------------|---------------------|--------------------|------------|
| Medical Exam Costs | Biennial | Employee | \$591.12 | 1,825 | 55% | 1,004 | \$593,484 |

3. Respirator Fit-Test Materials

General Industry:

The agency estimates that it costs employers \$1.27 for respirator materials to fit-test each of the 433 employees in general industry. 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.⁴⁸

Annual Cost: 433 (employees) x \$1.27 (cost for materials) = **\$550**

Construction Industry:

The agency estimates that it costs employers \$1.27 for respirator materials to fit-test each of the 159 employees in construction and shipyards. 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.⁴⁹

Annual Cost: 159 (employees) x \$1.27 (cost for materials) = **\$202**

⁴⁸ *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.

⁴⁹ *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.

Shipyards Sector:

The agency estimates that it costs employers \$1.27 for respirator materials to fit-test each of the 59 employees in construction and shipyards. 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*.⁵⁰

Annual Cost: 59 (employees) x \$1.27 (cost for materials) = \$75

4. Total Capital Costs

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

Table F – Annualization of the Final Cost

| | |
|---|---------------------|
| Total Capital Cost is \$44,205,890 | |
| Total Capital Cost Annualized is: \$ 27,516,414 | |
| Table F – Annualization of the Final Cost | |
| Three Year Average for the ICR (Only General Industry) | Cost |
| Exposure Monitoring | \$12,786,638 |
| Medical Exams | \$5,954,352 |
| Fit Testing | \$550 |
| Total Cost Average over three years for General Industry | \$18,741,540 |
| Three Year Average for the ICR (Only Construction) | Cost |
| Exposure Monitoring | \$4,803,291 |
| Medical Exams | \$1,616,713 |
| Fit Testing | \$202 |
| Total Cost Average over three years for Construction | \$6,420,206 |
| Three Year Average for the ICR (Only Shipyards) | Cost |
| Exposure Monitoring | \$1,761,109 |
| Medical Exams | \$593,484 |
| Fit Testing | \$75 |
| Total Cost Average over three years for | \$2,354,668 |

⁵⁰ *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.

| | |
|---|---------------------|
| Shipyards | |
| Total Cost Average over three years for General Industry, Maritime, and Construction | \$27,516,414 |

14. Provide estimates of annualized cost to the Federal Government. Also, provide a description 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. The agency has no annualized cost associated with enforcing the standard. OSHA would only review records in the context of an investigation of a particular employer to determine compliance with the standard. These activities are outside the scope of the PRA. See 5 CFR 1320.4(a)(2).

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

This is a revision to the existing collection of information. The agency is revising the currently approved Beryllium Information Collection for the general industry sector to 82,822 burden hours. This revision removes the collection of social security numbers from the recordkeeping requirements of the standard. This revision also clarifies the provisions for the written exposure control plan, the provisions for cleaning and replacement of personal protection equipment, the provisions for housekeeping for the disposal, recycling, and reuse of contaminated materials when transferring materials, the provisions for the general medical surveillance for employees who have not received medical examinations within the previous two years, and the provisions for referrals to and evaluations at a CBD diagnostic center. The changes to the information collection requirements would affect the existing ICR but would have no measurable impact on employer burden, and would therefore impose no additional burden hours or costs for the employer, if any, these changes will reduce the burden. In addition, the final rule modifies the proposed requirements for the frequency of medical exams for employees who have been exposed to beryllium during an emergency or who show signs and symptoms of CBD and for medical evaluation for employees at a CBD Diagnostic Center. The capital cost estimated for general industry is \$18,741,540. The capital cost estimate is annualized over three years.

However, while the agency requests approval for updates and revision to the existing collection of information requirements for the general industry final rule, this ICR still covers the construction and shipyard sectors and the associated burden hours and cost incurred. The total burden hours approved under this Information Collection for all three industries (general industry, maritime and construction) is 194,261.

Therefore, the agency is requesting an adjustment decrease in the burden hours of 27,376, from 194,261 hours to 166,885 hours. When the burden hours are annualized the burden hours are 108,091. This decrease in burden is due to an increase in the number of establishments that are in compliance which decreases the number of establishments that are in non-compliance and a decrease in time for familiarization. OSHA has determined that employers are more familiarized with this standard since this rule only clarified the agency's intentions for the standard. The capital cost estimate is \$44,205,890, after annualized over three years the cost is \$27,516,414. The agency estimates that the total capital cost to the employer for analyzing the samples taken for exposure monitoring, medical examinations, and fit-testing materials is \$44,205,890, a reduction of \$1,952,376. The total burden hours and cost estimates include all three industries: general industry, maritime, and construction.

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.

The information collected under the beryllium standard will not be published.

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.