

**LEAD IN CONSTRUCTION (29 CFR 1926.62)****1218-0189****May 2019****Note**

OSHA has completed a regulatory review of its existing safety and health standards in response to the President's Executive Order 13563, "Improving Regulation and Regulatory Review" (76 FR 3821). This review, the Standards Improvement Project—Phase IV (SIP-IV), was the fourth in a series of rulemaking actions to improve and streamline OSHA standards. OSHA's Standards Improvement Projects remove or revise individual requirements in safety and health standards that are confusing, outdated, duplicative, or inconsistent. The goal of this rulemaking was to reduce regulatory burden while maintaining or enhancing worker safety and health.

As part of the SIP IV rulemaking, OSHA removed the provisions in its standards that require employers to collect and record employees' social security numbers. This change will help protect employee privacy and aid in preventing identity fraud. The Lead standard for construction, 29 CFR 1926.62, has been amended to reflect this change.

This ICR seeks OMB approval for changes to the collection in accordance with the SIP-IV Final Rule. As noted above and described in more detail in this ICR, the SIP-IV Final Rule is expected to reduce the paperwork burden borne by employers.

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**SUPPORTING STATEMENT FOR THE  
INFORMATION COLLECTION REQUIREMENTS IN  
LEAD IN CONSTRUCTION STANDARD (29 CFR 1926.62)<sup>1</sup>  
(OMB CONTROL NO. 1218-0189 (May 2019))**

**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) 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). To achieve this objective, the OSH Act specifically authorizes “the development and promulgation of occupational safety and health regulations” (29 U.S.C. 651).

To protect worker health, the OSH Act authorizes the Occupational Safety and Health Administration (OSHA) to develop standards that provide for “monitoring or measuring employee exposure” to occupational hazards and “prescribe the type and frequency of medical examinations and other tests which shall be made available [by the employer] 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). In addition, the OSH Act mandates that “[e]ach employer shall make, keep and preserve, and make available to the Secretary [of Labor] . . . 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). In addition, the OSH Act directs OSHA to “issue regulations requiring employers to maintain accurate records of employee exposure to potentially toxic materials or other harmful physical agents which are required to be monitored and measured,” and further specifies that such regulations provide “for each employee or former employee to have access to such records as will indicate [their] own exposure to toxic materials or harmful physical agents” (29 U.S.C. 657). The OSH Act states further 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. 651).

Under the authority granted by the OSH Act, the Occupational Safety and Health Administration (OSHA) published a health standard governing worker exposure to Lead in Construction (29 CFR 1926.62) (the “Standard”). Attached to this supporting statement is a copy of the Standard.

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<sup>1</sup> The purpose of this Supporting Statement is to analyze and describe the burden hours and costs associated with provisions of this standard that contain paperwork requirements; it does not provide information or guidance on how to comply with, or how to enforce, the standard.

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The purpose of the Lead in Construction Standard is to reduce the occupational lead exposure in the construction industry. Lead exposure can result in both acute and chronic effects and can be fatal in severe cases of lead intoxication. Some of the health effects associated with lead exposure include: brain disorders which can lead to seizures, coma, and death; anemia; neurological problems; high blood pressure; kidney problems; reproductive problems; and decreased red blood cell production.

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

The Lead in Construction Standard includes requirements for exposure monitoring, compliance programs, respirator program, medical surveillance and recordkeeping. The information generated to comply with these provisions is primarily used by employers, workers, and medical care providers to provide protection for workers from the adverse health effects associated with occupational exposure to lead. The recordkeeping requirements of this Standard also assist OSHA in enforcement of the OSH Act and in development of information regarding the causes and prevention of occupational accidents and illnesses.

Both worker and employers benefit from the information provided by exposure-monitoring and medical surveillance records. Through notification of monitored exposure levels, the worker is informed whether his or her exposure is lower than or above a level warranting protective action. Medical records are designed so that a worker can determine whether or not treatment is needed for occupational exposure. Exposure-monitoring and medical surveillance records help the employer to ensure that workers are not overexposed to lead. The exposure assessment requirements can be used to help employers to understand how exposures can vary over time and can be used to diagnose and correct problem operations or poor work practices resulting in high airborne lead levels.

Records of previous medical examinations are useful to physicians who must examine workers exposed to lead. Without records of previous medical examinations, the physician may not be able to determine whether a worker has suffered an adverse health effects since his or her last examination. Further, when symptoms of organic damage appear, the physician often needs information about the patient's previous medical condition to make an accurate diagnosis of the new problem, its apparent cause, and the course of treatment required.

The data and information contained in the required records may also be used by both OSHA and NIOSH primarily for the development of lead exposure assessments. Exposure data and the data accumulated through the medical surveillance records can be used for epidemiological and diagnostic investigations (e.g., to determine, dose-response relationships for diseases caused by lead exposure).

The following paragraphs identify paperwork requirements. Burden hours and costs are discussed under Item 12.

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### Exposure Assessment (§1926.62(d)(1))

For each workplace or operation where a worker may be occupationally exposed to lead, the employer must make an initial determination of whether a worker will be exposed to lead at or above the action level. The employer must thus determine: (1) whether or not lead is actually present at the work site, and (2) whether or not worker exposures would be at or above the action level.

### Protection of Employees During Assessment of Exposure (§1926.62(d)(2)(i))

The Standard requires employers to provide certain protection to all workers in job categories specifically identified in paragraph (d)(2) of the Standard, before determining the representative lead exposures of these workers. These protections must be provided until the employer documents that the workers are not exposed over the PEL (documentation through new exposure monitoring data, or exposure-monitoring data no more than 12 months). If workers covered under (d)(2) are found to be exposed below the PEL, the documentation described in this paragraph is the same documentation that is also required to satisfy the Negative Initial Determination requirement.

### Basis of Initial Determination (§1926.62(d)(3))

The Standard further requires employers to determine whether any worker will be exposed to lead at or above the action level. This determination may be made on the basis of: (1) new exposure monitoring; (2) relevant exposure monitoring data collected by the employer within the previous 12 months (historical monitoring data); or (3) objective data <sup>2</sup> showing that worst-case exposures will be below the action level. Thus, employers will need to perform initial determination-related monitoring when objective data or previous exposure monitoring data do not exist or are insufficient for use. (Exposure monitoring performed to comply with the Initial Determination requirement may also be used to satisfy the Initial Monitoring requirement as described below.)

### Positive Initial Determination and Initial Monitoring (§1926.62(d)(4))

Employers must conduct initial exposure-monitoring (representative of each affected worker's exposure) when the initial determination is positive (the employer concludes that lead exposure may meet or exceed the action level) unless employers have relevant historical monitoring data from the previous 12 months.

### Negative Initial Determination (§1926.62(d)(5))

If the initial determination is negative (i.e., employers conclude that no workers will be exposed

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<sup>2</sup> Objective data is data demonstrating that a particular product or material containing lead or a specific process, operation, or activity involving lead cannot result in worker exposure to lead at or above the action level during processing, use or handling.

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at or above the action level), employers must make a written record of that determination. The record must include the information specified in paragraph (d)(3)(i) of this section and also shall include the date of determination, location within the worksite, and the name of each worker monitored.

**Frequency (§1926.62(d)(6))**

If the initial determination reveals employee exposure to be below the action level further exposure determination need not be repeated except as otherwise provided in paragraph (d)(7). (See: "Additional Exposure Assessments," below.)

The frequency of periodic monitoring is determined by whether the work site exposure levels are at or above the action level but at or below the PEL, or above the PEL. If the initial determination or subsequent determination reveals employee exposure to be at or above the action level but at or below the PEL the employer must perform monitoring at least every 6 months. The employer must continue monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are below the action level at which time the employer may discontinue monitoring for that employee except as otherwise provided in paragraph (d)(7).

If the initial determination reveals that employee exposure is above the PEL the employer shall perform monitoring quarterly. The employer must continue monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are at or below the PEL but at or above the action level at which time the employer shall repeat monitoring for that employee at the frequency specified in paragraph (d)(6)(ii) of this section, except as otherwise provided in paragraph (d)(7). The employer must continue monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are below the action level at which time the employer may discontinue monitoring for that employee except as otherwise provided in paragraph (d)(7).

**Additional Exposure Assessments (§1926.62(d)(7))**

Whenever there has been a change of equipment, process, control, personnel or a new task has been initiated that may result in additional workers being exposed to lead at or above the action level or may result in workers already exposed at or above the action level being exposed above the PEL, the employer must conduct additional monitoring.

**Employee Notification (§1926.62(d)(8))**

If employers conduct exposure monitoring, they must notify workers either individually in writing or by posting the results within 5 days in an appropriate location that is accessible to workers. If the results are at or above the PEL, the employer must include a statement to that effect and a description of corrective measures to be taken. The point of notification is to ensure that workers are aware of their exposures to OSHA-regulated substances, and the Agency preliminarily concludes that this goal can be met either through individual written notification or

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through posting in a location that is readily accessible to all workers whose results are being posted.

### Compliance Program (§1926.62(e)(2)(i), (e)(2)(ii), and (e)(2)(iii))

The Lead in Construction Standard requires employers to establish and implement a written compliance program to reduce worker exposures to or below the PEL by means of engineering and work practice controls. Employers must review and update their compliance programs at least annually to reflect the current status of the program until all worker exposures are reduced to or below the PEL solely by engineering and work practice control methods.

Written plans for these compliance programs shall include at least the following:

- (A) A description of each activity in which lead is emitted; e.g. equipment used, material involved, controls in place, crew size, employee job responsibilities, operating procedures and maintenance practices;
- (B) A description of the specific means that will be employed to achieve compliance and, where engineering controls are required engineering plans and studies used to determine methods selected for controlling exposure to lead;
- (C) A report of the technology considered in meeting the PEL;
- (D) Air monitoring data which documents the source of lead emissions;
- (E) A detailed schedule for implementation of the program, including documentation such as copies of purchase orders for equipment, construction contracts, etc.;
- (F) A work practice program which includes items required under paragraphs (g), (h) and (i) of this section and incorporates other relevant work practices such as those specified in paragraph (e)(5) of this section;
- (G) An administrative control schedule required by paragraph (e)(4) of this section, if applicable;
- (H) A description of arrangements made among contractors on multi-contractor sites with respect to informing affected employees of potential exposure to lead and with respect to responsibility for compliance with this section as set-forth in §1926.16.
- (I) Other relevant information.

### Notification of Other Onsite Employers (§1926.62(e)(2)(ii)(H))

As shown in the paragraph above, the compliance program requires contractors working with lead on multi-contractor sites to inform affected workers of potential exposure to lead as required

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in 29 CFR 1926.16 (Rule of Construction).

### Submission of Written Compliance Programs (§1926.62(e)(2)(iv))

The Standard requires that written compliance programs must be submitted upon request to any affected worker or authorized worker representatives, to OSHA and the National Institute for Occupational Safety and Health (NIOSH), and must be available at the worksite for examination and copying by OSHA and NIOSH.<sup>3</sup>

### Revision of Written Compliance Programs (§1926.62(e)(2)(v))

Written programs must be revised and updated at least annually to reflect the current status of the program.

### Administrative Controls (§1926.62(e)(4))

The Lead in Construction Standard permits the use of worker rotation to control exposure to lead. Employers who make use of worker rotation as an administrative control must establish a job rotation schedule as part of the written compliance program.

### Respirator Protection (§1926.62(f)(2)(i))

Employers using respirators to control worker exposures to lead must establish a respiratory protection program in accordance with 29 CFR 1910.134, paragraphs (b) through (d) (except (d) (1)(iii)), and (f) through (m), which covers each worker required to use a respirator. Paragraph (c) of 1910.134 requires employers to develop and implement a written respiratory protection program with worksite specific procedures, as well as elements for respirator use. The purpose of these requirements is to ensure that employers establish a standardized procedure for selecting, using, and maintaining respirators for each workplace requiring respirator use. Developing written procedures ensures that employers implement a respirator program that meets the needs of their workers.

### Notifying the Laundry (§1926.62(g)(2)(vi) and (vii))

The Lead in Construction Standard requires employers to provide workers exposed to lead above the PEL with protective work clothing and equipment. Employers supplying such clothing and equipment are also required to inform, in writing, those persons responsible for cleaning and laundering the protective clothing and equipment about the hazards of lead. The employer shall

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<sup>3</sup> OSHA has determined that the requirement for employers to make information available upon request to the Assistant Secretary is not a collection of information; OSHA typically requests access to records during an inspection, and information collected by the Agency during the investigation is not subject to the PRA under 5 CFR 1320.4(a)(2). While NIOSH may use records collected from employers for research purposes, the Agency does not anticipate NIOSH to request employers to make available records during the approval period. Therefore, the burden for the employer to make this information available to NIOSH is zero.

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ensure that the containers of contaminated protective clothing and equipment required by paragraph (g)(2)(v) of this section are labeled as follows: DANGER: CLOTHING AND EQUIPMENT CONTAMINATED WITH LEAD. MAY DAMAGE FERTILITY OR THE UNBORN CHILD. CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM. DO NOT EAT, DRINK OR SMOKE WHEN HANDLING. DO NOT REMOVE DUST BY BLOWING OR SHAKING. DISPOSE OF LEAD CONTAMINATED WASH WATER IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, OR FEDERAL REGULATIONS.<sup>4</sup>

### Medical Surveillance (§1926.62(j), (j)(1)(i) and (j)(1)(ii))

Employers must provide initial medical surveillance to any worker occupationally exposed to lead at or above the action level on any day. Initial medical surveillance consists of a single session of biological monitoring. The Standard further requires employers to establish a medical surveillance program for all workers who are, or may be, exposed by the employer at or above the action level for more than 30 days in any consecutive 12 months. Other medical surveillance provisions include: requirements for medical examinations and consultations; notification of the multiple physician review option; provision of information to physicians; written medical opinions; and written chelation notification.

### Biological Monitoring (§1926.62(j)(2))

Employers must provide biological monitoring to the following categories of workers:

Initial medical surveillance consisting of a single blood test (analyzed for lead and zinc protoporphyrin levels) for workers exposed, on any day, to lead at or above the action level;

Periodic medical surveillance consisting of regularly scheduled blood tests (analyzed for lead and zinc protoporphyrin levels) as part of a medical surveillance program for all workers exposed at or above the action level more than thirty days per year. These tests are to be administered at least every two months for the first six months of employment and every six months thereafter;

Additional blood tests for all workers exposed at or above the action level whose last blood sampling and analysis indicated a blood-level at or above 40 µg/dl. These tests are to be administered at least every two months until two consecutive blood test results indicate a blood-lead level below 40 µg/dl;

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<sup>4</sup>Prior to June 1, 2015, employers were permitted to include the following information on bags or containers of contaminated protective clothing and equipment required by paragraph (g)(2)(v) in lieu of the labeling requirements in paragraph (g)(2)(vii)(A) of this section: Caution: Clothing contaminated with lead. Do not remove dust by blowing or shaking. Dispose of lead contaminated wash water in accordance with applicable local, state, or federal regulations.

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Follow-up blood tests for workers removed from exposure to lead due to an elevated blood-lead level (at or above 50 $\mu$ g/dl). These tests are to be administered within two weeks after the employer receives the results of the first blood sampling test; and

Additional blood tests for workers removed from exposure to lead due to an elevated blood-lead level (50  $\mu$ g/dl or more). These tests are to be administered at least monthly during the removal period.

All biological monitoring tests must be performed by, or under the supervision of, a licensed physician. (Blood-lead samples are often collected by occupational health nurses or other qualified health-care practitioners.)

### Employee Notification of Results (§1926.62(j)(2)(iv))

Employer must give each worker written notification of his or her blood-lead level within five working days after the receipt of biological monitoring results. Employers must also notify each worker whose blood-lead level is at or above 40 $\mu$ g/dl that the Standard requires temporary medical removal, with medical removal protection benefits, when a worker's blood-lead level is at or above 50  $\mu$ g/dl.

### Medical Examinations and Consultations (§1926.62(j)(3))

Employers are required to provide medical examinations and/or consultations to the following categories of workers:

Workers exposed at or above the action level more than thirty days per year or with blood-lead levels at or above 40 $\mu$ g/dl;

Workers with signs or symptoms associated with lead intoxication;

Workers desiring medical advice about the interaction of lead exposure and reproduction;

Workers who are pregnant;

Workers experiencing difficulty in breathing during a respirator fit test or during use; and

Workers medically removed from lead exposure or limited by a final medical determination.

### Notification of Multiple Physician Review Options (§1926.62(j)(3)(iii)(B))

The Lead in Construction Standard requires employers to promptly notify each worker of his or her right to seek a second medical opinion after each occasion during which a physician conducts a medical examination or consultation.

### Information Provided to Examining and Consulting Physicians (§1926.62(j)(3)(iv))

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Employers must provide the physician conducting the medical examination or consultation the following: a copy of the Standard and appendices; a description of the worker's lead-exposed duties; the worker's exposure level; a description of the personal protective equipment used; prior blood-lead test results; and any prior written medical opinions concerning the worker in the employer's control.

### **Physician's Written Medical Opinion (§1926.62(j)(3)(v))**

The Standard requires that employers obtain a written medical opinion from the supervising, examining, or consulting physician for each session of biological monitoring, medical examination, or consultation, and provide it to the affected worker.

### **Chelation Notification (§1926.62(j)(4)(i))**

In accordance with the Standard, if therapeutic or diagnostic chelation is performed on a lead-poisoned worker, the worker must be notified, in writing, prior to the occurrence of the chelation. In general, chelation is only performed in severe cases of lead intoxication.

### **Employee Information and Training (§1926.62(l))**

#### **Communication of Hazards (§ 1926.62(l)(1)(i), 1926.62(1)(ii), 1926.62(1)(iii) and 1926.62 (1)(iv))**

The Standard requires employers to communicate information concerning lead hazards to all workers exposed to lead in accordance with the Hazard Communication Standard for the Construction Industry, 1926.59. The employer shall ensure that at least the following hazards are addressed: reproductive/developmental toxicity; central nervous system effects; kidney effects; blood effects; and acute toxicity effects.<sup>5</sup>

In addition, employers must establish a training program for all workers who are exposed to lead at or above the action level on any day or who work with lead compounds that may cause skin or eye irritation. Training must be provided prior to initial job assignment and must be repeated at least annually thereafter for all covered workers.

### **Training Program (§ 1926.62(l)(2))**

The employer is responsible for informing workers of the following: (1) the content of the lead standard and its appendices; (2) the specific nature of the operations that could result in exposure to lead above the action level; (3) the purpose, proper selection, fitting, use and limitations of

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<sup>5</sup>The Agency accounts for the burden hours and costs associated with compliance with the HCS, such as the development of a hazard communication program, under the Information Collection Request (ICR) for the HCS. OMB Control No. 1218-0072.

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respirators; (4) the purpose and a description of the medical surveillance program and the medical removal protection program, including information concerning the adverse health effects associated with excessive exposure to lead; (5) the engineering controls and work practices associated with the worker's job assignment; (6) the contents of any compliance plan in effect; and (7) instructions to workers that chelating agents should not be used routinely to remove lead from their bodies, and should not be used at all except under the direction of a licensed physician; (8) the employee's right of access to records.

Upon further analysis, the requirement that employers provide training to workers under (l)(1) and (l)(2) is not considered to be a collection of information

### Access to Training Program Materials (§1926.62(l)(3))

As required by (l)(3)(i), the employer must make readily available to all affected workers a copy of the standard and its appendices and provide, upon request, all materials relating to the worker training and information program to affected workers and their designated representatives. Workers receive training program materials during initial and annual training making it unlikely that workers will request to see such material. In addition, public disclosures of information originally provided by the Federal government to the recipient for the purpose of disclosure to the public do not fall within the definition of a collection of information under 5 CFR 1320.3(c) (2). Therefore, these requirements, as they pertain to materials provided by the Federal government to employers, are not collections of information.

In addition, under (l)(3)(ii), the Lead in Construction Standard requires employers to provide, upon request, all materials relating to the worker training and information program to OSHA and NIOSH. Usually, OSHA requests access to records during a compliance inspection. Information collected by the Agency during the investigation is not subject to the PRA under 5 CFR 1320.4(a)(2). Therefore, OSHA takes no burden or cost in Items 12 and 14 of this Supporting Statement.

### Signs (§1926.62(m))

The employer must post the following warning signs<sup>6</sup> in each work area where a worker's exposure to lead is above the PEL: DANGER, LEAD WORK AREA, MAY DAMAGE FERTILITY OR THE UNBORN CHILD, CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM, DO NOT EAT, DRINK OR SMOKE IN THIS AREA

### Exposure Monitoring Records (§1926.62(n)(1)(ii))

The Standard requires employers to establish and maintain an accurate record of all monitoring

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<sup>6</sup>Prior to June 1, 2016, employers were permitted to use the following legend in lieu of that specified in paragraph (m): WARNING: LEAD WORK AREA; POISON; NO SMOKING OR EATING.

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and other data used in conducting worker exposure assessments.

### **Medical Surveillance Records (§1926.62(n)(2)(i))**

Employers must establish and maintain an accurate record of medical surveillance results for each worker subject to medical surveillance.

### **Medical Removal Records (§1926.62(n)(3)(i))**

Employers must establish and maintain an accurate record for each worker subject to medical removal.

### **Objective Data Records (§1926.62(n)(4)(i))**

The Standard requires employers to establish and maintain records of the objective data relied upon to make initial determinations.

### **Employee Access to Records (§1926.62(n)(5))**

The Standard requires employers to make available upon request the contents of the written compliance program, the training program materials, and all records required to be maintained under paragraph (n) (Recordkeeping) to affected workers, former workers, and the designated representatives.

### **Federal Access to Records (§1926.62(n)(5))**

The Standard requires employers to make available upon request the contents of the written compliance program, the training program materials, and all records required to be maintained under paragraph (n) (Recordkeeping) to OSHA and NIOSH. Usually, OSHA requests access to records during a compliance inspection. Information collected by the Agency during the investigation is not subject to the PRA under 5 CFR 1320.4(a)(2). Therefore, OSHA takes no burden or cost in Items 12 and 14 of this Supporting Statement.

### **Record Transfer (§1926.62(n)(6))**

The standard requires employers ceasing to do business to transfer records to a successor employer. Employers must comply with the transfer requirements in (§1910.1020(h)).

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.

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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. In this regard, the employer would communicate the location of all records, including worker 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.

In addition, OSHA accounts for the burden hours and costs resulting from the worker notification requirements under the Information Collection Request (ICR) for its Access to Employee Exposure and Medical Records Standard (§1910.1020), OMB Control No. 1218-0065.

- 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 burden.**

Employers may use improved information technology when establishing and maintaining exposure monitoring and medical surveillance records. OSHA wrote the paperwork requirements of the Regulation in performance oriented language (i.e., in terms of what data to maintain, not how to maintain the data).

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

The requirements to maintain information 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 OSHA (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 this Standard are the minimum that OSHA believes are necessary to ensure that the employer and OSHA can effectively monitor the exposure and health status of workers working with lead.

- 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;**

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**requiring respondents to prepare a written response to a collection of information in fewer than 30 days after receipt of it;**

**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 reviewed and 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 uses; 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.**

Paragraph 1926.62(d)(8)(i) requires employers to give workers written notification of their exposure levels within five working days after completion of the exposure assessment.

Paragraph 1926.62(j)(2)(iv)(A) requires employers to give workers written notification concerning blood lead level results within five working days after the receipt of biological monitoring results. Paragraph 1926.62(j)(2)(iv)(B) requires employers to notify workers whose blood lead levels are at or above 40 ug/dl about the medical removal and medical removal protection benefits provisions of the Standard within five working days after the receipt of biological monitoring results.

In addition, under OSHA's Access to Employee Exposure and Medical Records Standard (§1910.1020), employers must maintain the exposure monitoring results for 30 years.

**8. If applicable, provide a copy and identify the date 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 3 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.**

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In accordance with 5 CFR 1320.11, OSHA has submitted a revised Lead in Construction (29 CFR 1926.62) Information Collection Request (ICR) to the Office of Management and Budget (OMB) for the Standards Improvement Project–Phase IV (SIP-IV) rulemaking.

OSHA sought public comment on revisions to this package when the Agency published the SIP-IV NPRM on October 4, 2016 (81 FR 68504). The Agency received no comments in response to this notice during the comment period for the NPRM.

This ICR seeks OMB approval for changes to the collection in accordance with the SIP-IV Final Rule, which is one of OSHA’s Standards Improvement Projects. These projects review existing safety and health standards in response to Executive Order 13563, “Improving Regulation and Regulatory Review” (76 FR 3821). They are intended to improve and streamline OSHA standards by removing or revising requirements that are confusing or outdated, or that duplicate, or are inconsistent with, other standards. The goal of the SIP-IV Final Rule is to reduce regulatory burden while maintaining or enhancing worker safety and health.

**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.**

Since employee medical records contain information that may be considered private, OSHA has taken steps to ensure that the data are kept private to the extent allowed by law. Rules of Agency practice and procedure governing OSHA access to worker medical records are contained in 29 CFR 1913.10. The legal authority for these procedural regulations is found in sections 8(c)(1) and 8(g)(2) of the Occupational Safety and Health, 29 U.S.C. 657; in section (e) of the Privacy Act, 5 U.S.C. 552a(e); in 29 CFR Part 70a; and in 5 U.S.C. 301.

**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 give to persons from whom the information is requested, and any steps to be taken to obtain their consent.**

The paperwork requirements specified by the Standard do not require collection of sensitive information.

**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.**

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**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 in Item 13.**

**Provide estimates of annualized cost to respondents for the hour burdens for collection of information, identifying and using appropriate wage rate categories. The cost of contracting out or paying outside parties for information collection activities should not be included here. Instead, this cost should be included in Item 14.**

### **Explanation and Summary of Estimated Annual Burden Hours**

As stated in the 1997 Information Collection Request, the development of the industry profile of affected establishments and workers began with estimates of the types and numbers of construction projects involving exposure to lead, in conjunction with a characterization of each type of project. This characterization included the different types of activities that were performed on each project where lead exposure could occur, as well as estimates of the average number of crews (and crew sizes) needed to perform each activity for each type of project, and the average duration of each activity for each type of project.

The identification of the different *types* of construction projects (and individual activities within each project type) involving exposure to lead was based on a review of the occupational health literature describing where exposure to lead typically occurs. This was augmented and refined by conversations with industry and labor experts and the information gained from the 25 site visits performed by OSHA's contractor CONSAD in its support work for OSHA. The *number* of different projects performed each year was generally based on: an inventory of the particular type of construction projects performed (e.g., the number of highway bridges in the U.S.); and the frequency with which each particular type of project had to be redone (e.g. how often a highway bridge had to be repainted and rehabilitated); or some estimate of the number of projects performed each year. In most cases, these data suggest that the frequency of performing work on the same structure is once every 10-20 years or that the number of projects performed annually (compared to the total number that need to be performed) is such that at least a 10 - 20 year life expectancy is implied. For the purposes of estimating the types and number of projects performed annually, the Agency has retained the original formulas for estimation from the previous ICR while providing updated statistics and work-practice information wherever possible.

Lead exposure is most common among construction project types that involve the disturbance of existing lead or lead-containing materials during additions, alterations, reconstruction, demolition, repairs and maintenance. Some examples of potential sources of exposure in these project types include lead-based paint and paint dust, lead pipes, leaded solder, the leaded support rods in stained glass windows, and some mineral wool insulation. In contrast, project types involving exposure to lead during new construction are comparatively rare. This is in part due to government regulations that have banned residential use of once common lead-containing construction materials such as lead-based paints and lead solder. In most new construction projects involving lead use, lead and lead-containing materials are used in limited quantities for

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specialized applications. Examples include the use of lead foil sheet in the walls of hospital x-ray suites.

The burden hour and cost estimates presented below are calculated based on the number of affected firms, workers, and lead-exposed projects as classified by the type of construction projects involving lead exposure (e.g., Highway and Railroad Bridge Repainting, Stained Glass Window Removal, and Electrical Cable Splicing). Based on estimates and analysis contained in the Regulatory Impact Analysis<sup>7</sup> and updated data where available, the Agency estimates that approximately 119,853 firms, 731,111 workers, and 3,352,890 projects are affected by 29 CFR 1926.62 on an annual basis.<sup>8</sup>

Each of the 25 affected project types is characterized by a set of unique assumptions about typical airborne lead exposure levels, typical project durations, the construction tasks performed, and numerous other factors entering into the calculation of the burden hours associated with compliance.<sup>9</sup>

The following hourly wage rates for the relevant occupational categories have been published by the Bureau of Labor Statistics.<sup>10</sup> These wages have been adjusted to reflect the fact that fringe benefits comprise roughly 31.7 percent of total worker compensation for the civilian workers.<sup>11</sup> The costs of labor used in this analysis are therefore estimates of total hourly compensation. These hourly wages are:

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<sup>7</sup>The basic assumptions used in calculating the burden hour and cost estimates are derived from or based on information in the Regulatory Impact Analysis for the Lead in Construction Standard, and three supporting contractor reports. The three supporting contractor reports are: (1) "Economic Analysis of OSHA Interim Final Standard for Lead in Construction" prepared by CONSAD Research Corporation in April 1993; (2) "Assessment of Potential Benefits Associated with the Interim Final Standard for Lead in Construction" (Appendix D of the CONSAD report) prepared by Meridian Research, Inc. in April 1993; and (3) "Quantitative Assessment of the Risks Associated with Exposure to Lead in the Construction Industry: Selected Toxicologic Endpoints (Peer Review Draft Report)" prepared by Meridian Research, Inc. in August 1992.

<sup>8</sup>See Attachment A for explanation of analysis, data sources, and a complete list of projects on a per project-type basis.

<sup>9</sup>The Final Economic Analysis assumed that 25 project types would be affected by the Standard. As explained in Attachment A, the Agency determined that there are no longer any water tank repainting, underground storage tank, elevator cable babbetting, transmission and communication tower maintenance, or installation of terne roofing projects in which workers are exposed to lead. References to these project types have been retained here and elsewhere in the document, but are assumed to comprise zero lead-exposed projects. See Attachment A for more information.

<sup>10</sup>Source: Bureau of Labor Statistics, Occupational Employment Statistics, National Occupational Employment and Wage Estimates United States, May 2014. The Agency assumed that the wages for the different labor categories would be the same as the following occupation codes on BLS: Construction Supervisor (47-1011 First Line Supervisors and Construction Trades and Extraction Workers), Non-Supervisory Construction Workers (47-0000 Construction and Extraction Occupations), and Clerical Workers (43-0000 Office and Administrative Support Occupations). (Available at: <http://www.bls.gov/oes/tables.htm> )

<sup>11</sup> Bureau of Labor and Statistics (BLS), 2015. Employer Costs for Employee Compensation - March 2015. Available at [http://www.bls.gov/news.release/archives/ecec\\_06102015.pdf](http://www.bls.gov/news.release/archives/ecec_06102015.pdf) (Accessed June 15, 2015).

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Construction Supervisors	\$41.25
Construction Workers	\$29.50
Clerical Workers	\$22.49

OSHA assumes that there will be a number of new firms affected by the Standard each year equivalent to 10 percent of the total number of firms affected on an annual basis. (It is necessary to make an assumption about the number of new firms affected by the Standard each year in order to estimate the burden associated with several one-time requirements of the Standard that existing firms would have had to comply with by the end of 1993.) OSHA assumed, for the purposes of developing this information collection burden estimate, that all affected firms are currently in compliance with 29 CFR 1926.62.

### **Burden Hour and Cost Determination**

The following sections summarize the methodology used for estimating the number of burden hours and costs resulting from the information collection requirements of the Standard.

#### **A. Exposure monitoring (§1926.62(d))**

##### **(1) Initial Determination**

For each workplace or operation where a worker may be occupationally exposed to lead, the employer must make an initial determination of whether a worker will be exposed to lead at or above the action level. The employer must thus determine (1) whether or not lead is actually present at the work site and (2) whether or not worker exposures would meet or exceed the action level.

###### **(1)(a) Determination of the Presence of Lead**

Some project types always involve lead exposure while other affected project types may only involve lead exposure on some projects. In general, those construction firms working on projects where lead is commonly found can reasonably be expected to have a high degree of expertise about whether a given project is likely to involve lead exposure. OSHA assumes that employers involved in ten project types are able to immediately determine whether lead will be present at a given work site based on expertise, materials to be used, bidding expertise, or other relevant circumstances; and that employers in these categories, such as Housing Lead Abatement (Public Housing) do not have any burden associated with determining whether lead was present on the work sites.

For twelve project types, employers use a lead-detection method on every project to analyze potentially-lead-containing materials to determine worker exposure levels above the permissible exposure limit (PEL) when lead is present. These project types are as follows:

Highway and Railroad Bridge Repainting

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Highway and Railroad Bridge Rehabilitation  
Water Tank Repainting  
Petroleum Tank Repainting  
Underground Storage Tank Demolition  
Commercial and Industrial Demolition  
Indoor Industrial Facility Maintenance/Renovation  
Outdoor Industrial Facility Maintenance/Renovation  
Industrial Process Equipment Manufacture/Maintenance/Repair  
Industrial Vacuuming  
Reinsulation over Existing Mineral Wool  
Transmission and Communication Tower Maintenance

For the following three project types: Commercial and Institutional Remodeling, Residential Remodeling, and Repair/Removal of Water Lines, OSHA made slightly different assumptions about how many projects are tested to determine the presence of lead.

Remodeling firms engaged in work covered under the “Commercial and Institutional Remodeling and Residential Remodeling” projects only perform lead-detection testing on those projects where they planned to assign workers to perform tasks associated with exposures at or above the action level (e.g., the remodeling tasks listed in paragraph (d)(2)(i) of 1926.62)). Otherwise these firms rely on objective data to demonstrate that remodeling work does not result in worker exposures at or above the action level. (OSHA estimates that objective data is used on 85 percent of commercial and industrial remodeling jobs and 97 percent of residential remodeling jobs). Plumbing firms engaged in repair or removal of water lines do not do lead-testing since they also use objective data to demonstrate that their work does not result in worker exposures at or above the action level. (The burden hours for provisions relating to objective data and associated recordkeeping are presented below.)

For those project types where lead detection is performed, employers use a chemical identification test method (lead-detection swabs) to determine whether lead is present at a particular work site of a given project type. A supervisor, earning \$41.25, takes 15 minutes (.25 hour) to test for lead using a chemical identification test method. The formula for the burden hours by project type is: (# of projects to be tested)  $\times$  (1 test per project)  $\times$  (.25 hour) = burden hours by project type. The burden hours by project is totaled to derive the total number of burden hours across all project types. OSHA estimated that 392,228 projects are tested to determine whether lead was present or not.<sup>12</sup>

**Burden hours:** 392,228 projects  $\times$  1 test per project  $\times$  .25 hour = 98,057 hours  
**Cost:** 98,057 hours  $\times$  \$41.25 = **\$4,044,851**

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<sup>12</sup>To determine the number of projects tested, the Agency applied the percentage change in the number of lead-exposed projects in each project type to the number of projects needing lead testing in each project type as determined in the previous ICR update (e.g., the Agency calculated a 5.4% decrease in the total number of highway and railroad bridge repainting lead-exposed projects; this 5.4% decrease was then applied to the total number of projects needing lead testing for the project category). This process was applied throughout this ICR.

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The Standard requires employers to determine whether any worker will be exposed to lead at or above the action level. This determination may be made on the basis of: (1) new exposure monitoring, (2) relevant exposure-monitoring data collected by the employer within the previous 12 months (historical monitoring data), or (3) objective data showing that worst-case exposures will be below the action level. Thus, employers must perform initial determination-related monitoring when objective data or previous exposure monitoring data do not exist or are insufficient for use. (Exposure monitoring performed to comply with the Initial Determination requirement may also be used to satisfy the Initial Monitoring requirement as described below.)

New employers will conduct monitoring for the first time to satisfy the Initial Determination requirement. Due to increased industry awareness about lead-exposed construction tasks and project types following the promulgation of 1926.62, OSHA expects that these new employers will design a representative monitoring program and/or benefit from recently-developed industry objective data. OSHA therefore assumes that all new employers, with workers engaged in tasks likely to produce exposures at or above the action level, will only conduct one session of representative monitoring during their first year of doing business.

For those construction project types where all tasks typically have exposures below the action level, both existing and new employers will use objective data to support negative initial determination to comply with the exposure assessment requirements of the Standard (Use of objective data is less burdensome and costly than conducting monitoring). Firms involved in the Commercial and Institutional Remodeling and Residential Remodeling project types use objective data since many lead-exposed remodeling jobs do not involve tasks with at or above the action level. (The burden hours associated with the Objective Data and Negative Initial Determination requirements are described below).

Due to costs and burdens associated with repeated exposure-monitoring, all firms (existing or new businesses) engaged in projects, with worker exposures at or above action level, collect representative monitoring data once per year to comply with the Initial Determination requirement without having to conduct monitoring at every worksite throughout the year. (Representative monitoring is monitoring which is representative of the exposure for each worker in the worksite who is exposed to lead.) The project types where monitoring would occur are as follows (the number of affected firms by the project type is given in parentheses):

- Highway and Railroad Bridge Repainting (522)
- Highway and Railroad Bridge Rehabilitation (7)
- Water Tank Repainting (0)
- Petroleum Tank Repainting (364)
- Underground Storage Tank Demolition (0)
- Housing Lead Abatement (Public Housing) (438)
- Commercial and Industrial Demolition (1,945)
- Indoor Industrial Facility Maintenance/Renovation (609)
- Outdoor Industrial Facility Maintenance/Renovation (781)
- Industrial Process Equipment Manufacture/Maintenance/Repair (41)
- Industrial Vacuuming (107)

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Stained Glass Window Removal (76)  
Commercial and Institutional Remodeling (18,444)  
Residential Remodeling (37,679)  
Reinsulation over Existing Mineral Wool (8,333)  
Transmission and Communication Tower Maintenance (0)

By totaling the number of affected firms by project type, OSHA estimates that each of the 69,346 firms engaged in the project types listed above conducts one session of representative monitoring annually in order to satisfy the Initial Determination requirement.

Based on industry and project type characteristics, 56,123 total firms engaged in Commercial and Institutional Remodeling (18,444 firms) and Residential Remodeling (37,679 firms) use in-house staff to perform exposure-monitoring since it is most cost-effective. The burden hours and wage costs associated with representative monitoring are therefore calculated below for the 56,123 firms engaged in these two project types. The costs for analyzing the associated air monitoring samples are included in the response to Item 13.

The remaining 13,223 firms (all firms in all of the affected project types except for Commercial and Institutional Remodeling and Residential Remodeling) hire industrial hygienist contractors to perform exposure-monitoring, since it is more cost-effective. For these firms, there are no burden hours or costs associated with Item 12. The cost of purchasing industrial hygiene contractor services and the costs for analyzing the associated air monitoring samples are included in the response to Item 13.

Due to the small scale, short duration, and relative rarity of lead-exposed projects among Commercial and Institutional Remodeling and Residential Remodeling projects, OSHA concludes that it is more cost-effective for employers engaged in these projects to purchase monitoring equipment and have construction supervisors conduct the necessary exposure monitoring rather than paying industrial hygienist contractors to collect data. Performing representative monitoring and reporting results on a Commercial and Institutional Remodeling project takes three hours of a construction supervisor's time per monitoring. Performing representative monitoring and reporting results on a Residential Remodeling project takes two hours of a construction supervisor's time per monitoring.

The formula calculates the number of representative monitoring by project type (conducted to satisfy the Initial Determination requirement) is: (# of affected firms by project type)  $\times$  (1 representative monitoring/firm/year) = # of monitoring by project type.

The total burden hour formula by project type is: (# of monitoring by project type)  $\times$  (# of labor hours by project type/monitoring) = burden hours by project type.

The cost formula is: (# of monitoring by project type)  $\times$  (# of labor hours by project type/monitoring)  $\times$  (labor cost/hour) = cost by project type.

OSHA used the following specific formulas to calculate the burden and costs of this requirement

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for firms engaged in remodeling project types.

### For firms engaged in Commercial and Institutional remodeling projects:

$(18,883 \text{ firms}) \times (1 \text{ representative monitoring/firm/year}) = 18,883 \text{ monitoring sessions}$

**Burden hours:** 18,444 monitoring sessions  $\times$  3 hours = 55,332 hours  
**Cost:** 55,332 hours  $\times$  \$41.25 = \$2,282,445

### For firms engaged in Residential Remodeling projects:

$(37,679 \text{ firms}) \times (1 \text{ representative monitoring/firm/year}) = 37,679 \text{ monitoring sessions}$

**Burden hours:** 37,679 monitorings  $\times$  2 hours = 75,358 hours  
**Cost:** 75,358 hours  $\times$  \$41.25 = \$3,108,518

The total burden hours for firms engaged in Commercial and Institutional Remodeling projects and in Residential Remodeling projects is 130,690 hours (55,332 hours for Commercial and Industrial Remodeling firms plus the 75,358 hours for Residential Remodeling).

To calculate the total cost associated with the Initial Determination requirement, OSHA added the total cost for Commercial and Industrial Remodeling to the total cost for Residential Remodeling (\$2,282,445 + \$3,108,518). OSHA estimated that the monitoring conducted to satisfy the Initial Determination requirement results in an annual labor cost of **\$5,390,963**.

### **Total Burden Hours and Costs for Initial Determination:**

The total annual burden hours associated with the Initial Determination requirement are the sum of the total annual burden hours associated with determining the presence of lead and the total annual burden hours associated with conducting representative monitoring (98,057 hours + 130,690 hours). The total annual burden hours associated with this requirement are **228,747 hours**.

The total annual costs associated with the Initial Determination requirement are the sum of the total annual costs associated with determining the presence of lead and the total annual costs associated with conducting representative monitoring (**\$4,044,851 + \$5,390,963 = \$9,435,814**).

## **(2) Objective Data**

Employers may use objective data to make an initial determination instead of performing exposure-monitoring thereby reducing burden hours and costs. Employers whose lead-exposed operations never meet or exceed the action level have paperwork burdens for obtaining and reviewing objective data, making negative initial determinations, and keeping records of the objective data used to make negative initial determinations.

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OSHA assumes that 106,630 firms engage in the following project types use objective data in order to demonstrate that their worst-case exposures do not meet or exceed the action level. These projects types and the number of affected firms are as follows:

Housing Lead Abatement (Private Housing) (4,087)  
In-Place Management of Lead-Based Paint (Public Housing) (45)  
In-Place Management of Lead-Based Paint (Private Housing) (4,644)  
Lead Joint Work on Cast Iron Soil Pipes (2,556)  
Installation of Radiation Shielding (8)  
Commercial and Institutional Remodeling (18,444)  
Residential Remodeling (37,679)  
Elevator Cable Babbittting (0)  
Electrical Cable Splicing (417)  
Repair/Removal of Water Lines (38,750)  
Installation of Terne Roofing (0)

A construction supervisor at each firm spends one hour per year obtaining and reviewing objective data.

**Burden hours:**       $106,630 \text{ firms} \times 1 \text{ review} \times 1 \text{ hour} = 106,630 \text{ hours}$   
**Cost:**                   $106,630 \text{ hours} \times \$41.25 = \$4,398,488$

### **(3) Protection of Employees During Assessment of Exposure**

The Standard requires employers to provide certain protections for workers, in job categories specifically identified by OSHA in paragraph (d)(2) of the Standard, before determining the representative exposures of these workers. OSHA requires these protections to be provided until the employer documents that the workers are not exposed over the PEL (if new exposure-monitoring data or exposure-monitoring data no more than 12 months old shows that to be case). If workers covered under (d)(2) are indeed found to be exposed below the PEL, the documentation described in this paragraph is the same documentation that is also required to satisfy the Negative Initial Determination requirement. Thus, the annual burden hours associated with preparing this documentation are attributable to the Negative Initial Determination requirement and are included below.

### **(4) Positive Initial Determination and Initial Monitoring**

Initial exposure monitoring (representative of each affected worker's exposure) is conducted when the initial determination is positive (the employer concludes that lead exposure may be at or above the action level) unless the employer has relevant historical monitoring data from the previous 12 months. All firms use data collected from an annual representative monitoring session (as described above under Initial Determination) to satisfy this requirement as well as the Initial Determination requirement. The annual burden hours associated with this requirement are already included above.

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### **(5) Negative Initial Determination**

If the initial determination is negative (e.g., the employer concludes that no workers will be exposed at or above the action level), the employer must make a written record of that determination. Firms engaged in the following project types are covered under the scope of 1926.62 because of the presence of lead-containing materials at the worksite but make negative determinations based on objective data showing airborne lead exposures are below the action level:

- Housing Lead Abatement (Private Housing)
- In-Place Management of Lead-Based Paint (Public Housing)
- In-Place Management of Lead-Based Paint (Private Housing)
- Lead Joint Work on Cast Iron Soil Pipes
- Installation of Radiation Shielding
- Commercial and Institutional Remodeling (for 85 percent of projects)
- Residential Remodeling (for 97 percent of projects)
- Elevator Cable Babbittting
- Electrical Cable Splicing
- Repair/Removal of Water Lines
- Installation of Terne Roofing

Each affected firm's clerical worker takes six minutes (.10 hour) to prepare the negative initial determination using a standardized form. The Agency assumes that there are 3,352,890 lead-exposed projects annually, where exposures are less than the action level resulting in negative initial determinations.

**Burden hours:**       $3,352,890 \text{ projects} \times 1 \text{ form} \times .10 \text{ hour} = 335,289 \text{ hours}$   
**Cost:**                   $335,289 \times \$22.49 = \$7,540,650$

### **(6) Periodic Exposure Measurement**

Periodic exposure-monitoring is triggered by the airborne exposure levels found on a given worksite. The frequency of periodic monitoring is determined by whether the work site exposure levels are at or below the action level but at or below PEL, or above the PEL. In addition, since the requirement to perform periodic monitoring is based on the exposure levels associated with a specific worksite, periodic monitoring only occurs if the project is of sufficient duration.

If all worker exposures are at or below the action level, monitoring does not need to be repeated unless there is a change in workplace conditions that may result in workers being exposed at or above the action level. All employers capable of using objective data (to make an initial determination that exposures are at or below the action level) also have sufficient knowledge about good work practices to prevent worker exposures from meeting or exceeding the action level. Therefore, no annual burden is estimated for this requirement.

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If worker exposures are at or above the action level but at or below the PEL, monitoring must be conducted every six months for the duration of the project. This situation is unlikely to happen frequently since most of the lead exposure data collected by OSHA and analyzed by project type was either: (1) very low across all data in the project type (i.e., below the action level) or (2) very high (above the PEL) across all data in a project type. This situation is rare and therefore no estimates are made of the amount of periodic monitoring triggered by this provision.

If worker exposures are above the PEL, monitoring must be conducted every three months (approximately 60 work days) for the duration of the project. The following project types have exposures above the PEL, after the implementation of engineering controls, and the typical duration of such projects. (Average project duration is given in parentheses.)

- Highway and Railroad Bridge Repainting (108 work days)
- Highway and Railroad Bridge Rehabilitation (180 work days)
- Housing Lead Abatement (Public) (90 work days)
- Commercial and Industrial Demolition (60 work days)
- Transmission and Communication Tower Maintenance (75 work days)

The average number of periodic monitoring per firm per project, by project type, is as follows:

- Highway and Railroad Bridge Repainting – 1 monitoring
- Highway and Railroad Bridge Rehabilitation – 3 monitoring sessions
- Housing Lead Abatement (Public) – 1 monitoring
- Commercial and Industrial Demolition – 1 monitoring
- Transmission and Communication Tower Maintenance – 1 monitoring

All 2,912 firms (all firms in the project types listed above) are affected by the Periodic Monitoring requirement. OSHA further estimates there are 6,193 projects requiring periodic monitoring and 8,771 occurrences of periodic monitoring annually. However, it is most cost-effective for firms engaged in the project types listed above to arrange for industrial hygienist contractors to perform monitoring. Therefore, for these firms, there are no burden hours or cost associated with Item 12. The cost to these firms of purchasing industrial hygiene contractor services is included in Item 13, along with the cost for analyzing the associated air monitoring samples.

### **(7) Employee Notification of Monitoring Results**

Employers are required to notify workers individually in writing or by posting the exposure assessment results. If the results are at or above the PEL, the employer must include a statement to that effect and a description of corrective measures to be taken. To determine the number of exposure-monitoring notifications, OSHA first calculated the average number of monitorings conducted per firm per year by project type. This number equals the average number of notifications per worker per year since each worker whose exposure is assessed must be notified of the results of each exposure-monitoring session.

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The following formula calculates the number of notifications made per year by project: # of workers to be notified by project type)  $\times$  (average # of notifications per worker per year by project type) = number of notifications per year by project type. The numbers of notification per year, by project type is then totaled to determine the total number of notifications per year across all project types. OSHA estimates there are of 87,871 notifications made annually. A clerical worker takes six minutes (.10 hour) to post the notification annually.

**Burden hours:** 87,871 notifications  $\times$  .10 hour = 8,787 hours  
**Cost:** 8,787 hours  $\times$  \$22.49 = \$197,620

### **B. Compliance Program (§1926.62(e))**

#### **(1) Written Compliance Program**

Employers must establish and implement a written compliance program to reduce worker exposures to or below the PEL by means of engineering and work practice controls. Compliance programs must be revised and updated at least annually to reflect the current status of the program until all worker exposures are reduced to or below the PEL solely by engineering and work practice control methods. The Standard required that compliance with this provision be achieved no later than 50 days from the Standard's effective date (June 3, 1993). Employers performing work of the following project types have worker exposures above the PEL.

- Highway and Railroad Bridge Repainting
- Highway and Railroad Bridge Rehabilitation
- Water Tank Repainting
- Petroleum Tank Repainting
- Underground Storage Tank Demolition
- Housing Lead Abatement (Public Housing)
- Commercial and Industrial Demolition
- Indoor Industrial Facility Maintenance/Renovation
- Outdoor Industrial Facility Maintenance /Renovation
- Industrial Process Equipment Manufacture/Maintenance/Repair
- Industrial Vacuuming
- Stained Glass Window Removal
- Commercial and Institutional Remodeling
- Residential Remodeling
- Reinsulation over Existing Mineral Wool
- Transmission and Communication Tower Maintenance

OSHA estimates there are 69,346 firms engaged in these project types.

#### **(1)(a) Development of Written Compliance Program**

OSHA assumes that all existing firms are in compliance and have already prepared their written plans. Therefore, only new firms must develop a written compliance program. For the purposes

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of calculating the burden hours and costs, OSHA assumes that, on an annual basis, 10 percent of the total number of firms (6,934 new firms) with worker exposures above the PEL and are new entrants to the industry. OSHA estimates a construction supervisor takes between one and eight hours to develop a written compliance program, depending on the project type involved. The formula used to derive the burden hours by project type is: (# of new firms)  $\times$  (1 program/firm)  $\times$  (# of hours of labor time/program/project type) = burden hours by project type. The burden hours by project type are totaled to derive the total burden hours for this requirement. The annual total burden hours for this requirement are 15,219 hours.

**Burden hours:** 6,935 new firms  $\times$  1 program/firm  $\times$  2.194564 = 15,219 hours  
**Cost:** 15,219  $\times$  \$41.25 = \$627,784

### **(1)(b) Annual Review of the Written Compliance Program Review**

All 69,346 firms, which include new firms, have some workers with exposures above the PEL requiring firms to review their written compliance plans annually. A construction supervisor spends half the amount of time to review than to develop a written compliance plan (i.e. between 30 minutes to four hours). The formula for annual review of compliance plans is as follows: (number of firms)  $\times$  (time per review firm/project type)  $\times$  (1 review a year) = burden hours by project time. The burden hours by project type were totaled to determine the total burden hours across all project times. The annual total burden hours for this requirement is 76,901 hours

**Burden hours:** 69,346 firms  $\times$  1 annually  $\times$  1.108949 = 76,901 hours  
**Cost:** 76,901  $\times$  \$41.25 = \$3,172,166

### **Total Burden and Costs of Written Compliance Program Requirement**

The total annual burden hours for the Written Compliance Program requirement is 92,120 hours; 15,219 hours for developing new compliance programs, plus 76,901 hours for annual review of existing compliance programs.

The total annual cost for the Written Compliance Program requirement is **\$3,799,950**; \$627,784 for developing new compliance programs plus \$3,172,166 for annual review of existing programs.

### **(2) Administrative Controls**

The Lead in Construction Standard permits the use of worker rotation to control exposure to lead. Employers who make use of worker rotation as an administrative control must establish a job rotation schedule as part of the written compliance program. Only employers performing project types involving abrasive blasting tasks are likely to establish and implement job rotation schedules due to the unusually high levels of airborne lead associated with that activity.

Although there may be other construction project types where worker rotation may occur, OSHA has no indication of the number of employers or workers who may be involved and believes that use of rotation as an administrative control is rare among employers engaged in other project

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types and tasks.

The following five project types involve abrasive blasting tasks (the number of affected firms is given in parentheses):

- Highway and Railroad Bridge Repainting (522)
- Water Tank Repainting (0)
- Petroleum Tank Repainting (364)
- Indoor Industrial Facility Maintenance/Renovation (609)
- Outdoor Industrial Facility Maintenance/Renovation (781)

By summing the number of firms affected in each of the five project types, OSHA estimates a total of 2,276 firms utilize worker rotation as an administrative control. The development of the required job rotation schedules takes no more than one hour of construction supervisor time per firm per year. Therefore, the formula for calculating total annual burden hours is:

**Burden hours:** 2,276 firms  $\times$  1 hour = 2,276 hours  
**Cost:** 2,276 firms  $\times$  \$41.25 = \$93,885

### **(3) Notification of Other Onsite Employers**

The Lead in Construction Standard's compliance program elements contains a reference to 1926.16 (Rule of Construction) which requires that the written program include a description of the arrangements made among contractors on multi-contractor sites to inform affected workers of potential exposure to lead and with respect to responsibility for compliance with the Lead Standard. No burden hours have been attributed for contractors notifying other contractors about the potential for exposure to lead since prime contractors customarily notify subcontractors of all conditions relevant to performing subcontracted work. The annual burden associated with documenting these compliance arrangements is included in the estimated burden hours for the development of the written compliance program given above.

### **(4) Submission of Written Compliance Programs**

The Standard requires that written compliance programs must be submitted upon request to any affected worker or authorized worker representatives, to OSHA and NIOSH, and must be available at the worksite for examination and copying by OSHA and NIOSH. OSHA assumes that if there is full compliance with the Standard, workers will not request access to the written compliance program since employers must train workers in the contents of the compliance plan in order to comply with paragraph (1) of 1926.62. Therefore, no burden was estimated for worker access. The annual burden associated with the submission of written compliance programs to OSHA and NIOSH are discussed in "Federal Access to Records" requirements below.

OSHA has determined that the requirement for employers to make information available upon request to the Assistant Secretary is also not a collection of information; OSHA typically requests

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access to information during an inspection, and information collected by the Agency during the investigation is not subject to the PRA under 5 CFR 1320.4(a)(2). While NIOSH may use information collected from employers for research purposes, the Agency does not anticipate that NIOSH will request employers to make available information during the approval period. Therefore, the burden for the employer to make this information available to NIOSH is zero.

### **C. Respirator Program (§1926.62(f))**

OSHA takes the burden for written respirator procedures, emergency use respirators and fit-testing in the ICR for the Respiratory Protection Standard, OMB Control Number 1218-0099.

### **D. Notifying the Laundry (§1926.62(g))**

The Lead in Construction Standard requires employers to provide workers exposed to lead above the PEL with protective work clothing and equipment. Employers supplying such clothing and equipment must inform, in writing, those persons responsible for cleaning and laundering the protective clothing and equipment about the hazards of lead. OSHA assumes workers of the affected firms clean the protective equipment. Therefore, the notification process is part of the Hazard Communication training given to the workers responsible for such duties since the employer must provide workers with information (such as a safety data sheet) about the hazards of lead to comply with that Standard (§ 1926.59). Therefore, no burden is taken for this requirement.

OSHA estimates that 69,346 firms provide protective clothing and equipment to their workers. Each of these firms contracts out the cleaning of protective clothing to a single commercial laundry service on an annual basis. OSHA estimates that notifying the laundry of the potentially harmful effects of exposure to lead requires six minutes (.10 hour) of clerical time, per firm per year.

**Burden hours:** 69,346 firms  $\times$  1 notification  $\times$  .10 hour = 6,935 hours  
**Cost:** 6,935 hours  $\times$  \$22.49 = \$155,968

### **E. Medical Surveillance (§1926.62(j))**

The Lead in Construction Standard requires employers to provide initial medical surveillance to any worker occupationally exposed on any day to lead at or above the action level. Initial medical surveillance consists of a single session of biological monitoring. The Standard further requires employers to establish a medical surveillance program for all workers who are or may be exposed by the employer at or above the action level for more than 30 days in any consecutive 12 months. The medical surveillance program includes regular schedule of biological monitoring. Other medical surveillance provisions include requirements for medical examinations and consultations, notification of the multiple physician review option, provision of information to physicians, written medical opinions, and written chelation notification.

OSHA assumes, given the implementation of the engineering controls and respirators necessary

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to comply with the Standard, that the blood-lead levels of construction workers do not exceed 25 micrograms per deciliter ( $\mu\text{g}/\text{dl}$ )<sup>13</sup>. This conclusion is relevant to the development of the burden estimates presented below since many of the medical surveillance requirements in §1926.62 are triggered by elevated blood-lead levels. (It should be noted that this conclusion is based on the nature of exposure pattern in the construction industry. Unlike worker in manufacturing facilities covered under the General Industry Lead Standard, most construction workers are not exposed to lead on a daily basis throughout an entire work year.)

### **(1) Biological Monitoring**

Employers are required to provide biological monitoring to the following categories of workers:

Initial medical surveillance consisting of a single blood test (analyzed for lead and zinc protoporphyrin levels) for workers exposed on any day to lead at or above the action level;

Periodic medical surveillance consisting of regularly scheduled blood tests (analyzed for lead and zinc protoporphyrin levels) as part of a medical surveillance program for all workers exposed at or above the action level more than thirty days per year. These tests are to be administered at least every two months for the first six months of employment and every six months thereafter.

Additional blood tests for all workers exposed at or above the action level whose last blood sampling and analysis indicated a blood-level at or above 40  $\mu\text{g}/\text{dl}$ . These tests are to be administered at least every two months until two consecutive blood test results indicate a blood-lead level below 40  $\mu\text{g}/\text{dl}$ ;

Follow-up blood tests for workers removed from exposure to lead due to an elevated blood-lead level (at or above 50  $\mu\text{g}/\text{dl}$ ). These tests are to be administered within two weeks after the employer receives the results of the first blood sampling test; and

Additional blood tests for workers removed from exposure to lead due to an elevated blood-lead level (50  $\mu\text{g}/\text{dl}$  or more). These tests are to be administered at least monthly during the removal period.

All biological monitoring tests must be performed by, or under the supervision of, a licensed physician. (Blood-lead samples are often collected by occupational health nurses or other qualified health-care practitioners). Because construction firms do not typically have health care professional on staff, employers will purchase biological monitoring services. The costs of biological monitoring tests are taken under Item 13.

#### **(1)(a) Initial Medical Surveillance**

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<sup>13</sup>In order to estimate the benefits associated with the Lead in Construction Standard, OSHA relied on two contractor reports prepared by Meridian Research, Inc.: “Assessment of Potential Benefits Associated with the Interim Final Standard for Lead in Construction” and “Quantitative Assessment of the Risk Associated with Exposure to Lead in Construction Industry: Selected Toxicologic Endpoints (Peer Review Draft Report).”

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The Standard requires that all workers exposed at or over the action level be provided with initial medical surveillance consisting of a single blood test (analyzed for blood-lead and zinc protoporphyrin levels) offered on a one-time basis. Employers in the following project types have workers exposed at or above the action level on at least one day per year:

- Highway and Railroad Bridge Repainting
- Highway and Railroad Bridge Rehabilitation
- Water Tank Repainting
- Petroleum Tank Repainting
- Underground Storage Tank Demolition
- Housing Lead Abatement (Public Housing)
- Commercial and Industrial Demolition
- Indoor Industrial Facility Maintenance/Renovation
- Outdoor Industrial Facility Maintenance/Renovation
- Industrial Process Equipment Manufacture/Maintenance/Repair
- Industrial Vacuuming
- Stained Glass Window Removal
- Commercial and Institutional Remodeling
- Residential Remodeling
- Reinsulation over Existing Mineral Wool
- Transmission and Communication Tower Maintenance

Since the Standard took effect in 1993, all existing workers exposed at or above the action level have been given initial medical surveillance. Therefore, only new workers will need to have initial medical surveillance. OSHA estimates that, on an annual basis, there are 138,532 workers exposed at or above the action level on at least one day per year.<sup>14</sup> OSHA assumes that 57.4 percent of these workers are new workers based on the average turnover rate of 57.4 percent for workers in the affected construction sectors<sup>15</sup>. OSHA therefore estimates that approximately 79,517 new hires, each worker receiving an initial test. The blood sampling used to obtain the blood-lead and zinc protoporphyrin levels requires 15 minutes (.25 hour) of the worker's time per test. The worker wage rate, including benefits is \$29.50. The following formula calculates the annual burden of this requirement:

**Burden hours:**       $79,517 \text{ workers} \times 1 \text{ initial test} \times .25 \text{ hour} = 19,879 \text{ hours}$   
**Cost:**       $19,879 \text{ hours} \times \$29.50 = \$589,431$

### **(1)(b) Periodic Medical Surveillance**

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<sup>14</sup>The 2006 ICR estimated that 21.5% of all workers employed in these project types were exposed above the action level on at least one day per year (177,194 of a total 825,586). The Agency applied this ratio to the updated number of total employment in these project types (644,337) to determine the current number of workers exposed at or above the action level.

<sup>15</sup> Bureau of Labor Statistics (BLS), 2014. Job Openings and Labor Turnover Survey, Total Separations Rate for the Construction Industry. Available at <http://www.bls.gov/jlt/data.htm> (Accessed July 13, 2015).

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The Standard requires employers to provide more frequent biological monitoring as part of a medical surveillance program to workers who are exposed at or above the action level on 30 or more days per year. Employers in the following project types have workers exposed at or above the action level for 30 or more days per year:

- Highway and Railroad Bridge Repainting
- Highway and Railroad Bridge Rehabilitation
- Water Tank Repainting
- Petroleum Tank Repainting
- Housing Lead Abatement (Public Housing)
- Commercial and Industrial Demolition
- Indoor Industrial Facility Maintenance/Renovation
- Outdoor Industrial Facility Maintenance/Renovation
- Industrial Process Equipment Manufacture/Maintenance/Repair
- Stained Glass Window Removal
- Transmission and communication Tower Maintenance

OSHA estimates that 41,034 workers are eligible for periodic medical surveillance on an annual basis (excluding the estimated number of part-year workers).<sup>16</sup> The frequency associated with this testing is every two months for the first six months of employment and then every six months for as long as the worker continues to be exposed at or above the action level for 30 or more days per year and remain employed by the employer. Thus, in the first year of employment, workers receive four sessions of biological monitoring (at months 2, 4, 6, and 12). After the first year of employment, workers are monitored semi-annually (at months 6 and 12). Because new workers receive two sessions of biological monitoring per year, OSHA calculated the annual burden associated with this requirement separately for new and existing workers.

An estimated 23,554 new hires (57.4 percent of 41,034 workers) receive four biological monitoring tests per year (for a total of 94,216 tests) in addition to the initial medical surveillance given once to all workers exposed at or above the action level on at least one day per year. The blood sampling requires 15 minutes (.25 hour) of the worker's time per test. OSHA uses the following formula to calculate the annual burden of this requirement.

<b>Burden hours:</b>	$23,554 \text{ workers} \times 4 \text{ tests} \times .25 \text{ hour} = 23,554 \text{ hours}$
<b>Cost:</b>	$23,554 \text{ hours} \times \$29.50 = \$694,843$

OSHA assumes that 17,480 workers, or 42.6 percent of the 41,034 workers eligible to receive periodic medical surveillance, are full-year workers, based on an annual turnover rate of 57.4 percent. Eligible full-year workers receive two biological monitoring tests for a total of 34,960 tests per year. An additional 11,777 part-year workers (28.7 percent or ½ of the 57.4 percent annual turnover rate) receive at least one of the two biological monitoring tests, since departing

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<sup>16</sup>The 2006 ICR estimated that 87.2% of all workers employed in these project types were eligible for periodic medical surveillance on an annual basis (70,805 of a total 81,231). The Agency applied this ratio to the updated number of total employment in these project types (47,057) to determine the current number of workers eligible for periodic medical surveillance.

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workers leave at an even rate throughout the year. Thus, 11,777 tests are given to part-year workers. A blood sampling requires 15 minutes (.25 hour) of the worker's time per test.

<b>Burden hours:</b>	$17,480 \text{ full-year workers} \times 2 \text{ tests} \times .25 \text{ hour} = 8,740 \text{ hours}$
	$11,777 \text{ part-year workers} \times 1 \text{ test} \times .25 \text{ hour} = 2,944 \text{ hours}$
<b>Cost:</b>	$11,684 \text{ hours} \times \$29.50 = \$344,678$

### **Total Burden and Cost of Periodic Medical Surveillance Requirement**

OSHA calculated the total annual burden of providing periodic medical surveillance by adding the total annual burden of providing periodic medical surveillance to new workers to the total annual burden of providing periodic medical surveillance to full-year and part-year workers (23,554 hours + 11,684 hours). The total annual burden associated with the Periodic Medical Surveillance requirement is **35,238 hours**.

OSHA calculated the total annual cost of providing periodic medical surveillance by adding the total annual cost of providing periodic medical surveillance to new workers to the total annual cost of providing periodic to full-year and part year workers (\$694,843 + \$344,678). The total annual cost associated with the Periodic Medical Surveillance requirement is **\$1,039,521**.

### **Additional Medical Surveillance Based on Blood-Lead Levels**

As described above, OSHA assumes employers are in compliance with the Standard; therefore, construction workers do not have blood-lead levels greater than 25 $\mu\text{g}/\text{dL}$ . Therefore, there are no incidences of biological monitoring triggered by worker blood-lead levels in excess of 40  $\mu\text{g}/\text{dL}$ , no follow-up tests on workers triggered by a single blood lead test result in excess of 50  $\mu\text{g}/\text{dL}$ , and no additional testing for persons on medical removal due to a blood-lead level in excess of 50  $\mu\text{g}/\text{dL}$ .

### **(2) Worker Notification of Results**

Employers must provide each worker with written notification of his or her blood-lead level within five working days after the receipt of biological monitoring results. The Standard requires employers to notify each worker whose blood-lead level exceed 40 $\mu\text{g}/\text{dL}$ , and requires the employer to provide temporary medical removal with medical removal protection benefits when a worker's blood-lead level exceeds 50  $\mu\text{g}/\text{dL}$ .

OSHA estimates that 220,470 biological monitoring tests are administered annually, based on the following calculations:

$$\begin{aligned}(79,517 \text{ new workers}) \times (1 \text{ initial test}) &= 79,517 \text{ tests} \\ (23,554 \text{ new workers}) \times (4 \text{ periodic tests}) &= 94,216 \text{ tests} \\ (17,480 \text{ full-year workers}) \times (2 \text{ periodic tests}) &= 34,960 \text{ tests} \\ (11,777 \text{ part-year workers}) \times (1 \text{ periodic test}) &= 11,777 \text{ tests}\end{aligned}$$

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A supervisor takes six minutes (.10 hour) to provide notification results to the affected worker. This notification includes the physician's written medical opinion (as described below).

**Burden hours:**  $220,470 \text{ tests} \times 1 \text{ notification} \times .10 \text{ hour} = 22,047 \text{ hours}$

**Cost:**  $22,047 \text{ hours} \times \$41.25 = \$909,439$

### **(3) Medical Examinations and Consultations**

The employer is required to provide medical examinations and/or consultations to the following categories of workers:

Workers exposed at or above the action level more than thirty days per year with blood-lead levels at or above 40 $\mu\text{g}/\text{dl}$ .

Workers with signs or symptoms associated with lead intoxication;

Workers desiring medical advice about the interaction of lead exposure and reproductions;

Workers who are pregnant;

Workers experiencing difficulty in breathing during a respirator fit test or during use; and

Workers medically removed from lead exposure or limited by a final medical determination.

Consistent with the assumptions above, OSHA assumes there are no medical examinations required because of worker blood-lead levels in excess of 40  $\mu\text{g}/\text{dl}$  and no medical removal associated with worker blood-lead levels in excess of 50  $\mu\text{g}/\text{dl}$  since no workers are expected to have blood-lead levels above 25  $\mu\text{g}/\text{dl}$  if full compliance with 1926.62 is achieved. OSHA does not have data on the annual number of workers given medical examinations due to signs or symptoms associated with lead intoxication, desire for advice about reproductive issues, pregnancy, or difficulties with respirators.

Therefore, OSHA assumes that no more than 5 percent or 6,927 of the 138,532 workers exposed at or above the action level on any one day (and thus eligible for biological monitoring due to significant airborne lead exposure) will be given a medical examination or consultation.

All medical examinations and procedures must be performed by, or under the supervision of, a licensed physician. Because construction firms do not typically have a health care professional on staff, employers will purchase physician services. The costs of medical examinations are in Item 13. Medical examinations require workers, earning \$29.50 an hour, to be away from their work stations for approximately two hours.

**Burden hours:**  $6,927 \text{ workers} \times 1 \text{ examination/year} \times 2 \text{ hours} = 13,854 \text{ hours}$

**Cost:**  $13,854 \text{ hours} \times \$29.50 = \$408,693$

**LEAD IN CONSTRUCTION (29 CFR 1926.62)****1218-0189****May 2019****(4) Notification of Multiple Physician Review Option**

The Lead in Construction Standard requires that each employer promptly notify each worker of his or her right to seek a second medical opinion after each occasion during which a physician conducts a medical examination or consultation. This requirement can be fulfilled by including a photocopy of such notification with the physician's written examination. OSHA estimates that inclusion of this notification form takes no more than one minute (.02 hour) of supervisor time per notification. OSHA estimates there are 6,264 medical examinations annually.

**Burden hours:** 6,927 exams  $\times$  1 notification/exam  $\times$  .02 hour = 139 hours  
**Cost:** 139 hours  $\times$  \$41.25 = \$5,734

**(5) Information Provided to Examining/Consulting Physicians**

Employers must provide the physician conducting a medical examination or consultation with the following information: a copy of the Standard and appendices; a description of the worker's lead-exposed duties; the worker's exposure level; a description of the personal protective equipment used; prior blood-lead test results; and any prior written medical opinions concerning the worker in the employer's control. OSHA estimates 15 minutes (.25 hour) of supervisor time per examination is needed.

**Burden hours:** 6,927 exams  $\times$  .25 hour per examination = 1,732 hours  
**Cost:** 1,732 hours  $\times$  \$41.25 = \$71,445

**(6) Physician's Written Medical Opinion**

Employers must obtain a written medical opinion from the supervising, examining, or consulting physician for each session of biological monitoring, medical examination, or consultation, and provide it to the affected worker.

**(6)(a) Preparation of the Written Medical Opinion**

There are no burden hours associated with this requirement since most physicians are not workers of the affected construction firms. The costs for the preparation of the written medical opinion are included in the costs of the biological monitoring, medical examination, or consultation services. The cost of these services is presented in the response to Item 13.

**(6)(b) Provision of the Written Medical Opinion**

A supervisor worker take six minutes (.10 hour) per test or examination to provide a copy of the physician's written medical opinion to the affected worker. However, the burden associated with providing the written medical opinions for biological monitoring results is in the discussion of the Employee Notification requirement. Therefore, in order to avoid double-counting, the number of burden hours presented here is only for those written opinions generated by medical examinations.

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**Burden hours:** 6,927 exams  $\times$  1 notification/exam  $\times$  .10 hour = 693 hours  
**Cost:** 693 hours  $\times$  \$41.25 = \$28,586

### **(7) Chelation Notification**

If therapeutic or diagnostic chelation is performed on a lead-poisoned worker, the worker must be notified in writing prior to the occurrence of the chelation. In general, chelation is only performed in severe cases of lead intoxication. If employers are in full compliance with the Standard, workers should not experience blood-lead levels high enough to require therapeutic or diagnostic chelation to be performed. Therefore, no annual burden has been estimated for this requirement.

## **G. Recordkeeping (§ 1926.62 (n))**

### **(1) Exposure Monitoring Records**

The Standard requires employers to establish and maintain an accurate record of all monitoring and other data used in conducting worker exposure assessments. As described above, 69,346 firms with worker exposures above the PEL conduct one session of representative monitoring per year for a total of 69,346 representative monitorings per year. OSHA also estimates that 6,193 firms conduct a total of 8,771 periodic monitorings per year. Thus, there are 78,117 exposure monitorings per year for which records are kept. OSHA estimates that establishment and maintenance of worker monitoring records requires approximately six minutes (.10 hour) of clerical time per record. The total annual burden for this requirement is derived using the following formula:

**Burden hours:** 78,117 records  $\times$  .10 hour = 7,812 hours  
**Cost:** 7,812 hours  $\times$  \$22.49 = \$175,692

### **(2) Medical Surveillance Records**

Employers must establish and maintain an accurate record of medical surveillance results for each worker subject to medical surveillance. The number of records to be established and maintained is the sum of the number of sessions of biological monitoring administered each year and the number of medical examinations administered each year. The following annual number of tests and exams are provided as described above: 220,470 biological monitoring tests and 6,927 exams. OSHA estimates that approximately six minutes (.10 hour) of supervisor time per record is required to establish and maintain worker medical surveillance records.

**Burden hours:** 227,397 monitoring & exam records  $\times$  .10 hour = 22,740 hours  
**Cost:** 22,740  $\times$  41.25 = \$938,025

### **(3) Medical Removal Records**

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The Standard requires employers to establish and maintain an accurate record for each worker subject to medical removal. However, OSHA assumes employers are in full compliance; therefore, no worker will need to be medically removed and no medical removal records are created. Therefore, no burden hours are attributed to this provision.

### **(4) Objective Data Records**

The Standard requires employers to establish and maintain records of the objective data relied upon to make initial determinations. A construction supervisor completes standardized form for each project where objective data is used to make a negative initial determination. The completed form identifies the objective data being used and lists the reasons supporting the employer's conclusion that the objective data is appropriate for use in characterizing exposures at the specific work site. Preparation of this form takes six minutes (.10 hour) of a construction supervisor time per affected project. OSHA estimates there are approximately 3,352,890 lead-exposed projects per year where objective data is used to make a negative initial determination.

**Burden hours:** 3,352,890 projects  $\times$  .10 hour =335,289 hours  
**Cost:** 335,289 hours  $\times$  \$41.25 = \$13,830,671

### **(5) Employee Access to Records**

The Standard requires employers to make available, upon request, the written compliance program, the training materials, and records required to be maintained under paragraph (n) (Recordkeeping), to affected workers, former workers, and the designated representatives. Workers will not request access to the written compliance program or the training program material since all workers exposed at or above the action level receive training covering the content of the training program, and the training must include an explanation of the contents of the written compliance program. Therefore, workers will only request access to their exposure-monitoring, medical, and/or medical removal records. OSHA assumes that approximately 10 percent, or 13,853 workers, of the 138,532 workers for whom exposure-monitoring and biological monitoring records are generated, will request access to these records each year. OSHA estimates a clerk takes 15 minutes (.25 hour) to provide access to records.

**Burden hours:** 13,853 requests  $\times$  .25 hour =3,463 hours  
**Cost:** 3,463 hours  $\times$  \$22.49 = \$77,883

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**Table 1**  
**Summary of Burden Hours and Costs for the**  
**Collections of Information contained in the**  
**Lead in Construction Standard (Item 12)**

<b>Information Collection Requirement</b>	<b>Responses</b>	<b>Existing Burden Hours</b>	<b>Requested Burden Hours</b>	<b>Burden Hour Change</b>	<b>Estimated Cost</b>
EXPOSURE MONITORING					
Initial Determination					
<i>Determination of the Presence of Lead</i>	448,351	228,747	228,747	0	\$9,435,814
Objective Data	106,630	106,630	106,630	0	\$4,398,488
Protection of Employees during Assessment of Exposure	0	0	0	0	0
Positive Initial Determination and Initial Monitoring	0	0	0	0	0
Negative Initial Determination	3,352,890	335,289	335,289	0	\$7,540,650
Periodic Exposure Measurement	1	1	1	0	1
Employee Notification of Monitoring Results	87,871	8,787	8,787	0	\$197,620
COMPLIANCE PROGRAM					
Written Compliance Program				0	
<i>Development of Written Compliance Program</i>	6,935	15,219	15,219	0	\$627,784
<i>Annual Review of the Written Compliance Program Review</i>	69,346	76,901	76,901	0	\$3,172,166
Administrative Controls	2,276	2,276	2,276	0	\$93,885
Notification of Other Onsite Employers	0	0	0	0	0
Submission of Written Compliance Programs	0	0	0	0	0
RESPIRATOR PROGRAM	0	0	0	0	0
NOTIFYING THE LAUNDRY	69,346	6,935	6,935	0	\$155,968
MEDICAL SURVEILLANCE					
Biological Monitoring					
<i>Initial Medical Surveillance</i>	79,517	19,879	19,879	0	\$586,431
<i>Periodic Medical Surveillance</i>	140,953	35,238	35,238	0	\$1,039,521
Employee Notification of Results	220,470	22,047	22,047	0	\$909,439
Medical Examinations and Consultations	6,927	13,854	13,854	0	\$408,693
Notification of Multiple Physician Review Option	6,927	139	139	0	\$5,734
Information Provided to Examining/Consulting Physicians	6,927	1,732	1,732	0	\$71,445
Physician's Written Medical Opinion					

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Information Collection Requirement	Responses	Existing Burden Hours	Requested Burden Hours	Burden Hour Change	Estimated Cost
<i>Preparation of the Written Medical Opinion</i>	0	0	0	0	0
<i>Provision of the Written Medical Opinion</i>	6,927	693	693	0	\$28,586
Chelation Notification	0	0	0	0	0
EMPLOYEE INFORMATION AND TRAINING					
Training Program	0	0	0	0	0
Access to Training Materials	0	0	0	0	\$0
RECORDKEEPING					
Exposure Monitoring Records	78,117	7,812	7,812	0	\$175,692
Medical Surveillance Records	227,397	22,740	22,740	0	\$938,025
Medical Removal Records	1	1	1	0	1
Objective Data Records	3,352,890	335,289	335,289	0	\$13,830,671
Employee Access to Records	13,853	3,463	3,463	0	\$77,883
Federal Access to Records	0	0	0	0	0
<b>TOTAL</b>	<b>8,284,552</b>	<b>1,243,672</b>	<b>1,243,672</b>	<b>0</b>	<b>\$43,695,075</b>

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 show in Item 12 and 14).

The cost estimate should be split into two components: (a) a total capital and startup 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 of 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 collection services should be a 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 rule making 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

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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.

**TABLE 2**  
**Cost Summary Table (Item 13)**

<b>Cost</b>	<b>Current</b>	<b>Requested</b>	<b>Difference</b>
<b>Initial Determination for Lead</b>	\$9,990,047	\$9,990,047	\$0
<b>Monitoring for Initial Determination</b>	\$45,789,95 0	\$45,789,95 0	\$0
<b>Periodic Exposure Measurement</b>	\$2,960,994	\$2,960,994	\$0
<b>Initial Medical Surveillance</b>	\$2,373,582	\$2,373,582	\$0
<b>Periodic Medical Surveillance</b>	\$4,207,447	\$4,207,447	\$0
<b>Medical Examination and Consultation</b>	\$1,620,918	\$1,620,918	\$0
<b>Transfer of Records</b>	\$0	\$0	\$0
<b>Totals</b>	\$66,942,93 8	\$66,942,93 8	\$0

**Explanation of Method of Estimating Costs**

The assumptions used in calculating the cost estimates presented are based on information in the Regulatory Impact Analysis for the Lead in Construction Standard three supporting contractor reports. The three supporting contractor reports are: (1) "Economic Analysis of OSHA's Interim Final Standard for Lead in Construction" prepared by CONSAD Research Corporation in April 1993; (2) "Assessment of Potential Benefits Associated with the Interim Final Standard for Lead in Construction" (Appendix D of the CONSAD report) prepared by Meridian Research, Inc. in April 1993; and (3) "Quantitative Assessment of the Risks Associated with Exposure to Lead in the Construction Industry: Selected Toxicologic Endpoints (Peer Review Draft Report)" prepared by Meridian Research, Inc. in August 1992. Updated costs for industrial hygienists' services, exposure-monitoring equipment, and lead detection swabs are based on ERG estimates.

**Exposure-monitoring (§ 1926.62(d))**

**Initial Determination**

As discussed above in the response to Items 12, OSHA assumes that employers engaged in fifteen of the twenty-five affected project types use a chemical identification test method (lead-detection swabs) to make determinations about the presence of lead on particular work sites. OSHA estimates that 392,228 projects per year are tested to determine whether lead was present. These tests are performed by construction supervisors working for the affected firms. Therefore, the wage cost attributable to this requirement is taken under Item 12. The cost of purchasing the lead detection swabs is taken in Item 13.

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Lead detection swabs range in cost from \$3.50 to \$4.99 per swab depending upon the quantity purchased. The lower cost assumes the purchase of pack containing 8 swabs for \$27.99, while the higher cost assumes the purchase of one pack containing 2 swabs for \$9.97. Assuming 4-8

swabs are used on the average project (where lead detection is deemed necessary), test swabs are estimated to cost \$25.47 per project.<sup>17</sup>

**Cost:**             $392,228 \text{ projects} \times \$25.47 \text{ per project} = \$9,990,047$

### **Monitoring Conducted for the Initial Determination**

The Standard requires employers to determine whether any worker will be exposed to lead at or above the action level. This determination may be made on the basis of (1) new exposure-monitoring, (2) relevant exposure-monitoring data collected by the employer within the previous 12 months (historical monitoring data), or (3) objective data showing the worst-case exposures will be below the action level. As described above under the discussion associated with Item 12, due to the costs and burdens associated with repeated exposure-monitoring, all firms engaged in projects with worker exposures at or above the action level will collect representative monitoring data so the firms can make initial determinations without the need to conduct monitoring at every worksite throughout the year.

OSHA estimates that 69,346 firms conduct one session of representative monitoring annually in order to satisfy the Initial Determination requirement and that there are 69,346 representative monitorings per year.

As discussed in the response to Item 12, OSHA assumes that 13,223 firms contract with industrial hygiene consultants to collect representative exposure-monitoring data. Different assumptions were made concerning monitoring for the 56,123 Commercial and Institutional Remodeling and Residential Remodeling projects (“Remodeling” projects). For these firms, the cost of the Initial Determination requirement that are included in the response to Item 13 consist of the cost for contracted industrial hygienist services and the cost of laboratory analysis of the air monitoring samples collected by the industrial hygienists.

#### **All Projects Except Remodeling Projects**

Each of the 13,223 firms conducts one representative monitoring per year for an annual total of 13,223 monitorings across the thirteen project types. OSHA assumes eight hours of an industrial hygienist contractor’s time is needed to collect representative monitoring data and four hours of an industrial hygienist contractor’s time is needed to prepare a report documenting the results of the exposure-monitoring. Therefore, OSHA assumes a total of 12 hours of labor time associated

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<sup>17</sup>According to Home Depot, the price for a packet containing 2 lead detection swabs was \$9.97 (<http://www.homedepot.com/p/3M-LeadCheck-Instant-Lead-Test-Swabs-2-Pack-LC-2SDC6/203313743>) while according to Ace Hardware, the price for a packet containing 8 lead detection swabs was \$27.99 (<http://www.acehardware.com/product/index.jsp?productId=10777028>).

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with each representative monitoring. The cost of contracting outside industrial hygienist services is approximately \$77.08 per hour.<sup>18</sup> Thus, by project type, the labor cost formula is: (#of monitorings by project type)  $\times$  (12 industrial hygienist labor hours/monitoring)  $\times$  (\$77.08/hour of industrial hygienist labor).

**Cost:**  $13,223 \text{ monitorings} \times 12 \text{ hours industrial hygienist labor} \times \$77.08/\text{hour of industrial hygienist labor} = \$12,230,746$

The cost of laboratory analysis of the samples for the 13,223 firms is \$29 per project type sample collected.<sup>19</sup> The average number of samples collected per monitoring was assumed to vary by project type from 2 samples to 16 samples per monitoring. Thus, the analytical cost formula is: (# of monitorings by project type)  $\times$  (9 samples/monitoring/by project type)  $\times$  (\$29/sample) = analytical cost by project type. The total cost of laboratory analysis for those firms contracting out their monitoring was **\$3,391,384**.

### Remodeling Projects

OSHA assumes that 56,123 firms engaged in Commercial and Institutional Remodeling (18,444 firms) and Residential Remodeling (37,679 firms) have a construction supervisor conduct representative exposure-monitoring since this is cost-effective for these firms given the small scale, short duration, and relative rarity of lead-exposed remodeling projects. For firms engaged in Commercial and Institutional Remodeling and Residential Remodeling, the cost of the Initial Determination requirement attributable to Item 13 consists of purchasing exposure-monitoring equipment, and the cost of laboratory analysis of the air monitoring samples collected by construction supervisors.

The cost of laboratory analysis of the samples for the Commercial and Institutional Remodeling and Residential Remodeling projects types was assumed to be \$15 per sample collected. The estimated average number of samples collected per representative monitoring on a Commercial and Industrial Remodeling project is 3 samples. The estimated average number of samples collected on a Residential Remodeling job is 2 samples. These estimates were based on the number of distinct lead-exposed activities and average crew sizes associated with these project types. Thus, by project type, the analytical formula is: (# of monitorings by project type)  $\times$  (# of samples/monitoring)  $\times$  (\$29/sample) = analytical cost by project type. The costs by project type

<sup>18</sup> According to Bureau of Labor Statistics, Occupational Employment Statistics, May 2014, the hourly wage for 29-9011 Occupational Health and Safety Specialists and 29-9012 Occupational Health and Safety Technicians were \$33.88 and \$24.65 respectively (<http://www.bls.gov/oes/tables.htm>). The sum of these hourly wages was inflated by 31.7% which is the benefit as a percentage of employee compensation for civilian workers. This is based on Bureau of Labor and Statistics, Employer Costs for Employee Compensation – March 2015 ([http://www.bls.gov/news.release/archives/ecec\\_06102015.pdf](http://www.bls.gov/news.release/archives/ecec_06102015.pdf)).

<sup>19</sup> Galson Laboratories, 2015. Sampling & Analysis Guide. Available at <http://www.galsonlabs.com/samplinganalysis/sampling-analysis-guide/> (Accessed June 12, 2015). Used the average cost (\$29) of Analytical Technique – ICP/AES (\$33), Analytical Technique – ICP/MS (\$40) and Analytical Technique – FAA (\$15).

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were then totaled to derive the total costs for both project types. The total cost of laboratory analysis for firms engaged in Commercial and Institutional Remodeling and Residential Remodeling was thus estimated to be **\$3,790,010**.

OSHA assumes that firms performing Commercial and Institutional Remodeling and Residential Remodeling projects purchase their own air monitoring equipment. On average, each firm purchases two air monitoring pumps, a pump charger, two hose/clip assemblies, two filter holders, and one digital calibrator in order to perform representative monitoring, based on a useful life of 5 years for pumps and related accessories and a discount rate of 7 percent.

The formula used to calculate the total annualized cost of purchasing monitoring equipment was: (# of firms) × (Total annualized equipment cost per firm) = total annualized cost. Thus, multiplying the total estimate of 56,123 firms engaged in Commercial and Institutional Remodeling and Residential Remodeling by the total annualized equipment cost of \$470 per firm gives an annual cost of **\$26,377,810** associated with the purchase of monitoring equipment.

### **Cost Summary:**

Cost for industrial hygiene labor (for 13,223 projects):	\$12,230,746
Cost for laboratory analysis (for 13,223 projects):	\$ 3,391,384
Cost for laboratory analysis (for 56,123 remodeling projects)	\$ 3,790,010
Cost of purchasing monitoring equipment <u>(for 56,123 remodeling projects):</u>	<u>\$26,377,810</u>
<b>Total</b>	<b>\$45,789,950</b>

### **Periodic Exposure Measurement**

Periodic exposure-monitoring is triggered by the airborne exposure levels found on a given worksite. The frequency of periodic monitoring is determined by whether the work site exposure levels are below the action level, between the action level and PEL, or above the PEL. In addition, since the requirement to perform periodic monitoring is based on the exposure levels associated with a specific worksite, periodic monitoring only occurs if the project is of sufficient duration. OSHA assumes that the following project types are affected based on the expected airborne exposure levels following the implementation of engineering controls and the typical duration of such projects (average project duration is given in parentheses):

- Highway and Railroad Bridge Repainting (108 work days)
- Highway and Railroad Bridge Rehabilitation (180 work days)
- Housing Lead Abatement (Public) (90 work days)
- Commercial and Industrial Demolition (60 work days)
- Transmission and Communication Tow Maintenance (75 work days)

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The average number of periodic monitorings per firm per project, by project type, is as follows:

- Highway and Railroad Bridge Repainting – 1 monitoring
- Highway and Railroad Bridge Rehabilitation – 3 monitorings
- Housing Lead Abatement (Public) – 1 monitoring
- Commercial and Industrial Demolition – 1 monitoring
- Transmission and Communication Tower Maintenance – 1 monitoring

OSHA estimates that a total of 2,912 firms engaged in the project types listed above conduct periodic monitoring over the course of a year. OSHA further estimates that there are 6,193 projects requiring periodic monitoring and 8,771 occurrences of periodic monitoring annually. The costs for periodic monitoring performed by these firms are for contracted industrial hygienist services and the cost of laboratory analysis of the samples collected by the industrial hygienist.

Eight hours of an industrial hygienist contractor's time is needed to collect representative monitoring data and four hours of an industrial hygienist contractor's time is needed to prepare a report documenting the results of the exposure-monitoring, for a total of 12 hours of labor time associated with each representative monitoring. OSHA assumes that the cost of contracting for outside industrial hygienist services is \$77.08 per hour. Thus, by project type, the labor cost formula is: (#of monitorings by project type)  $\times$  (12 industrial hygienist labor hours/monitoring)  $\times$  (\$77.00/hour of industrial hygienist labor) = labor cost by project type. The total cost of contracted services associated with the Periodic Monitoring requirement for the affected firms is **\$2,706,432**.

The cost laboratory analysis of the samples for these project types is \$29 per sample collected. The number of samples collected per monitoring varies by project type from 1 sample to 5 samples per monitoring; thus, the Agency assumes an average of 3 samples per monitoring. This variation is attributable to differences in the number of distinct lead-exposed activities and average crew sizes. Thus, by project type, the analytical cost formula is: (#of monitorings by project types)  $\times$  (3 samples/monitoring)  $\times$  (\$29/sample) = total analytical cost by project type. The cost by project type is then totaled to derive the total costs across all project types. The total cost of laboratory analysis for those firms contracting out their monitoring is **\$254,562**.

The total costs associated with the Periodic Monitoring requirement is the sum of the costs of contracted industrial hygiene services and the costs associated with the analytical monitoring. The total cost for firms contracting out their monitoring is \$2,706,432. The total cost of laboratory analysis for those firms contracting out their monitoring is \$254,562. Therefore, the total cost of this requirement is **\$2,960,994**.

### **Medical Surveillance (§ 1926.62 (j))**

The Lead in Construction Standard requires employers to provide initial medical surveillance to any worker occupationally exposed on any day to lead at or above the action level. Initial

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medical surveillance consists of a single session of biological monitoring. The Standard further requires employers to establish a medical surveillance program for all workers who are or may be exposed by the employer at or above the action level for more than 30 days in any consecutive 12 months. The medical surveillance program includes a more regular schedule of biological monitoring which continues as long as the worker meets the airborne exposure criteria and continues to work for the employer. Other medical surveillance provisions include requirements for medical examinations and consultations, notification of the multiple physician review option, provision of information to physicians, written medical opinions, and written chelation notifications.

### **Biological Monitoring**

#### **Initial Medical Surveillance**

The Standard requires that employers offer, on a one-time basis, all workers exposed at or above the action level initial medical surveillance consisting of a single blood test (analyzed for blood-lead and zinc protoporphyrin levels). As described above in Item 12, OSHA estimates there are 79,517 new hires each year that are exposed at or above the action level and will need initial medical surveillance consisting of a blood test for blood-lead and zinc protoporphyrin levels. OSHA therefore estimates 79,517 tests are administered each year. The cost associated with one session of biological monitoring for blood-lead and zinc protoporphyrin levels is currently \$29.85.<sup>20</sup>

**Cost:**       $79,517 \text{ tests} \times \$29.85 \text{ per test} = \$2,373,582$

#### **Periodic Medical Surveillance**

The Standard requires employers to provide more frequent biological monitoring as part of a medical surveillance program to workers who are exposed at or above the action level on 30 or more days per year. As described above, OSHA estimates that 41,034 workers are eligible for periodic medical surveillance on an annual basis (excluding the estimated number of part-year workers). The frequency associated with this testing is every two months for the first six months of employment and then every six months for as long as the worker continues to be exposed at or above the action level for 30 or more days per year and remains employed by the employer. Thus, in the first year of employment, workers receive four sessions of biological monitoring (at months 2, 4, 6, and 12). After the first year of employment, workers are monitored semi-annually (at months 6 and 12). Because new workers receive four biological monitoring per year, OSHA calculated the annual costs associated with this requirement separately for new and existing workers.

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<sup>20</sup> FAIR Health, 2015. Consumer Cost Lookup. Available at [http://fairhealthconsumer.org/medical\\_cost.php](http://fairhealthconsumer.org/medical_cost.php) (Accessed June 12, 2015).

Out-of-pocket costs by CPT Code were obtained from FAIR Health webpage for zip code 02143. The cost used is the average (\$29.85) of \$31.79 for CPT Code 84202 Protoporphyrin (metabolism substance level) and \$27.91 for CPT Code 83655 Lead Level.

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An estimated 23,554 new hires (57.4 percent of 41,034 workers) receive four biological monitoring tests per year (for a total of 94,216 tests) in addition to the initial medical surveillance given once to all workers exposed at or above the action level on a least one day per year. One session of biological monitoring for blood-lead and zinc protoporphyrin levels costs \$29.85. The following formula calculates the annual cost of this requirement:

**Cost:**  $94,216 \text{ tests} \times \$29.85 \text{ per test} = \$2,812,348$

OSHA assumes that 17,480 workers, or 42.6 percent of the 41,034 workers eligible to receive periodic medical surveillance, are full-year workers based on an annual turnover rate of 57.4 percent. Eligible full-year workers receive two biological monitoring tests for a total of 34,960 tests per year. An additional 11,777 part-year workers (28.7 percent or 1/2 of the 57.4 percent annual turnover rate) receive at least one of the two biological monitoring tests, since departing workers leave at an even rate throughout the year. Thus, 11,777 tests are given to part year workers.

**Cost:**  $(34,960 \text{ tests}) \times (\$29.85 \text{ per test}) = \$1,043,556$   
 $(11,777 \text{ tests}) \times (\$29.85 \text{ per test}) = \$351,543$   
 $\$1,043,556 + \$351,543 = \$1,395,099$

Thus, the total annual cost of providing periodic medical surveillance to full-year and part-year workers is **\$4,207,447** ( $\$2,812,348 + \$1,395,099$ ).

### **Additional Medical Surveillance Based on Blood-Lead Levels**

As described above, OSHA concludes that if employers fully comply with the Standard, construction workers will not have blood-lead levels greater than 25 $\mu\text{g}/\text{dl}$ . Therefore, OSHA assumes that there are: no incidences of biological monitoring triggered by worker blood-lead levels in excess of 40 $\mu\text{g}/\text{dl}$ ; no follow-up tests on workers triggered by a single blood-lead tests result in excess of 50 $\mu\text{g}/\text{dl}$ ; and no additional testing for persons on medical removal due to a blood-lead level in excess of 50 $\mu\text{g}/\text{dl}$ . Therefore, there are no costs for testing associated with this requirement.

### **Medical Examinations and Consultations**

As discussed under the response to Item 12, OSHA assumes that no more than five percent, or 6,927 of the 138,532, workers exposed at or above the action level on any one day (and thus eligible for biological monitoring due to significant airborne lead exposure) are given a medical examination or consultation. Medical examinations are estimated to cost \$234 per examination. This estimate covers all of the specialized testing needed including additional blood testing. The following formula calculates the cost of this requirement:

**Cost:**  $6,927 \text{ examinations} \times \$234 \text{ per examination} = \$1,620,918$

**14. Provide estimates of annualized cost to the Federal government. Also, provide a description of the**

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**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 also may aggregate cost estimates from Items 12, 13, and 14 in a single table.**

### **Cost to the Federal Government**

Usually, OSHA requests access to records during an inspection. Information collected by the Agency during the investigation is not subject to the PRA under 5 CFR 1320.4(a)(2). Therefore, OSHA takes no burden or cost in Items 12 and 14 of this Supporting Statement

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

As part of the SIP-IV rulemaking, OSHA removed the requirement that employers document employees' social security numbers (SSN) in their exposure and medical records. Time to document SSN in records is negligible and, therefore the Agency is not requesting any changes to the burden hour or cost estimates as a result. (See Table 1)

The Agency is requesting a decrease of 14 hours in burden hours, from 1,243,686 to 1,243,672 and decrease of 178 in the responses from 8,284,730 to 8,284,552. This requested decrease in burden hours and responses in the inventory is the result of an error in the recording of the total burden hours in the previous ICR for this standard. (See Table 1)

**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 required to be collected by the Lead in Construction Standard will not have results that will be published for statistical use.

**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. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS**

The supporting statement does not contain any collection of information requirements that employ statistical methods.

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### Attachment A

This addendum to the ICR describes the Agency's methodology and reasoning behind updates to the number of establishments affected by the Lead in Construction Standard (29 CFR 1926.62) on an annual basis. The Agency reviewed all data sources to verify that the most recent available data is used.

#### Highway and Railroad Bridge Repainting

##### *Highway Bridge Repainting:*

Studies have found that workers renovating previously deleaded bridges still have the potential for exposure to significant amounts of lead.<sup>21</sup> Because of this, the Agency conservatively assumes that all bridge repainting and rehabilitation projects previously covered by the Standard as discussed in the Final Economic Analysis (FEA) remain covered (i.e., that despite abatement, all projects on bridges previously coated with lead based paints (LBP) have the potential for significant worker exposure to lead). Secondly, the Agency assumes that all new bridges built since the publication of the FEA were not coated with LBP.

The U.S. Department of Transportation (DOT) reported a total of 607,749 bridges in the U.S. as of December 2013<sup>22</sup>, and an annual average of 987 new and replaced steel bridges during 2009-2010.<sup>23</sup> Based on the total number of bridges described in the FEA (585,336 in 1990), ERG assumes that there are roughly 974 new bridges built annually in the U.S.  $((607,749 - 585,336) \div 23 \text{ years})$ . Therefore, the Agency assumes that 13 of the 987 total projects occurring annually involve the replacement of deficient bridges more than 15-20 years old that would have otherwise required repainting. The Agency estimates that the total number of highway bridge repainting projects covered by the Standard (1,973 will be reduced by 974 on an annual basis. **(TOTAL = 999 projects)**

##### *Railroad Bridge Repainting:*

The FEA assumed that maintenance practices for railroad-bridge repainting were similar to those used for highway bridges. Because the Agency was unable to identify specific data regarding the repainting or rehabilitation of railroad bridges, we assume that the number of railroad bridge repainting projects covered by the Standard will have decreased by the same percentage as highway bridge repainting projects (5.4%). Based on the analysis above, the Agency assumes that the total number of railroad bridge repainting projects covered by the Standard will have decreased by 22 ( $415 \times 5.4\%$ ). **(TOTAL = 393)**

**Project Type Total: 999 + 393 = 1,392**

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<sup>21</sup>Johnson, JC, et al. "Lead exposure among workers renovating a previously deleaded bridge: comparison of trades, work tasks." *Journal of the American Industrial Hygiene Association*, November 2000. 61 (6): 815 – 819.

<sup>22</sup>Source: U.S. Department of Transportation, Federal Highway Administration, National Bridge Inventory, 2013. *Bridges by Year Built*. Available at <http://www.fhwa.dot.gov/bridge/structyr.cfm> .

<sup>23</sup>Source: U.S. Department of Transportation, Federal Highway Administration, *Annual Materials Report* on New Bridge Construction and Bridge Rehabilitation (2009-2010), Available at <http://www.fhwa.dot.gov/bridge/nbi/matreport2011.cfm>

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### **Highway and Railroad Bridge Rehabilitation**

#### *Highway Bridge Rehabilitation:*

The FEA estimated that of the 585,336 highway bridges in the U.S., 2,393 steel bridges were rehabilitated or replaced each year and that 79.88% of these bridges contained LBP coatings – for a total of 1,912 bridges rehabilitated or replaced annually that contained LBP. According to the DOT, there was an annual average of an annual average of 987 new and replaced steel bridges during 2009 - 2010. Of these, there were an average 13 steel bridges rehabilitated or replaced (i.e., 987 ÷ 74).<sup>24</sup> Assuming that 79.88% of steel bridges contain LBP coatings, the Agency estimates that there are a total 10 bridge rehabilitation projects covered by the Standard occurring annually. (**TOTAL = 10 projects**)

#### *Railroad Bridge Rehabilitation:*

The FEA based its estimate of the number of steel railroad bridge rehabilitation projects on the relationship between the total number of large highway bridge repainting projects with LBP and the total number of large highway bridge rehabilitation projects with LBP. This ratio based on the Agency's updated estimates is 1% (10 ÷ 999). In particular, the FEA assumed that the number of railroad bridge rehabilitation projects with LBP is one-half that calculated for highway projects (i.e., one-half of 1%, or 0.5%). Therefore, the Agency estimates that there are a total of 2 railroad bridge rehabilitation projects covered by the Standard annually ( $393 \times 0.5\%$ ). (**TOTAL = 2 projects**)

**Project Type Total: 10 + 2 = 12**

### **Water Tank Repainting**

The FEA estimated that there were a total of 51,645 steel water tanks in the U.S., that water storage tanks are totally repainted every 15 years, and that approximately 65 percent of all metal water tanks are coated with LBP. This resulted in an estimated 2,238 total water tank repainting projects occurring on annual basis that encounter LBP. Of these, the FEA assumed that 82% of projects would be executed by outside painting contractors; 40% of the remaining projects would be performed by publicly employed personnel in OSHA State Plan States covered by the Standard.

The Agency was unable to locate current data regarding the number of water tank repainting projects occurring each year, although previous discussion with the American Water Works Association (AWWA) indicated that the use of LBP in projects of this type was discontinued a number of years ago. For this analysis, the Agency assumes that any water tanks constructed since publication of the FEA did not involve use of LBP. Given the assumptions of the FEA, the Agency assumes that all water tanks described in the FEA as containing LBP (33,570) have been repainted in the 15 years since publication ( $2,238 \times 15 \text{ years} = 33,570 \text{ tanks}$ ).

**Project Type Total: 0**

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<sup>24</sup> Source: U.S. Department of Transportation, Federal Highway Administration, *Annual Materials Report on New Bridge Construction and Bridge Rehabilitation (2009-2010)*, Available at <http://www.fhwa.dot.gov/bridge/nbi/matreport2011.cfm>

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### **Petroleum and LNG Tank Repainting:**

The FEA estimated that there were 209,350 petroleum-containing tanks in the U.S., that each tank is abrasive-blasted and repainted every 20 years, and that approximately 10,468 tanks coated with LBP are repainted each year. The FEA also assumed that no new tanks are coated with LBP. As such, ERG assumes that there remain approximately 52,340 petroleum tanks coated with LBP ( $(209,350 \div 20) \times 5 = 52,340$ ). The FEA assumes that each project consists of repainting three tanks. Therefore, roughly 3,491 projects are assumed to take place each year. The Agency is making no changes to the estimated number of petroleum and LNG tank repainting projects occurring each year.

**Project Type Total: 3,491**

### **Demolition of Underground Storage Tanks:**

The FEA assumed that all underground storage tanks containing LBP would have to be removed within 10 years of publication. The Agency assumes that all tanks have been removed and that projects of this type are no longer covered by the Standard.

**Project Type Total: 0**

### **Housing Lead Abatement (Public Housing):**

While the original economic analysis assumed that all public-housing lead abatement would be conducted in 15 years, it is unclear the extent to which lead abatement in public housing has been completed. While the number of projects estimated in the FEA would likely be a high-end estimate today, given the lack of further information and the fact that some LBP likely remains in a large percentage of these housing structures, the Agency is retaining this estimate.

**Project Type Total: 900**

### **Housing Lead Abatement (Private Housing):**

The FEA assumed that lead abatement in private housing would take approximately 60 years to complete and that there were 62,300 abatement projects annually. Given the amount of work necessary and the number of homes potentially requiring abatement (Recent reports have estimated that roughly 38 million housing units in the U.S. still have lead-based paint hazards.<sup>25</sup>), The Agency assumes that lead abatement in private housing is ongoing and occurs regularly. The FEA assumes that the majority of work in this project type would be done by painting contractors (SIC 1721 and miscellaneous special trade contractors (SIC 1799). Since 2002, the number of establishments in these industries has increased by a total of 14%; the Agency assumes that the

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<sup>25</sup>Jacobs, et al. "The Prevalence of Lead-Based Paint Hazards in U.S. Housing." *Environmental Health Perspectives*, Vol. 110, No. 10 (Oct. 2002): 599 – 606.

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number of projects performed by firms in these industries has increased by 14% as well.<sup>26</sup> Thus, the agency estimates that there are a total of 89,914 lead abatement projects in private housing each year.

**Project Type Total: 89,914**

### **In-Place Management (Public and Private Housing):**

As discussed previously, given the amount of work and number of homes potentially requiring abatement, the Agency assumes that in-place management of lead in both public and private housing is ongoing and occurs regularly. For reasons discussed above, the Agency is retaining the original estimate for the number of projects undertaken in public housing.

The FEA assumed that the majority of the work in this field would be done by painting contractors (SIC 1721 - NAICS 237310 Highway, Street, and Bridge Construction and NAICS 238320 Paint and Wall Covering Contractors) and plastering contractors (SIC 1742 - NAICS 238310 Drywall and Insulation Contractors). In 2002, these industries comprised 39,477 and 21,712 establishments respectively.<sup>27</sup> In 2013, these industries had 18,178 and 8,527 establishments respectively.<sup>28</sup> In total this represents a decrease in the number of establishments of 56.4% from 2002 to 2013; the Agency assumes that the number of projects undertaken in private housing involving lead exposure will decrease 56.4% as well.

**Project Type Total: 336,040 (3,150 + 332,890)**

### **Commercial and Industrial Demolition:**

The FEA estimated that there were 1,200 wrecking and demolition contractor establishments performing 2,480 projects annually, and that exposure to lead occurred in 50% of all projects (1,240). According to the 2013 Economic Census, there are 3,763 wrecking and demolition contractors in the United States (2012 NAICS 238910), representing an increase in total

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<sup>26</sup>Source: U.S. Census Bureau, 1992, 2013 Economic Census, County Business Pattern. In 1992, there were a total of 31,920 and 25,270 establishments in SIC 1721 and 1799 respectively. In 2013, firms previously classified in SIC 1721 (NAICS 237310 and NAICS 238320 Paint and Wall Covering Contractors) totaled 18,178. Similarly, firms previously classified in SIC 1799 now consists of NAICS 236220 Commercial and Institutional Building Construction, 237990 Other Heavy and Civil Engineering Construction, 238150 Glass and Glazing Contractors, 238190 Other Foundation, Structure, and Building Exterior Contractors, 238290 Other Building Equipment Contractors, 238320 Paint and Wall Covering Contractors, 238350 Finish Carpentry Contractors, 238390 Other Building Finishing Contractors, 238910 Site Preparation Contractors, 238990 All Other Specialty Trade Contractors, 561790 Other Services to Buildings and Dwellings and 562910 Remediation Services) totaled 64,646.

<sup>27</sup>Source: U.S. Census Bureau, 2002 Economic Census.

<sup>28</sup>Source: U.S. Census Bureau, 2013 Economic Census, County Business Pattern. SIC 1721 was estimated to comprise 25 percent of 2012 NAICS 237310 Highway, Street, and Bridge Construction, 50 percent of 238320 Paint and Wall Covering Contractors. Similarly, SIC 1742 was estimated to comprise 50 percent of 2012 NAICS 238310 Drywall and Insulation Contractors.

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establishments of 78.3%.<sup>29</sup> The Agency assumes that the number of demolition projects performed annually (2,181 in 2002 has increased by 78.3% as well. In total, the Agency estimates that there are 3,889 commercial and industrial demolition projects occurring annually resulting in worker lead exposures.

**Project Type Total: 3,889**

### **Indoor/Outdoor Industrial Facility Maintenance and Renovation:**

The FEA assumed that a total of 5,300 industrial facility maintenance projects are estimated to be performed each year, and that approximately 31.6% of those projects involved LBP coatings (for a total of 1,864 projects). It was also assumed that 85 percent of projects are performed outdoors and 15 percent are performed indoors. Finally, the FEA assumed that contractors involved in these activities would include painting contractors (SIC 1721), general contractors of industrial buildings (SIC 1541), structural steel erection contractors (SIC 1791), and miscellaneous special trade contractors (SIC 1799).

In 2002, there were a total of 82,528 establishments in those industries assumed to be involved in industrial facility maintenance and renovation.<sup>30</sup> As discussed previously (see Housing Lead Abatement (Private Housing)), the number of establishments in those industries formerly comprising SICs 1721 and 1799 increased by 14.4% from 2002 to 2013. Additionally, the number of establishments in industries comprising SIC 1541 increased by 27.3%, while industries comprising SIC 1791 also increased by 541%.<sup>31</sup> In total, in 2013, the number of establishments in these industry classifications increased from 82,528 to 119,182, a decrease of 44.4%. The Agency assumes that the number of projects occurring in these sectors (the number estimated for 2002 was 337 indoor and 1,904 outdoor projects) has increased by 44.4% as well.

**Project Type Total: 487 (indoor) + 2,749 (outdoor) = 3,236**

### **Lead Joint Work on Cast Iron Soil Pipes**

The FEA estimated that there were 9,438 projects performed per year involving the installation of cast iron soil pipes using lead-oakum joints. The Plumbing, Heating and Cooling Contractors Association of Massachusetts (PHCCAMA) indicated that the use of lead-oakum joint work on cast iron pipe fixtures is still required for some applications, but that lead use has declined both

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<sup>29</sup>Source: U.S. Census Bureau, 2013 Economic Census, County Business Pattern. Total establishment (33,867) for NAICS 238910 Site Preparation Contractors is divided by 9. 1997 NAICS 235940 Wrecking and Demolition Contractors was converted to 2002 NAICS 238910 Site Preparation Contractors which was divided among nine 1997 NAICS. In order to get the numbers equivalent to "Wrecking and Demolition" within NAICS 238910 Site Preparation Contractors, the total is divided by 9.

<sup>30</sup> Source: U.S. Census Bureau, 2002 Economic Census.

<sup>31</sup>Source: U.S. Census Bureau, 1992, 1997, 2002 and 2013 Economic Census. In 1992 there were 7,693 and 3,792 firms classified in SICs 1541 and 1791, respectively. In 2013, firms previously classified in SIC 1541 (comprised of 25% of 2012 NAICS 236210 Industrial Building Construction and 17% of NAICS 236220 Commercial and Institutional Building Construction) totaled 7,109 establishments; firms previously classified in SIC 1791 (comprised of 100% of 2007 NAICS 238120 Structural Steel and Precast Concrete Contractors, 50% of NAICS 238190 Other Foundation, Structure, and Building Exterior Contractors and 25% of NAICS 238220 Plumbing, Heating, and Air-Conditioning Contractors) totaled 29,250 establishments.

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due to the increased use of PVC piping, and the use of no-hub connectors and no-hub iron pipes that do not require lead joints.<sup>32</sup> The Agency was unable to locate specific data regarding the continued application of lead-oakum joint work on cast iron piping. However, based on conversation with the PHCCAMA and because assumptions in the FEA were based primarily on instances when the use of lead-oakum joints were required for certain applications, it seems reasonable to assume that many of these requirements are still in place. As such, the Agency is retaining previous estimates for the number of projects performed per year involving the installation of cast iron soil pipes using lead-oakum joints.

**Project Type Total: 9,438**

### **Manufacturing, Maintenance and Repair of Industrial Process Equipment**

Based on information provided in the FEA, the Agency is unable to provide a definitive update regarding the number of projects occurring within this project type. The agency is retaining the previous estimate for the number of projects performed per year involving the manufacture, maintenance, and repair of industrial process equipment.

**Project Type Total: 982**

### **Industrial Vacuuming:**

The FEA estimated that industrial vacuuming projects occur four times per year for each of an estimated 137 electric arc furnaces (EAFs) in the U.S. The EPA reports that production of steel in minimills (still mills that recycle old steel through use of EAFs) has increased dramatically over the past 30 years, and accounted for 57 percent of national steel production in 2006.<sup>33</sup> As of 2006, the Association for Iron and Steel Technology reported that there were a total of 63 facilities containing EAFs in the U.S., and the EPA estimated that there were “over 200 EAFs in the U.S.”<sup>34</sup> For this ICR update, the Agency assumes that there are a total of 225 EAFs operating in the U.S., and that industrial vacuuming with exposure to lead occurs four times annually for each EAF (for a total of 900 projects).

The FEA also assumed that vacuuming occurs at plants producing non-ferrous metals which could have lead exposure, and that establishments employing more than 10 workers in NAICS 331410 Nonferrous Metal (except Aluminum) Smelting and Refining have the same frequency of servicing as the steel plants with electric arc furnaces. The number of establishments in these

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<sup>32</sup>A no-hub connector typically consists of a rubber sleeve and a stainless steel band secured by hose clamps. A variation, a neoprene sleeve with adjustable steel bands is often used when connecting PVC pipe to an existing cast-iron drainpipe.

<sup>33</sup>U.S. EPA. Federal Register, Volume 72, No. 182, Thursday, September 20, 2007. 53814 – 53836 (<http://www.gpo.gov/fdsys/pkg/FR-2007-09-20/html/E7-18343.htm>).

<sup>34</sup>U.S. EPA. “Fact Sheet: Electric Arc Furnace NSPS Amendment.” [http://www.epa.gov/ttn/caaa/t3/fact\\_sheets/arcfurnf.pdf](http://www.epa.gov/ttn/caaa/t3/fact_sheets/arcfurnf.pdf)

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industries with greater than 10 workers as of 2013 was 97<sup>35</sup>. Thus, industrial vacuuming takes place at these facilities approximately 388 times per year (97 establishments x 4 times/year).

**Project Type Total: 900 EAF projects +388 non-ferrous metal projects = 1, 288**

### **Stained Glass Window Removal:**

The FEA assumed that of a total 1,567 establishments in SIC 3231 (Products of purchased glass), there were approximately 104 firms each performing 24 projects per year. In the 2013 Economic Census, there were approximately 1,144 in NAICS 327215 (Glass product manufacturing made of purchased glass, establishments formerly classified under SIC 3231)—a decrease of 30.3 percent.<sup>36</sup> The Agency assumes that the number of firms performing stained glass window removal has decreased by 30.3 percent as well. It was estimated that there were 109 firms performing 2,616 projects annually in 2002. Therefore, for this ICR, there are approximately 76 (109 x 30.3%) firms performing 1,824 projects (76 firms x 24 projects per year) annually.

**Project Type Total: 1,824**

### **Installation of Radiation Shielding:**

The FEA based the number of radiation shielding installation projects each year on the number of linear accelerator suite installations, and noted that exposures during the preparation of x-ray suites, which primarily results from the cutting of lead foil panels, are likely to be very brief and below the limit of detection. The Agency is retaining the original estimate of 100 projects per year.

**Project Type Total: 100**

### **Commercial and Institutional Remodeling:**

The FEA estimated that the total value of improvement and upkeep for private, state, and local non-residential buildings was \$78,040 million and that the average project value would be about \$100,000 yielding an estimated 780,000 projects per year. According to the 2002 Economic Census, the total value of commercial and institutional building construction (additions, alterations or reconstruction, and maintenance and repair) was \$80,508 million.<sup>37</sup> Maintaining the assumptions of the FEA, this would result in an estimated 801,000 projects per year. Additionally, the FEA assumed that since LBP was largely phased out by 1973, the ratio of pre-1973 buildings to total commercial building stock provided an “acceptable surrogate for the incidence of potential LBP exposure” (As of publication of the FEA in 1993, this ratio stood at

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<sup>35</sup>County Business Patterns (CBP), 2013. County Business Patterns (CBP). US Census. Available at <http://www.census.gov/econ/cbp/download/> (Accessed June 16, 2015).

<sup>36</sup>U.S. Census Bureau, 2002 and 2013 Economic Census.

<sup>37</sup>U.S. Census Bureau, 2009 Economic Census. Commercial and Institutional Building Construction, Series Report EC02-23I-236220, 2002.

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0.7). As of 2012, the ratio of pre-1973 buildings to total commercial building stock is 0.42.<sup>38</sup> This yields an estimated 336,420 commercial and institutional remodeling projects where LBP might be encountered.

**Project Type Total: 336,420**

### Residential Remodeling:

The FEA estimated the number of residential remodeling projects potentially exposed to lead based on the following data and assumptions:

Total expenditures of \$20,911 million by residential homeowners on painting, siding, and interior reconstruction in the U.S. Census Bureau 1988 Current Construction Report  
The average project cost was \$4,882, derived from a weighted average of data from the National Association of Homebuilders for painting, residing, and multi-trade interior remodeling jobs

The incidence of LBP in private homes, assumed to be 63 percent of all existing homes

Together, these data yield an estimated total of 4,283,000 remodeling projects per year, of which 2,698,000 were projects where LBP may be disturbed during remodeling.

According to the 2007 Current Construction Reports, the seasonally adjusted annual rate for total expenditures on home improvements, maintenance and repairs in first quarter 2007 was \$230,900 million.<sup>39</sup> Since 2007 is still the latest year for which data is available, it was estimated that the cost for 2014 is \$256,922<sup>40</sup>. This represents an increase of 34.6 percent over first quarter 1988. Assuming that the adjusted average project cost has remained relatively stable, the Agency assumes a 34.6 percent increase in the total number of remodeling projects each year (4,283,000  $\times$  1.346 = 5,764,918). According to recent data, approximately 40 percent of all U.S. housing

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<sup>38</sup>U.S. Department of Energy, 2012. Commercial Building Energy Consumption Survey (CBECS), Table B8: Year constructed, number of buildings, 2012. Energy Information Administration (EIA). Available at <http://www.eia.gov/consumption/commercial/data/2012/index.cfm> (Accessed July 8, 2015). The total number of buildings constructed from 1970 to 1979 was 684 thousand; the Agency used the average number of buildings constructed over this time period to estimate the number of buildings constructed from 1970 to 1973.

<sup>39</sup>U.S. Census Bureau, Expenditures for Residential Improvements and Repairs. Current Construction Reports, Expenditures for Residential Improvements and Repairs Seasonally Adjusted, <http://www.census.gov/const/C50/histtab1.pdf>. The Agency calculated the increase in total construction expenditures (for years 1988 and 2014) using the real growth inflation rate of 96.81% (the CPI for Housing, All Urban Consumers) to estimate the number of residential remodeling projects. Bureau of Labor Statistics (BLS), 2014. Consumer Price Index - All Urban Consumers - Housing (Not-seasonally adjusted). Available at <http://www.bls.gov/data/> (Accessed August 4, 2015).

<sup>40</sup>The cost from 2007 (i.e. \$230,900 million) was adjusted using the Consumer Price Index (Non-seasonally adjusted) of 11.27% for Housing from 2007 to 2014 to estimate the cost for 2014. Bureau of Labor Statistics (BLS), 2014. Consumer Price Index - All Urban Consumers - Housing (Not-seasonally adjusted). Available at <http://www.bls.gov/data/> (Accessed August 4, 2015).

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units have some lead-based paint.<sup>41</sup> Accordingly, the Agency estimates that there are 2,305,967 residential remodeling projects per year with some exposure to lead.

**Project Type Total: 2,305,967**

### **Elevator Cable Babbetting:**

The FEA assumed that there were a total of 67,500 elevators that might be re-cabled with a lead-containing babbitt material, and that elevators are recabled approximately every 12.5 years. Since this ICR update takes place more than 15 years after the publication of the FEA, it seems reasonable to assume that all elevators with a lead-containing Babbitt material would have been recabled by this time. Therefore, the Agency assumes zero projects of this type.

**Project Type Total: 0**

### **Electrical Cable Splicing:**

The FEA notes that “not all cable splicing jobs employ molten lead as the sealing method. Newer cable systems use rubber or plastic connectors.” Because of this, it seems reasonable to assume that the number of projects involving lead exposures in this field have declined given the reduced use of the lead sealing method. While unable to provide a definitive update for these types of projects, based on discussion in the FEA and review of available literature and online information, the Agency assumes that the number of projects involving lead in electric cable splicing has declined by 50%.

**Project Type Total: 50,000**

### **Reinsulation over Existing Mineral Wool:**

The FEA estimates that 22,000 projects take place each year, or approximately the equivalent of two projects per year for every insulation firm (estimated at 11,000 at the time of publication). While updated information on the number of projects requiring reinsulation over existing lead-containing mineral wool is unavailable, the use of lead slag as a raw material in mineral wool production ended about 1970. The Agency assumes that lead exposure in this type of project has not increased in publication of the FEA. While likely on the high end, the Agency is retaining the FEA estimate of 22,000 projects annually.

**Project Type Total: 22,000**

### **Repair and Removal of Water Lines Containing Lead:**

The use of lead-containing pipes, solder and flux is prohibited in the installation of plumbing in residential and nonresidential facilities providing water for human consumption by the Safe Drinking Water Act. However, a substantial number of residential, commercial and healthcare facilities built before 1986 likely have lead pipes, fixtures and solder. While the Agency was unable to locate specific data regarding the number of water line repair or removal projects occurring each year, it is assumed that this type of work is ongoing. The FEA assumed that each

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<sup>41</sup>Jacobs, et al. “The Prevalence of Lead-Based Paint Hazards in U.S. Housing.” *Environmental Health Perspectives*, Vol. 110, No. 10 (Oct. 2002): 599 – 606.

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plumbing contractor (SIC 1711 Plumbing, Heating, and Air-Conditioning) would perform leaded water line removal three times per year. In the 2013 Census, there were 61,999 establishments in NAICS 238210 Electrical Contractors, 238220 Plumbing, Heating, and Air-Conditioning Contractors and 238910 Site Preparation Contractors. Retaining the original analysis and updating based on the most recent Census data, the Agency estimates that 185,997 projects occur annually.

**Project Type Total: 185,997**

**Transmission and Communication Tower Maintenance:**

The FEA estimated that roughly 30% of the 1,760,635 transmission towers in 1990 had exposed LBP. Additionally, the FEA assumed that towers were painted or touched up every 15 years and that 40 towers constitutes one project, for a total of 880 projects involving exposure to LBP coatings per year. Based on these assumptions, all towers containing exposed LBP would have been repainted or encapsulated since publication of the FEA. Additionally, the Agency assumes that no new tower construction since the publication of the FEA would have contained LBP. Therefore, the Agency estimates 0 projects.

**Project Type Total: 0**

**Installation of Terne Roofing:**

Terne roofing using lead and tin alloy is no longer produced due to health and safety concerns regarding the use of lead. The Agency contacted Follansbee Steel (according to the FEA, the only domestic producer of terne roofing material), and a firm representative confirmed that terne roofing material is currently coated using a 50/50 alloy of tin and zinc; lead is no longer used in terne roofing material production.

**Project Type Total: 0**