

Revision to the Lead in Construction Standard Supporting Statement

The Standards Improvement Project–Phase III (SIP-III) is the third in a series of rulemaking actions to improve and streamline OSHA standards. The Standard Improvement Projects remove and revise individual requirements in standards that are confusing, outdated, duplicative or inconsistent. In May 2011, OSHA published the SIP-III final rule.

The SIP-III final rule removed from 25 of OSHA’s substance-specific standards the requirements for employers to transfer employee exposure-monitoring and medical records to the National Institute for Occupational Safety and Health (NIOSH), and to notify NIOSH prior to disposal of such records. As a result of removing these transfer and notification requirements, OSHA is revising the 25 corresponding Information Collection Requests (ICRs)¹ to reduce the burden-hour and cost estimates associated with these provisions.

Edits to this supporting statement consists of strikethroughs and highlighted yellow text. These edits indicate removal of the requirement for employers to transfer records to NIOSH. Language deleted from this Supporting Statement is struck-through. Language added to the supporting statement appears highlighted in yellow.

¹ ?The section of the preamble in the final SIP-III rule titled, *Office of Management and Budget Review Under the Paperwork Reduction Act of 1995* lists the 27 ICRs being revised. The 27 ICRs are being revised as follows: 23 ICRs are revised as a result of removing the requirements for employers to transfer records to NIOSH; two ICRs are being revised to remove both the requirements for employers to transfer records to NIOSH and for employers to prepare training certifications; and two additional ICRs are being revised to remove only training certifications.

**SUPPORTING STATEMENT FOR THE
INFORMATION COLLECTION REQUIREMENTS IN
LEAD IN CONSTRUCTION STANDARD (29 CFR 1926.62)²
(OMB CONTROL NO. 1218-0189 (May 2011))**

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 employee 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 employee exposure to Lead in Construction (29 CFR 1926.62) (the “Standard”). Attached to this supporting statement is a copy of the Standard.

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

² 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.

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, training, and recordkeeping. The information generated to comply with these provisions is primarily used by employers, employees, and medical care providers to provide protection for employees 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 employee and employers benefit from the information provided by exposure-monitoring and medical surveillance records. Through notification of monitored exposure levels, the employee is informed whether his or her exposure is lower than or above a level warranting protective action. Medical records are designed so that an employee can determine whether or not treatment is needed for occupational exposure. Exposure-monitoring and medical surveillance records help the employer to ensure that employees 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 employees exposed to lead. Without records of previous medical examinations, the physician may not be able to determine whether an employee 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.

Exposure Assessment (§1926.62(d)(1))

For each workplace or operation where an employee may be occupationally exposed to lead, the employer must make an initial determination of whether an employee 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 exceed 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 employee will be exposed to lead 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 data³ 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 employee's exposure) when the initial determination is positive (the employer concludes that lead exposure may 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 employees will be exposed 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 and social security numbers of each employee monitored.

Frequency (§1926.62(d)(6))

The frequency of periodic monitoring is determined by whether the work site exposure levels are

³ 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 employee exposure to lead at or above the action level during processing, use or handling.

below 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 will only occur if the project is of sufficient duration.

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

If employers conduct exposure monitoring, they must notify employees either individually in writing or by posting the results within 5 days in an appropriate location that is accessible to employees. 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 employees are aware of their exposures to OSHA- regulated substances, and the Agency preliminarily concludes that his goal can be met either through individual written notification or through posting in a location that is readily accessible to all employees whose results are being posted.

Compliance Program (§1926.62(e)(2)(i))

The Lead in Construction Standard requires employers to establish and implement a written compliance program to reduce employee 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 employee exposures are reduced to or below the PEL solely by engineering and work practice control methods.

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

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

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

The compliance program requires contractors working with lead on multi-contractor sites to inform affected employees of potential exposure to lead as required 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 employee or authorized employee 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.

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

Employers using respirators to control employee 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). 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 employees.

Notifying the Laundry (§1926.62(g)(2)(vi))

The Lead in Construction Standard requires employers to provide employees 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.

Medical Surveillance (§1926.62(j))

Employers must provide initial medical surveillance to any employee 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 employees 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 employees:

Initial medical surveillance consisting of a single blood test (analyzed for lead and zinc protoporphyrin levels) for employees exposed, on any day, to lead in excess of 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 employees exposed 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 employees exposed above the action level whose last blood sampling and analysis indicated a blood-lead 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;

Follow-up blood tests for employees removed from exposure to lead due to an elevated blood-lead level (at or above 50µg/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 employees removed from exposure to lead due to an elevated blood-lead level (50 µg/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 employee 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 employee whose blood-lead level exceeds 40µg/dl that the Standard requires temporary medical removal, with medical removal protection benefits, when an employee's blood-lead level exceeds 50 µg/dl.

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

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

Employees exposed above the action level more than thirty days per year with blood-lead levels at or above 40µg/dl;

Employees with signs or symptoms associated with lead intoxication;

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

Employees who are pregnant;

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

Employees 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 employee 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))

Employers must provide the physician conducting the medical examination or consultation the

following: a copy of the Standard and appendices; a description of the employee's lead-exposed duties; the employee's exposure level; a description of the personal protective equipment used; prior blood-lead test results; and any prior written medical opinions concerning the employee 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 employee.

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

In accordance with the Standard, if therapeutic or diagnostic chelation is performed on a lead-poisoned employee, the employee 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))

The Lead in Construction Standard requires employers to communicate information concerning lead hazards to all employees exposed to lead in accordance with the Hazard Communication Standard for the Construction Industry, 1926.59. In addition, employers must establish a training program for all employees 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.

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

The Lead in Construction Standard also requires employers to provide, upon request, all materials relating to the employee training and information program to affected employees, their designated representatives, OSHA, and NIOSH.

Exposure monitoring Records (§1926.62(n)(1)(ii))

The Standard requires employers to establish and maintain an accurate record of all monitoring and other data used in conducting employee exposure assessments.

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

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

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

Employers must establish and maintain an accurate record for each employee 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 employees, former employees, 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. Requests from OSHA and NIOSH normally occur only in the context of a compliance inspection.

Record Transfer (§1926.62(n)(6))

The Lead in Construction standard requires employers ceasing to do business to transfer records either to a successor employer or to NIOSH. Employers must comply with the transfer requirements in (§1910.1020(h)). ~~Employers may mail exposure or medical records to NIOSH.~~

- 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 2 above.**

The requirements to maintain information are specific to each employer and employee 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 (Item 5 of OMB Form 83-I), 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 employees 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;

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 employees 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 employees 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 employees whose blood lead levels are 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.

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.

The SIP-III notice of proposed rulemaking (NPRM; 75 FR 38645) proposed to revoke existing collection-of-information (paperwork) requirements contained in 27 existing Information Collection Requests (ICRs) approved by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (PRA-95). OSHA prepared and submitted one ICR for the SIP-III proposal to OMB for review in accordance with 44 U.S.C. 3507(d). For the SIPs III final, OSHA is submitting separate ICRs to OMB.

The NPRM proposed to remove provisions that require employers to transfer employee exposure-monitoring and medical records to NIOSH and for employers to contact NIOSH prior to disposing of such records. No comments were received opposing this revision; therefore, OSHA is removing §1926.62(n)(6)(ii) and (iii) and the associated burden hours and costs from this ICR.

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

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

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

To ensure that the personal information contained in medical records remains confidential, OSHA developed 29 CFR 1913.10 to regulate access to these records.

11. Provide additional justification for any questions of a sensitive nature, such as sexual behavior and attitudes, religious beliefs, and other matters that are commonly considered private. This justification should include the reasons why the agency considers the questions necessary, the specific uses to be made of the information, the explanation to be 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. 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 or OMB Form 83-I.

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 occur. 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 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 Analysis⁴ and updated data where available, the Agency estimates that approximately 136,484 firms, 869,230 workers, and 3,984,793 projects are affected by 29 CFR 1926.62 on an annual basis.⁵

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.⁶

The following hourly wage rates for the relevant occupational categories have been published by the Bureau of Labor Statistics.⁷ These wages have been adjusted to reflect the fact that fringe benefits comprise roughly 29.4 percent of total employee compensation in the private sector.⁸ The costs of labor used in this analysis are therefore estimates of total hourly compensation. These hourly wages are:

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|--------------------------|---------|
| Construction Supervisors | \$35.48 |
| Construction Workers | \$26.73 |
| Clerical Workers | \$21.53 |

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

⁴ 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.

⁵ See Attachment A for explanation of analysis, data sources, and a complete list of firms, workers and projects on a per project-type basis.

⁶ 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 babbiting, 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.

⁷ Source: Bureau of Labor Statistics, Occupational Employment Statistics, National Industry-Specific Occupational Employment and Wage Estimates – Sector 23, May 2007.

⁸ Source: Bureau of Labor Statistics. *Employer Costs for Employee Compensation – March 2008*. June 11, 2008.

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 also 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 an employee may be occupationally exposed to lead, the employer must make an initial determination of whether an employee 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 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
- 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 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 \$35.48, 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) × (1 test per project) × (.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 396,265 projects are tested to determine whether lead was present or not.⁹

Burden hours: 396,265 projects x 1 test per project x .25 hour = 99,066 hours
Cost: 99,066 hours × \$35.48 = \$ 3,514,862

The Standard requires employers to determine whether any employee will be exposed to lead 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

⁹ To determine the number of projects tested, the Agency applied the percentage change in the total number of lead-exposed projects in each project type to the total number of projects needing lead testing as determined in the previous ICR update (e.g., the Agency calculated a 36.1% decrease in the total number of highway and railroad bridge repainting lead-exposed projects; this 36.1% decrease was then applied to the total number of projects needing lead testing as presented in Appendix A, Table 2 of the previous ICR update.). This process was applied throughout this ICR update.

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 in excess of 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 exposures in excess of 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 above the 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 employee 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 (891)
- Highway and Railroad Bridge Rehabilitation (896)
- Water Tank Repainting (0)
- Petroleum Tank Repainting (364)
- Underground Storage Tank Demolition (0)
- Housing Lead Abatement (Public Housing) (438)
- Commercial and Industrial Demolition (1,091)
- Indoor Industrial Facility Maintenance/Renovation (421)
- Outdoor Industrial Facility Maintenance/Renovation (541)
- Industrial Process Equipment Manufacture/Maintenance/Repair (41)
- Industrial Vacuuming (104)
- Stained Glass Window Removal (109)
- Commercial and Institutional Remodeling (18,888)
- Residential Remodeling (39,632)
- 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 71,749 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, 58,520 total firms engaged in Commercial and Institutional Remodeling (18,888 firms) and Residential Remodeling (39,632 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 58,520 firms engaged in these to project types. The costs for analyzing the associated air monitoring samples are included in the response to Item 13.

The remaining 13,229 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) × (1 representative monitoring/firm/year) = # of monitoring by project type.

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

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

OSHA used the following specific formulas to calculate the burden and costs of this requirement for firms engaged in remodeling project types.

For firms engaged in Commercial and Institutional remodeling projects:

(18,888 firms) × (1 representative monitoring/firm/year) = 18,888 monitoring sessions

Burden hours: 18,888 monitoring sessions × 3 hours = 56,664 hours

Cost: 56,664 hours × \$35.48 = \$2,010,439

For firms engaged in Residential Remodeling projects:

(39,632 firms) × (1 representative monitoring/firm/year) = 39,632 monitoring sessions

Burden hours: 39,632 monitorings × 2 hours = 79,264 hours
Cost: 79,264 hours × \$35.48 = \$ 2,812,287

The total burden hours for firms engaged in Commercial and Institutional Remodeling projects and in Residential Remodeling projects is 135,928 hours (56,664 hours for Commercial and Industrial Remodeling firms plus the 79,264 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 (\$2,010,439 + \$2,812,287). OSHA estimated that the monitoring conducted to satisfy the Initial Determination requirement results in an annual labor cost of \$4,822,726.

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 (99,066 hours + 135,928 hours). The total annual burden hours associated with this requirement are **234,994 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 (**\$3,514,862 + \$4,822,726 = \$8,337,588**).

(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 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.

OSHA assumes that 132,003 firms engage in the following project types use objective data in order to demonstrate that their worst-case exposures do not exceed the action level. These projects types and the number of affected firms are as follows:

- Housing Lead Abatement (Private Housing) (3,585)
- In-Place Management of Lead-Based Paint (Public Housing) (85)
- In-Place Management of Lead-Based Paint (Private Housing) (10,604)
- Lead Joint Work on Cast Iron Soil Pipes (2,556)
- Installation of Radiation Shielding (8)
- Commercial and Institutional Remodeling (18,888)
- Residential Remodeling (39,632)
- Elevator Cable Babbiting (0)
- Electrical Cable Splicing (417)
- Repair/Removal of Water Lines (56,228)

Installation of Terne Roofing (0)

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

Burden hours: 132,003 firms × 1 review × 1 hour = 132,003 hours
Cost: 132,003 hours × \$35.48 = \$4,683,466

(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 employee's exposure) is conducted when the initial determination is positive (the employer concludes that lead exposure may exceed 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.

(5) Negative Initial Determination

If the initial determination is negative (e.g., the employer concludes that no employees 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 Babbiting
Electrical Cable Splicing
Repair/Removal of Water Lines
Installation of Terne Roofing

Each affected firm's clerical employee takes six minutes (.10 hour) to prepare the negative initial determination using a standardized form. There are 3,820,582 lead-exposed projects annually, where exposures are less than the action level resulting in negative initial determinations.

Burden hours: 3,820,582 projects × 1 form × .10 hour = 382,058 hours

Cost: 382,058 × \$21.53 = \$8,225,709

(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 below 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.

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

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 monitorings 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 3,316 firms (all firms in the project types listed above), are affected by the Periodic Monitoring requirement. OSHA further estimates there are 6,892 projects requiring periodic monitoring and 9,762 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 employees 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 employee per year since each employee whose exposure is assessed must be notified of the results of each exposure-monitoring session.

The following formula calculates the number of notifications made per year by project: # of employees to be notified by project type) × (average # of notifications per employee 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 81,557 notifications made annually. A clerical employee takes six minutes (.10 hour) to post the notification annually.

Burden hours: 81,557 notifications × .10 hour = 8,156 hours
Cost: 8,156 hours × \$21.53 = \$175,599

B. Compliance Program (§1926.62 (e))

(1) Written Compliance Program

Employers must establish and implement a written compliance program to reduce employee 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 employee 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 71,749 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 of calculating the burden hours and costs, OSHA assumes that, on an annual basis, 10 percent of the total number of firms (7,175 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) × (1 program/firm) × (# 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 15,737 hours.

Burden hours: 7,171 new firms x 1 program/firm x 2.194564 = 15,737 hours
Cost: 15,737 × \$35.48 = \$558,349

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

All 71,749 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) × (time per review firm/project type) × (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 79,566 hours

Burden hours: 71,749 firms x 1 annually x 1.108949 = 79,566 hours
Cost: 79,566 × \$35.48 = \$2,823,001

Total Burden and Costs of Written Compliance Program Requirement

The total annual burden hours for the Written Compliance Program requirement is **95,303 hours**; 15,737 hours for developing new compliance programs, plus 79,566 hours for annual review of existing compliance programs.

The proposed total annual cost for the Written Compliance Program requirement is **\$3,381,350**; \$558,349 for developing new compliance programs plus \$2,823,001 for annual review of existing programs.

(2) Administrative Controls

The Lead in Construction Standard permits the use of employee rotation to control exposure to lead. Employers who make use of employee 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 employee rotation may occur, OSHA has no indication of the number of employers or employees who may be involved and believes that use of rotation as an administrative control is rare among employers engaged in other project 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 (891)
Water Tank Repainting (0)
Petroleum Tank Repainting (364)
Indoor Industrial Facility Maintenance/Renovation (421)
Outdoor Industrial Facility Maintenance/Renovation (541)

By summing the number of firms affected in each of the five project types, OSHA estimates a total of 2,217 firms utilize employee 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: 2,217 firms × 1 hour = 2,217 hours
Cost: 2,217 firms × \$35.48 = \$78,659

(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 employees 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 employee or authorized employee representatives, to the OSHA and NIOSH, and must be available at the worksite for examination and copying by the OSHA and the NIOSH. OSHA assumes that if there is full compliance with the Standard, employees will not request access to the written compliance program since employers must train employees in the contents of the compliance plan in order to comply with paragraph (1) of 1926.62. Therefore, no burden was estimated for employee 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.

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 employees 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 employees 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 employees with information (such as a material 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 71,749 firms provide protective clothing and equipment to their employees. 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: 71,749 firms × 1 notification × .10 hour = 7,175 hours

Cost: 7,175 hours × \$21.53 = \$154,478

E. Medical Surveillance (§1926.62(j))

The Lead in Construction Standard requires employers to provide initial medical surveillance to any employee 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 employees 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 to comply with the Standard, that the blood-lead levels of construction workers do not exceed 25 micrograms per deciliter ($\mu\text{g}/\text{dl}$)¹⁰. 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 employees:

Initial medical surveillance consisting of a single blood test (analyzed for lead and zinc protoporphyrin levels) for employees exposed on any day to lead in excess of 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 employees exposed 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 employees exposed 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 $\mu\text{g}/\text{dl}$;

¹⁰ 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).”

Follow-up blood tests for employees removed from exposure to lead due to an elevated blood-lead level (at or above 50µg/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 employees removed from exposure to lead due to an elevated blood-lead level (50 µg/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 Item13.

(1)(a) Initial Medical Surveillance

The Standard requires that all employees exposed 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 employees exposed 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 employees exposed over the action level have been given initial medical surveillance. Therefore, only new employees will need to have initial medical surveillance. OSHA estimates that, on an annual basis, there are 125,279 workers exposed above the action level on at least one day per year.¹¹ OSHA assumes that 30 percent of these workers are new employees based on the average turnover rate of 30 percent given in the

¹¹ The previous 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 to determine the current number of workers exposed above the action level.

Regulatory Impact Analysis for employees in the affected construction sectors. OSHA therefore estimates that approximately 37,584 new hires, each employee receiving an initial test. The blood sampling used to obtain the blood-lead and zinc protoporphyrin levels requires 15 minutes (.25 hour) of the employee's time per test. The employee wage rate, including benefits is \$26.73. The following formula calculates the annual burden of this requirement:

Burden hours: 37,584 employees × 1 initial test × .25 hour = 9,396 hours

Cost: 9,396 hours × \$26.73 = \$251,155

(1)(b) Periodic Medical Surveillance

The Standard requires employers to provide more frequent biological monitoring as part of a medical surveillance program to employees who are exposed above the action level on 30 or more days per year. Employers in the following project types have employees exposed 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 50,743 workers are eligible for periodic medical surveillance on an annual basis (excluding the estimated number of part-year employees).¹² 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 employee continues to be exposed above the action level for 30 or more days per year and remain employed by the employer. Thus, in the first year of employment, employees receive four sessions of biological monitoring (at months 2, 4, 6, and 12). After the first year of employment, employees are monitored semi-annually (at months 6 and 12). Because new employees receive two sessions of biological monitoring per year, OSHA calculated the annual burden associated with this requirement separately for new and existing employees.

An estimated 15,223 new hires (30 percent of 50,743 workers) receive four biological monitoring tests per year (for a total of 60,892 tests) in addition to the initial medical surveillance given once to all employees exposed above the action level on at least one day per year. The blood sampling requires 15 minutes (.25 hour) of the employee's time per test. OSHA uses the following formula to calculate the annual burden of this requirement.

¹² The previous 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 to determine the current number of workers eligible for periodic medical surveillance.

Burden hours: $15,223 \text{ employees} \times 4 \text{ tests} \times .25 \text{ hour} = 15,223 \text{ hours}$
Cost: $15,223 \text{ hours} \times \$26.73 = \$406,911$

OSHA assumes that 35,520 employees, or 70 percent of the 50,743 employees eligible to receive periodic medical surveillance, are full-year employees, based on an annual turnover rate of 30 percent. Eligible full-year employees receive two biological monitoring tests for a total of 71,040 tests per year. An additional 7,612 part-year employees (15 percent or $\frac{1}{2}$ of the 30 percent annual turnover rate) receive at least one of the two biological monitoring tests, since departing employees leave at an even rate throughout the year. Thus, 7,612 tests are given to part-year employees. A blood sampling requires 15 minutes (.25 hour) of the employee's time per test.

Burden hours: $35,520 \text{ full-year employees} \times 2 \text{ tests} \times .25 \text{ hour} = 17,760 \text{ hours}$
 $7,612 \text{ part-year employees} \times 1 \text{ test} \times .25 \text{ hour} = 1,903 \text{ hours}$
Cost: $19,663 \text{ hours} \times \$26.73 = \$525,592$

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 employees to the total annual burden of providing periodic medical surveillance to full-year and part-year employees (15,223 hours + 19,663 hours). The total annual burden associated with the Periodic Medical Surveillance requirement is **34,886 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 employees to the total annual cost of providing periodic to full-year and part year employees (\$406,911+\$525,592). The total annual cost associated with the Periodic Medical Surveillance requirement is **\$932,503**.

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 $25\mu\text{g}/\text{d}$. 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) Employee Notification of Results

Employers must provide each employee 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 employee 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 an employee's blood-lead level exceeds $50\mu\text{g}/\text{dl}$.

OSHA estimates that 177,128 biological monitoring tests are administered annually, based on the following calculations:

$$\begin{aligned}(37,584 \text{ new employees}) \times (1 \text{ initial test}) &= 37,584 \text{ tests} \\(15,223 \text{ new employees}) \times (4 \text{ periodic tests}) &= 60,892 \text{ tests} \\(35,520 \text{ full-year employees}) \times (2 \text{ periodic tests}) &= 71,040 \text{ tests} \\(7,612 \text{ part-year employees}) \times (1 \text{ periodic test}) &= 7,612 \text{ tests}\end{aligned}$$

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

| | |
|----------------------|--|
| Burden hours: | $177,128 \text{ tests} \times 1 \text{ notification} \times .10 \text{ hour} = 17,713 \text{ hours}$ |
| Cost: | $17,713 \text{ hours} \times \$21.53 = \$381,361$ |

(3) Medical Examinations and Consultations

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

Employees exposed above the action level more than thirty days per year with blood-lead levels at or above 40µg/dl.

Employees with signs or symptoms associated with lead intoxication:

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

Employees who are pregnant;

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

Employees 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 µg/dl and no medical removal associated with worker blood-lead levels in excess of 50 µg/dl since no workers are expected to have blood-lead levels above 25 µg/dl if full compliance with 1926.62 is achieved. OSHA does not have data on the annual number of employees 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 6,264 of the 125,279 employees exposed 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 health care professional on staff, employers will purchase physician services. The costs of medical examinations are in Item 13. Medical examinations require workers, earning \$26.73 an hour, to be away from their work stations for approximately two hours.

Burden hours: 6,264 employees × 1 examination/year × 2 hours = 12,528 hours
Cost: 12,528 hours × \$26.73 = \$334,873

(4) Notification of Multiple Physician Review Option

The Lead in Construction Standard requires that each employer promptly notify each employee 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 clerical time per notification. OSHA estimates there are 6,264 medical examinations annually.

Burden hours: 6,264 exams × 1 notification/exam × .02 hour = 125 hours
Cost: 125 hours × \$21.53 = \$2,691

(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 employee's lead-exposed duties; the employee's exposure level; a description of the personal protective equipment used; prior blood-lead test results; and any prior written medical opinions concerning the employee in the employer's control. OSHA estimates 15 minutes (.25 hour) of clerical time per examination is needed.

Burden hours: 6,264 exams × .25 hour per examination = 1,566 hours
Cost: 1,566 hours × \$21.53 = \$33,716

(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 employee.

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

There are no burden hours associated with this requirement since most physicians are not employees 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 clerical employee take six minutes (.10 hour) per test or examination to provide a copy of the physician's written medical opinion to the affected employee. 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.

Burden hours: 6,264 exams × 1 notification/exam × .10 hour = 626 hours
Cost: 626 hours × \$21.53 = \$13,478

(7) Chelation Notification

If therapeutic or diagnostic chelation is performed on a lead-poisoned employee, the employee 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, employees 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.

F. Employee Information and Training (§ 1926.62 (I))

(1) Training Program

Employers must communicate information concerning lead hazards to all employees exposed to lead in accordance with the Hazard Communication Standard for the Construction Industry, 1926.59. In addition, employers must establish a training program for all employees 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. However, OSHA does not require employers to keep records of employee training. Therefore, OSHA has assumed that there will be no paperwork burden associated with this requirement.

(2) Access to Training Materials

Employers must make a copy of the Standard and its appendices readily available to all affected employees. Employers can make the Standard readily available by posting the materials or posting a notice of their location on an employee bulletin board. OSHA estimates that posting the materials or notice takes no more than six minutes (.10 hour) of clerical time per employer on an annual basis.

Burden hours: 136,484 firms × 1 posting/firm × .10 hour = 13,648 hours
Cost: 13,648 hours × \$21.53 = \$293,841

Employers must provide, upon request, all materials relating to the employee training and information program to affected employees and their designated representatives, OSHA and

NIOSH. Employees receive training program materials during initial and annual training making it unlikely that employees will request to see such material. Therefore, no paperwork burden is taken for employee requests for training materials. Burden hours and costs for providing training materials to OSHA are taken under Federal access records.

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 employee exposure assessments. As described above, 71,749 firms with worker exposures above the PEL conduct one session of representative monitoring per year for a total of 71,749 representative monitorings per year. OSHA also estimates that 6,892 firms conduct a total of 9,762 periodic monitorings per year. Thus, there are 78,641 exposure monitorings per year for which records are kept. OSHA estimates that establishment and maintenance of employee 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: | $78,641 \text{ records} \times .10 \text{ hour} = 7,864 \text{ hours}$ |
| Cost: | $7,864 \text{ hours} \times \$21.53 = \$169,312$ |

(2) Medical Surveillance Records

Employers must establish and maintain an accurate record of medical surveillance results for each employee 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: 177,128 biological monitoring tests and 6,264 exams. OSHA estimates that approximately six minutes (.10 hour) of clerical time per record is required to establish and maintain employee medical surveillance records.

| | |
|----------------------|---|
| Burden hours: | $183,392 \text{ monitoring \& exam records} \times .10 \text{ hour} = 18,339 \text{ hours}$ |
| Cost: | $18,339 \times \$21.53 = \$394,839$ |

(3) Medical Removal Records

The Standard requires employers to establish and maintain an accurate record for each employee subject to medical removal. However, OSHA assumes employers are in full compliance; therefore, no employee 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 3,820,582 lead-exposed projects per year where objective data is used to make a negative initial determination.

Burden hours: 3,820,582 projects × .10 hour = 382,058 hours
Cost: 382,058 hours × \$35.48 = \$13,555,418

(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 employees, former employees, and the designated representatives. Employees will not request access to the written compliance program or the training program material since all employees exposed over 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, employees will only request access to their exposure-monitoring, medical, and/or medical removal records. OSHA assumes that approximately 10 percent, or 12,528 employees, of the 125,279 employees 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: 12,528 requests × .25 hour = 3,132 hours
Cost: 3,132 hours × \$21.53 = \$67,432

(6) Federal Access to Records

The Standard requires employers to make available, upon request, the written compliance program, the training program materials, and all records required to be maintained under paragraph (n) (Recordkeeping) to OSHA and NIOSH. OSHA requests such access during a compliance inspection.

During the first full fiscal year (1994) following promulgation of the Lead in Construction Standard, OSHA conducted 178 inspections on lead-exposed work sites. This number of inspections represents the maximum annual number of inspections that OSHA is likely to conduct for this Standard since standards usually receive additional enforcement emphasis in the first year following their promulgations. Therefore, OSHA estimates 178 inspections are conducted on lead-exposed worksites. A construction supervisor takes 5 minutes (.08 hour) to fulfill each request.

Burden hours: 178 inspections × .08 hour = 14 hours
Cost: 14 hours × \$35.48 = \$497

(7) Transfer of Records

The Lead in Construction Standard requires employers ceasing to do business to transfer records either to a successor employer or to the Director of NIOSH. Employers may mail exposure or medical records to NIOSH. Based on the previous ICR, NIOSH will not receive any records from employers covered under 1926.62. For the purpose of calculating the burden associated with this requirement, OSHA estimates that one employer per year sends records to NIOSH and that it takes one hour of clerical time to send the records to NIOSH. Thus, the total annual burden associated with records is one hour.

The labor cost was based on a clerical wage of \$21.53 per hour, including fringe benefits. The estimated cost of this requirement was therefore estimated to be \$22.

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 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.

| Cost | Current | Requested | Difference |
|---|----------------|------------------|-------------------|
| Initial Determination for Lead | \$5,547,710 | \$5,547,710 | \$0 |
| Monitoring for Initial Determination | \$39,825,860 | \$39,825,860 | \$0 |
| Periodic Exposure Measurement | \$9,115,794 | \$9,115,794 | \$0 |
| Initial Medical Surveillance | \$1,598,072 | \$1,598,072 | \$0 |
| Periodic Medical Surveillance | \$5,933,368 | \$5,933,368 | \$0 |
| Medical Examination and Consultation | \$1,234,008 | \$1,234,008 | \$0 |
| Transfer of Records* | \$14 | \$0 | -\$14 |

| | | | |
|---------------|--------------|--------------|-------|
| Totals | \$63,254,826 | \$63,254,812 | -\$14 |
|---------------|--------------|--------------|-------|

*Indicates removal 29 CFR part 1926.62(n)(6)(ii) and (iii) requiring employers to comply with transferring employee exposure-monitoring and medical records to the National Institute for Occupational Safety and Health (NIOSH) or for notifying NIOSH prior to disposal of such records.

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 396,265 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.

Lead detection swabs range in cost from \$2.01 to \$2.59 per swab depending upon the quantity purchased. The lower cost assumes the purchase of at least 10 packs containing 16 swabs per pack at \$32.10 per pack, while the higher cost assumes the purchase of one pack containing 8 swabs per pack for \$20.75. Assuming 4-8 swabs are used on the average project (where lead detection is deemed necessary), test swabs are estimated to cost \$14 per project.¹³

Cost: 396,265 projects × \$14 per project = \$5,547,710

Monitoring Conducted for the Initial Determination

The Standard requires employers to determine whether any employee will be exposed to lead 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

¹³ A review of available ASTM Standard E1828-compliant commercial brands of lead detection swabs indicated that prices have not changed substantially since the previous ICR update.

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 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 71,749 firms conduct one session of representative monitoring annually in order to satisfy the Initial Determination requirement and that there are 71,749 representative monitorings per year.

As discussed in the response to Item 12, OSHA assumes that 13,229 firms contract with industrial hygiene consultants to collect representative exposure-monitoring data (different assumptions were made concerning monitoring of for the 58,520 Commercial and Institutional Remodeling and Residential 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.

Each of the 13,229 firms conducts one representative monitoring per year for an annual total of 13,229 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 with each representative monitoring. The cost of contracting outside industrial hygienist services is approximately \$75.00 per hour.¹⁴ Thus, by project type, the labor cost formula is: (#of monitorings by project type) × (12 industrial hygienist labor hours/monitoring) × (\$75.00/hour of industrial hygienist labor).

Cost: 13,229 monitorings × 12 hours industrial hygienist labor × \$75.00/hour of industrial hygienist labor) = **\$11,906,100**

The cost of laboratory analysis of the samples for the 13,229 firms is \$14 per project type sample collected.¹⁵ The average number of samples collected per monitoring was assumed to vary by project type from 2 samples to 16 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 type) × (# of samples/monitoring/by project type) × (\$14/sample) = analytical cost by project type. The costs by project type were then totaled to derive the total cost across all project types. The total cost of laboratory analysis for those firms contracting out their monitoring was **\$2,898,364**.

¹⁴ The Agency has assumed that the cost of outside industrial hygienist services is approximately \$75/hour to be consistent with per unit cost for industrial hygienist services as discussed in recent OSHA literature.

¹⁵ The previous ICR update estimated that the cost of laboratory analysis was \$13 per project type sample collected. The Consumer Price Index (CPI) indicated a 6.3% increase in the price of professional medical services from 2005 to 2007; given the 6.3% increase in the price of professional medical services, it was assumed that the cost of laboratory services increased by 6.3% as well.

OSHA assumes that 58,520 firms engaged in Commercial and Institutional Remodeling (18,888 firms) and Residential Remodeling (39,632 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.

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. Table VI below gives the annualized cost for each category of item 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 58,520 firms engaged in Commercial and Institutional Remodeling and Residential Remodeling by the total annualized equipment cost of \$427.57¹⁶ per firm gives an annual cost of **\$25,021,396** associated with the purchase of monitoring equipment.

Total Cost Summary:

| | |
|--|---------------------|
| Cost for industrial hygiene labor (for 13,229 firms): | \$11,906,100 |
| Cost for Representative Monitoring for all 71,749 firms: | \$2,898,364 |
| <u>Cost of purchasing monitoring equipment (58,520 firms):</u> | <u>\$25,021,396</u> |
| Total | \$39,825,860 |

The cost of laboratory analysis of the samples for the Commercial and Institutional Remodeling and Residential Remodeling projects types was assumed to be \$14 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) × (# of samples/monitoring) × (\$14/sample) = analytical cost by project type. The costs by project type 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 **\$1,902,992**.

Periodic Exposure Measurement

¹⁶ The previous ICR estimated that the annualized equipment cost per firm was \$402.23; given the 6.3% increase in the price of professional medical services as discussed previously, it was assumed that the cost of exposure monitoring equipment increased by 6.3% as well.

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 Tower Maintenance (75 work days)

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 3,316 firms engaged in the project types listed above conduct periodic monitoring over the course of a year. OSHA further estimates that there are 6,892 projects requiring periodic monitoring and 9,762 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 \$75.00 per hour. Thus, by project type, the labor cost formula is: (#of monitorings by project type) × (12 industrial hygienist labor hours/monitoring) × (\$75.00/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 \$8,785,800.

The cost laboratory analysis of the samples for these project types is \$14 per sample collected. The number of samples collected per monitoring varies by project type from 1 sample to 5 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) × (# of samples/monitoring) × (\$14/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 \$329,994.

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 \$8,785,800. The total cost of laboratory analysis for those firms contracting out their monitoring is \$329,994. Therefore, the total cost of this requirement is \$9,115,794.

Medical Surveillance (§ 1926.62 (j))

The Lead in Construction Standard requires employers to provide initial medical surveillance to any employee 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 employees 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 employee 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 employees exposed over 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 37,584 new hires each year that are exposed 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 37,584 tests are administered each year. The cost associated with one session of biological monitoring for blood-lead and zinc protoporphyrin levels is currently \$42.52.¹⁷

Cost: 37,584 tests × \$42.52 per test = \$1,598,072

Periodic Medical Surveillance

The Standard requires employers to provide more frequent biological monitoring as part of a medical surveillance program to employees who are exposed above the action level on 30 or more days per year. As described above, OSHA estimates that 50,743 workers are eligible for periodic medical surveillance on an annual basis (excluding the estimated number of part-year

¹⁷ The previous ICR estimated that the cost per test was \$402.23; given the 6.3% increase in the price of professional medical services as discussed previously, it was assumed that the cost of biological monitoring increased by 6.3% as well.

employees). 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 employee continues to be exposed above the action level for 30 or more days per year and remains employed by the employer. Thus, in the first year of employment, employees receive four sessions of biological monitoring (at months 2, 4, 6, and 12). After the first year of employment, employees are monitored semi-annually (at months 6 and 12). Because new employees receive four biological monitoring per year, OSHA calculated the annual costs associated with this requirement separately for new and existing employees.

An estimated 15,223 new hires (30 percent of 50,743 workers) receive four biological monitoring tests per year (for a total of 60,892 tests) in addition to the initial medical surveillance given once to all employees exposed above the action level on a least one day per year. One session of biological monitoring for blood-lead and zinc protoporphyrin levels costs \$42.52. The following formula calculates the annual cost of this requirement:

$$\text{Cost:} \quad 60,892 \text{ tests} \times \$42.52 \text{ per test} = \$2,589,128$$

OSHA assumes that 35,520 employees, or 70 percent of the 50,743 employees eligible to receive periodic medical surveillance, are full-year employees based on an annual turnover rate of 30 percent. Eligible full-year employees receive two biological monitoring tests for a total of 71,040 tests per year. An additional 7,611 part-year employees (15 percent or ½ of the 30 percent annual turnover rate) receive at least one of the two biological monitoring tests, since departing employees leave at an even rate throughout the year. Thus, 7,611 tests are given to part year employees.

$$\begin{aligned} \text{Cost:} \quad & (71,040 \text{ tests}) \times (\$42.52 \text{ per test}) = \$3,020,621 \\ & (7,611 \text{ tests}) \times (\$42.52 \text{ per test}) = \$323,620 \\ & \$3,020,621 + \$323,620 = \$3,344,240 \end{aligned}$$

Thus, the total annual cost of providing periodic medical surveillance to full-year and part-year employees is **\$5,933,368** (\$2,589,128 + \$3,344,240).

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 25µg/dl. Therefore, OSHA assumes that there are: no incidences of biological monitoring triggered by worker blood-lead levels in excess of 40µg/dl; no follow-up tests on workers triggered by a single blood-lead tests result in excess of 50µg/dl; and no additional testing for persons on medical removal due to a blood-lead level in excess of 50µg/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 6,264 of the 125,279, employees exposed 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. Medial examinations are estimated to cost \$197 per examination.¹⁸ This estimate covers all of the specialized testing needed including additional blood testing. The following formula calculates the cost of this requirement:

Cost: 6,264 examinations × \$197 per examination = \$1,234,008

Transfer of Records

~~The Lead in Construction Standard requires employers ceasing to do business to transfer records either to a successor employer or to the Director of NIOSH. During the previous ICR clearance, NIOSH did not receive any records from employers. For the purposes of calculating the cost associated with this requirement, OSHA estimates that one employer sends records to NIOSH each year. Employers may mail exposure or medical records to NIOSH. OSHA estimates that the cost of shipping supplies and postage is approximately \$14.20 per mailing.~~

14. **Provide estimates of annualized cost to the Federal government. Also, provide a description of the method used to estimate cost, which should include quantification of hours, operational expenses (such as equipment, overhead, printing, and support staff), and nay 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

Federal Access to Records

During programmed inspections, OSHA representatives may request to see written compliance plans, training program material, and other records required to be maintained to comply with the Lead in Construction Standard. As explained above, under the response to Item 12, OSHA assumes it will request records from 178 facilities per year. OSHA estimates that an OSHA compliance safety and health officer (CSHO), earning approximately \$39.70¹⁹ per hour, takes 10 minutes (.17 hour) to review such records during each inspection.

Cost: 178 inspections × .17 hour × \$39.70 = \$1,201

2. Federal Burden Records Transfer

~~The Lead in Construction Standard requires that if an employer ceases to do business and there is no successor to preserve and maintain the employee medical and monitoring records for the required periods of time, the records must be transmitted to NIOSH. In addition, at the expiration of the retention period for the records required to be maintained, employers must notify NIOSH at least three months prior to the disposal of such records and transmit those records to NIOSH if requested to do so.~~

¹⁸ The previous ICR estimated that the cost per medical examination was \$180; given the 6.3% increase in the price of professional medical services as discussed previously, it was assumed that the cost of medical examinations increased by 6.3% as well.

¹⁹ This rate represents the average 2008 General Schedule (GS) hourly wage rate for a compliance officer (GS-12, Step 5) in each of the 32 geographic regions as specified by the U.S. Office of Personnel Management.

The cost to the Federal government consist of the costs associated with processing records from employers who cease to do business and have no successor to preserve and maintain employee records and any costs associated with processing records requested by NIOSH after the retention period for those records has expired.

Based on the previous ICR, NIOSH did not receive any sets of records from employers covered under 1926.62. OSHA therefore assumes that the burden and cost associated with this requirement will be minimal. To allow for any future transfer of records to NIOSH during the period covered by this clearance, OSHA takes one hour for this Information Collection Request. NIOSH estimates that 15 sets of records can be processed in one hour at a cost of \$16.02 per hour. OSHA therefore assumes that the cost to the Federal government associated with this requirement will be \$16.02 (1 hour × \$16 per hour = \$16.00).

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

OSHA removed the requirement that employers transfer employee exposure-monitoring records and medical records to the National Institute for Occupational Safety and Health, specified in paragraph §1926.62(n)(6)(ii) and (iii), under the Standards Improvement Project-Phase III final rule. As a result of this rulemaking, the Agency requests a program change reduction of one hour and a program change cost savings of \$14.00.

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.

There are no forms associated with this collection of information on which to display an expiration date.

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.

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.

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.²⁰ 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 595,383 bridges in the U.S. as of December 2005, and an annual average of 1,188 new and replaced steel bridges during 2004 – 2005.²¹ Based on the total number of bridges described in the FEA (585,336 in 1990), ERG assumes that there are roughly 558 new bridges built annually in the U.S. $((595,383 - 585,336) \div 18 \text{ years})$. Therefore, the Agency assumes that 630 of the 1,188 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 will be reduced by 630 on an annual basis. **(TOTAL = 2,376 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 (21%). 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 150 $(715 \times 21\%)$. **(TOTAL = 565)**

Project Type Total: 2,376 + 565 = 2,941

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

²⁰ 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.

²¹ Source: U.S. Department of Transportation, Federal Highway Administration, National Bridge Inventory, 2005.

DOT, there was an annual average of 2,164 new, replaced and/or rehabilitated steel bridges in the U.S. during 2004 – 2005. Of these, there were an average 1,606 steel bridges rehabilitated or replaced (i.e., 2,164 – 558).²² Assuming that 79.88% of steel bridges contain LBP coatings, the Agency estimates that there are a total 1,282 bridge rehabilitation projects covered by the Standard occurring annually. (**TOTAL = 1,282 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 54% ($1,282 \div 2,376$). In particular, the FEA assumed that the number of railroad bridge rehabilitation projects with LBP is one-half that calculate for highway projects (i.e., one-half of 54%, or 27%). Therefore, the Agency estimates that there are a total of 153 railroad bridge rehabilitation projects covered by the Standard annually ($565 \times 27\%$). (**TOTAL = 153 projects**)

Project Type Total: 1,282 + 153 = 1,435

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 Plans covered by the Standard.

The Agency was unable to locate current data regarding the number of water tank repainting projects occurring each year, although discussion with the American Water Works Association (AWWA) indicates 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 repainted in the 15 years since publication ($2,238 \times 15 \text{ years} = 33,570 \text{ tanks}$).

Project Type Total: 0

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.

²² Source: U.S. Department of Transportation, Federal Highway Administration, National Bridge Inventory, 2005.

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.²³), 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 1992, the number of establishments in these industries has increased by a total of 26.6%; the Agency assumes that the number of projects performed by firms in these industries has increased by 26.6% from the FEA as well.²⁴ Thus, the agency estimates that there are a total of 78,872 lead abatement projects in private housing each year.

Project Type Total: 78,872

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.

²³ 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.

²⁴ Source: U.S. Census Bureau, 1992, 1997 and 2002 Economic Census. In 1992, there were a total of 31,920 and 25,270 establishments in SIC 1721 and 1799 respectively. In 2002, firms previously classified in SIC 1721 (1997 NAICS 235210) totaled 39,477 establishments; firms previously classified in SIC 1799 (comprised of 2% of 1997 NAICS 235210, 2% of NAICS 235920, 100% of NAICS 235990, and 27% of NAICS 562910) totaled 32,903 establishments.

The FEA assumed that the majority of the work in this field would be done by painting contractors (SIC 1721) and plastering contractors (SIC 1742). In 1992, these industries comprised 31,920 and 18,648 establishments respectively.²⁵ In 2002, these industries—1997 NAICS industries 235210 and 235420—included 39,477 and 21,712 establishments, respectively.²⁶ In total this represents an increase in the number of establishments of 21% from 1992 to 2002; the Agency assumes that the number of projects undertaken in private housing involving lead exposure will increase 21% as well.

Project Type Total: 766,660 (3,150 + 763,510)

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 2002 Economic Census, there are 2,111 wrecking and demolition contractors in the United States (2002 NAICS 235940), representing an increase in total establishments of 75.9%.²⁷ The Agency assumes that the number of demolition projects performed annually has increased by 75.9% as well. In total, the Agency estimates that there are 2,181 commercial and industrial demolition projects occurring annually resulting in worker lead exposures.

Project Type Total: 2,181

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 1992, there were a total of 68,675 establishments in those industrials assumed to be involved in industrial facility maintenance and renovation.²⁸ As discussed previously, the number of establishments in those industries formerly comprising SICs 1721 and 1799 increased by 26.6% from 1992 to 2002. Additionally, the number of establishments in industries comprising SIC 1541 decreased by 27.4%, while industries comprising SIC 1791 increased by 20.3%.²⁹ In total, the number of establishments in these industry classifications increased from 68,675 to 82,528, an increase of 20.2%. The Agency assumes that the number of projects occurring in these sectors has increased by 20.2% as well.

Project Type Total: 337 (indoor) + 1,904 (outdoor) = 2,241

²⁵ Source: U.S. Census Bureau, 1992 Economic Census.

²⁶ Source: U.S. Census Bureau, 2002 Economic Census.

²⁷ Source: U.S. Census Bureau, 2002 Economic Census.

²⁸ Source: U.S. Census Bureau, 1992 Economic Census.

²⁹ Source: U.S. Census Bureau, 1992, 1997 and 2002 Economic Census. 1992 there were 7,693 and 3,792 firms classified in SICs 1542 and 1791, respectively. In 2002, firms previously classified in SIC 1542 (comprised of 96% of 1997 NAICS 233310 and 3% of NAICS 233320) totaled 5,585 establishments; firms previously classified in SIC 1791 (1997 NAICS 235910) totaled 4,563 establishments.

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 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.³⁰ 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 2006.³¹ 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.”³² 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 primary copper smelting (NAICS 331411) and other non-ferrous metals smelting (331419) have the same frequency of servicing as the steel plants with electric arc furnaces. The number of establishments in these industries with greater than 10 employees as of 2002 was 88 (Source: County Business

³⁰ 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.

³¹ U.S. EPA. Federal Register, Volume 72, No. 182, Thursday, September 20, 2007. 53814 – 53836 (<http://www.epa.gov/fedrgstr/EPA-AIR/2007/September/Day-20/a18343.pdf>).

³² U.S. EPA. “Fact Sheet: Electric Arc Furnace NSPS Amendment.” http://www.epa.gov/ttn/oarpg/t1/fact_sheets/eaf_npsfs.pdf

Patterns Survey and U.S. Economic Census). Thus, industrial vacuuming takes place at these facilities approximately 352 times per year.

Project Type Total: 1,252

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 2002 Economic Census, there were approximately 1,641 in NAICS 327215 (Glass product manufacturing made of purchased glass, establishments formerly classified under SIC 3231)—an increase of 4.7 percent.³³ The Agency assumes that the number of firms performing stained glass window removal has increased by 4.7 percent as well. Therefore, there are approximately 109 firms performing 2,616 projects annually.

Project Type Total: 2,616

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.³⁴ 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 0.7). As of 2003, the ratio of pre-1973 buildings to total commercial building stock is 0.43.³⁵ This yields an estimated 344,430 commercial and institutional remodeling projects where LBP might be encountered.

³³ U.S. Census Bureau, 1992 and 2002 Economic Census.

³⁴ U.S. Census Bureau, 2002 Economic Census. Commercial and Institutional Building Construction, Series Report EC02-231-236220, 2002.

³⁵ U.S. Department of Energy, Energy Information Administration, Commercial Building Energy Consumption Survey (CBECS), 2003. Table B8: Year Constructed, Number of Buildings for Non-Mall Buildings, 2003. Released June 2006. [http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set3/2003pdf/b8.pdf]. The total number of buildings constructed from 1970 to 1979 was 731 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.

Project Type Total: 344,430

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 2002 Current Construction Reports, the seasonally adjusted annual rate for total expenditures on home improvements, maintenance and repairs in first quarter 2002 was \$169,900 million. This represents an increase of 41.6 percent over first quarter 1993 (the earliest for which data is available in this report).³⁶ Assuming that the adjusted average project cost has remained relatively stable, the Agency assumes a 41.6 percent increase in the total number of remodeling projects each year ($4,283,000 \times 1.416 = 6,064,728$). According to recent data, approximately 40 percent of all U.S. housing units have some lead-based paint.³⁷ Accordingly, the Agency estimates that there are 2,425,891 residential remodeling projects per year with some exposure to lead.

Project Type Total: 2,425,891

Elevator Cable Babbitting:

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

³⁶ U.S. Census Bureau, Expenditures for Residential Improvements and Repairs. Current Construction Reports, C50/02-Q1: September 2002. Table 1: Expenditures for Residential Properties: Quarterly 1993 to 2002.

³⁷ 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.

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 plumbing contractor (SIC 1711) would perform leaded water line removal three times per year. In the 2002 Census, there were 89,976 establishments in NAICS 2351 (plumbing, heating, and air conditioning contractors). Retaining the original analysis and updating based on the most recent Census data, the Agency estimates that 269,928 projects occur annually.

Project Type Total: 269,928

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