

**SUPPORTING STATEMENT FOR THE
INFORMATION COLLECTION REQUIREMENTS IN
THE CADMIUM IN GENERAL INDUSTRY STANDARD (29 CFR 1910.1027)
OFFICE OF MANAGEMENT AND BUDGET (OMB)
CONTROL NO. 1218-0185 (June 2012)**

A. JUSTIFICATION

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

The main objective of the Occupational Safety and Health Act ("OSH Act" or "Act") is to "assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources" (29 U.S.C. 651). To achieve this objective, the OSH Act specifically authorizes "the development and promulgation of occupational safety and health standards" (29 U.S.C. 651). The 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).

To protect worker health, the OSH Act authorizes the Occupational Safety and Health Administration ("OSHA" or "Agency") to develop standards that provide for "monitoring or measuring worker 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 workers exposed to such hazards . . . to most effectively determine whether the health of such workers is adversely affected by such exposure" (29 U.S.C. 655). Moreover, the Act directs the Agency to "issue regulations requiring employers to maintain accurate records of worker exposures 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 worker or former worker to have access to such records as will indicate [their] own exposure to toxic materials or harmful physical agents" (29 U.S.C. 657). 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 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).

Under the authority granted by the OSH Act, the Agency published a standard for general industry that regulates worker cadmium (Cd) exposure (§1910.1027; the "Standard"). OSHA based the Standard on a determination that occupational exposure to Cd poses a hazard to workers. This determination showed Cd exposure may cause lung cancer, prostate cancer, non-malignant respiratory disease, acute pneumonitis, fever and chest pain, severe weakness,

coughing and tightness of the chest, and kidney disease. Items 2 and 12 below list and describe the specific information collection requirements of the Standard.

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

Exposure Monitoring (§1910.1027(d))

General (§1910.1027(d)(1)(i)) - Each employer who has a workplace or work operation covered by this section shall determine if any employee may be exposed to cadmium at or above the action level.

§1910.1027(d)(1)(ii) - Determinations of employee exposure shall be made from breathing zone air samples that reflect the monitored employee's regular, daily 8-hour TWA exposure to cadmium.

§1910.1027(d)(1)(iii) - Eight-hour TWA exposures shall be determined for each employee on the basis of one or more personal breathing zone air samples reflecting full shift exposure on each shift, for each job classification, in each work area. Where several employees perform the same job tasks, in the same job classification, on the same shift, in the same work area, and the length, duration, and level of cadmium exposures are similar, an employer may sample a representative fraction of the employees instead of all employees in order to meet this requirement. In representative sampling, the employer shall sample the employee(s) expected to have the highest cadmium exposures.

Initial Monitoring (§1910.1027(d)(2)(i)) - Except as provided for in paragraphs (d)(2)(ii) and (d)(2)(iii) of this section, the employer shall monitor employee exposures and shall base initial determinations on the monitoring results.

(§1910.1027(d)(2)(ii)) - Where the employer has monitored after September 14, 1991, under conditions that in all important aspects closely resemble those currently prevailing and where that monitoring satisfies all other requirements of this section, including the accuracy and confidence levels of paragraph (d)(6) of this section, the employer may rely on such earlier monitoring results to satisfy the requirements of paragraph (d)(2)(i) of this section.

Purpose: Initial monitoring assists employers in identifying areas of operation that may require additional efforts to reduce exposure and come into compliance with the Standard. Initial monitoring results also assist employers in determining the need for engineering controls, instituting or modifying work practices, and in selecting appropriate respiratory protection to prevent workers from overexposure. This information also determines whether the employer must perform periodic monitoring.

§1910.1027(d)(2)(iii) - Where the employer has objective data, as defined in paragraph (n)(2) of this section, demonstrating that employee exposure to cadmium will not exceed the action level

under the expected conditions of processing, use, or handling, the employer may rely upon such data instead of implementing initial monitoring.

Purpose: By eliminating the need for initial monitoring, this alternative encourages employers to use operations that substantially reduce worker exposures to Cd. (See discussion of paragraph (n)(2) for additional information on using objective data.)

Monitoring Frequency (Periodic Monitoring) (§1910.1027(d)(3)(i)) - If the initial monitoring or periodic monitoring reveals employee exposures to be at or above the action level, the employer shall monitor at a frequency and pattern needed to represent the levels of exposure of employees and where exposures are above the PEL to assure the adequacy of respiratory selection and the effectiveness of engineering and work practice controls. However, such exposure monitoring shall be performed at least every six months. The employer, at a minimum, shall continue these semi-annual measurements unless and until the conditions set out in paragraph (d)(3)(ii) are met.

§1910.1027(d)(3)(ii) - If the initial monitoring or the periodic monitoring indicates that employee exposures are below the action level and that result is confirmed by the results of another monitoring taken at least seven days later, the employer may discontinue the monitoring for those employees whose exposures are represented by such monitoring.

Purpose: Periodic monitoring is necessary because relatively minor changes in tasks, work practices, and environmental conditions may affect airborne concentrations of Cd. Employers may use these monitoring results to evaluate the effectiveness of selected control methods. In addition, these measurements remind both the employer and workers of the need to protect workers against the effects of overexposure to Cd. These monitoring data also will inform the examining physician of the existence and extent of a worker's Cd exposures for use in assessing the worker's medical condition.

Additional Monitoring (§1910.1027(d)(4)) - The employer also shall institute the exposure monitoring required under paragraphs (d)(2)(i) and (d)(3) of this section whenever there has been a change in the raw materials, equipment, personnel, work practices, or finished products that may result in additional employees being exposed to cadmium at or above the action level or in employees already exposed to cadmium at or above the action level being exposed above the PEL, or whenever the employer has any reason to suspect that any other change might result in such further exposure.

Purpose: Additional monitoring ensures that the workplace is safe, or alerts the employer of the need to improve protection.

Worker Notification of Monitoring Results (§1910.1027(d)(5)(i)) - The employer must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in writing or by posting the results in an appropriate location that is accessible to employees.

§1910.1027(d)(5)(ii) - Wherever monitoring results indicate that employee exposure exceeds the PEL, the employer shall include in the written notice a statement that the PEL has been exceeded and a description of the corrective action being taken by the employer to reduce employee exposure to or below the PEL.

Purpose: This provision assures that workers receive accurate exposure data and, in addition, provides them with information regarding the specific actions the employer is taking to lower their exposures and furnish them with a safe and healthful workplace in accordance with section 8(c)(3) of the Act.

Methods of Compliance (§1910.1027(f))

Compliance Program (§1910.1027(f)(2)(i)) – Where the PEL is exceeded, the employer shall establish and implement a written compliance program to reduce employee exposure to or below the PEL by means of engineering and work practice controls, as required by paragraph (f)(1) of this section. To the extent that engineering and work practice controls cannot reduce exposures to or below the PEL, the employer shall include in the written compliance program the use of appropriate respiratory protection to achieve compliance with the PEL.

§1910.1027(f)(2)(ii) - Written compliance programs shall include at least the following:

§1910.1027(f)(2)(ii)(A) - A description of each operation in which cadmium is emitted; e.g., machinery used, material processed, controls in place, crew size, employee job responsibilities, operating procedures, and maintenance practices;

§1910.1027(f)(2)(ii)(B) - A description of the specific means that will be employed to achieve compliance, including engineering plans and studies used to determine methods selected for controlling exposure to cadmium, as well as, where necessary, the use of appropriate respiratory protection to achieve the PEL;

§1910.1027(f)(2)(ii)(C) - A report of the technology considered in meeting the PEL;

§1910.1027(f)(2)(ii)(D) - Air monitoring data that document the sources of cadmium emissions;

§1910.1027(f)(2)(ii)(E) - A detailed schedule for implementation of the program, including documentation such as copies of purchase orders for equipment, construction contracts, etc.;

§1910.1027(f)(2)(ii)(F) - A work practice program that includes items required under paragraphs (h), (i), and (j) of this section;

§1910.1027(f)(2)(ii)(G) - A written plan for emergency situations, as specified in paragraph (h) of this section; and

§1910.1027(f)(2)(ii)(H) - Other relevant information.

§1910.1027(f)(2)(iii) - The written compliance programs shall be reviewed and updated at least annually, or more often if necessary, to reflect significant changes in the employer's compliance status.

§1910.1027(f)(2)(iv) - Written compliance programs shall be provided upon request for examination and copying to affected employees, designated employee representatives as well as to the Assistant Secretary, and the Director.

Purpose: This requirement commits the employer to evaluating worker Cd exposures and establishing an organized and complete program for reducing these exposures to the PEL; it does so prior to beginning a job to prevent unnecessary exposure to Cd, and to inform workers regarding planned controls. The requirement to prepare and update the written compliance program ensures that employers continue to evaluate variable workplace conditions, including Cd exposures, and to implement feasible engineering and work-practice controls as required. The written program also assures OSHA, NIOSH, workers, and their representatives that employers are taking necessary and appropriate measures to protect workers from hazardous Cd exposures.

Respiratory Protection (§1910.1027(g))

Respiratory Program (§1910.1027(g)(2)(i)) - The employer must implement a respiratory protection program in accordance with 29 CFR 1910.134 (b) through (d) (except (d)(1)(iii)), and (f) through (m), which covers each employee required by this section to use a respirator.

Purpose: The purpose of these requirements is to ensure that employers establish a standardized procedure for selecting, using, and maintaining respirators for each workplace that requires respirator use. Developing written procedures ensures that employers implement the required respirator program in an effective and reliable manner that addresses the unique characteristics (including chemical hazards) of the workplace. The Agency accounts for the burden hours and cost resulting from the respirator-program requirements under the Information Collection Request for OSHA's Respiratory Protection Standard (§1910.134), Office of Management and Budget (OMB) Control Number 1218-0099.

Emergency Situations (§1910.1027(h)) - The employer shall develop and implement a written plan for dealing with emergency situations involving substantial releases of airborne cadmium. The plan shall include provisions for the use of appropriate respirators and personal protective equipment. In addition, employees not essential to correcting the emergency situation shall be restricted from the area and normal operations halted in that area until the emergency is abated.

Purpose: Emergency plans provide workers with information to maximize their personal protection and minimize Cd exposures under these conditions.

Protective work clothing and equipment (§1910.1027(i))

(§1910.1027(i)(2)(iv)) - The employer shall assure that bags or containers of contaminated protective clothing and equipment that are to be taken out of the change rooms or the workplace for laundering, cleaning, maintenance or disposal shall bear labels in accordance with paragraph (m)(3) of this section.

Purpose: This information allows personnel who handle Cd-contaminated protective clothing or equipment to protect themselves from the harmful effects of Cd.

Cleaning, replacement, and disposal (§1910.1027(i)(3))

Notification of Laundry Personnel (§1910.1027(i)(3)(v)) - The employer shall inform any person who launders or cleans protective clothing or equipment contaminated with cadmium of the potentially harmful effects of exposure to cadmium and that the clothing and equipment should be laundered or cleaned in a manner to effectively prevent the release of airborne cadmium in excess of the PEL.

Purpose: This information allows such personnel to protect themselves from harmful Cd exposures.

Housekeeping (§1910.1027(k))

§1910.1027(k)(7) - Waste, scrap, debris, bags, containers, personal protective equipment, and clothing contaminated with cadmium and consigned for disposal shall be collected and disposed of in sealed impermeable bags or other closed, impermeable containers. These bags and containers shall be labeled in accordance with paragraph (m)(2) of this section.

Purpose: This information allows personnel who handle these articles to protect themselves from exposure to hazardous levels of Cd.

Medical Surveillance (§1910.1027(l))

General (§1910.1027(l)(1)) - Employers must implement a medical-surveillance program for employees who are or who may be exposed to Cd at concentrations at or above the AL. However, medical surveillance is unnecessary if the employer can demonstrate that: an employee's exposure to airborne Cd at or above the AL occurs on 30 or fewer days per year (twelve consecutive months). Additionally, an employer must provide medical surveillance for an employee exposed to Cd at or above the action level by that employer prior to the effective

date. Employers are exempt from this requirement when they can demonstrate that the employee did not work in jobs with exposure to Cd for an aggregated total of more than 60 months.

Initial Examination (§1910.1027(l)(2)(i)) - The employer shall provide an initial (preplacement) examination to all employees covered by the medical surveillance program required in paragraph (l)(1)(i) of this section. The examination shall be provided to those employees within 30 days after initial assignment to a job with exposure to cadmium or no later than 90 days after the effective date of this section, whichever date is later.

§1910.1027(l)(2)(ii) - The initial (preplacement) medical examination shall include:

§1910.1027(l)(2)(ii)(A) - A detailed medical and work history, with emphasis on: past, present, and anticipated future exposure to cadmium; any history of renal, cardiovascular, respiratory, hematopoietic, reproductive, and/or musculo-skeletal system dysfunction; current usage of medication with potential nephrotoxic side-effects; and smoking history and current status; and

§1910.1027(l)(2)(ii)(B) - Biological monitoring that includes the following tests:

§1910.1027(l)(2)(ii)(B)(1) - Cadmium in urine (CdU), standardized to grams of creatinine (g/Cr);

§1910.1027(l)(2)(ii)(B)(2) - Beta-2 microglobulin in urine (B(2)-M), standardized to grams of creatinine (g/Cr), with pH specified, as described in Appendix F; and

§1910.1027(l)(2)(ii)(B)(3) - Cadmium in blood (CdB), standardized to liters of whole blood (lwb).

§1910.1027(l)(2)(iii) - Recent Examination: An initial examination is not required to be provided if adequate records show that the employee has been examined in accordance with the requirements of paragraph (l)(2)(ii) of this section within the past 12 months. In that case, such records shall be maintained as part of the employee's medical record and the prior exam shall be treated as if it were an initial examination for the purposes of paragraphs (l)(3) and (4) of this section.

Actions Triggered by Initial Biological Monitoring (§1910.1027(l)(3))

If laboratory analyses of the initial biological monitoring results show that an employee's CdU, CdB, and/or β_2 -MU exceed specified limits, this provision requires the employer to reassess an employee's Cd exposure within two weeks by evaluating the employee's work practices, personal hygiene, respirator use, smoking history and current smoking status, as well as hygiene facilities, the respirator program, and the maintenance and effectiveness of the relevant engineering controls. Within 30 days after the reassessment, employers must take reasonable steps to correct any deficiencies found in the assessment that may be responsible for the employee's excessive Cd exposure. Employers also must provide the employee with a full medical examination within

90 days of receiving the abnormal biological-monitoring results, and then conduct biological monitoring either quarterly or semi-annually and administer medical examinations either annually or semi-annually.

Purpose: The purpose of initial biological monitoring is to determine the worker's existing cadmium exposure level to facilitate the early detection of potential effects associated with cadmium exposure and to evaluate the need for continued or follow-up monitoring of workers.

Periodic Medical Surveillance (§1910.1027(l)(4))

For each employee who is covered under paragraph (l)(1)(i)(A), the employer shall provide at least the minimum level of periodic medical surveillance, which consists of periodic medical examinations and periodic biological monitoring. A periodic medical examination shall be provided within one year after the initial examination required by paragraph (l)(2) and thereafter at least biennially. Biological sampling shall be provided at least annually, either as part of a periodic medical examination or separately as periodic biological monitoring.

§1910.1027(l)(4)(ii) - The periodic medical examination shall include:

§1910.1027(l)(4)(ii)(A) - A detailed medical and work history, or update thereof, with emphasis on: past, present and anticipated future exposure to cadmium; smoking history and current status; reproductive history; current use of medications with potential nephrotoxic side-effects; any history of renal, cardiovascular, respiratory, hematopoietic, and/or musculo-skeletal system dysfunction; and as part of the medical and work history, for employees who wear respirators, questions 3-11 and 25-32 in Appendix D;

§1910.1027(l)(4)(ii)(B) - A complete physical examination with emphasis on: blood pressure, the respiratory system, and the urinary system;

§1910.1027(l)(4)(ii)(C) - A 14 inch by 17 inch, or a reasonably standard sized posterior-anterior chest X-ray (after the initial X-ray, the frequency of chest X-rays is to be determined by the examining physician);

§1910.1027(l)(4)(ii)(D) - Pulmonary function tests, including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV(1));

§1910.1027(l)(4)(ii)(E) - Biological monitoring, as required in paragraph (l)(2)(ii)(B);

§1910.1027(l)(4)(ii)(F) - Blood analysis, in addition to the analysis required under paragraph (l)(2)(ii)(B), including blood urea nitrogen, complete blood count, and serum creatinine;

§1910.1027(l)(4)(ii)(G) - Urinalysis, in addition to the analysis required under paragraph (l)(2)(ii)(B), including the determination of albumin, glucose, and total and low molecular weight proteins;

§1910.1027(l)(4)(ii)(H) - For males over 40 years old, prostate palpation, or other at least as effective diagnostic test(s); and

§1910.1027(l)(4)(ii)(I) - Any additional tests deemed appropriate by the examining physician.

Actions Triggered by Medical Examinations (§1910.1027(l)(5))

§1910.1027(l)(5)(i) - If the results of a medical examination carried out in accordance with this section indicate any laboratory or clinical finding consistent with cadmium toxicity that does not require employer action under paragraphs (l)(2), (3) or (4) of this section, the employer, within 30 days, shall reassess the employee's occupational exposure to cadmium and take the following corrective action until the physician determines they are no longer necessary:

§1910.1027(l)(5)(i)(A) - Periodically reassess: the employee's work practices and personal hygiene; the employee's respirator use, if any; the employee's smoking history and status; the respiratory protection program; the hygiene facilities; and the maintenance and effectiveness of the relevant engineering controls;

§1910.1027(l)(5)(i)(B) - Within 30 days after the reassessment, take all reasonable steps to correct the deficiencies found in the reassessment that may be responsible for the employee's excess exposure to cadmium;

§1910.1027(l)(5)(i)(C) - Provide semiannual medical reexaminations to evaluate the abnormal clinical sign(s) of cadmium toxicity until the results are normal or the employee is medically removed; and

§1910.1027(l)(5)(i)(D) - Where the results of tests for total proteins in urine are abnormal, provide a more detailed medical evaluation of the toxic effects of cadmium on the employee's renal system.

Examination for Respirator Use (§1910.1027(l)(6))

§1910.1027(l)(6)(i) - To determine an employee's fitness for respirator use, the employer shall provide a medical examination that includes the elements specified in (l)(6)(A)-(D). This examination shall be provided prior to the employee's being assigned to a job that requires the use of a respirator or no later than 90 days after this section goes into effect, whichever date is later, to any employee without a medical examination within the preceding 12 months that satisfies the requirements of this paragraph.

§1910.1027(l)(6)(i)(A) - A detailed medical and work history, or update thereof, with emphasis on: past exposure to cadmium; smoking history and current status; any history of renal, cardiovascular, respiratory, hematopoietic, and/or musculo-skeletal system

dysfunction; a description of the job for which the respirator is required; and questions 3-11 and 25-32 in Appendix D;

§1910.1027(l)(6)(i)(B) - A blood pressure test;

§1910.1027(l)(6)(i)(C) - Biological monitoring of the employee's levels of CdU, CdB and B(2)-M in accordance with the requirements of paragraph (l)(2)(ii)(B), unless such results already have been obtained within the previous 12 months; and

§1910.1027(l)(6)(i)(D) - Any other test or procedure that the examining physician deems appropriate.

§1910.1027(l)(6)(ii) - After reviewing all the information obtained from the medical examination required in paragraph (l)(6)(i) of this section, the physician shall determine whether the employee is fit to wear a respirator.

§1910.1027(l)(6)(iii) - Whenever an employee has exhibited difficulty in breathing during a respirator fit test or during use of a respirator, the employer, as soon as possible, shall provide the employee with a periodic medical examination in accordance with paragraph (l)(4)(ii) to determine the employee's fitness to wear a respirator.

§1910.1027(l)(6)(iv) - Where the results of the examination required under paragraph (l)(6)(i), (ii), or (iii) of this section are abnormal, medical limitation or prohibition of respirator use shall be considered. If the employee is allowed to wear a respirator, the employee's ability to continue to do so shall be periodically evaluated by a physician.

Emergency Examinations (§1910.1027(l)(7))

§1910.1027(l)(7)(i) - In addition to the medical surveillance required in paragraphs (l)(2)-(6) of this section, the employer shall provide a medical examination as soon as possible to any employee who may have been acutely exposed to cadmium because of an emergency.

§1910.1027(l)(7)(ii) - The examination shall include the requirements of paragraph (l)(4)(ii), with emphasis on the respiratory system, other organ systems considered appropriate by the examining physician, and symptoms of acute overexposure, as identified in Appendix A of this section in paragraphs II(B)(1)-(2) and IV.

Termination of Employment Examination (§1910.1027(l)(8)) - At termination of employment, the employer shall provide a medical examination in accordance with paragraph (l)(4)(ii) of this section, including a chest X-ray, to any employee to whom at any prior time the employer was required to provide medical surveillance under paragraphs (l)(1)(i) or (l)(7) of this section. However, if the last examination satisfied the requirements of paragraph (l)(4)(ii) of this standard and was less than six months prior to the date of termination, no further examination is required unless otherwise specified in paragraphs (l)(3) or (l)(5);

Purpose: Documentation and maintenance of the medical-examination results required by the Standard provide a continuous record of worker health. Physicians use these records to determine the extent to which workers, since their last examination, experience health effects related to Cd exposure. Additionally, if signs and symptoms of potential Cd overexposure appear, the physician often needs information about a worker's previous medical condition to make an accurate diagnosis of the presenting condition, ascertain its apparent cause, and identify a course of treatment. Medical records also permit workers to determine whether they need treatment, or to evaluate the effectiveness of their employer's exposure-reduction program.

Information Provided to the Physician (§1910.1027(l)(9)) - The employer shall provide the following information to the examining physician:

§1910.1027(l)(9)(i) - A copy of this standard and appendices;

§1910.1027(l)(9)(ii) - A description of the affected employee's former, current, and anticipated duties as they relate to the employee's occupational exposure to cadmium;

§1910.1027(l)(9)(iii) - The employee's former, current, and anticipated future levels of occupational exposure to cadmium;

§1910.1027(l)(9)(iv) - A description of any personal protective equipment, including respirators, used or to be used by the employee, including when and for how long the employee has used that equipment; and

§1910.1027(l)(9)(v) - Relevant results of previous biological monitoring and medical examinations.

Purpose: Making this information available to physicians assists them in evaluating a worker's health and fitness for specific job assignments involving Cd exposure. In the case of medical examinations administered in response to emergency exposures, the physician can use the exposure information to devise appropriate treatment.

Physician's Written Medical Opinion (§1910.1027(l)(10))

§1027(l)(10)(i) - The employer shall promptly obtain a written, medical opinion from the examining physician for each medical examination performed on each employee. This written opinion shall contain:

§1910.1027(l)(10)(i)(A) - The physician's diagnosis for the employee;

§1910.1027(l)(10)(i)(B) - The physician's opinion as to whether the employee has any detected medical condition(s) that would place the employee at increased risk of material impairment to health from further exposure to cadmium, including any indications of potential cadmium toxicity;

§1910.1027(l)(10)(i)(C) - The results of any biological or other testing or related evaluations that directly assess the employee's absorption of cadmium;

§1910.1027(l)(10)(i)(D) - Any recommended removal from, or limitation on the activities or duties of the employee or on the employee's use of personal protective equipment, such as respirators;

§1910.1027(l)(10)(i)(E) - A statement that the physician has clearly and carefully explained to the employee the results of the medical examination, including all biological monitoring results and any medical conditions related to cadmium exposure that require further evaluation or treatment, and any limitation on the employee's diet or use of medications.

§1910.1027(l)(10)(ii) - The employer promptly shall obtain a copy of the results of any biological monitoring provided by an employer to an employee independently of a medical examination under paragraphs (l)(2) and (l)(4), and, in lieu of a written medical opinion, an explanation sheet explaining those results.

§1910.1027(l)(10)(iii) - The employer shall instruct the physician not to reveal orally or in the written medical opinion given to the employer specific findings or diagnoses unrelated to occupational exposure to cadmium.

Purpose: The purpose in requiring the employer to obtain a physician's written opinion is to provide the employer with medical information to use in determining the worker's initial job assignments, and to assess the worker's ability to use protective clothing and equipment. The physician's written opinion also informs the employer about whether the worker has a condition indicating Cd overexposure; the prohibition against providing the employer with information regarding conditions unrelated to Cd exposure ensures that discussions between the physician and patient are open and candid, thereby enhancing diagnosis and treatment. The requirement that the physician's opinion be in writing ensures that the information is available for future reference. Providing workers with a copy of the physician's written opinion informs them of the medical-examination results so that they can determine the need for, and evaluate the

effectiveness of, treatments and other interventions.

Medical Removal Protection (MRP) (§1910.1027(l)(11))

General (§1910.1027(l)(11)(i)(A)) - The employer shall temporarily remove an employee from work where there is excess exposure to cadmium on each occasion that medical removal is required under paragraphs (l)(3), (l)(4), or (l)(6) of this section and on each occasion that a physician determines in a written medical opinion that the worker should be removed from such exposure. The physician's determination may be based on biological monitoring results, inability to wear a respirator, evidence of illness, other signs or symptoms of cadmium-related dysfunction or disease, or any other reason deemed medically sufficient by the physician.

§1910.1027(l)(11)(i)(B) - The employer shall medically remove an employee in accordance with paragraph (l)(11) of this section regardless of whether at the time of removal a job is available into which the removed employee may be transferred.

§1910.1027(l)(11)(i)(C) - Whenever an employee is medically removed under paragraph (l)(11) of this section, the employer shall transfer the removed employee to a job where the exposure to cadmium is within the permissible levels specified in that paragraph as soon as one becomes available.

§1910.1027(l)(11)(i)(D) - For any employee who is medically removed under the provisions of paragraph (l)(11)(i) of this section, the employer shall provide follow-up biological monitoring in accordance with (l)(2)(ii)(B) at least every three months and follow-up medical examinations semi-annually at least every six months until in a written medical opinion the examining physician determines that either the employee may be returned to his/her former job status as specified under (l)(11)(iv)-(v) or the employee must be permanently removed from excess cadmium exposure.

Purpose: Medical removal prevents medical impairments induced or exacerbated by Cd from becoming worse. In addition, medical removal allows workers who have these impairments an opportunity to recuperate and return to their former jobs.

Multiple Physician Review (§1910.1027(l)(13))

§1910.1027(l)(13)(i) - If the employer selects the initial physician to conduct any medical examination or consultation provided to an employee under this section, the employee may designate a second physician to:

§1910.1027(l)(13)(i)(A) - Review any findings, determinations, or recommendations of the initial physician; and

§1910.1027(l)(13)(i)(B) - Conduct such examinations, consultations, and laboratory tests as the second physician deems necessary to facilitate this review.

§1910.1027(l)(13)(ii) - The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician provided by the employer conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, multiple physician review upon the employee doing the following within fifteen (15) days after receipt of this notice, or receipt of the initial physician's written opinion, whichever is later:

§1910.1027(l)(13)(ii)(A) - Informing the employer that he or she intends to seek a medical opinion; and

§1910.1027(l)(13)(ii)(B) - Initiating steps to make an appointment with a second physician.

§1910.1027(l)(13)(iii) - If the findings, determinations, or recommendations of the second physician differ from those of the initial physician, then the employer and the employee shall assure that efforts are made for the two physicians to resolve any disagreement.

§1910.1027(l)(13)(iv) - If the two physicians have been unable to quickly resolve their disagreement, then the employer and the employee, through their respective physicians, shall designate a third physician to:

§1910.1027(l)(13)(iv)(A) - Review any findings, determinations, or recommendations of the other two physicians; and

§1910.1027(l)(13)(iv)(B) - Conduct such examinations, consultations, laboratory tests, and discussions with the other two physicians as the third physician deems necessary to resolve the disagreement among them.

§1910.1027(l)(13)(v) - The employer shall act consistently with the findings, determinations, and recommendations of the third physician, unless the employer and the employee reach an agreement that is consistent with the recommendations of at least one of the other two physicians.

Purpose: OSHA believes that multiple-physician review improves worker participation in an employer's medical-surveillance program, thereby increasing early detection and treatment Cd-related diseases. However, program participation is strictly voluntary on the part of workers. If the medical opinion provided by the employer's physician could result in job removal, and no opportunity exists for workers to obtain a second medical opinion, many of them would refuse to participate in the medical-surveillance program.

Information the Employer Must Provide the Employee (§1910.1027(l)(15))

§1910.1027(l)(15)(i) - The employer shall provide a copy of the physician's written medical opinion to the examined employee within two weeks after receipt thereof.

§1910.1027(l)(15)(ii) - The employer shall provide the employee with a copy of the employee's biological monitoring results and an explanation sheet explaining the results within two weeks after receipt thereof.

§1910.1027(l)(15)(iii) - Within 30 days after a request by an employee, the employer shall provide the employee with the information the employer is required to provide the examining physician under paragraph (l)(9) of this section.

Purpose: This medical information allows workers to determine the need for, and to evaluate the effectiveness of, treatments and other interventions.

Communication of Cadmium Hazards to Employees (§1910.1027(m))

Warning Signs (§1910.1027(m)(2))

§1910.1027(m)(2)(i) - Warning signs shall be provided and displayed in regulated areas. In addition, warning signs shall be posted at all approaches to regulated areas so that an employee may read the signs and take necessary protective steps before entering the area.

§1910.1027(m)(2)(ii) - Warning signs required by paragraph (m)(2)(i) of this section shall bear the following information: DANGER CADMIUM CANCER HAZARD CAN CAUSE LUNG AND KIDNEY DISEASE AUTHORIZED PERSONNEL ONLY RESPIRATORS REQUIRED IN THIS AREA.

§1910.1027(m)(2)(iii) - The employer shall assure that signs required by this paragraph are illuminated, cleaned, and maintained as necessary so that the legend is readily visible.

Purpose: Posting warning signs informs workers that they are entering a regulated area, and that they must have proper authorization before entering such an area. Warning signs allow workers and others to take the precautions necessary to avoid harmful Cd exposures; in addition, the signs supplement worker training by specifying the limits of regulated areas.

Warning Labels (§1910.1027(m)(3))

§1910.1027(m)(3)(i) - Shipping and storage containers containing cadmium, cadmium compounds, or cadmium contaminated clothing, equipment, waste, scrap, or debris shall bear appropriate warning labels, as specified in paragraph (m)(3)(ii) of this section.

§1910.1027(m)(3)(ii) - The warning labels shall include at least the following information: DANGER CONTAINS CADMIUM CANCER HAZARD AVOID CREATING DUST CAN CAUSE LUNG AND KIDNEY DISEASE.

§1910.1027(m)(3)(iii) - Where feasible, installed cadmium products shall have a visible label or other indication that cadmium is present.

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

Employee Information and Training (§1910.1027(m)(4))

§1910.1027(m)(4)(i) - The employer shall train each employee who is potentially exposed to cadmium, institute a training program, ensure employee participation in the program, and maintain a record of the contents of such program.

§1910.1027(m)(4)(ii) - Training shall be provided prior to or at the time of initial assignment to a job involving potential exposure to cadmium and at least annually thereafter.

§1910.1027(m)(4)(iii) - The employer shall make the training program understandable to the employee and shall assure that each employee is informed of the following:

§1910.1027(m)(4)(iii)(A) - The health hazards associated with cadmium exposure, with special attention to the information incorporated in Appendix A to this section;

§1910.1027(m)(4)(iii)(B) - The quantity, location, manner of use, release, and storage of cadmium in the workplace and the specific nature of operations that could result in exposure to cadmium, especially exposures above the PEL;

§1910.1027(m)(4)(iii)(C) - The engineering controls and work practices associated with the employee's job assignment;

§1910.1027(m)(4)(iii)(D) - The measures employees can take to protect themselves from exposure to cadmium, including modification of such habits as smoking and personal hygiene, and specific procedures the employer has implemented to protect employees from exposure to cadmium such as appropriate work practices, emergency procedures, and the provision of personal protective equipment;

§1910.1027(m)(4)(iii)(E) - The purpose, proper selection, fitting, proper use, and limitations of respirators and protective clothing;

§1910.1027(m)(4)(iii)(F) - The purpose and a description of the medical surveillance program required by paragraph (l) of this standard;

§1910.1027(m)(4)(iii)(G) - The contents of this section¹ and its appendices, and,

§1910.1027(m)(4)(iii)(H) - The employee's rights of access to records under 1910.1020(e) and (g).

§1910.1027(m)(4)(iv) - Additional access to information and training program and materials.

§1910.1027(m)(4)(iv)(A) - The employer shall make a copy of this section and its appendices readily available without cost to all affected employees and shall provide a copy if requested.

§1910.1027(m)(4)(iv)(B) - The employer shall provide to the Assistant Secretary or the Director, upon request, all materials relating to the employee information and the training program.

Purpose: An employer's information and training program provides workers with information on the health hazards resulting from Cd exposure and with the understanding necessary to minimize these hazards. This program serves to explain and reinforce the information presented to workers on signs, labels, and material safety data sheets; however, this information will be effective only when workers understand the information and can take the actions necessary to avoid or minimize Cd exposure. Training also enables workers to recognize operations and locations associated with Cd exposures, thereby permitting them to limit Cd exposure from these sources. Providing the program materials to OSHA ensures that employers are in compliance with the program requirements, while NIOSH may review the materials for research and other purposes.

Recordkeeping (§1910.1027(n))

Exposure Monitoring (§1910.1027(n)(1)(i)) - The employer shall establish and keep an accurate record of all air monitoring for cadmium in the workplace.

§1910.1027(n)(1)(ii) - This record shall include at least the following information:

§1910.1027(n)(1)(ii)(A) - The monitoring date, duration, and results in terms of an 8-hour TWA of each sample taken;

¹ The training program must cover the contents of the Standard, including paragraphs 1910.1027 (i), (j) and (k).

§1910.1027(n)(1)(ii)(B) - The name, social security number, and job classification of the employees monitored and of all other employees whose exposures the monitoring is intended to represent;

§1910.1027(n)(1)(ii)(C) - A description of the sampling and analytical methods used and evidence of their accuracy;

§1910.1027(n)(1)(ii)(D) - The type of respiratory protective device, if any, worn by the monitored employee;

§1910.1027(n)(1)(ii)(E) - A notation of any other conditions that might have affected the monitoring results.

§1910.1027(n)(1)(iii) - The employer shall maintain this record for at least thirty (30) years, in accordance with 29 CFR 1910.1020.

Purpose: Establishing and maintaining exposure monitoring records permit employers, workers, OSHA, and other interested parties to identify the levels, durations, and extent of cadmium exposure. Maintaining these records also assist OSHA in determining whether employers are complying with the standard, thereby ensuring that workers are receiving adequate protection from cadmium exposure.

Objective Data for Exemption from Requirement for Initial Monitoring (§1910.1027(n)(2))

§1910.1027(n)(2)(i) - For purposes of this section, objective data are information demonstrating that a particular product or material containing cadmium or a specific process, operation, or activity involving cadmium cannot release dust or fumes in concentrations at or above the action level even under the worst-case release conditions. Objective data can be obtained from an industry-wide study or from laboratory product test results from manufacturers of cadmium-containing products or materials. The data the employer uses from an industry-wide survey must be obtained under workplace conditions closely resembling the processes, types of material, control methods, work practices and environmental conditions in the employer's current operations.

§1910.1027(n)(2)(ii) - The employer shall establish and maintain a record of the objective data for at least 30 years.

Purpose: Maintaining these records allows OSHA to ascertain whether employers are complying with the Standard, thereby ensuring that workers are receiving adequate protection from Cd exposure. In addition, workers and their representatives have access to these records, thereby providing assurance that the employer's use of the objective data is reasonable.

Medical Surveillance (§1910.1027(n)(3))

§1910.1027(n)(3)(i) - The employer shall establish and maintain an accurate record for each employee covered by medical surveillance under paragraph (l)(1)(i) of this section.

§1910.1027(n)(3)(ii) - The record shall include at least the following information about the employee:

§1910.1027(n)(3)(ii)(A) - Name, social security number, and description of the duties;

§1910.1027(n)(3)(ii)(B) - A copy of the physician's written opinions and an explanation sheet for biological monitoring results;

§1910.1027(n)(3)(ii)(C) - A copy of the medical history, and the results of any physical examination and all test results that are required to be provided by this section, including biological tests, X-rays, pulmonary function tests, etc., or that have been obtained to further evaluate any condition that might be related to cadmium exposure;

§1910.1027(n)(3)(ii)(D) - The employee's medical symptoms that might be related to exposure to cadmium; and

§1910.1027(n)(3)(ii)(E) - A copy of the information provided to the physician as required by paragraph (l)(9)(ii)-(v) of this section.

§1910.1027(n)(3)(iii) - The employer shall assure that this record is maintained for the duration of employment plus thirty (30) years, in accordance with 29 CFR 1910.1020.

Purpose: These records permit employers, workers, and other interested parties (e.g., worker representatives) to assess the effectiveness of exposure controls by conducting a proper evaluation of worker health, identify the development of Cd-related diseases, determine appropriate treatment and follow-up, and assess the effectiveness of medical interventions. The prolonged retention period (i.e., duration of employment plus 30 years) is necessary because of the long latency periods associated with the manifestation of Cd-related diseases.

Availability (§1910.1027(n)(4))

§1910.1027(n)(4)(i) - Except as otherwise provided for in this section, access to all records required to be maintained by paragraphs (n)(1)-(3) of this section shall be in accordance with the provisions of 29 CFR 1910.1020.

§1910.1027(n)(4)(ii) - Within 15 days after a request, the employer shall make an employee's medical records required to be kept by paragraph (n)(3) of this section available for examination and copying to the subject employee, to designated representatives, to anyone having the specific written consent of the subject employee, and after the employee's death or incapacitation, to the employee's family members.

Purpose: Workers and their designated representatives use exposure-monitoring and medical-

surveillance records to assess worker medical status over the course of employment, to evaluate the effectiveness of the employer's exposure-reduction program, and for other reasons. Accordingly, access to these records is necessary to provide both direct and indirect improvements in the detection, treatment, and prevention of Cd-related medical effects.

Transfer of Records (§1910.1027(n)(6))

Whenever an employer ceases to do business and there is no successor employer to receive and retain records for the prescribed period or the employer intends to dispose of any records required to be preserved for at least 30 years, the employer shall comply with the requirements concerning transfer of records set forth in 29 CFR 1910.1020(h).

Purpose: Paragraph (h) of § 1910.1020 requires employers who cease to do business to transfer medical and exposure-monitoring records to the successor employer, who then must receive and maintain the records. If no successor employer is available, the employer must, at least three months before ceasing business, notify current workers who have records of their right to access these records.²

OSHA considers the employer's transfer of records to a successor employer to be usual and customary communications during the transition from one employer to a successor employer. In this regard, the employer would communicate the location of all records, including worker exposure-monitoring and medical records, at the facility to the successor employer during the transfer of business operations, as a matter of usual and customary business practice.

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

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

Employers may use electronic information technology when establishing and maintaining the required records, with the exception of training records (which require a signature). The Agency wrote the paperwork requirements of the Standard in performance-oriented language, i.e., in terms of what data to collect, not how to record the data.

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

The information collection requirements of the Standard are specific to each employer and

² Upon a thorough review of this ICR, the Agency determined that these provisions were not fully addressed in previous ICRs.

worker involved, and no other source or agency duplicates these requirements or can make the required information available to the Agency (i.e., the required information is available only from employers).

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

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

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

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

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

- **Requiring respondents to report information to the agency more often than quarterly;**
- **Requiring respondents to prepare a written response to a collection of information in fewer than 30 days after receipt of it;**
- **Requiring respondents to submit more than an original and two copies of any document;**
- **Requiring respondents to retain records, other than health, medical, government contract, grant-in-aid, or tax records, for more than three years;**
- **In connection with a statistical survey that is not designed to produce valid and reliable results that can be generalized to the universe of study;**
- **Requiring the use of a statistical data classification that has not been 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 use; or**
- **Requiring respondents to submit proprietary trade secret, or other confidential information unless the agency can demonstrate that it has instituted procedures to protect the information's confidentiality to the extent permitted by law.**

Under paragraph (d)(5) of the Standard, employers must inform workers, either individually in writing or by posting the exposure monitoring results, no later than 15 working days after obtaining the results. If these results indicate that a worker's exposures are above the PEL, the notification must state this fact and describe what corrective actions the employer is taking to

reduce the worker's exposure to or below the PEL. (In addition, under OSHA's Access to Employee Exposure and Medical Records Standard (§1910.1020), employers must maintain the exposure monitoring results for 30 years. OSHA accounts for the burden hours and costs related to the retention of these records under the Information Collection Request (ICR) for §1910.1020, OMB Control No. 1218-0065.)

Additionally, paragraph (l)(15) of the Standard requires employers to provide workers with a copy of the physician's written opinion regarding their medical examination and a copy of the worker's biological monitoring results, including a written explanation of the results, within two weeks of obtaining the 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.

As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3506(c)(2)(A)), OSHA published a notice in the *Federal Register* on March 6, 2012 (77 FR 13359, Docket No. OSHA-2012-0005) requesting public comment on its proposed extension of the information collection requirements contained in the Cadmium in General Industry Standard (29 CFR 1910.1027). This notice was part of a preclearance consultation program intended to provide those interested parties the opportunity to comment on OSHA's request for an extension by the Office of Management and Budget (OMB) of a previous approval of the information collection requirements found in the above Standard. The Agency received no comments in response to its notice to comment on this request.

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

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

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

To ensure that the personal information contained in medical records required by the Standard remains confidential, the Agency developed and implemented 29 CFR 1913.10 ("Rules of agency practice and procedure concerning OSHA access to worker medical records") to regulate

access to these records.

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

The paperwork requirements specified by the Standard do not require the 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.**
- **Provide estimates of annualized cost to respondents for the hour burdens for collections of information, identifying and using appropriate wage-rate categories.**

An overview of the exposure profile underlying the calculations of burden hours is shown in the attached Tables 1 and 2. The previous ICR update noted that this exposure profile was comprehensively updated in 1999. Because of this, the Agency based its updated estimates of the number potentially exposed workers on cadmium consumption estimates for the period from 1999 and 2010, as reported in the U.S. Geological Survey (USGS) *Mineral Commodity Summaries* (2000 and 2011), which report that U.S. domestic consumption of cadmium has decreased over 74 percent since 1999 (from 2,220 to 572 metric tons).³ The USGS reports that the percentage of cadmium consumed globally for Nickel-Cadmium (NiCd) battery production has increased in recent years, while the percentages for other traditional end uses of cadmium—specifically coatings, pigments, and stabilizers—have decreased in response to environmental

³Documents available at: <http://minerals.usgs.gov/minerals/pubs/mcs/2000/mcs2000.pdf> and <http://minerals.usgs.gov/minerals/pubs/mcs/2011/mcs2011.pdf>.

and health concerns. However, the Agency estimates a decrease in the U.S. domestic consumption of cadmium batteries.⁴

From 1999 to 2011, the Agency estimates that workers in cross-country sectors exposed at or above the action level have decreased from 55,932 to 35,926 workers and the number of workers exposed at or above the PEL in cross-country sectors has decreased from 40,279 to 24,620 workers. In the specific-industry sectors the number of workers exposed at or above the action level decreased from 15,374 to 11,072 and the number of workers exposed at or above the PEL in the specific industry sectors has decreased from 14,644 to 10,828 workers. During this period, the Agency estimates that the number of cadmium-specific industry plants decreased (from 5,052 to 4,887 plants). In addition, the Agency estimates that the number of cross-industry plants decreased (from 46,377 to 44,847), for the period from 2008 to 2011.

Additional information and discussion can be found in Tables 1 and 2. Table 3 below provides a summary of burden hour and cost estimates for the information collection requirements specified by the Standard.

BURDEN HOUR AND COST DETERMINATIONS

The Agency adopted the mean wage rates from “*National Occupational Employment and Wage Estimates, May 2010*,” U.S. Department of Labor, Bureau of Labor Statistics http://www.bls.gov/oes/current/oes_nat.htm#43-0000. Total compensation for these occupational categories includes an adjustment of 29.5 percent (*Employer Costs for Worker Compensation, September 2011*) for fringe benefits; this figure represents the average level of fringe benefits in the private sector. The costs of labor used in this analysis are, therefore, estimates of total hourly compensation. These hourly wages⁵ are:

- Supervisors \$38.31
- Non-supervisory production workers \$23.04
- Secretarial workers \$22.82
- Industrial hygienist technicians \$32.41

Exposure monitoring (§1910.1027(d))

General and Initial Monitoring (§1910.1027(d)(1) and (d)(2)(i))

⁴Although the percentage of cadmium use in batteries increased from 72 percent to 83 percent of total consumption from 1999 to 2010, because of the significant overall decrease in the U.S. domestic use of cadmium, use of batteries is estimated to have decreased over the same time period. (For additional information, see Table 1, endnote iii.)

⁵The occupational codes for these wage categories are as follows: for supervisors, 51-1011, “First-Line Supervisors of Production and Operating Workers”; for non-supervisory production workers, 51-0000, “Production Occupations”; for secretarial workers, OC 43-0000, “Office and Administrative Support Occupations”; and for industrial hygienist technicians, OC 29-2011 and 29-2012, “Medical and Clinical Laboratory Technologists.”

While some new plants (utility companies) are estimated in Table 1, it is expected that these employers, based on the experiences and objective data of others in their industry, will assume that exposures above the action level will occur for the same types of occupations, and will act accordingly in terms of performing periodic and additional monitoring, which is reflected in the estimates below. Thus, no new burden is shown for the initial determination.

Objective Data (§1910.1027(d)(2)(iii))

As noted above, new utility plants are assumed to rely on objective data of others in the industry. The number of utility plants has increased from 4,663 (estimate from the 2008 ICR) to 4,700, approximately 37 per year. OSHA estimates that a supervisor at each new facility spends one hour to gather the necessary documentation to meet the objective data requirements:

Burden hours: 37 new firms x 1 hour = 37 hours
Cost: 37 hours x \$38.31 = \$1,417

Periodic Monitoring (§1910.1027(d)(3))

Based on the data in Tables 1 and 2, OSHA estimates that 46,998 workers are exposed above the AL, and that an industrial hygiene technician can monitor 10 workers with one sample. Each sample (every six months) takes 30 minutes (0.5 hour) for an industrial hygienist technician to collect and mail to a laboratory for analysis. Thus, the estimated burden hours and cost of this provision each year are:

Burden hours: (46,998 workers ÷ 10) × 2 samples/year × 0.5 hour = 4,700 hours
Cost: 4,700 hours × \$32.41= \$152,327

Additional Monitoring (§1910.1027(d)(4))

The Agency estimates that an additional 94 monitoring samples (one percent of the 9,400 periodic monitoring samples (46,998/10 x 2 samples/year)) are performed each year by an industrial hygiene technician. The yearly burden hours and cost of this requirement are estimated as:

Burden hours: 94 monitoring samples × 0.5 hour = 47 hours
Cost: 47 hours × \$32.41= \$1,523

Employee Notification of Monitoring Results (§1910.1027(d)(5))

The Agency believes that a secretary takes five minutes (0.08 hour) to post and maintain the worker exposure-monitoring results. Each of the 4,887 specific-industry establishments involved with cadmium (see Table 1) have workers exposed above the PEL and must conduct at least semi-annual monitoring. In addition, the Agency estimates that each of the 44,847 cross-industry plants (see Table 2, footnote xi) conduct semi-annual exposure monitoring. Finally, the Agency assumes each of the 94 additional monitoring samples is in a separate plant. Thus, the annual estimated burden hours and cost for this provision are:

Burden hours: $((4,887 + 44,847) \times 2 \text{ semi-annual}) + 94) \times 0.08 \text{ hours} = 7,965$
hours
Cost: $7,965 \text{ hours} \times \$22.82 = \$181,761$

Compliance Program (§1910.1027(f)(2))

Employers must review and update their written compliance plans at least annually. The Agency estimates that a supervisor spends 1.5 hours updating the program, resulting in a yearly burden-hour and cost estimate of:

Burden hours: $4,887 \text{ plants} \times 1.5 \text{ hours} = 7,331 \text{ hours}$
Cost: $7,331 \text{ hours} \times \$38.31 = \$280,851$

For the 10 cross-industry occupations, located in 44,847 plants, a written compliance plan is required for those plants for which exposures are above the PEL. The Agency estimates that 20% of the 44,847 plants must be covered by a written compliance plan, yielding 8,969 plants. Because plants with cross-industry occupations generally have limited cadmium exposures, the compliance plan is expected to be less extensive than plans for the specific industry sector plants. Therefore, OSHA estimates that it takes only one hour to update and revise the written plan. The yearly burden-hour and cost estimates for this requirement are:

Burden hours: $8,969 \text{ plants} \times 1 \text{ hour} = 8,969 \text{ hours}$
Cost: $8,969 \text{ hours} \times \$38.31 = \$343,602$

Emergency Situations (§1910.1027(h))

OSHA believes that no substantial releases of Cd occur under emergency situations. Therefore, the Agency is assuming that this provision imposes no annual burden hours or cost on employers.

Notification of Laundry Personnel (§1910.1027(i)(3)(v))

The Agency assumes that employers change laundries infrequently; accordingly, the need to provide the specified information to those who clean and launder Cd-contaminated protective

clothing or equipment is minimal. Thus, OSHA concludes that this requirement results in no burden hours or cost to employers.

Medical Surveillance (§1910.1027(l))

Initial Examination; Actions Triggered by Initial Biological Monitoring; Periodic Medical Surveillance; Actions Triggered by Medical Examinations; Examinations for Respirator Use; Emergency Examinations; and Termination of Employment Examination (§1910.1027(l)(2) through (§1910.1027(l)(8))

The Standard requires that employers must provide at least one medical exam to the 46,998 workers who are exposed to cadmium above the AL once every two years. The Agency assumes that it will take 1.5 hours of worker time (at \$23.04 per hour) to have a medical exam (which includes 30 minutes of travel time). The annual burden hours and cost estimated for these requirements are:

Burden hours:	$46,998 \text{ workers} \div 2 \times 1.5 \text{ hours} = 35,249 \text{ hours}$
Cost:	$35,249 \text{ hours} \times \$23.04 = \$812,137$

Based on the 1992 Regulatory Impact Analysis (RIA), in conjunction with updated employment data, OSHA believes that an additional 174 medical exams are administered each year.⁶ These 174 exams cover the following areas: respirator use, emergencies, medical removal, multiple physician review, alternate physician determination, and termination of employment. The yearly burden-hour and cost estimates for these exams are:

Burden hours:	$174 \text{ examinations} \times 1.5 \text{ hours} = 261 \text{ hours}$
Cost:	$261 \text{ hours} \times \$23.04 = \$6,013$

Based on the 1992 RIA, in conjunction with the updated employment data, OSHA estimates that 2,038 biological-monitoring tests are administered each year.⁷ The 2,038 tests consist of 679 tests for each of the following: β_2 -MU, CdU, and CdB. A worker can receive all three tests in one visit to the physician. The Agency estimates that it will take 45 minutes (0.75 hour) for a worker to receive the three biological tests, including 30 minutes (0.5 hour) of worker travel time. The estimated burden hours and cost each year for these tests are:

⁶Based on data presented in Tables 1 and 2, the Agency is estimating a total decline in employment of 38.9 percent from 1999 to 2010; the Agency assumes that the total number of additional medical exams will decrease by 38.9 percent as well.

⁷As discussed in footnote 3, the Agency estimates a total decline in employment of 38.9 percent; the Agency assumes that the total number of biological monitoring tests will decrease by 38.9 percent as well.

Burden hours: $2,038 \div 3 \text{ tests per visit} \times 0.75 \text{ hour} = 509 \text{ hours}$
Cost: $509 \text{ hours} \times \$23.04 = \$11,727$

Information Provided to Physician (§1910.1027(l)(9))

The Agency assumes that employers provide the required information to the physician prior to each medical examination and biological-monitoring collection (i.e., urine and blood collections combined). Therefore, employers must provide this information before the total 24,352 medical examinations and biological tests (23,499 annual examinations + 174 additional medical examinations + 679 worker visits for 3 biological tests). Assuming that a secretary requires five minutes (0.08 hour) to compile and send the information to the physician prior to each administration, and to maintain the information, the annual burden-hour and cost estimates for this paperwork requirement are:

Burden hours: $24,352 \text{ administrations} \times 0.08 \text{ hour} = 1,948 \text{ hours}$
Cost: $1,948 \text{ hours} \times \$22.82 = \$44,453$

Physician's Written Medical Opinion (§1910.1027(l)(10))

OSHA assumes that the physician writes an opinion for each medical examination and one opinion for the biological-monitoring tests administered (for a total of 24,352 written opinions annually), and that a secretary takes five minutes (0.08 hour) to distribute a written opinion to a worker and maintain the record. The estimated yearly burden hours and costs of this requirement are:

Burden hours: $24,352 \text{ written opinions} \times 0.08 \text{ hour} = 1,948 \text{ hours}$
Cost: $1,948 \text{ hours} \times \$22.82 = \$44,453$

Communication of Cadmium Hazards to Employee (§1910.1027(m))

Warning Signs and Labels (§1910.1027(m)(2) and (m)(3))

The Standard provides specific language for the required signs and labels, therefore, the Agency is exempted from estimating the burden hours and costs of this provision under 5 CFR 1320.3(c) (2) (“Controlling paperwork burden on the public”).

Employee Information and Training (§1910.1027(m)(4))

The Standard requires annual training for all 262,932 potentially exposed workers. This includes 47,751 workers in the specific-industry sectors, and 215,181 workers in the cross-industry

occupations.⁸ OSHA estimates that, for each session, the supervisor requires 15 minutes (0.25 hour) to prepare the training material and 45 minutes (0.75 hour) to deliver it to 20 workers, for a total of one hour. In addition, based on the decrease in the number of total plants in specific-industry sectors (see Table 1), the Agency estimates there are no new plants that must develop a training program. In addition, based on the increase in the number of total plants in [Specific Industry Sectors] Table 1, the Agency estimates there are 37 new plants that must develop a training program. The Agency estimates that it takes 1 hour for each new plant to develop the necessary training program and initial materials. The annual burden hours and cost estimated for this training are:

Burden hours: $(262,932 \text{ workers} \div 20) + (37 \text{ new plants}) \times 1 \text{ hour} = 13,184 \text{ hours}$

Cost: $13,184 \text{ hours} \times \$38.31 = \$505,079$

Recordkeeping (§1910.1027(n))

Exposure Monitoring (§1910.1027(n)(1))

The Agency assigned the burden hours and costs of this recordkeeping requirement to paragraph (d)(5) (see “Employee Notification of Monitoring Results (§1910.1027(d)(5)” above)).

Objective Data for Exemption from Requirement for Initial Monitoring (§1910.1027(n)(2))

The Agency assumes that the burden is minimal for employers to maintain objective data once the data has been developed. Burden for employers to develop such data is accounted for under “Objective Data (§1910.1027(d)(2)(iii).”

Medical Surveillance (§1910.1027(n)(3))

The Agency assigned the burden hours and cost of this recordkeeping requirement to paragraphs (l)(9) and (l)(10). (See “Information Provided to Physician (§1910.1027(l)(9))” and “Physician's Written Opinion (§ 1910.1027(l)(10)” above.)

Availability (§1910.1027(n)(4))

The Agency estimates that OSHA compliance officers will conduct 696 inspections annually at facilities covered by the Standard, and that they will request all required records while at each

⁸The previous ICR noted that this data was “[b]ased on data from the RIA, in conjunction with the updated employment data for 1999.” These figures were estimated using the previous ICR figures for exposed employees in the specific industries (55,654) and exposed employees in the cross-industry (250,793), and multiplying by the percentage decline in employment from 2007 to 2010 (-14.2%).

site.⁹ OSHA believes that a supervisor spends five minutes (0.08 hour) during each inspection informing a compliance office about the location of these records, for a total of 56 hours (i.e., 696 inspections × 0.08 hour). In addition, the Agency assumes that 10% (26,293) of the 262,932 workers potentially exposed to Cd request to see their records each year.¹⁰ OSHA estimates that a secretary requires five minutes (0.08 hour) to make these records available to each worker, for a total of 2,103 hours (i.e., 26,293 workers × 0.08 hour). Therefore, the estimated annual burden hours and cost for this requirement are:

Burden hours:	56 hours (for inspections) + 2,103 hours (for workers) = 2,159 hours
Cost:	(56 hours × \$38.31) + (2,103 hours × \$22.82) = \$50,135

⁹The Agency estimated the number of inspections by determining the inspection rate (1.4%) for all facilities under the jurisdiction of the OSH Act (including both Federal OSHA and approved state-plan agencies), and then multiplied the total number of facilities covered by the Standard (49,734) by this percentage (i.e., 49,734 facilities × 1.4% = 696 inspections).

¹⁰This figure includes parties acting on an employee's behalf (i.e., their designated representatives, parties with the employee's written consent, and family members).

Table 1. Exposure Profile for Cadmium: Specific Industry Sectors

Specific-Industry Sector[i]	1999 Estimates			2010 Estimates		
	# Plants	Total EEs ≥ AL	Only those EEs ≥ PEL	# Plants [ii]	Total EEs ≥ AL	Only those EEs ≥ PEL
<i>NiCd Batteries[iii]</i>	4	1,032	826	1	307	245
<i>Zn/Cd Refining[iv]</i>	5	1,294	1,035	3	647	518
Pigments[v]	4	99	80	1	16	13
Stabilizers[vi]	4	141	113	1	7	6
Lead Smelting/Refining[vii]	4	354	354	3	303	303
Platers[viii]	436	327	109	98	74	25
Utilities[ix]	4,501	4,220	4,220	4,700	4,059	4,059
<i>Iron & Steel[x]</i>	95	7,907	7,907	80	5,659	5,659
Total	5,052	15,374	14,644	4,887	11,072	10,828

[i] Those industries that have at least one plant with slightly different requirements due to a legal settlement agreement have been marked in italics.

[ii] Unless otherwise noted, the Agency was unable to locate updated information regarding the number of plants covered by the Standard. As such, previous estimates have been adjusted by the same proportion the number of workers changed from 1999 to 2010. (Because the estimated number of stabilizer establishments is less than 1, it was rounded to 1.)

[iii] The Agency estimates that cadmium consumption for batteries decreased by 70.3 percent from 1999 to 2010; the Agency assumes that the number of exposed workers has decreased by 70.3 percent as well. (USGS reports that of total cadmium consumption in 1999 (estimated at 2,220 tons), 72 percent was for batteries (estimated at 1,598.4 tons). It is assumed that of total cadmium consumption in 2010 (572 tons), 83 percent was for batteries (estimated at 474.76 tons) – the same percentage as for the year 2008, which is the latest data available. Therefore, the 70.3 percent decrease was calculated as follows: $(1,598.4 - 474.76 / 1,598.4)$. (Sources: <http://minerals.usgs.gov/minerals/pubs/mcs/2000/mcs2000.pdf>, <http://minerals.usgs.gov/minerals/pubs/mcs/2008/mcs2008.pdf>, <http://minerals.usgs.gov/minerals/pubs/mcs/2009/mcs2009.pdf>, <http://minerals.usgs.gov/minerals/pubs/mcs/2011/mcs2011.pdf>.)

[iv] USGS reports three companies in the United States produced refined cadmium in 2010. Cadmium production in the U.S. decreased by 63.9 percent from 1999 to 2010 while zinc production fluctuated slightly but remained relatively stable; because the Agency is unable to determine what percentage of potentially exposed workers are engaged in zinc or cadmium refining, the Agency assumes that the number of exposed workers has decreased by 50 percent. (Source: <http://minerals.usgs.gov/minerals/pubs/mcs/2000/mcs2000.pdf> and <http://minerals.usgs.gov/minerals/pubs/mcs/2011/mcs2011.pdf>.)

[v] The Agency estimates that cadmium consumption for pigments decreased by 84.1 percent from 1999 to 2010; the Agency assumes that the number of exposed workers has decreased by 84.1 percent as well. (USGS reports that of total cadmium consumption in 1999 (estimated at 2,220 tons), 13 percent was for pigments (estimated at 288.6 tons). It is assumed that of total cadmium consumption in 2010 (572 tons), 8 percent was for pigments (estimated at 45.8 tons) – the same percentage as for the year 2008, which is the latest data available. Therefore, the 84.1 percent

decrease was calculated as follows: $(288.6 - 45.8) / 288.6$. (Sources: Same as endnote iii, above.)

[vi] USGS reports that cadmium consumption for use in stabilizers for plastics declined 95 percent from 1999 to 2010 (from an estimated 133.2 tons to 6.9 tons). The Agency assumes that the number of exposed workers has decreased by 95 percent as well. (Source: <http://minerals.usgs.gov/minerals/pubs/mcs/2000/mcs2000.pdf> and <http://minerals.usgs.gov/minerals/pubs/mcs/2011/mcs2011.pdf>.)

[vii] USGS reports that estimated employment at primary and secondary lead smelters and refineries decreased 14.4 percent from 1999 to 2010 (from an estimated 2,150 to 1,840 workers). The Agency assumes that the number of exposed workers has decreased by 14.4 percent as well. (Source: <http://minerals.usgs.gov/minerals/pubs/mcs/2000/mcs2000.pdf> and <http://minerals.usgs.gov/minerals/pubs/mcs/2011/mcs2011.pdf>.)

[viii] USGS reports that cadmium consumption for use in coatings and plating decreased by 77.5 percent from 1999 to 2010 (from 177.6 tons to 40.04 tons). The Agency assumes that the number of plants and exposed workers has decreased by 77.5 percent as well. (Source: <http://minerals.usgs.gov/minerals/pubs/mcs/2000/mcs2000.pdf> and <http://minerals.usgs.gov/minerals/pubs/mcs/2011/mcs2011.pdf>.)

[ix] U.S. Census Bureau, County Business Patterns Survey reports that the total number of workers employed in NAICS 221 has decreased 3.8 percent from 1999 to 2009, while the total number of establishments has increased by 4.4 percent. The Agency assumes that the number of exposed workers and plants has decreased by 3.8 percent and increased by 4.4 percent, respectively.

[x] US Census Bureau, County Business Patterns Survey reports that the total number of workers employed in NAICS 331111 has declined 28.43 percent from 1999 to 2009, while the total number of establishments has decreased 15.8 percent over the same time period. The Agency assumes that the number of exposed workers has decreased 28.43 percent as well, while the number of plants has decreased 15.8 percent.

Table 2. Exposure Profile for Cadmium: Cross-Industry Occupations [xi]

Cross-Industry Occupations	1999 Estimates		2010 Estimates	
	# EEs ≥ AL	# EEs ≥ PEL	# EEs ≥ AL	# EEs ≥ PEL
Chemical Mixers[xii]	7,978	5,318	2,056	1,370
Electroplaters[xiii]	670	335	151	76
Furnace Operators[xiv]	2,572	1,714	2,022	1,347
Kiln/Kettle Operators[xv]	123	123	77	77
Heat Treaters[xvi]	811	581	409	293
Equipment Cleaners	97	39	97	39
Metal Machining[xvii]	8,941	8,941	4,669	4,669
Painters[xviii]	5,140	3,427	815	543
Repair/Utilities[xix]	15,075	5,276	14,498	5,074
Weld/Braze/Solderers[xx]	14,525	14,525	11,132	11,132
Total	55,932	40,279	35,926	24,620

[xi] The previous ICR stated that “[f]or the ten cross-industry occupations, 48,109 plants, spread across 88 SIC codes, are estimated to use cadmium.” Given the overall decline in cadmium consumption and 3.3 percent decrease in the number of plants estimated in Table 1, the Agency estimates that for the ten cross-industry occupations, the number of plants using cadmium, estimated in the previous ICR to be 46,377, has declined by 3.3 percent as well to 44,847.

[xii] Given the overall 74.2 percent decrease in cadmium consumption from 1999 to 2010, the Agency assumes that the number of exposed chemical mixers has declined 74.2 percent as well. (Source: <http://minerals.usgs.gov/minerals/pubs/mcs/2000/mcs2000.pdf> and <http://minerals.usgs.gov/minerals/pubs/mcs/2011/mcs2011.pdf>.)

[xiii] As described above in endnote 8, the consumption of cadmium for use in coating and plating decreased by 77.5 percent from 1999 to 2010. The Agency assumes that the number of electroplaters exposed to cadmium declined by 77.5 percent as well. (Source: <http://minerals.usgs.gov/minerals/pubs/mcs/2000/mcs2000.pdf> and <http://minerals.usgs.gov/minerals/pubs/mcs/2011/mcs2011.pdf>.)

[xiv] According to the BLS Occupational Employment Statistics Program (OES), National Occupational Employment and Wage Estimates, total employment for metal-refining furnace operators and tenders (SOC 51-4051) decreased by 21.4 percent from 1999 to 2010. The Agency assumes that the total number of exposed workers in this occupational category has declined by 21.4 percent as well.

[xv] According to BLS’ OES, total employment for furnace, kiln, oven, drier, and kettle operators and tenders (SOC 51-9051) decreased by 37.7 percent from 1999 to 2010. The Agency assumes that the total number of exposed workers in this occupational category has declined by 37.7 percent as well.

[xvi] According to BLS' OES, total employment for "heat treating equipment setters, operators, and tenders, metal and plastic" (SOC 51-4191) decreased by 49.6 percent from 1999 to 2010. The Agency assumes that the total number of exposed workers in this occupation category has declined by 49.6 percent as well.

[xvii] According to BLS' OES, total employment in machine operating, setting, and tending occupations (SOC 51-4021 through 51-4035) decreased by 47.8 percent from 1999 to 2010. The Agency assumes that the total number of exposed workers in this occupational category has declined by 47.8 percent as well.

[xviii] Given the 84.1 percent decline in cadmium consumption for pigments from 1999 to 2010 as discussed in endnote 5, the Agency assumes that the total number of exposed workers in this occupational category has declined 84.1 percent as well.

[xix] As discussed in endnote 9, the total number of workers employed in NAICS 221 has decreased 3.8 percent from 1999 to 2009. The Agency assumes that the number of exposed workers has decreased 3.8 percent as well.

[xx] According to BLS' OES, total employment in SOC 51-4121 (Welders, Cutters, Solderers, and Brazers) has decreased by 23.4 percent from 1999 to 2010. The Agency assumes that the total number of exposed workers in this occupational category has declined by 23.4 percent as well.

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

- The cost estimate should be split into two components: (a) a total capital and start-up cost component (annualized over its expected useful life); and (b) a total operation and maintenance and purchase of service 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 respondent (fewer than 10), utilize the 60-day pre-OMB submission public comment process and use existing economic or regulatory impact analysis associated with the rulemaking containing the information collection, as appropriate.

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

Capital Cost Determinations

In determining the capital cost of these paperwork requirements, OSHA used the information and data from Item 12 above. From these determinations, the Agency estimates that the total capital cost of these requirements is \$4,799,475.

(A) Exposure Monitoring

Based on information from OSHA's Technical Center in Salt Lake City, the cost for a laboratory to analyze air-monitoring samples for Cd is approximately \$29 per sample. According to the information provided under "Exposure Monitoring (§1910.1027(d))" above, employers collect 4,700 representative exposure-monitoring samples twice a year, for a total of 9,400 samples, as well as an additional 94 exposure-monitoring samples annually. The capital cost each year associated with obtaining these exposure-monitoring samples is:

$$\text{Cost:} \quad (9,400 \text{ samples} + 94 \text{ samples}) \times \$29 = \$275,326$$

(B) Medical Surveillance

The cost for the medical exam required by the Standard is estimated to be \$189 per exam.¹¹ For biological testing, costs are as follows: β_2 -MU - \$64; CdU - \$29; and CdB - \$29.¹² According to “Medical Surveillance (§1910.1027(l))” above, employers provide 23,499 annual medical examinations, 174 additional medical examinations, and analyze 2,037 biological-monitoring samples for CdU, CdB, and β_2 -MU.¹³ The yearly capital cost of the medical-surveillance requirements is:

$$\text{Cost: } (23,499 \text{ medical examinations} \times \$189) + (679 \text{ CdU samples} \times \$29) + (679 \text{ CdB samples} \times \$29) + (679 \beta_2\text{-MU samples} \times \$64) = \$4,524,149$$

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

COSTS TO FEDERAL GOVERNMENT

The Federal government may incur costs from paragraph (n)(5) of the Standard. Paragraph (n)(5) specifies that employers must make all required records available to OSHA for inspection. In fulfilling its enforcement responsibilities under paragraph (n)(5), the Agency estimates that a compliance officer (GS-12, step 5), at an hourly wage rate of \$39.50, spends about 10 minutes (.17 hour) during an inspection reviewing the written records required by the Standard.¹⁴ According to footnote 7 above, OSHA believes that its compliance officers conduct 696 such inspections annually. The Agency considers other expenses, such as equipment, overhead, and support staff salaries, as normal operating expenses that would occur without the collection-of-information requirements specified by the Standard. Therefore, the total cost of these paperwork requirements to the Federal government is:

¹¹The previous ICR update estimated that the cost for a medical examination was \$159 per exam, including \$45 for a medical history and physical, \$84 for a chest x-ray, and \$30 for a pulmonary function test. The Consumer Price Index (CPI) indicated a 16.5% increase in the price of professional medical services from 2005 to 2010; given the 16.5% increase in the price of professional medical services, it was assumed that the cost of medical examinations increased by 16.5% as well.

¹²The previous ICR update estimated the cost of biological testing as follows: β_2 -MU - \$55; CdU - \$25; and CdB - \$25. Given the 16.5% increase in the price of professional medical services discussed in footnote 14, the Agency assumed that the price of biological testing increased by 16.5% as well.

¹³While the information under “Medical Surveillance (§1910.1027(l))” indicates that employers perform 679 urine collections and blood collections annually, laboratories divide the urine collections into two parts for analyzing CdU and β_2 -MU separately; the resulting 1,584 urine samples, when added to 679 blood samples, result in a total of 2,038 biological-monitoring samples.

¹⁴This rate represents the average 2012 General Schedule (GS) hourly wage rate for a compliance officer (GS-12, Step 5) in each of the 33 geographic regions as specified by the U.S. Office of Personnel Management.

Cost: 696 inspections × .17 hour × \$39.50 = \$4,674

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

OSHA is requesting an adjustment decrease in the burden hours of these paperwork requirements from 91,033 to 84,307 hours, for a total decrease of 6,726 hours. The reduction is the result of the estimated decrease of exposed workers and reduction in the number of plants in cross-industry and specific-industry sectors.

The Agency was able to update the 1999 industry profile data with updated estimates of the number potentially exposed workers based on cadmium consumption estimates in 1999 and 2010, as reported in the U.S. Geological Survey (USGS) *Mineral Commodity Summaries*, which reports that U.S. domestic consumption of cadmium has decreased over 74 percent since 1999 (from 2,220 to 572 metric tons).

Although the Agency estimates a decrease of exposed workers and a reduction in the number of plants, the operation and maintenance costs have increased from \$4,644,185 to \$4,799,475, a total increase of \$155,290, due to increased costs for exposure monitoring sampling and medical exams.

16. For collections 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 information, completion of report, publication dates, and other actions.

OSHA will not publish the information collected under the Standard.

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

No forms are available for the Agency to display the expiration date.

18. Explain each exception to the certification statement.

OSHA is not requesting an exception to the certification statement.

Table 3 – Summary of Annual Burden Hour and Cost Estimates

Information Collection Requirement	Responses	Current Burden Hours	Requested Burden Hours	Change in Burden Hours	Estimated Cost
Exposure Monitoring					
Initial Monitoring	0	0	0	0	0
Objective Data	37	0	37	37	\$1,417
Monitoring Frequency (Periodic Monitoring)	9,400	5,086	4,700	-386	\$152,327
Additional Monitoring	94	51	47	-4	\$1,523
Employee Notification of Monitoring Results	99,562	8,208	7,965	-243	\$181,761
Compliance Program	13,856	16,583	16,300	-283	\$624,453
Emergency Situations	0	0	0	0	0
Notification of Laundry Personnel	0	0	0	0	0
Medical Surveillance					
Initial Examination; Actions Triggerred by Initial Biological Monitoring; Periodic Medical Surveillance; Actions Triggerred by Medical Examinations; Examinations for Respirator Use; Emergency Examinations; and Termination of Employment Examination	24,352	39,046	36,019	-3,027	\$829,877
Information Provided to Physician	24,352	2,114	1,948	-166	\$44,453
Physician's Written Medical Opinion	24,352	2,114	1,948	-166	\$44,453
Communication of Cd Hazards to Employees					
Warning Signs and Warning Labels	0	0	0	0	0
Employee Information and Training	13,184	15,322	13,184	-2,138	\$505,079
Recordkeeping					
Exposure Monitoring	0	0	0	0	0
Objective Data	0	0	0	0	0
Medical Surveillance	0	0	0	0	0
Availability	26,989	2,509	2,159	-350	\$50,135
Transfer of Records	0	0	0	0	0
TOTAL	236,177	91,033	84,307	-6,726	2,435,478

B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS.

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