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DEPARTMENT OF LABOR

Occupational Safety and Health Administration

29 CFR Parts 1915 and 1926

[Docket No. OSHA–H005C–2006–0870]

RIN 1218–AD21

Occupational Exposure to Beryllium and Beryllium Compounds in Construction and Shipyard Sectors

AGENCY: Occupational Safety and Health Administration (OSHA), Labor.

ACTION: Final rule.

SUMMARY: OSHA is finalizing the proposed rule on occupational exposure to beryllium and beryllium compounds in construction and shipyards by delaying the compliance deadlines for nearly all provisions of the standards to [INSERT DATE ONE YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. The one exception to the [INSERT DATE ONE YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER] compliance deadline is for the permissible exposure limit (PEL) and the short-term exposure limit (STEL), which OSHA has been enforcing since May 11, 2018. This rule confirms that the exposure limits remain in effect. OSHA is not adopting the portion of the proposed rule that would have revised OSHA's existing beryllium standards for construction and shipyards to revoke the ancillary provisions. OSHA finds that other OSHA standards do not duplicate the requirements of the ancillary provisions in the beryllium standards for construction and shipyards in their entirety. Thus revoking all of the ancillary provisions and leaving only the PEL and STEL would be inconsistent with OSHA's statutory mandate to protect workers from the demonstrated

significant risks of material impairment of health resulting from exposure to beryllium and beryllium compounds. OSHA will publish a new proposal for the construction and shipyards beryllium standards, to seek comment on different changes OSHA is considering.

DATES: This rule is effective [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: For purposes of 28 U.S.C. 2112(a), OSHA designates Edmund C. Baird, Associate Solicitor of Labor for Occupational Safety and Health, to receive petitions for review of the final rule. Contact the Associate Solicitor at the Office of the Solicitor, Room S-4004, U.S. Department of Labor, 200 Constitution Avenue NW, Washington, DC 20210; telephone: (202) 693-5445.

Copies of this Federal Register document and news releases: Electronic copies of these documents are available at OSHA's webpage at *https://www.osha.gov*.

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SUPPLEMENTARY INFORMATION:

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Citation Method:

In the docket for the beryllium rulemaking, found at *http://www.regulations.gov*, every submission was assigned a document identification (ID) number that consists of the docket number (OSHA-H005C-2006-0870) followed by an additional four-digit number. For example, the document ID number for OSHA's Preliminary Economic Analysis and Initial Regulatory Flexibility Analysis is OSHA-H005C-2006-0870-0426. Some document ID numbers include one or more attachments (see, e.g., Document ID OSHA-H005C-2006-0870-2142).

When citing exhibits in the docket, OSHA includes the term "Document ID" followed by the last four digits of the document ID number, the attachment number or other attachment identifier, if necessary for clarity, and page numbers (designated "p." or

"Tr." for pages from a hearing transcript). In a citation that contains two or more document ID numbers, the document ID numbers are separated by semicolons.

I. Executive Summary

On June 27, 2017, OSHA published a proposed rule on Occupational Exposure to Beryllium and Beryllium Compounds in Construction and Shipyards (82 FR 29182). In it, OSHA proposed revoking the ancillary provisions in the beryllium standards for construction (29 CFR 1926.1124) and shipyards (29 CFR 1915.1024), while retaining the PEL of 0.2 ug/m^3 and the STEL of 2.0 ug/m^3. The basis for the proposal was that other OSHA standards apply to the primary operations in which exposures to beryllium occur in construction (abrasive blasting) and shipyards (abrasive blasting and welding), and that those other standards might adequately protect workers from exposure to beryllium in those operations. OSHA asked for comment on whether such an approach would provide adequate protection, and whether OSHA should retain any or all of the ancillary provisions (82 FR at 29183). OSHA also requested comment on whether OSHA should retain the medical surveillance provisions in particular (82 FR at 29183). Finally, OSHA stated that it was considering extending the compliance dates for the construction and shipyards standards for a year in order to "give affected employers additional time to come into compliance with its requirements, which could be warranted by the uncertainty created by this proposal" (82 FR at 29183).

OSHA has decided not to proceed with the proposed revocation of the construction and shipyards standards' ancillary provisions. As discussed herein, the agency has determined that there is not complete overlap in protections between the standards' ancillary provisions and other OSHA standards. Therefore, because of its

statutory responsibility to protect workers who face significant risk of material impairment of health from beryllium exposure, the agency cannot issue a final rule revoking all of the ancillary provisions in the standards. To the extent there is overlap between specific requirements within the ancillary provisions and other OSHA standards, OSHA will account for that overlap in the new proposal. In that rulemaking, OSHA will provide the public with notice of the more limited changes the agency believes may be appropriate, either because there is some measure of overlap with other OSHA standards or for separate reasons, such as to make the standards more consistent with the changes OSHA has made, or proposed to make, to the general industry standard for beryllium (see 83 FR 31045; 83 FR 63746) in the period since OSHA issued the construction and shipyards proposal in June 2017.

After careful consideration of the comments and information received in response to the proposal, OSHA is delaying the compliance dates for all ancillary provisions of the construction and shipyards standards for beryllium until [INSERT DATE ONE YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. This final rule has no effect on compliance with the PEL and STEL requirements of the standards, which have been enforced since May 2018. OSHA's decision to delay compliance obligations for the ancillary provisions reflects the agency's determination that it would be unreasonable to expect employers to comply by the dates in the 2017 final rule given the agency's decisions to retain all ancillary provisions in this final rule and proceed with a separate rulemaking to propose different amendments to the standards. The uncertainty inherent in this regulatory posture makes additional time essential. Requiring compliance with the 2017 final rule, or even requiring employers to expend time and money to

determine how to comply with the 2017 final rule, would make little sense when the standards may ultimately be amended via the forthcoming rulemaking.

II. Pertinent Legal Authority

The purpose of the Occupational Safety and Health Act of 1970 ("the OSH Act" or "the Act"), 29 U.S.C. 651 et al., 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(b)). To achieve this goal, Congress authorized the Secretary of Labor to promulgate occupational safety and health standards pursuant to notice and comment (see 29 U.S.C. 655(b)).

An occupational safety or health standard is a standard "which requires conditions, or the adoption or use of one or more practices, means, methods, operations, or processes, reasonably necessary or appropriate to provide safe or healthful employment and places of employment" (29 U.S.C. 652(8)). The Act provides that in promulgating health standards dealing with toxic materials or harmful physical agents, such as the January 9, 2017, final rule regulating occupational exposure to beryllium, the Secretary must set the standard which most adequately assures, to the extent feasible, on the basis of the best available evidence that no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life (29 U.S.C. 655(b)(5)).

The Supreme Court has held that before the Secretary can promulgate any permanent health or safety standard, he must make a threshold finding that significant risk is present and that such risk can be eliminated or lessened by a change in practices (see *Industrial Union Dept., AFL-CIO v. Am. Petroleum Inst.*, 448 U.S. 607, 641-42

(1980) (plurality opinion) ("*Benzene*")). Thus, section 6(b)(5) of the Act requires health standards to reduce significant risk to the extent feasible (see id.).

The Court further observed that what constitutes "significant risk" is "not a mathematical straitjacket" and must be "based largely on policy considerations" (Id. at 655, 655 n.62). OSHA retains:

> great discretion . . . under Section 3(8) [of the Act], especially in an area where scientific certainty is impossible. In the first instance, it is the agency itself that determines the existence of a "significant" risk . . . . In making the difficult judgment as to what level of harm is unacceptable, the agency may rely on its own sound "considerations of policy" as well as hard factual data . . . .

(*United Steelworkers v. Marshall*, 647 F.2d 1189, 1248 (D.C. Cir. 1980) ("*Lead I*") (internal citations omitted)). When evaluating such considerations, OSHA exercises its discretion and its "delegated power to make within certain limits decisions that Congress normally makes itself" (*Industrial Union Dept., AFL-CIO v. Hodgson*, 499 F.2d 467, 475 (D.C. Cir. 1974)). Accordingly, OSHA's discretionary authority under the Act is broad (see *Lead I*, 647 F.2d at 1230). Indeed, a number of terms of the statute give OSHA wide discretion to devise means to achieve the congressionally mandated goal of ensuring worker safety and health (Id.). Once OSHA makes its significant risk finding, the standard must be "reasonably necessary or appropriate" to reduce or eliminate that risk within the meaning of section 3(8) of the Act, 29 U.S.C. 652(8), and *Benzene*, 448 U.S. at 642 (see *Bldg. and Constr. Trades Dep't v. Brock*, 838 F.2d 1258, 1269 (D.C. Cir. 1988) ("*Asbestos II*")). In choosing among regulatory alternatives, however, "[t]he determination that [one standard] is appropriate, as opposed to a marginally [more or less protective] standard, is a technical decision entrusted to the expertise of the agency" (*Nat'l Mining Ass'n v. Mine Safety and Health Admin*., 116 F.3d 520, 528 (D.C. Cir.

1997) (analyzing a Mine Safety and Health Administration standard under the *Benzene* significant risk standard)). Where there is significant risk below the PEL, OSHA should use its regulatory authority to impose additional requirements on employers when those requirements will result in a greater than de minimis incremental benefit to workers' health (see *Asbestos II*, 838 F.2d at 1274).

The Act also authorizes the Secretary to modify any occupational safety or health standard. 29 U.S.C. 655(b). The Supreme Court has acknowledged that regulatory agencies do not establish rules of conduct to last forever, and agencies may revise their rules if supported by a reasoned analysis for the change (see *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 42 (1983)). While "it may be easier for an agency to justify a deregulatory action, the direction in which an agency chooses to move does not alter the standard of judicial review established by law" (Id. at 43).

OSHA is required to set standards "on the basis of the best available evidence," 29 U.S.C. 655(b)(5), and its determinations are "conclusive" if supported by "substantial evidence in the record considered as a whole," 29 U.S.C. 655(f). As noted above, the Supreme Court, in *Benzene*, explained that OSHA must look to "a body of reputable scientific thought" in making its determinations, while noting that a reviewing court must "give OSHA some leeway where its findings must be made on the frontiers of scientific knowledge" (448 U.S. at 656). When there is disputed scientific evidence in the record, OSHA must review the evidence on both sides and "reasonably resolve" the dispute (*Pub. Citizen Health Research Grp. v. Tyson*, 796 F.2d 1479, 1500 (D.C. Cir. 1986)). As the D.C. Circuit has noted, where "OSHA has the expertise we lack and it has exercised that expertise by carefully reviewing the scientific data," a dispute within the scientific

community is not occasion for the reviewing court to take sides about which view is correct (Id.).

OSHA standards must be both technologically and economically feasible (see *Lead I*, 647 F.2d at 1264). The Supreme Court has defined feasibility as "capable of being done" (*Am. Textile Mfrs. Inst. v. Donovan*, 452 U.S. 490, 509-10 (1981) ("*Cotton Dust*")). The courts have further clarified that a standard is technologically feasible if OSHA proves a reasonable possibility, "within the limits of the best available evidence, . . . that the typical firm will be able to develop and install engineering and work practice controls that can meet the PEL in most of its operations" (*Lead I*, 647 F.2d at 1272).

With respect to economic feasibility, the courts have held that "a standard is feasible if it does not threaten massive dislocation to or imperil the existence of the industry" (Id. at 1265 (internal quotation marks and citations omitted)). A court must examine the cost of compliance with an OSHA standard:

> in relation to the financial health and profitability of the industry and the likely effect of such costs on unit consumer prices . . . . [T]he practical question is whether the standard threatens the competitive stability of an industry, . . . or whether any intra-industry or inter-industry discrimination in the standard might wreck such stability or lead to undue concentration.

(Id. (internal citations omitted)). The courts have further observed that granting companies reasonable time to comply with new PELs may enhance economic feasibility (see Id.).

Because section 6(b)(5) of the Act explicitly imposes the "to the extent feasible" limitation on the setting of health standards, OSHA is not permitted to use cost-benefit analysis to make its standards-setting decisions (29 U.S.C. 655(b)(5)). An OSHA standard must be cost effective, which means that the protective measures it requires are

the least costly of the available alternatives that achieve the same level of protection, but OSHA cannot choose an alternative that provides a lower level of protection because it is less costly (see *Int'l Union, UAW v. OSHA*, 37 F.3d 655, 668 (D.C. Cir. 1994); see also *Cotton Dust*, 452 U.S. at 514 n.32).

III. Events Leading to the Final Rule

On January 9, 2017, OSHA published its final rule Occupational Exposure to Beryllium and Beryllium Compounds in the *Federal Register* (82 FR 2470-2757). OSHA issued three separate standards for general industry (29 CFR 1910.1024), construction (29 CFR 1926.1124), and shipyards (29 CFR 1915.1024). Each standard contained a new, lower PEL of 0.2 μg/m^3 and a STEL of 2.0 μg/m^3, along with ancillary provisions to augment the protection provided by the new exposure limits. The ancillary provisions included requirements for exposure assessment, methods for controlling exposure, respiratory protection, personal protective clothing and equipment (PPE), housekeeping, medical surveillance, hazard communication, and recordkeeping.

On June 27, 2017, OSHA published an NPRM proposing to revoke the ancillary provisions for both the construction and shipyards standards while retaining the new lower PEL of 0.2 μg/m^3 and STEL of 2.0 μg/m^3 for those sectors (82 FR 29182).[1] OSHA stated in the proposal that it was also considering extending the compliance dates in the January 9, 2017, final rule by a year for the construction and shipyard standards. OSHA reasoned that this potential extension would give affected employers additional time to come into compliance with the final rule's requirements, which could be warranted by the

[1] For a more comprehensive discussion of the events leading to the proposed rule, see the preamble to the 2017 NPRM (82 FR at 29185-88).

uncertainty created by the proposal. OSHA also stated in the proposal that it would not enforce the construction and shipyards standards without further notice while the rulemaking was underway.[2] OSHA gave the public 60 days to comment on the proposal, and received about 70 unique comments, which OSHA carefully reviewed in developing this final rule.

On May 7, 2018, OSHA issued a direct final rule (DFR) adopting a number of clarifying amendments to the general industry standard to address the application of that standard to materials containing trace amounts of beryllium (83 FR 19936). The DFR amended the text of the general industry standard to clarify OSHA's intent with respect to certain terms in the standard, including the definition of beryllium work area, the definition of emergency, and the meaning of the terms dermal contact and beryllium contamination. The DFR also clarified OSHA's intent with respect to provisions for disposal and recycling and with respect to provisions that the agency intended to apply only where skin can be exposed to materials containing at least 0.1% beryllium by weight. The DFR became effective on July 6, 2018, because OSHA did not receive significant adverse comment in response to the DFR (see 83 FR 31045).

On June 1, 2018, OSHA published a proposal to extend the compliance date for certain ancillary requirements of the general industry beryllium standard, from March 12, 2018, to December 12, 2018 (83 FR 25536). OSHA proposed to delay the compliance dates for the following provisions in the general industry standard: beryllium work areas and regulated areas (paragraph (e)), written exposure control plans (paragraph (f)(1)),

[2] Subsequently, in March 2018, OSHA stated that it would begin enforcing the PEL and STEL on May 11, 2018 (see Memorandum for Regional Administrators, Delay of Enforcement of the Beryllium Standards under 29 CFR 1910.1024, 29 CFR 1915.1024, and 29 CFR 1926.1124, Mar. 2, 2018, available at: *https://www.osha.gov/laws-regs/standardinterpretations/2018-03-02*).

personal protective clothing and equipment (paragraph (h)), hygiene areas and practices (paragraph (i) except for change rooms and showers), housekeeping (paragraph (j)), communication of hazards (paragraph (m)), and recordkeeping (paragraph (n)). OSHA reasoned that: (1) it planned to propose modifications to ancillary provisions of the beryllium general industry standard in response to stakeholder questions and concerns; (2) it would be undesirable for both the agency and the regulated community to begin enforcement of the ancillary provisions of the standard that would be affected by the upcoming rulemaking; (3) enforcing compliance with the relevant ancillary requirements, as currently written, before publishing the agreed-upon proposal, would likely result in employers taking unnecessary measures to comply with provisions that OSHA intended to clarify; and (4) the proposed compliance date extension would give OSHA time to prepare and publish the planned substantive general industry NPRM to amend the standard before employers were required to comply with the affected provisions of the rule. OSHA adopted the extension of the compliance dates, as proposed, on August 9, 2018 (83 FR 39351).

On December 11, 2018, OSHA published a substantive NPRM to modify several of the general industry beryllium standard's definitions, along with the provisions for methods of compliance, personal protective clothing and equipment, hygiene areas and practices, housekeeping, medical surveillance, communication of hazards, and recordkeeping (83 FR 63746). OSHA reasoned in part that the proposed modifications would provide clarification and simplify or improve compliance.

IV. Final Economic Analysis

A. Summary of Economic Impact

OMB has determined that this final rule is not economically significant. The rule revises 29 CFR 1915.1024(o)(2) and 29 CFR 1926.1124(o)(2) to extend the deadline for compliance with certain provisions of the construction and shipyards beryllium standards until [INSERT DATE ONE YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. OSHA's final economic analysis shows that this compliance date extension will result in a net cost savings for the affected industries. At a 3 percent discount rate over 10 years, the extension will result in net annual cost savings of $0.36 million per year; at a discount rate of 7 percent over 10 years, the net annual cost savings is $0.85 million per year. When the Department uses a perpetual time horizon, the annualized cost savings of the final rule is $0.42 million with a 7 percent discount rate. The rule is an Executive Order (E.O.) 13771 deregulatory action.

B. Final Economic Analysis and Regulatory Flexibility Certification

Executive Orders 12866 and 13563, the Regulatory Flexibility Act (5 U.S.C. 601–612), and the Unfunded Mandates Reform Act (UMRA) (2 U.S.C. 1532(a)) require that OSHA estimate the benefits, costs, and net benefits of regulations, and analyze the effects of certain rules that OSHA promulgates. Executive Order 13563 emphasizes the importance of quantifying both costs and benefits, reducing costs, harmonizing rules, and promoting flexibility.

This final rule is not an "economically significant regulatory action" under E.O. 12866 or UMRA, or a ''major rule'' under the Congressional Review Act (5 U.S.C. 801 et seq.). Neither the benefits nor the costs of this final rule would exceed $100 million in any given year. This final rule to extend the compliance dates for the ancillary provisions in the construction and shipyards beryllium standards results in cost savings. Cost savings

arise in this context because a delay in incurred costs for employers would allow them to invest the funds (and earn an expected return at the going interest rate) that would otherwise have been spent to comply with those provisions.

At a discount rate of 3 percent, this final compliance-date extension yields annualized cost savings of $0.36 million per year for 10 years. At a discount rate of 7 percent, this final rule yields an annualized cost savings of $0.85 million per year for 10 years. When the Department uses a perpetual time horizon to allow for cost comparisons under E.O. 13771 (82 FR 9339, Jan. 30, 2017), the annualized cost savings of this final compliance date extension are $0.42 million at a discount rate of 7 percent.

1. Changes to the baseline: updating to 2018 dollars and removing familiarization costs; discussion of overhead costs

Because more than two years have elapsed since promulgation of the beryllium standards on January 9, 2017, OSHA has updated the projected costs for construction and shipyards contained in the final economic analysis that accompanied the rule from 2015 to 2018 dollars using the latest Occupational Employment Statistics (OES) wage data (for 2018). Additionally, although familiarization costs were included in the cost estimates developed in the 2017 final economic analysis, OSHA expects that those costs have already been incurred by affected employers,[3] and is excluding them from its analysis of the cost savings associated with this extension of compliance dates. Thus, baseline costs for this final economic analysis (FEA) are the projected costs from the 2017 final economic analysis, updated to 2018 dollars, less familiarization costs.

[3] In the 2017 NPRM, the agency estimated no cost savings for familiarization with the new beryllium standards because it believed all rule familiarization costs had already been incurred (82 FR at 29209). The agency received no comments disagreeing with this estimate.

OSHA notes that it did not include an overhead labor cost in the 2017 analysis and has not accounted for such costs in this FEA. There is not one broadly accepted overhead rate, and the use of overhead to estimate the marginal costs of labor raises a number of issues that should be addressed before applying overhead costs to analyze the cost implications of any specific regulation. There are several ways to look at the cost elements that fit the definition of overhead, and there is a range of overhead estimates currently used within the federal government—for example, the Environmental Protection Agency has used 17 percent,[4] and government contractors have reportedly used 50 percent for on-site (i.e. company site) overhead.[5] Some overhead costs, such as advertising and marketing, may be more closely correlated with output than with labor. Other overhead costs vary with the number of new employees. For example, rent or payroll processing costs may change little with the addition of 1 employee in a 500-employee firm, but may change substantially with the addition of 100 employees. If an employer is able to rearrange current employees' duties to implement a rule, then the marginal share of overhead costs, such as rent, insurance, and major office equipment (e.g., computers, printers, copiers), would be very difficult to measure with accuracy.

[4] Cody Rice, U.S. Environmental Protection Agency, "Wage Rates for Economic Analyses of the Toxics Release Inventory Program," June 10, 2002 (Document ID 2025). This analysis itself was based on a survey of several large chemical manufacturing plants: Heiden Associates, Final Report: A Study of Industry Compliance Costs Under the Final Comprehensive Assessment Information Rule, Prepared for the Chemical Manufacturers Association, December 14, 1989.

[5] Grant Thornton LLP, *2017 Government Contractor Survey*, *https://www.grantthornton.com/-/media/content-page-files/public-sector/pdfs/surveys/2018/2017-government-contractor-survey.* According to Grant Thornton's *2017 Government Contractor Survey*, on-site rates are generally higher than off-site rates, because the on-site overhead pool includes the facility-related expenses incurred by the company to house the employee, while no such expenses are incurred or allocated to the labor costs of direct charging personnel who work at the customer site. For further examples of overhead cost estimates, see the Employee Benefits Security Administration's guidance at *https://www.dol.gov/sites/dolgov/files/ebsa/laws-and-regulations/rules-and-regulations/technical-appendices/labor-cost-inputs-used-in-ebsa-opr-ria-and-pra-burden-calculations-july-2017.pdf.*

If OSHA had included an overhead rate when estimating the marginal cost of labor, without further analyzing an appropriate quantitative adjustment, and adopted for these purposes an overhead rate of 17 percent on base wages, the cost savings of this final rule would increase to approximately $0.37 million per year, at a discount rate of 3 percent, or to approximately $0.87 million per year, at a discount rate of 7 percent.[6] The addition of 17 percent overhead on base wages would therefore increase cost savings by approximately 3.5 percent above the primary estimate at either discount rate.

2. Changes to the standard: extension of the compliance date to [INSERT DATE ONE YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The construction and shipyards beryllium standards went into effect on May 20, 2017, with most compliance obligations set to begin on March 12, 2018. The requirement in the shipyards standard to provide change rooms was set to commence on March 11, 2019, and engineering controls under paragraph (f) expected to be implemented by March 10, 2020. In the June 2017 construction and shipyards proposal, OSHA stated that it would "not enforce the January 9, 2017, shipyard and construction standards without further notice while this new rulemaking is underway" (82 FR at 29182, 29223). Subsequently, in March 2018, OSHA stated that it would begin enforcing the PEL and STEL on May 11, 2018 (see Memorandum for Regional Administrators, Delay of Enforcement of the Beryllium Standards under 29 CFR 1910.1024, 29 CFR 1915.1024, and 29 CFR 1926.1124, Mar. 2, 2018, available at: *https://www.osha.gov/laws-regs/standardinterpretations/2018-03-02*). OSHA clarified in a May 9, 2018, interim

[6] OSHA used an overhead rate of 17 percent on base wages in a sensitivity analysis in the FEA (OSHA-2010-0034-4247, p. VII-65) in support of the March 25, 2016, final respirable crystalline silica standards (81 FR 16286) and in the PEA in support of the June 27, 2017, beryllium proposal for the construction and shipyard sectors (82 FR at 29201).

enforcement memorandum that it would begin enforcing the construction and shipyards beryllium standards' PEL and STEL on May 11, 2018, but would not enforce any other provisions of those standards absent further notice (see Interim Enforcement Memorandum and Notice of Delay in Enforcement for Certain Provisions of the Beryllium Standards, May 9, 2018, available at: *https://www.osha.gov/laws-regs/standardinterpretations/2018-05-09*). This final rule delays the compliance date for most ancillary provisions by one year from the date of publication of this rule and delays the requirement to implement engineering controls by half a year. This delay provides time for OSHA to issue a revised proposal and final rule modifying the ancillary provisions of the construction and shipyard standards and will allow employers to avoid the undue costs of complying with standards that may change in the near future. Note that the PEL and STEL compliance dates will not be extended as those requirements have already gone into effect and are being enforced.

OSHA estimated the cost savings of the final rule relative to baseline costs, where baseline costs reflect the costs of compliance *without* the final rule's changes to the compliance dates. This final rule extends the compliance dates for all provisions except the PEL and STEL to one year after the publication date of this final rule. In the 2017 final economic analysis, the cost of compliance with the PEL and STEL was calculated as the cost of respiratory protection for employees exposed over the PEL and STEL because until the compliance date for the engineering controls provision, employers were permitted to use respirators to comply with the PEL and STEL. Hence, there are no cost savings due to respirators. Because the exact publication date of this final rule was uncertain at the time this FEA was being prepared but was expected to be in September

2019, OSHA rounded the baseline and compliance dates to March and September, rather than calendar days.

This results in the following extensions:

- For engineering controls, the compliance date will be extended by 0.5 years.
- For all ancillary provisions, the compliance date will be extended by 1 year from the date of publication of this rule.[7]

OSHA commonly estimates annualized costs over a ten-year period and will do so here. For the baseline, OSHA estimates 10 years of costs, starting in March of 2020 for engineering controls and in September of 2019 for all ancillary provision costs. OSHA then calculates the present values of these costs as of September of 2019 using the appropriate discount rate. Similarly, to calculate the cost of the construction and shipyard beryllium standards as modified by this date extension final rule, OSHA estimates 10 years of costs for all ancillary provisions starting in September of 2020 and again creates present values as of September of 2019. The difference between the present values across the two cases gives total cost savings of this final rule. Annualizing the present value of cost savings over ten years, the result is an annualized cost savings of $0.36 million per year at a discount rate of 3 percent, or $0.85 million per year at a discount rate of 7 percent. When the Department uses a perpetual time horizon to allow for cost comparisons under E.O. 13771, the annualized cost savings of this compliance date extension is $0.42 million at a discount rate of 7 percent.

[7] For the purposes of this FEA, respirators are not considered to be among the ancillary provisions because employers are permitted to use respirators to comply with the PEL and STEL until the engineering controls provision becomes enforceable; OSHA therefore attributed the cost of respirators to compliance with the PEL and STEL.

The cost savings for the baseline and compliance date extension by provision and year are presented below in Table 1 at undiscounted, 3 percent, and 7 percent values. As shown in Table 1, and described elsewhere in this final rule, the cost savings described in this FEA reflect savings only for provisions covered by the compliance date extension. The present value of costs for each provision by period and discount rate are shown below in Table 2 and the present value of costs for each provision by period, discount rate, and industry are shown in Table 3.

3. Economic and Technological Feasibility

In the final economic analysis for the 2017 construction and shipyards beryllium standards, OSHA concluded that the standards were technologically feasible. OSHA has determined that the standards as modified by this final rule are also technologically feasible because the rule does not change any of the standards' substantive requirements and simply gives employers more time to comply with the standards' requirements. Furthermore, OSHA previously concluded that the beryllium standards were economically feasible. As this final rule does not impose any new substantive requirements, and results in cost savings, OSHA has concluded that the standards as modified by this final rule are also economically feasible.

4. Effects on Benefits

This final rule delays the compliance date for most ancillary provisions by one year and delays the requirement to implement engineering controls by half a year. This delay provides time for OSHA to issue a revised proposal modifying the ancillary provisions of the construction and shipyard standards and allows employers to avoid the undue costs of complying with standards that may change in the near future.

In the 2017 construction and shipyards proposal, OSHA explained it believed that it had underestimated baseline compliance with the ancillary provisions in the 2017 final rule. As such, OSHA stated it believed there would be limited to no benefits, in terms of reduced cases of chronic beryllium disease (CBD), attributable to the ancillary provisions, and thus limited to no foregone benefits if the ancillary provisions were to be revoked. However, many commenters pointed out that other existing standards did not provide protection identical to the ancillary provisions of the beryllium standards, so baseline compliance was not actually as high as OSHA believed in the 2017 proposal to revoke the ancillary provisions. For example, the United Steelworkers (USW) commented that the shipyard employer at which its members work as abrasive blasters "does not have a system in place to monitor for exposure to beryllium in the air or monitor the health of their co-workers" (Document ID 2124, p. 2). The American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) commented that medical surveillance and hazard communication are necessary because beryllium-related diseases are often misdiagnosed as other respiratory diseases, and medical surveillance under the beryllium standards would address this by specifically screening for beryllium-related disease, while hazard communication and training under the beryllium standards would educate workers who often do not know they are exposed on how to handle and use beryllium more safely. (Document ID 2140, pp. 8-9). This means that while other OSHA standards may require some medical screening and training, there is not complete overlap—and therefore not 100% baseline compliance—with the beryllium medical surveillance provisions or the training requirements specific to beryllium.

In light of these and other similar comments, OSHA recognizes that, while it is possible that baseline compliance is higher for some provisions than was estimated in the 2017 final rule, baseline compliance with other provisions may not be as high as it believed in the 2017 proposal. OSHA has decided not to revoke all of the ancillary provisions in the construction and shipyard sectors so that it may issue a new proposal for these sectors with a revised collection of ancillary provisions that is appropriate for those sectors. OSHA expects this revised collection of ancillary provisions to maintain the protections and benefits of the 2017 final rule, and will make it more likely that the regulated community will realize the full benefits of the rule, as estimated in the 2017 final economic analysis. OSHA believes that any short-term loss of benefits associated with this extension of compliance dates will be offset in the long term by the benefits resulting from the agency's proposed rulemaking.

5. Certification of no significant impact on a substantial number of small entities

This final rule will result in cost savings for affected employers, and those savings fall below levels that would have a significant positive economic impact on a substantial number of small entities.[8] Therefore, OSHA certifies that this final rule does not have a significant impact on a substantial number of small entities.

[8] OSHA investigated whether the projected cost savings would exceed its threshold of 1 percent of revenues or 5 percent of profits for small entities and very small entities for every industry. To determine if this was the case, OSHA returned to its original regulatory flexibility analysis (in the 2017 FEA) for small entities and very small entities. OSHA found that the cost savings of this final rule are such a small percentage of revenues and profits for every affected industry that OSHA's threshold would not be exceeded for any industry.

Table 1: Cost Savings of the Extension Rule by Year and Provision (2018 Dollars)

Year	Undiscounted Cost by Year				Discounted Costs - Baseline				Discounted Costs - Delay				Difference
	Engineering Controls and Work Practices	Ancillary Provisions	Respir-ators	Total	Engineer-ing Controls and Work Practices	Ancillary Provisions	Respir-ators	Total	Engineer-ing Controls and Work Practices	Ancillary Provisions	Respir-ators	Total	Total
3% Discount Rate													
1	$62,664	$21,339,162	$83,401	$21,485,227	$61,744	$21,339,162	$83,401	$21,484,307	$60,839	$20,717,633	$83,401	$20,861,873	-$622,435
2	$15,160	$10,282,661	$43,278	$10,341,098	$14,502	$9,983,166	$42,017	$10,039,686	$14,290	$9,692,394	$42,017	$9,748,701	-$290,985
3	$15,160	$10,953,330	$44,949	$11,013,439	$14,080	$10,324,564	$42,369	$10,381,013	$13,873	$10,023,849	$42,369	$10,080,091	-$300,922
4	$15,160	$10,456,238	$48,633	$10,520,031	$13,670	$9,568,939	$44,506	$9,627,116	$13,469	$9,290,232	$44,506	$9,348,208	-$278,908
5	$15,160	$10,840,594	$44,949	$10,900,703	$13,272	$9,631,728	$39,937	$9,684,936	$13,077	$9,351,192	$39,937	$9,404,206	-$280,730
6	$15,160	$10,528,920	$43,278	$10,587,357	$12,885	$9,082,339	$37,332	$9,132,556	$12,696	$8,817,805	$37,332	$8,867,832	-$264,723
7	$15,160	$10,793,458	$50,305	$10,858,922	$12,510	$9,039,351	$42,130	$9,093,990	$12,326	$8,776,069	$42,130	$8,830,525	-$263,466
8	$15,160	$10,560,311	$43,278	$10,618,748	$12,145	$8,586,499	$35,189	$8,633,833	$11,967	$8,336,407	$35,189	$8,383,563	-$250,270
9	$15,160	$10,772,025	$44,949	$10,832,134	$11,792	$8,503,536	$35,483	$8,550,811	$11,619	$8,255,860	$35,483	$8,302,962	-$247,849
10	$15,160	$10,574,631	$48,633	$10,638,424	$11,448	$8,104,574	$37,273	$8,153,296	$11,280	$7,868,518	$37,273	$7,917,072	-$236,224
Total	**$199,102**	**$117,101,329**	**$495,653**	**$117,796,085**	**$178,049**	**$104,163,857**	**$439,637**	**$104,781,543**	**$175,437**	**$101,129,958**	**$439,637**	**$101,745,032**	**-$3,036,511**
Annualized Total (3%)	**—**	**—**	**—**	**—**	**$20,873**	**$12,211,182**	**$51,539**	**$12,283,593**	**$20,567**	**$11,855,516**	**$51,539**	**$11,927,622**	**-$355,972**
7% Discount Rate													
1	$62,664	$21,339,162	$83,401	$21,485,227	$60,579	$21,339,162	$83,401	$21,483,142	$58,564	$19,943,142	$83,401	$20,085,107	-$1,398,035
2	$15,160	$10,282,661	$43,278	$10,341,098	$13,697	$9,609,964	$40,446	$9,664,107	$13,241	$8,981,274	$40,446	$9,034,962	-$629,145
3	$15,160	$10,953,330	$44,949	$11,013,439	$12,801	$9,567,063	$39,260	$9,619,124	$12,375	$8,941,180	$39,260	$8,992,815	-$626,308
4	$15,160	$10,456,238	$48,633	$10,520,031	$11,963	$8,535,405	$39,699	$8,587,068	$11,565	$7,977,014	$39,699	$8,028,279	-$558,789
5	$15,160	$10,840,594	$44,949	$10,900,703	$11,181	$8,270,238	$34,292	$8,315,710	$10,809	$7,729,194	$34,292	$7,774,294	-$541,415
6	$15,160	$10,528,920	$43,278	$10,587,357	$10,449	$7,506,974	$30,856	$7,548,280	$10,102	$7,015,864	$30,856	$7,056,822	-$491,458
7	$15,160	$10,793,458	$50,305	$10,858,922	$9,766	$7,192,137	$33,520	$7,235,423	$9,441	$6,721,623	$33,520	$6,764,584	-$470,838
8	$15,160	$10,560,311	$43,278	$10,618,748	$9,127	$6,576,431	$26,951	$6,612,509	$8,823	$6,146,197	$26,951	$6,181,971	-$430,537

Table 1: Cost Savings of the Extension Rule by Year and Provision (2018 Dollars)

Year	Undiscounted Cost by Year				Discounted Costs - Baseline				Discounted Costs - Delay				Difference
	Engineering Controls and Work Practices	Ancillary Provisions	Respir-ators	Total	Engineer-ing Controls and Work Practices	Ancillary Provisions	Respir-ators	Total	Engineer-ing Controls and Work Practices	Ancillary Provisions	Respir-ators	Total	Total
9	$15,160	$10,772,025	$44,949	$10,832,134	$8,530	$6,269,417	$26,161	$6,304,107	$8,246	$5,859,268	$26,161	$5,893,675	-$410,432
10	$15,160	$10,574,631	$48,633	$10,638,424	$7,972	$5,751,898	$26,453	$5,786,323	$7,706	$5,375,606	$26,453	$5,409,766	-$376,558
Total	**$199,102**	**$117,101,329**	**$495,653**	**$117,796,085**	**$156,064**	**$90,618,687**	**$381,041**	**$91,155,792**	**$150,873**	**$84,690,362**	**$381,041**	**$85,222,275**	**-$5,933,517**
Annualized Total (7%)	**—**	**—**	**—**	**—**	**$22,220**	**$12,902,062**	**$54,252**	**$10,686,240**	**$21,481**	**$12,058,002**	**$54,252**	**$12,133,735**	**-$844,799**

Source: US DOL, OSHA, Directorate of Standards and Guidance, Office of Regulatory Analysis

Note: Figures in rows may not add to totals due to rounding.

Table 2: Summary of Cost Savings of the Extension Rule by Year and Detailed Provision (2018 Dollars)

Provision	Delay Years	Baseline Costs		Delay Costs		Cost Savings Due to Delay	
		3%	7%	3%	7%	3%	7%
Respirators	0	$51,539	$54,252	$51,539	$54,252	$0	$0
Engineering Controls and Work Practices	0.5	$20,873	$22,220	$20,567	$21,481	-$306	-$739
Rule Familiari-zation	1	$0	$0	$0	$0	$0	$0
Exposure Assessment	1	$5,182,213	$5,417,362	$5,031,275	$5,062,955	-$150,938	-$354,407
Regulated Areas	1	$281,930	$293,253	$273,718	$274,068	-$8,212	-$19,185
Beryllium Work Areas	1	$26,757	$32,497	$25,978	$30,371	-$779	-$2,126
Medical Surveillance	1	$1,531,280	$1,671,163	$1,486,680	$1,561,835	-$44,600	-$109,328
Medical Removal	1	$435,360	$496,139	$422,680	$463,681	-$12,680	-$32,458
Written Exposure Control Plan	1	$236,317	$253,173	$229,434	$236,610	-$6,883	-$16,563
Protective Work Clothing & Equipment	1	$170,515	$177,137	$165,549	$165,549	-$4,966	-$11,588
Hygiene Areas and Practices - Change Rooms	1	$1,379,760	$1,436,745	$1,339,573	$1,342,752	-$40,187	-$93,993
Hygiene Areas and Practices - Changing Labor Time	1	$296,379	$307,889	$287,747	$287,747	-$8,632	-$20,142
Hygiene Areas and Practices - Head Coverings	1	$17,191	$17,859	$16,690	$16,690	-$501	-$1,168
Housekeeping	1	$1,813,684	$1,922,243	$1,760,858	$1,796,489	-$52,826	-$125,754
Training	1	$839,796	$876,602	$815,336	$819,255	-$24,460	-$57,348
Total	—	**$12,283,593**	**$12,978,534**	**$11,927,622**	**$12,133,735**	**-$355,972**	**-$844,799**

Source: US DOL, OSHA, Directorate of Standards and Guidance, Office of Regulatory Analysis

Note: Figures in rows may not add to totals due to rounding.

Table 3: Summary of Cost Savings of the Extension Rule by Year, Provision, and Industry (2018 Dollars)

Sector	Abrasive Blasting - Construction		Abrasive Blasting - Shipyards	Welding - Shipyards	Construc-tion Subtotal	Maritime Subtotal	Total, All Industries
NAICS	238320	238990	336611a	336611b			
Industry	Painting and Wall Covering Contractors	All Other Specialty Trade Contractors	Ship Building and Repairing	Ship Building and Repairing			
3% Discount Rate							
Respirators	$0	$0	$0	$0	$0	$0	$0
Engineering Controls and Work Practices	$0	$0	$0	-$306	$0	-$306	-$306
Rule Familiarization	$0	$0	$0	$0	$0	$0	$0
Exposure Assessment	-$57,327	-$53,120	-$40,234	-$257	-$110,447	-$40,491	-$150,938
Regulated Areas	-$139	-$129	-$7,900	-$43	-$269	-$7,943	-$8,212
Beryllium Work Areas	-$302	-$280	-$191	-$7	-$581	-$198	-$779
Medical Surveillance	-$16,868	-$15,630	-$11,838	-$264	-$32,498	-$12,103	-$44,600
Medical Removal	-$4,816	-$4,463	-$3,380	-$21	-$9,279	-$3,401	-$12,680
Written Exposure Control Plan	-$2,610	-$2,419	-$1,791	-$63	-$5,029	-$1,854	-$6,883
Protective Work Clothing & Equipment	-$1,873	-$1,736	-$1,312	-$45	-$3,609	-$1,358	-$4,966
Hygiene Areas and Practices - Change Rooms	-$15,662	-$14,512	-$9,900	-$114	-$30,174	-$10,013	-$40,187
Hygiene Areas and Practices - Changing Labor Time	-$3,279	-$3,039	-$2,302	-$12	-$6,318	-$2,314	-$8,632
Hygiene Areas and Practices - Head Coverings	-$190	-$176	-$134	-$1	-$366	-$134	-$501
Housekeeping	-$19,914	-$18,453	-$13,977	-$482	-$38,367	-$14,459	-$52,826
Training	-$9,221	-$8,544	-$6,472	-$223	-$17,765	-$6,695	-$24,460
Total (3%)	**-$132,202**	**-$122,499**	**-$99,430**	**-$1,840**	**-$254,701**	**-$101,270**	**-$355,972**
7% Discount Rate							
Respirators	$0	$0	$0	$0	$0	$0	$0
Engineering Controls and Work Practices	$0	$0	$0	-$739	$0	-$739	-$739
Rule Familiarization	$0	$0	$0	$0	$0	$0	$0
Exposure Assessment	-$134,605	-$124,726	-$94,470	-$606	-$259,331	-$95,076	-$354,407
Regulated Areas	-$325	-$302	-$18,458	-$100	-$627	-$18,558	-$19,185
Beryllium Work Areas	-$823	-$763	-$520	-$20	-$1,586	-$540	-$2,126

Medical Surveillance	-$41,353	-$38,318	-$29,023	-$635	-$79,671	-$29,658	-$109,328
Medical Removal	-$12,328	-$11,423	-$8,652	-$54	-$23,751	-$8,706	-$32,458
Written Exposure Control Plan	-$6,286	-$5,824	-$4,301	-$152	-$12,110	-$4,453	-$16,563
Protective Work Clothing & Equipment	-$4,371	-$4,050	-$3,062	-$106	-$8,421	-$3,168	-$11,588
Hygiene Areas and Practices - Change Rooms	-$36,630	-$33,942	-$23,154	-$266	-$70,572	-$23,420	-$93,993
Hygiene Areas and Practices - Changing Labor Time	-$7,652	-$7,090	-$5,371	-$29	-$14,743	-$5,400	-$20,142
Hygiene Areas and Practices - Head Coverings	-$444	-$411	-$312	-$2	-$855	-$313	-$1,168
Housekeeping	-$47,407	-$43,927	-$33,272	-$1,148	-$91,334	-$34,420	-$125,754
Training	-$21,619	-$20,032	-$15,173	-$524	-$41,651	-$15,697	-$57,348
Total (7%)	**-$313,843**	**-$290,809**	**-$235,767**	**-$4,380**	**-$604,652**	**-$240,148**	**-$844,799**

Source: US DOL, OSHA, Directorate of Standards and Guidance, Office of Regulatory Analysis

Note: Figures in rows may not add to totals due to rounding.

V. OMB Review Under the Paperwork Reduction Act of 1995

The current beryllium standards for occupational exposure to beryllium — general industry (29 CFR 1910.1024), construction (29 CFR 1926.1124), and shipyard (29 CFR 1915.1024) — contain collection of information (paperwork) requirements that have been approved by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (PRA), and approved under OMB Control number 1218-0267. The PRA defines *"*collection of information*"* to mean "the obtaining, causing to be obtained, soliciting, or requiring the disclosure to third parties or the public, of facts or opinions by or for an agency, regardless of form or format" (44 U.S.C. 3502(3)(A)). Under the PRA, a Federal agency cannot conduct or sponsor a collection of information unless OMB approves it, and the agency displays a currently valid OMB control number (44 U.S.C. 3507). Also, notwithstanding any other provision of law, no employer shall be subject to penalty for failing to comply with a collection of information if the collection of information does not display a currently valid OMB control number (44 U.S.C. 3512).

In OSHA's June 27, 2017 proposed rule, OSHA proposed to revoke the ancillary provisions of the beryllium standards, and their collection of information requirements, in both the construction and shipyards sectors, while retaining the new lower PEL of 0.2 $\mu g/m^3$ and STEL of 2.0 $\mu g/m^3$ for those sectors (82 FR 29182). In this final rule, OSHA has decided not to adopt the proposal to revoke the ancillary requirements in the construction and shipyard standards. Instead, OSHA is extending the compliance dates for the ancillary provisions of the construction and shipyard standards. The final rule

does not change the information collections already approved by the OMB under OMB Control Number 1218-0267.

VI. Federalism

OSHA reviewed this final rule in accordance with the Executive Order on Federalism (E.O. 13132, 64 FR 43255 (Aug. 10, 1999)), which requires that Federal agencies, to the extent possible, refrain from limiting state policy options, consult with states prior to taking any actions that would restrict state policy options, and take such actions only when clear constitutional authority exists and the problem is national in scope. E.O. 13132 provides for preemption of state law only with the express consent of Congress. Federal agencies must limit any such preemption to the extent possible.

Under Section 18 of the OSH Act (29 U.S.C. 651 et seq.), Congress expressly provides that states and U.S. territories may adopt, with Federal approval, a plan for the development and enforcement of occupational safety and health standards. OSHA refers to such states and territories as "State Plan States." Occupational safety and health standards developed by State Plan States must be at least as effective in providing safe and healthful employment and places of employment as the Federal standards (29 U.S.C. 667). Subject to these requirements, State Plan States are free to develop and enforce under state law their own requirements for safety and health standards.

OSHA previously concluded from its analysis that promulgation of the beryllium standard complies with E.O. 13132 (82 FR at 2633). In states without an OSHA-approved State Plan, this final rule limits state policy options in the same manner as every standard promulgated by OSHA. For State Plan States, Section 18 of the OSH Act, as noted in the previous paragraph, permits State Plan States to develop and enforce their

own beryllium standards provided these requirements are at least as effective in providing safe and healthful employment and places of employment as the requirements specified in this final rule.

VII. State Plan States

When Federal OSHA promulgates a new standard or a more stringent amendment to an existing standard, State Plans must amend their standards to reflect the new standard or amendment, or show OSHA why such action is unnecessary, e.g., because an existing state standard covering this area is "at least as effective" as the new Federal standard or amendment (29 CFR 1953.5(a)). The state standard must be at least as effective as the final Federal rule. State Plans must adopt the Federal standard or complete their own standard within six months of the promulgation date of the final Federal rule. When OSHA promulgates a new standard or amendment that does not impose additional or more stringent requirements than an existing standard, State Plans do not have to amend their standards, although OSHA may encourage them to do so. The 21 states and 1 U.S. territory with OSHA-approved occupational safety and health plans covering the private sector and state and local governments are: Alaska, Arizona, California, Hawaii, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Nevada, New Mexico, North Carolina, Oregon, Puerto Rico, South Carolina, Tennessee, Utah, Vermont, Virginia, Washington, and Wyoming. Connecticut, Illinois, Maine, New Jersey, New York, and the Virgin Islands have OSHA-approved State Plans that apply to state and local government employees only.

The new amendments to OSHA's beryllium rule do not impose any new requirements on employers. Accordingly, State Plans do not have to amend their

standards to extend the compliance dates for their beryllium rules, but they may do so within the limits of this final rule.

VIII. Unfunded Mandates Reform Act

When OSHA issued the 2017 final rule establishing standards for occupational exposure to beryllium, it reviewed the rule according to the Unfunded Mandates Reform Act of 1995 (UMRA) (2 U.S.C. 1501 et seq.) and E.O. 13132 (64 FR 43255 (Aug. 10, 1999)). OSHA concluded that the 2017 final rule did not meet the definition of a "Federal intergovernmental mandate" under the UMRA because OSHA standards do not apply to state or local governments except in states that voluntarily adopt State Plans. OSHA further noted that the rule did not impose costs of over $100 million per year on the private sector (82 FR at 2634).

As discussed above in Section IV of this preamble, OSHA has determined that the extension of the compliance dates in this final rule does not impose any costs on private-sector employers beyond those costs already identified in the 2017 final rule for beryllium. Because OSHA reviewed the total costs of the 2017 beryllium rule under UMRA, no further review of those costs is necessary. Therefore, for purposes of UMRA, OSHA certifies that this final rule does not mandate that state, local, or tribal governments adopt new, unfunded regulatory obligations of, or increase expenditures by the private sector by, more than $100 million in any year.

IX. Environmental Impacts

OSHA has reviewed this final beryllium rule according to the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et seq.), the regulations of the Council on Environmental Quality (40 CFR part 1500), and the Department of

Labor's NEPA procedures (29 CFR part 11). OSHA has made a determination that this final rule would have no significant impact on air, water, or soil quality; plant or animal life; or the use of land or aspects of the external environment.

X. Consultation and Coordination With Indian Tribal Governments

OSHA reviewed this final rule in accordance with E.O. 13175 (65 FR 67249) and determined that it does not have "tribal implications" as defined in that order. This rule does not have substantial direct effects on one or more Indian tribes, on the relationship between the Federal government and Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes.

XI. Health and Risk

As part of the 2017 final rule, OSHA concluded that employees exposed to beryllium and beryllium compounds at the preceding PELs were at significant risk of material impairment of health, specifically CBD and lung cancer. OSHA also reviewed the exposure data for workers exposed to beryllium in abrasive blasting in construction and shipyards and welding in shipyards, and determined, based on the exposure levels observed, that there is a significant risk to those workers of CBD and lung cancer (82 FR at 29183). In the 2017 construction and shipyards NPRM, OSHA described its previous findings and invited further comment and data "on the risks of sensitization, CBD, and lung cancer among workers involved in abrasive blasting and welding operations in shipyards and construction" (82 FR at 29221). After reviewing the comments and information received in response to this invitation, OSHA reaffirms its finding that the

best available evidence indicates that there is a significant risk of material impairment of health for workers exposed to beryllium in construction and shipyards.[9]

Some commenters, including the Abrasive Blasting Manufacturers Alliance (ABMA), the Construction Industry Safety Coalition (CISC), Materion Brush Inc. (Materion), and the National Association of Home Builders, argued that OSHA failed to show significant risk for lung cancer or CBD in construction and shipyards (Document ID 2142, pp. 3, 12-14; 2125, p. 23; 2145, pp. 1, 27; 2128, pp. 3-4). For example, CISC pointed out that OSHA's risk assessment for the 2017 final rule is based on studies from general industry workplaces and complained of a "lack of data suggesting any cases of CBD or other associated disease outcomes in construction" (Document ID 2125, pp. 12-13, 24). ABMA also asserted, based on reasoning similar to CISC's, that there is no evidence of health effects from beryllium exposure in construction and shipyards (Document ID 2142, Comments, pp. 12-13). A review commissioned and submitted by ABMA found that there are no epidemiological studies establishing causation between beryllium exposure as a result of abrasive blasting and CBD (Document ID 2142, Attachment 2, p. 7). Materion noted that OSHA's risk analysis is based on studies that do not examine the prevalence of disease specifically among workers exposed to abrasive blast media in construction and shipyards, while acknowledging that abrasive blasting can lead to beryllium exposures over the new action level of 0.1 ug/m^3 (Document ID 2145, Comments, p. 6). All of these comments are substantively similar to previous comments on OSHA's 2015 NPRM.

[9] Many commenters also expressed concern about the provisions of the standards related to dermal contact with beryllium. While OSHA does not address these comments in this final rule, the forthcoming rulemaking will propose changes related to dermal contact with beryllium.

For example, ABMA previously asserted that their members are unaware of any occurrence of beryllium sensitization, CBD, or lung cancer due to beryllium exposure among their employees or their customers' employees (Document ID 1673, p. 9). OSHA addressed such comments in the preamble to the 2017 final rule, finding that ABMA had not presented the agency with any studies or rigorous scientific evidence to support their statements (82 FR at 2641-42). OSHA noted in the January 9, 2017, final rule that such statements were not compelling evidence, especially considering that no surveillance programs were in place to detect beryllium sensitization or CBD among workers exposed to beryllium among ABMA's members (82 FR at 2642; see also 82 FR at 29221). ABMA's comments submitted in response to the 2017 NPRM complain that OSHA often considers anecdotal evidence from employees and is shifting the burden to the regulated community to show the absence of risk (Document ID 2142, Comments, p. 13). Similarly, CISC complains that OSHA's approach did not include data examining the prevalence of CBD or other beryllium-related disease endpoints in the construction industry before in determining that construction and shipyard employees also faced a significant risk of material impairment of health (Document ID 2125, pp. 13-14).

As CISC acknowledged, however, "OSHA does not need to perform an industry-by-industry assessment of significant risk when promulgating health standards" (Document ID 2125, p. 14). OSHA's 2017 final rule risk assessment showed that there is a significant risk of beryllium sensitization and CBD for workers exposed to beryllium at exposure levels of 0.1 ug/m^3 and above. ABMA, CISC, and others attempt to rebut this finding by claiming a lack of disease in their industries without providing any evidence of

testing for these conditions among construction and shipyards workers.[10] Information on testing rates in an industry is necessary before any conclusions about disease prevalence can be made. This is particularly so in operations like abrasive blasting, where treating physicians may be unaware of the potential for beryllium exposure. Medical professionals would likely not order a Beryllium Lymphocyte Proliferation Test (BeLPT) unless they know a worker has been exposed to beryllium, and without such a test, CBD is often misdiagnosed. (Document ID 2091; 82 FR 2499, 2705). As the National Employment Law Project (NELP) commented, OSHA cannot "withhold or revoke feasible protections from comparably at-risk workers just because their toxic exposures occur in different industries." (Document ID 2106, p. 5). On this record, OSHA has no reason to believe that airborne exposure to beryllium impacts construction and shipyard employees differently from general industry employees and reaffirms its previous finding: that reports from employers in these industries who have not provided their workers with medical surveillance specific to beryllium-related health effects do not constitute evidence against OSHA's determination of significant risk at exposure levels of 0.1 ug/m^3 and above.

Some commenters further argued that OSHA should address possible variability in risk depending on the specific chemical compound or physical form (e.g., particle size) of beryllium. CISC commented that OSHA did not adequately account for "differences in toxicity with the variety of forms of beryllium" (Document ID 2125, pp. 14-18). ABMA and Materion observed that OSHA's 2017 health and risk analysis relied on studies of

[10] Furthermore, the literature review submitted by ABMA (SOMA) did not identify any studies examining sensitization and CBD in these sectors (Document ID 2142, Attachment 2, pp. 6-7).

exposure to beryllium alloys or processed beryllium, which they believe to be irrelevant to the construction industry (Document ID 2142, Comments, pp. 12, 17; 2145, Comments, p. 6). Citing Deubner et al.'s 2001 study of 75 workers exposed in a beryllium mining and extraction facility who were primarily exposed to beryllium ore and salts (Document ID 1543), Materion stated that "a case of CBD has never been identified in any patient that has been linked only to exposures to natural beryllium containing materials associated with the construction industry" (Document ID 2145, Comments, p. 6).

OSHA also reviewed the Deubner et al. study that Materion cited and discussed it in the 2017 final rule.[11] Because there was no sensitization or CBD detected among those whose only beryllium exposure came from working with bertrandite ore, Deubner et al. concluded that beryllium ore and salts may pose less of a hazard than beryllium metal and beryllium hydroxide. OSHA noted in the 2017 final rule preamble that these results are consistent with some of the literature on animal studies examining solubility and particle size (82 FR at 2502). However, the Duebner et al. study population of 75 workers is too small to demonstrate that beryllium ore and salts pose no hazard of sensitization and CBD. OSHA acknowledged some uncertainty regarding possible differences in risk depending on the chemical or physical form of beryllium (82 FR at 2545), but determined that there is insufficient information to support a quantitative risk analysis differentiating between chemical and physical forms of beryllium (82 FR at 2529). Comments submitted on the 2017 construction and shipyards NPRM did not provide any additional data or

[11] Of the 75 workers surveyed for sensitization with the BeLPT, three were identified as sensitized by an abnormal BeLPT result. One of those found to be sensitized was diagnosed with CBD. A follow-up study by Stefaniak et al. (2008) found that beryllium was present at the mill in three forms: mineral, poorly crystalline beryllium oxide, and beryllium hydroxide (Document ID 1543).

information that OSHA could use to evaluate risk of sensitization or CBD associated with various chemical or physical forms of beryllium. Therefore, OSHA reaffirms its determination of significant risk of material impairments of health at airborne beryllium exposure levels of 0.1 ug/m^3 and above, regardless of the chemical or physical form of the beryllium.

OSHA also acknowledged uncertainty in its risk estimates for lung cancer in the 2017 final rule, stating that the lung cancer risks should be regarded as less certain than its risk estimates for CBD and sensitization (82 FR at 2552). OSHA continues to acknowledge that the solubility of beryllium may affect the risk of lung cancer it poses to exposed workers. Materion provided extensive commentary suggesting that OSHA's 2017 determination that beryllium exposure can cause lung cancer should not apply to beryllium in insoluble forms (Document ID 2145, pp. 12-20). Materion supplemented their comments with an analysis they commissioned to evaluate OSHA's 2017 lung cancer risk assessment (Crump and Proctor, Document ID 2145, Attachment 5); a publication that updated a previous lung cancer study by Boffetta et al. (Document ID 2145, Attachment 3); and a group of animal testing results that Materion cited as evidence that exposure to beryllium metal is unlikely to cause cancer (Document ID 2145, Comments, pp. 18-20; Attachments 8-18). However, the agency determined in 2017 that the epidemiological literature on beryllium sensitization and CBD clearly shows sufficient occurrence of sensitization and CBD to be considered significant within the meaning of the OSH Act (82 FR at 2545). Uncertainty with respect to the lung cancer risk attributable to beryllium exposure in construction and shipyards does not undermine

OSHA's finding of significant risk wherever there is beryllium exposure at the action level or above, which rests upon strong evidence that such exposure can cause CBD.

In summary, the comments submitted by ABMA, CISC, Materion, and others regarding OSHA's 2017 risk assessment merely recapitulate arguments that were previously presented in response to the 2015 NPRM, and which OSHA addressed in the 2017 final rule. OSHA has reviewed the comments, analyses, and studies submitted to the record, and finds no information that would cause the agency to reconsider its significant risk determination for airborne beryllium exposure at and above the action level in construction and shipyards.

OSHA maintains its conclusion from the 2017 final rule that employees in construction and shipyards are exposed to beryllium at levels above the new action level and PEL, primarily from abrasive blasting activities, and that employees exposed to those levels are at significant risk of developing adverse health effects (82 FR at 2637).

XII. Summary and Explanation of the Final Rule

This section of the preamble explains the final changes that OSHA is making to the beryllium standards for construction and shipyards, as well as the agency's rationales for making the changes and for not adopting its proposal to revoke all ancillary provisions from the beryllium standards for construction and shipyards.

A. Introduction

The 2017 final rule promulgated three standards designed to protect workers from the serious health effects caused by occupational exposure to beryllium and beryllium compounds (see 82 FR 2470 (Jan. 9, 2017)). The three standards, which cover general industry (29 CFR 1910.1024), construction (29 CFR 1926.1124), and shipyards (29 CFR

1915.1024), contain a comprehensive set of protections against beryllium exposure, consisting of the exposure limits in paragraph (c) and a number of ancillary provisions, typical of OSHA health standards, in paragraphs (d) through (n) (see 82 FR at 2476). The ancillary provisions of the construction and shipyards standards encompass requirements for exposure assessment, competent person (construction) or regulated areas (shipyards), methods of compliance, respiratory protection, personal protective clothing and equipment, hygiene, housekeeping, medical surveillance and medical removal, communication of hazards, and recordkeeping (29 CFR 1915.1024(d)-(n); 29 CFR 1926.1124(d)-(n)).

Since publication of the 2017 final rule, OSHA has undertaken several additional rulemaking efforts affecting the beryllium standards. On June 27, 2017, OSHA proposed revoking the ancillary provisions for the construction and shipyards standards while retaining the new, lower PEL of 0.2 $\mu g/m^3$ and STEL of 2.0 $\mu g/m^3$ for those sectors (82 FR 29182). Subsequently, on May 7, 2018, OSHA issued a DFR adopting a number of clarifying amendments to address the application of the beryllium standard for general industry to materials containing trace amounts of beryllium (83 FR 19936). The DFR amended the text of the general industry standard to clarify certain terms in the standard, including the definition of beryllium work area, the definition of emergency, and the meaning of the terms dermal contact and beryllium contamination. The DFR also clarified provisions for disposal and recycling and provisions that the agency intended to apply only where skin can be exposed to materials containing at least 0.1% beryllium by weight. OSHA did not receive significant adverse comment in response to the DFR, and therefore the rule became effective on July 6, 2018 (see 83 FR 31045 (July 3, 2018)).

On June 1, 2018, OSHA published a proposal to extend the compliance date for certain ancillary requirements of the general industry beryllium standard, from March 12, 2018 to December 12, 2018 (83 FR 25536). OSHA reasoned that: (1) it planned to propose modifications to ancillary provisions of the beryllium general industry standard in response to stakeholder questions and concerns; (2) it would be undesirable for both the agency and the regulated community to begin enforcement of the ancillary provisions of the standard that would be affected by the upcoming rulemaking; (3) enforcing compliance with the relevant ancillary requirements, as currently written, before publishing the agreed-upon proposal, would likely result in employers taking unnecessary measures to comply with provisions that OSHA intended to clarify; and (4) the proposed compliance date extension would give OSHA time to prepare and publish the planned substantive general industry NPRM to amend the standard before employers were required to comply with the affected provisions of the rule. OSHA adopted the extension of the compliance dates, as proposed, on August 9, 2018 (83 FR 39351).

Finally, on December 11, 2018, OSHA published a proposal to modify several of the general industry beryllium standard's definitions, along with the provisions for methods of compliance, personal protective clothing and equipment, hygiene areas and practices, housekeeping, medical surveillance, communication of hazards, and recordkeeping (83 FR 63746). OSHA proposed the modifications, in part, to provide clarification and simplify or improve compliance. The agency is working to finalize the proposal at this time.

B. OSHA's Decision Not to Revoke All Ancillary Provisions

As mentioned above, paragraphs (d) through (n) of the construction and shipyards standards for beryllium contain the ancillary provisions, which augment the exposure limits in paragraph (c). OSHA's 2017 NPRM proposed revoking all ancillary provisions for the construction and shipyards standards while retaining the new PEL of 0.2 μg/m^3 and the STEL of 2.0 μg/m^3 for those sectors (82 FR 29182). The primary rationale behind the proposal to revoke these provisions was that other OSHA standards might already require equivalent protections. In the 2017 NPRM, OSHA pointed to a number of OSHA standards that already apply to the primary operations involving beryllium exposure in construction and shipyards, which are abrasive blasting in construction and abrasive blasting and welding in shipyards (82 FR at 29183). These standards included the ventilation standard (29 CFR 1926.57) and the mechanical paint removers standard (29 CFR 1915.34), among others. OSHA requested comment on whether standards consisting only of the new, lower PEL and STEL would provide adequate protection to construction and shipyards workers, considering the other standards that apply. The agency also requested comment on whether OSHA should retain any or all of the ancillary provisions and, more particularly, on whether OSHA should retain the medical surveillance provisions (82 FR at 29183).

Some commenters agreed with OSHA's primary rationale for proposing to revoke all ancillary provisions in the construction and shipyards standards (see, e.g., Document ID 2120; 2122; 2142), while others disagreed with that rationale (see, e.g., Document ID 2121; 2124; 2129; 2132; 2133; 2134; 2140). For example, the U.S. Small Business Administration, Office of Advocacy (SBA) commented that "employees performing abrasive blasting and welding in these sectors are already protected by OSHA standards

and industry practices that provide for ventilation, personal protective equipment, and respiratory protection" (Document ID 2120, p. 6). On the other hand, Public Citizen's Health Research Group (Public Citizen) commented that "it is simply untrue . . . that all of the ancillary beryllium provisions overlap with existing OSHA regulations and that workers therefore will achieve no additional protections from the dangers of beryllium with the implementation of the ancillary provisions of the rule" (Document ID 2134, p. 2).

Having carefully reviewed the comments and evidence in the record, OSHA has determined that beryllium construction and shipyards standards consisting only of the PEL and STEL would not be sufficiently protective. Other OSHA standards do contain some requirements that overlap with, or duplicate, the requirements of the beryllium standards for construction and shipyards. However, for most ancillary provisions, there is only partial overlap, and for the remainder, there is no overlap at all. This conclusion refutes OSHA's primary rationale for issuing the proposal. Thus, OSHA has determined not to adopt its proposal to remove all ancillary provisions from the construction and beryllium standards.

In its analysis below, OSHA discusses only whether other OSHA standards overlap with each of the beryllium standards' ancillary provisions, and whether OSHA should revoke those provisions on the basis of overlap with existing standards. Other issues, such as whether discrete requirements in the standards are necessary, will be addressed in the forthcoming proposal. OSHA takes this approach because it recognizes that there is not complete overlap between the standards' ancillary provisions and other

OSHA standards, and that therefore it cannot issue a final rule revoking all the construction and shipyard ancillary provisions on that basis.

OSHA has also decided not to revoke, in this final rule, discrete portions of ancillary provisions that overlap with other OSHA standards, while retaining parts of other provisions, to ensure that stakeholders have a full opportunity to comment on this action. This is particularly important here, where several commenters emphasized that the ancillary provisions of the beryllium standards are interrelated and cannot be practically and effectively implemented in isolation (see Document ID 2129, p. 8; 3130, p. 2; 2134, p. 3; 2140, p. 4). In addition, in the forthcoming proposal, OSHA intends to propose a number of changes to specific ancillary provisions for issues not addressed by the June 27, 2017 NPRM. For example, OSHA will propose changes to the construction and shipyard beryllium standards that reflect changes OSHA has proposed to the general industry standard (83 FR 63746). These changes may themselves impact conclusions about the necessity of a particular ancillary provision. OSHA therefore has decided to proceed with a new proposal, which will ensure that the record is fully developed.

The following discussion addresses each ancillary provision, along with the comments in the record regarding overlap or duplication with other OSHA requirements.[12]

Exposure Assessment, Paragraph (d)

Paragraph (d) of the beryllium standards for construction and shipyards (29 CFR 1926.1124(d) and 1915.1024(d)) requires employers to assess the airborne beryllium

[12] For a detailed, provision-by-provision explanation of the beryllium standards promulgated in the 2017 final rule, including information on compliance with the requirements of the standards, please see Section XVI, Summary and Explanation of the Standards, in the final rule (82 FR at 2635-2735).

exposure of each employee using either a scheduled monitoring approach or a performance option. Reassessment is required when certain changes in the workplace occur. The provision establishes specific methods of sample analysis and requires employers to both provide affected employees the opportunity to observe the exposure monitoring and notify them of the assessment results. In the preamble to the 2017 final rule, OSHA found that this approach to exposure assessment was a "well-recognized and accepted risk management tool" and was "necessary and protective" for beryllium-exposed workers (82 FR at 2619, 2651).

All the commenters who specifically addressed the proposed removal of paragraph (d) opposed it (e.g., Document ID 2109; 2118, p. 1; 2119, p. 2; 2129, p. 5; 2130, p. 2; 2134, p. 2; 2135, pp. 3-4; 2140, p. 7). For example, members of Congress noted that the requirement to perform exposure assessments for beryllium is not contained in any other OSHA standard. Absent paragraph (d), they argued, there would be no independent obligation to monitor employees' beryllium exposure at construction or shipyard workplaces (Document ID 2135, p. 4). Public Citizen echoed this concern, noting that, without the beryllium standards' ancillary provisions, employers "would not be required, *by any regulation*, to follow a prescribed schedule for measurement of airborne beryllium [and] notify employees and maintain written records of the results of such measurements . . ." (Document ID 2134, p. 2). Similarly, the Institute for Policy Integrity at NYU School of Law stated that, given OSHA's estimate of a 0% baseline compliance rate for the exposure assessment requirement, employers in the construction and shipyard industries will not conduct exposure assessments for beryllium absent paragraph (d) (Document ID 2119, p. 2). USW illustrated this point, stating that the

shipyard employer that employs its members as abrasive blasters "does not have a system in place to monitor for exposure to beryllium in the air" (Document ID 2124, p. 2).

As indicated by the comments, no other standards duplicate the specific requirements in paragraph (d), such as the requirements to perform assessments at specified intervals and when there are changes in the workplace, along with the requirement for employee notification of results. This is true despite the fact that employers must currently perform some assessment of exposure to comply with the standards' PEL and STEL (which, again, OSHA is currently enforcing). The conclusion that there is no overlap with respect to paragraph (d) supports OSHA's determination not to revoke the standard's ancillary provisions in this final rule.

Regulated Areas (Shipyards) and Competent Person (Construction), Paragraph (e)

Paragraph (e) of the beryllium standard for shipyards (29 CFR 1915.1024(e)) requires employers to establish, maintain, demarcate, and limit access to "regulated areas," which are demarcated areas where airborne beryllium exposure levels are above the PEL or STEL. Employees who enter regulated areas must use respiratory protection and PPE. Paragraph (e) of the beryllium standard for construction (29 CFR 1926.1124(e)), on the other hand, requires employers to designate a "competent person" where airborne exposure to beryllium exceeds the PEL or STEL. The competent person must make frequent and regular inspections of job sites, materials, and equipment, and perform other duties to ensure the proper implementation of the standard and protection of employees. OSHA determined in the 2017 final rule that paragraph (e) is necessary, among other reasons, to limit employee access to areas of the workplace with high levels

of beryllium exposure and to ensure that employees who access such areas are properly protected against beryllium exposure (82 FR at 2658-59).

In the 2017 NPRM, OSHA noted that the construction ventilation standard, 29 CFR 1926.57(f), requires certain measures that would limit exposure of workers (82 FR at 29221). Specifically, 29 CFR 1926.57(f)(7) requires that dust not be allowed to accumulate outside abrasive blasting enclosures and that spills be cleaned up promptly (Id.). Furthermore, 29 CFR 1926.57(f)(3) and (4) require ventilation and dust collection and removal systems in abrasive blasting operations (Id.). OSHA stated that compliance with these measures during abrasive blasting should reduce the amount of beryllium-containing dust to be cleaned, thereby protecting workers who clean spent abrasive blasting media after operations are completed (Id.). Additionally, OSHA emphasized the requirement to train employees to recognize and avoid unsafe conditions, 29 CFR 1926.21 (Id.), as a means of helping minimize exposures of workers proximal to abrasive blasting operations.

For shipyards, OSHA placed emphasis on the mechanical paint removers standard (Id. at 29222), which requires, at 29 CFR 1915.34(c)(3)(iii), that employees other than blasters wear eye and respiratory protection when working in areas where there are unsafe concentrations of abrasive material and dusts. In addition, OSHA noted that OSHA's ventilation standard applies to shipyards and requires, at 29 CFR 1910.94(a)(4), that blast cleaning enclosures have sufficient ventilation, in part, to prevent leakage of dust outside the enclosure. Such leakage could create exposures for employees not involved in blasting operations (Id.). OSHA also stated that abrasive blasting sometimes occurs in confined spaces at shipyard workplaces, and noted that OSHA's shipyard

standard regulating work in confined and enclosed spaces requires demarcation of, and limitation of employee access to, such spaces (Id. (discussing 29 CFR 1915.12)).

OSHA requested information on the prevalence of abrasive blasting in confined or enclosed spaces in shipyards, but did not receive responsive comments establishing how often abrasive blasting operations in shipyards fall within the scope of 29 CFR 1915.12. However, even if it is assumed that most abrasive blasting operations at shipyards occur in confined spaces, 29 CFR 1915.12 would not substitute for the protections provided by paragraph (e). This is because paragraph (e) of the beryllium standard applies to all affected shipyards employees, not just those working in confined spaces. Employees protected by paragraph (e) but not by the confined spaces standard include those engaged in abrasive blasting in non-confined spaces and other employees who work near blasting operations, such as clean-up helpers.

None of the comments that OSHA received provided a specific rationale or data that would support removing paragraph (e) from either standard, while multiple comments supported OSHA's determination in the 2017 final rule that the requirements of paragraph (e) are essential to the effectiveness of the construction and shipyards beryllium standards. For example, North America's Building Trades Unions (NABTU) commented that paragraph (e) of the construction industry beryllium standard is important because construction worksites, unlike fixed worksites, typically do not have a safety professional on-site, and that the designation of a competent person ensures that there is an agent of the employer on-site who has the knowledge and authority to recognize, evaluate, and correct beryllium hazards (Document ID 2129, p. 6). NABTU also stated that the competent person requirement helps ensure that the written exposure

control plan is properly implemented at construction worksites, and noted that OSHA has included a similar competent person requirement in numerous other health standards applicable to the construction industry (Id.). USW also submitted a comment indicating that employers engaged in abrasive blasting operations in the shipyards industry may not have specific controls in place to protect helpers or other bystanders from exposure to beryllium during the operation (Document ID 2124, pp. 9-11).

After considering these comments, OSHA finds that other standards do not completely overlap the standards' regulated areas (shipyards) and competent person (construction) requirements. Particularly, the other applicable OSHA standards discussed above do not replicate the requirements in paragraph (e) that ensure that employee access to areas with reasonably expected airborne exposure to beryllium is limited and appropriately managed. This conclusion supports OSHA's determination not to revoke the standards' ancillary provisions in this final rule.

Methods of Compliance, Paragraph (f)

Paragraph (f) of the beryllium standards for construction and shipyards requires that employers implement methods for reducing employee exposure to beryllium through a written exposure control plan, engineering and work practice controls, and a prohibition on rotating employees to achieve compliance with the PEL. In the 2017 final rule, OSHA determined that written exposure control plans are instrumental for protection of workers because "[r]equiring employers to articulate where exposures occur and how those exposures will be controlled will help to ensure that they have a complete understanding" of how to comply with the standards (82 FR at 2668). OSHA also concluded that requiring primary reliance on engineering and work practice controls to

control exposures is consistent with good industrial hygiene practice and with OSHA's traditional approach for health standards (82 FR at 2672).

In response to the NPRM, Public Citizen noted that, "[s]hould OSHA rescind the ancillary provisions for construction and shipyard workers, employers in those industries would not be required, *by any regulation*, to . . . maintain a written plan to control beryllium exposures [or] institute engineering and work practice controls . . . . " (Document ID 2134, p. 2). The AFL-CIO commented that, without paragraph (f), "the rule would ignore the importance of the hierarchy of controls in addressing workplace chemical exposures" (Document ID 2140, p. 8).

These comments and OSHA's review of the record indicate that other OSHA standards do not provide equivalent worker protections. In the absence of paragraph (f), employers would not be required to establish and implement a written exposure control plan specific to beryllium, and shipyards workers would not receive the benefits of the hierarchy of controls, as required by paragraph (f).[13] This conclusion supports OSHA's determination not to revoke the standard's ancillary provisions in this final rule.

Respiratory Protection, Paragraph (g)

Paragraph (g) in the beryllium standards for both construction and shipyards requires the provision and use of respiratory protection from exposures to beryllium: (1) during periods necessary to install or implement feasible engineering and work practice controls where airborne exposure exceeds, or can reasonably be expected to exceed, the

[13] Note that under a PEL- and STEL-only beryllium standard, construction employers would be required to comply with the new beryllium exposure limits under 29 CFR 1926.55(b), which independently requires the hierarchy of controls. The shipyards air contaminants standard however, does not contain a comparable requirement to implement engineering and work practice controls (see 29 CFR 1915.1000).

TWA PEL or STEL (paragraph (g)(1)(i)); (2) during operations, including maintenance and repair activities and non-routine tasks, when engineering and work practice controls are not feasible and airborne exposure exceeds, or can reasonably be expected to exceed, the TWA PEL or STEL (paragraph (g)(1)(ii)); (3) during operations for which an employer has implemented all feasible engineering and work practice controls when such controls are not sufficient to reduce airborne exposure to or below the TWA PEL or STEL (paragraph (g)(1)(iii)); (4) during emergencies (paragraph (g)(1)(iv)); and (5) when an employee who is eligible for medical removal under the standard chooses to remain in a job with airborne exposure at or above the action level (paragraph (g)(1)(v)). Paragraph (g) also provides that required respiratory protection must be selected and used in accordance with OSHA's general Respiratory Protection standard at 29 CFR 1910.134. Finally, paragraph (g) requires employers to provide powered air-purifying respirators (PAPR) when an employee entitled to a respirator under the beryllium standard requests one, as long as the PAPR provides adequate protection.

In the 2017 final rule, OSHA recognized that workers who perform open-air abrasive blasting using mineral grit (i.e., coal slag) will routinely be exposed to levels above the PEL of 0.2 ug/m^3 (even after the installation of feasible engineering and work practice controls), and therefore, these workers will also be required to wear respiratory protection (82 FR at 2584). OSHA also found that requiring the provision and use of respiratory protection when an employee who is eligible for medical removal chooses to remain in a job with airborne exposure at or above the action level "has the potential to delay or avoid the onset of CBD in sensitized individuals and to mitigate or retard the effects of CBD in employees who are in the early stages of CBD" (82 FR at 2676).

Finally, OSHA found that "provision of PAPRs at the employee's request will provide employees necessary protection beyond that found in provisions of the Respiratory Protection standard, where provision of a PAPR for reasons of fit, comfort and reliability is at the employer's discretion" (82 FR at 2676).

In the NPRM, OSHA relied on several of its standards requiring the provision and use of respirators to explain its proposal to revoke the ancillary provisions of the 2017 construction and shipyard rules (82 FR at 29221-22). First, OSHA relied on the construction ventilation standard, 29 CFR 1926.57, which requires workers performing abrasive blasting to wear extensive PPE, including respirators, under certain conditions, including where beryllium concentrations dispersed by blasting may exceed the PEL and the operator is not already physically separated from the nozzle and blast material (29 CFR 1926.57(f)(5)(ii)). Second, OSHA relied on the general industry respiratory protection standard, 29 CFR 1910.134, which applies to both construction and shipyards, because it requires employers to provide a respirator to each employee when necessary to protect the employee's health. Third, OSHA relied on the mechanical paint removers standard, 29 CFR 1915.34, which applies to abrasive blasting in shipyards, and "requires respiratory protection and other appropriate personal protective equipment in abrasive blasting operations for both abrasive blasting operators and helpers working in the area" (29 CFR 1915.34(c)(3)). Finally, OSHA relied on the standard covering confined and enclosed spaces in shipyard employment, which prohibits employees from entering a space whose atmosphere exceeds a PEL except for emergency rescue, or for a short duration for installation of ventilation equipment, provided that the atmosphere in the

space is monitored continuously and respiratory protection and other necessary and appropriate PPE and clothing are provided (29 CFR 1915.12).

A number of commenters focused specifically on the degree of overlap between the construction and shipyards standards' respiratory protection requirements and the respiratory protection requirements in other OSHA standards. Some agreed with OSHA's preliminary determination that the respiratory protection provisions contained in paragraph (g) of the standards were unnecessary because the workers were adequately protected by other applicable standards. For example, the ABMA stated that OSHA's preliminary determination was "absolutely correct" (Document ID 2142, p. 9). In support of its statement, ABMA submitted a report prepared for it by Exponent (Document ID 2142, Attachment 1), which stated that the rules governing abrasive blasting currently in effect for both the construction and shipyards industries already require engineering and administrative controls and PPE, including an air supply respirator and a hood or blasting helmet (Document ID 2142, Attachment 1, pp. 5-6, 11). SBA similarly noted its "understanding" that employees performing abrasive blasting and welding in the construction and shipyard sectors are already protected by OSHA standards and industry practices that provide for ventilation, PPE, and respiratory protection (Document ID 2120, p. 6).

Other commenters objected to the proposed removal of paragraph (g) (see, e.g., Document ID 2124; 2129; 2135; 2140). Some argued that existing respiratory protection requirements in other standards are not sufficient to protect all of the employees exposed to beryllium in construction and shipyards, especially employees who are exposed due to abrasive blasting. For example, NABTU commented that the ventilation standard "does

little, if anything, for [construction] workers other than the blasting operators" (Document ID 2129, p. 9). Specifically, NABTU observed that the ventilation standard "does not require respiratory protection for pot tenders, helpers, or bystanders, instead simply stating that dust-filter respirators 'may be used' for operations such as clean up, loading, or unloading" (Document ID 2129, p. 9).

AFL-CIO echoed NABTU's concerns, commenting that the ventilation standard, 29 CFR 1926.57, and the mechanical paint removers standard, 29 CFR 1915.34, do not protect workers, such as pot tenders, cleanup workers, demolition workers, machinists, surveyors, maintenance and repair workers and other bystanders, who are performing other tasks in operations like abrasive blasting (Document ID 2140, pp. 3, 5). It argued that these workers are at serious risk from beryllium dust created by abrasive blasting operations, and, importantly, do not share the same baseline protections as abrasive blasters and welders (Document ID 2140, p. 3).

USW expressed similar concerns in its comments (Document ID 2124, pp. 2, 10-11). Its USW Local Union 8888 safety committee stated that it knows from on-the-job experience that, even though shipyard abrasive blasters are required to wear an airline respirator, others on the blasting crew in shipyards are not required to wear any type of respiratory protection (Document ID 2124, pp. 2, 11). In support, USW quoted the testimony of USW Local Union 8888 member Dennis Johnson, who testified at OSHA's March 2016 public hearing on the 2015 beryllium proposal that, in his experience in shipyards, "only the blasters had the respirators" (Document ID 2124, p. 10 (quoting Document ID 1756, Tr. 246-49)). USW noted that this issue is not confined to the

shipyard industry; Mr. Johnson's experience is comparable to USW members' experience in construction operations (Document ID 2124, p. 11).

After considering the comments, OSHA concludes that there is partial, but not complete, overlap between other OSHA standards and paragraph (g) of the final construction and shipyards rules. It is true that paragraph (g) requires respiratory protection to be selected and used in accordance with OSHA's general respiratory protection standard, 29 CFR 1910.134, and that the general industry respiratory protection standard is independently applicable to the construction and shipyards sectors (see 29 CFR 1926.103, 1915.154). However, other standards on which OSHA relied in the NPRM do not apply to all situations or tasks in which workers covered by the construction or shipyards beryllium standards might engage.

Moreover, the construction and shipyards standards contain requirements that go beyond the baseline requirements in other OSHA standards, including the general industry respiratory protection standard. Unlike the beryllium standards, none of the standards on which OSHA relied in the NPRM require respiratory protection for an employee who is eligible for medical removal under the standard but chooses to remain in a job with airborne exposure at or above the action level, or require employers to provide PAPRs when an employee entitled to a respirator under the beryllium standard requests one. Indeed, in the 2017 final rule, OSHA specifically recognized that the PAPR provision went beyond the baseline provisions of the respiratory protection standard (82 FR at 2678).

Therefore, other standards do not completely overlap the standards' respiratory protection requirements. This conclusion supports OSHA's determination not to revoke the standards' ancillary provisions in this final rule.

Personal Protective Clothing and Equipment, Paragraph (h)

Paragraph (h) requires employers to provide and ensure the use of PPE for employees exposed to beryllium, and also contains provisions pertaining to the removal, storage, cleaning, and replacement of the PPE. To comply with paragraph (h), employers are expected to choose the appropriate type of PPE for their employees based on the results of the employer's hazard assessment (82 FR at 2682). In the 2017 final rule, OSHA stated that the PPE requirements are intended to protect employees by preventing the accumulation of airborne beryllium on clothing, shoes, and equipment, which can result in additional inhalation exposure. The PPE requirements also protect employees in other work areas, as well as employees and other individuals outside the workplace, from exposures that could occur if contaminated clothing were to transfer beryllium to those areas (82 FR at 2678).

In the 2017 NPRM, OSHA identified several OSHA standards that require employees engaged in abrasive blasting operations (in construction and shipyards) and welding operations (in shipyards) to use PPE during their work (82 FR at 29197). OSHA stated that, in construction, 29 CFR 1926.57(f)(5)(v) requires abrasive blasting operators to wear full PPE, including respirators, gloves, safety shoes, and eye protection. Similarly, 29 CFR 1915.34(c)(3) requires full PPE for abrasive blaster operators performing mechanical paint removal in shipyards (82 FR at 29197). In addition, OSHA noted that gloves are required by 29 CFR 1915.57(a) to protect welders in shipyards, and

that "relevant PPE is required by the existing personal protective equipment standard (1926.95) and the existing hand and body protection standard (1915.157) to protect blasting helpers in construction and shipyards, respectively, from dermal exposure to beryllium dust" (82 FR at 29197). Given the other standards' PPE requirements, OSHA preliminarily estimated that affected employees are required to be equipped with PPE 100 percent of the time when exposed to beryllium (82 FR at 29197).

In response to the 2017 proposal, NELP stated that the requirements in paragraph (h), which state "clearly and specifically when and what type of PPE is required," do not exist in other OSHA standards and that, without paragraph (h) of the beryllium standards, "employees will clearly not receive these protections" (Document ID 2106, p. 6). Other commenters criticized OSHA's estimates regarding the existing use of PPE in the affected construction and shipyard operations. NABTU strongly disagreed with OSHA's statement in the 2017 NPRM that "[b]aseline usage of . . . PPE is far higher in construction and shipyards (82 FR at 29216)" (Document ID 2129, p. 7). Members of Congress commented that OSHA's preliminary estimate that there is already a high level of compliance with other OSHA standards did "not appear to be supported by testimony from the hearing" (Document ID 2135, p. 7). The hearing testimony "suggests that while the abrasive blasters may have protections, there is limited or no protection for many other workers, including bystanders, who are exposed to beryllium-containing dust under the pre-existing standards" (Document ID 2135, p. 7). The Beryllium Health and Safety Committee Task Group also expressed concern about OSHA's assumption that affected workers are required to be equipped with PPE 100 percent of the time, stating that the

agency "does not have supporting evidence of consistent and standard use across pot tenders and cleanup activities supporting abrasive blasting" (Document ID 2118, p. 5).

After reviewing the comments, OSHA is persuaded that other OSHA standards only partially overlap with the requirements of paragraph (h). Some workers exposed to beryllium in construction and shipyards, such as abrasive blasting helpers, would not be fully protected if OSHA revoked the requirements for PPE in their entirety. In addition, the overlapping PPE standards that OSHA cited in the NPRM do not contain any removal, storage, cleaning, and replacement requirements that would minimize cross-contamination and migration of beryllium dust. These provisions are necessary to protect workers who are wearing the PPE from additional inhalation exposure that could come from improper removal of the PPE.

Therefore, other standards do not completely overlap with or duplicate the standards' PPE requirements. This conclusion supports OSHA's determination not to revoke the standards' ancillary provisions in this final rule.

Hygiene Areas and Practices, Paragraph (i)

Paragraph (i) contains requirements for hygiene areas and practices. Paragraph (i) requires employers to: (1) provide readily accessible washing facilities to remove beryllium from the hands, face, and neck (paragraph (i)(1)(i)); (2) ensure that employees who have dermal contact with beryllium wash any exposed skin (paragraph (i)(1)(ii)); (3) provide change rooms if employees are required to use personal protective clothing and are required to remove their personal clothing (paragraph (i)(2)); (4) ensure that employees take certain steps to minimize exposure in eating and drinking areas (paragraph (i)(3)); and (5) ensure that employees do not eat, drink, smoke, chew tobacco

or gum, or apply cosmetics in areas where there is a reasonable expectation of exposure above the TWA PEL or STEL (paragraph (i)(4)).

While emphasizing the importance of hygiene areas and practices in the final rule, OSHA also acknowledged that the sanitation standards in construction (29 CFR 1926.51) and shipyards (29 CFR 1915.88) include provisions similar to some of those in the beryllium standards. For example, the sanitation standards include hygiene provisions requiring the employer to provide change rooms with separate storage facilities for protective clothing whenever employees are required by an OSHA standard to wear protective clothing. The sanitation standards also require employers to provide wash facilities and prohibits storage or consumption of food or beverages in any area where employees are exposed to a toxic material (82 FR at 2684). OSHA pointed out this potential overlap in the NPRM (82 FR at 29205).

In response to the NPRM, OSHA received only two comments that specifically addressed paragraph (i). One comment, from NABTU, expressed the need for hygiene requirements such as washing facilities, change rooms, and eating and drinking areas to prevent the spread of beryllium, noting that "[w]hen beryllium-exposed workers are afforded washing and clean-up areas, all construction workers on the site are protected from exposure" (Document ID 2129, p. 7). On the other hand, ABMA identified a number of existing standards, including the sanitation standards, applicable to employees in construction and shipyards, and argued that these provisions provide adequate protection from exposure to beryllium (Document ID 2142, pp. 9-10). ABMA also indicated that hygiene practices are utilized during abrasive blasting regardless of the beryllium standard due to other substance-specific standards such as lead, hexavalent

chromium, cadmium, and arsenic, which require employees who are exposed to these materials through abrasive blasting to wash their hands and face (Document ID 2142, Attachment 1, p. 6).

After considering the comments, OSHA concludes that there is overlap between the sanitation standards for construction and shipyards and paragraph (i) of the beryllium rules for construction and shipyards. However, this overlap is not complete. For example, the sanitation standard for the construction industry prohibits "consum[ing] food or beverages in … any area exposed to a toxic material," 29 CFR 1926.51(g), and the sanitation standard for shipyards similarly prohibits the consumption or storage of "food, beverages, and tobacco products … in any area where employees may be exposed to hazardous or toxic substances," 29 CFR 1915.88(h). The beryllium standards, on the other hand, contain more exacting requirements that do not overlap with these requirements – specifically, requirements that employers keep "surfaces in eating and drinking areas … as free as practicable of beryllium," 29 CFR 1915.1024(i)(3)(i) and 1926.1124(i)(3)(ii), and prohibit "employees [from] enter[ing] any eating or drinking area with personal protective clothing or equipment unless, prior to entry, surface beryllium has been removed from the clothing or equipment by methods that do not disperse beryllium into the air or onto an employee's body," 29 CFR 1915.1024(i)(3)(ii) and 1926.1124(i)(3)(iii).

Thus, other standards do not completely overlap the standards' hygiene area and practices requirements.

Housekeeping, Paragraph (j)

Paragraph (j) requires employers in both construction and shipyards to follow the cleaning procedures in their written exposure control plan, clean up spills and emergency releases promptly, use appropriate cleaning methods, and provide recipients of beryllium containing materials for disposal with a copy of the warnings described in paragraph (m) (82 FR at 2688). In the preamble to the 2017 final rule, OSHA indicated that these provisions are important because they minimize sources of exposure to beryllium that engineering controls do not completely eliminate (82 FR at 2689).

In the NPRM, OSHA identified other OSHA standards that might duplicate some provisions of paragraph (j) (82 FR at 29197). These included the construction ventilation standard, 29 CFR 1926.57(f)(7), which requires that dust not be allowed to accumulate outside abrasive blasting enclosures and that spills be cleaned up promptly. Other standards applicable to abrasive blasting operations in construction, 29 CFR 1926.57(f)(3) and (f)(4), also require exhaust ventilation and dust collection and removal systems. Likewise, certain provisions of OSHA's general ventilation standard for abrasive blasting, 29 CFR 1910.94(a), apply to shipyards. For example, 29 CFR 1910.94(a)(7)) requires that "[d]ust shall not be permitted to accumulate on the floor or on ledges outside of an abrasive-blasting enclosure, and dust spills shall be cleaned up promptly…" (82 FR at 29197). OSHA stated that compliance with these provisions "already ensures that employers take some steps during the blasting operations to prevent accumulations of dust sufficient to create exposures exceeding the PEL in clean-up after blasting operations are completed" (82 FR at 29197).

Some commenters supported revocation of paragraph (j) on the basis of overlapping and duplicative provisions (e.g., Document ID 2142, Attachment 1, p. 7

(citing 29 CFR 1926.57(f)(7)). However, other commenters argued that at least some of the beryllium standards' housekeeping provisions are not duplicated by other OSHA standards. For example, NABTU indicated that the ventilation standard does not prohibit dry sweeping and brushing, which are prohibited by the beryllium standards except in limited circumstances (Document ID 2129, p. 9; see also 2140, p. 8). Similarly, the AFL-CIO pointed out that abrasive blasting cleanup workers who clean and recycle spent abrasive would not be protected by other OSHA standards when performing these tasks (Document ID 2140, p. 8).

After reviewing the comments, OSHA is persuaded that other OSHA standards do not completely overlap with, or duplicate the protections of, the construction and shipyards standards' housekeeping requirements. Some workers exposed to beryllium, such as abrasive blasting cleanup workers, would not be adequately protected if OSHA revoked paragraph (j) in its entirety. In addition, the provisions prohibiting dry sweeping, dry brushing, and the use of compressed air except under certain circumstances are not contained in other OSHA standards. OSHA's determination that other standards do not completely overlap with the beryllium standards' housekeeping requirements supports the agency's decision not to revoke the standards' ancillary provisions in this final rule.

Medical Surveillance, Paragraph (k)

Paragraph (k) includes provisions for medical surveillance in connection with occupational exposure to beryllium. It requires employers in both construction and shipyards to offer eligible employees, at no cost to the employee, participation in the medical surveillance program. Paragraph (k) specifies requirements of the medical

surveillance program, such as which employees are eligible for medical surveillance, as well as the frequency and content of medical examinations.

As explained in the 2017 final rule, the purposes of medical surveillance for beryllium are: (1) to identify beryllium-related adverse health effects so that appropriate intervention measures can be taken; (2) to determine if an employee has any condition that might make him or her more sensitive to beryllium exposure; and (3) to determine the employee's fitness to use personal protective equipment such as respirators (82 FR at 2696). The inclusion of medical surveillance in the beryllium standards for construction and shipyards is consistent with section 6(b)(7) of the OSH Act (29 U.S.C. 655(b)(7)), which requires that, where appropriate, medical surveillance programs be included in OSHA health standards to aid in determining whether the health of employees is adversely affected by exposure to the hazards addressed by the standard.

In the NPRM, OSHA asked several specific questions regarding whether it should keep all or some of the standard's medical surveillance requirements (82 FR at 29183). While some comments that OSHA received in response to these questions supported revocation (see e.g., Document ID 2142, pp. 3, 16-19), most of the stakeholders that responded to OSHA's request for comment on issues related to medical surveillance argued that the agency should retain the medical surveillance provisions in the construction and shipyards standards (see, Document ID 2117, pp. 1-2; 2140, pp. 5, 8-9; 2130, pp. 1-2; 2132, pp. 1-2; 2118, pp.1-3; 2121, p. 3; 2119, p. 2; 2133, pp. 1-3; 2106, pp. 3, 4, 6, 7; 2129, pp. 1, 3-5, 7-8, 10; 2123, pp. 1-3; 2134, p. 2; 2131, pp. 1-2; 2124, pp. 6, 12; 2136, pp. 1-3; 2135, pp. 2-4).

Of significance to this final rule, several stakeholders noted that no other standards require medical surveillance for beryllium-exposed workers in the shipyard or construction sectors (see, e.g., Document ID 2106, p. 6; 2133, p. 1; 2140, p. 5). OSHA agrees with these comments. OSHA therefore concludes that the beryllium standards' medical surveillance provisions do not overlap with any other OSHA standard. This conclusion supports OSHA's determination not to revoke the standard's ancillary provisions in this final rule.

Medical Removal Protection, Paragraph (l)

Paragraph (l) of the standards establishes requirements for medical removal, which apply only to a limited category of workers who are suffering health effects related to their exposure to beryllium. Medical removal benefits include, at the employee's choice, either remaining in a job with exposures above the action level while using respiratory protection or being transferred to a job with exposures below the action level, along with maintenance of earnings and other benefits for six months. OSHA determined in the 2017 final rule that medical removal provisions provide workers with incentives to participate in the medical surveillance program, and that they also give workers with sensitization or CBD the opportunity and means to minimize further exposure to beryllium (82 FR at 2724). Although OSHA considered in the 2017 NPRM whether other OSHA standards might provide equivalent protections to affected workers, the agency's review of existing standards found that no other standards duplicate the requirements of paragraph (l). Similarly, several commenters stated that there are no overlapping or duplicative OSHA requirements for medical removal related to beryllium exposure (see, e.g., Document ID 2106, p. 6; 2134, p. 2), and no commenters pointed to

other OSHA standards that provide overlapping protections. OSHA's conclusion that there is no overlap supports its determination not to revoke the standard's ancillary provisions in this final rule.

Communication of Hazards, paragraph (m)

Paragraph (m) sets forth the employer's obligations to comply with OSHA's hazard communication standard (HCS) (29 CFR 1910.1200) relative to beryllium, and to provide warnings and training to employees about the hazards of beryllium.

In the 2017 final rule, OSHA discussed the importance of the communication of hazards provision (see 82 FR at 2724-29). The agency pointed out the need for employees to understand the hazards of beryllium exposure, the protective measures necessary to minimize potential health hazards, and the rights afforded them under these standards. OSHA also noted that the training requirements serve to explain and reinforce the information available on labels and Safety Data Sheets (SDSs), which are most effective when employees understand the information (82 FR at 2724). Because beryllium is a hazardous chemical with serious and debilitating health effects, it is imperative that employers ensure that employees can demonstrate that they understand the training materials and have knowledge of the topics covered during the training sessions.

In the NPRM, OSHA stated that 29 CFR 1926.21 requires construction employers to train their employees in the recognition and avoidance of unsafe conditions, and that, in particular, § 1926.21(b)(3) requires that employers instruct employees on the safe handling and use of harmful substances, and make employees aware of the potential hazards, personal hygiene, and personal protective measures required (82 FR at 29221).

OSHA further stated that the HCS, which applies to the construction and shipyard industries (29 CFR 1915.1200, 1926.59), requires training, including training on the hazards of the chemicals in the work area and the appropriate work practices, emergency procedures, and personal protective equipment to be used (29 CFR 1910.1200(h)(3)) (Id. at 29221-29222).

Some commenters stated either generally that the ancillary provisions of the construction and shipyards rules were duplicative of other OSHA standards, or specifically that adequate hazard communication protections were already contained in the HCS and OSHA's abrasive blasting guidance (see, e.g., Document ID 2120, p. 6; 2122, p. 2; 2142 Attachment 1, p. 6). Other commenters stated that, if OSHA rescinded the standards' ancillary provisions, employers in the construction and shipyards industry would not be required to conduct the beryllium-specific training required by the rules (see, e.g., Document ID 2121, p. 3; 2129, pp. 4, 10; 2133, p. 2; 2134, p. 2).

After considering the comments, OSHA concludes that there is some, but not complete, overlap between other OSHA standards and paragraph (m) of the beryllium standards for construction and shipyards. As OSHA stated in the 2017 final rule, the beryllium standards' hazard communication requirements were intended to be "substantively as consistent as possible with the HCS," but also included "additional specific requirements needed to protect employees exposed to beryllium" (82 FR at 2724).

First, paragraph (m) of the beryllium standards goes beyond the requirements of the HCS. For example, paragraph (m)(3)(ii) of the beryllium standards requires specific training on the signs and symptoms of CBD, the employer's written exposure control

plan, specific operations that can lead to employee exposure to beryllium, measures that employees can take to protect themselves from exposure, and the purpose and description of the medical surveillance and medical removal protection requirements of the standards. These topics would not necessarily be covered by training that is required by the hazard communication standard.

Moreover, the beryllium standards require employers to provide employees with training on the specific hazards associated with beryllium exposure; as OSHA stated in the 2017 final rule, "[w]hile OSHA agrees that the HCS is designed to cover all chemical hazards in the workplace[,] … OSHA finds that employees need to be trained on the hazards specifically associated with beryllium, in addition to the training they receive under the HCS" (82 FR at 2726). Finally, the beryllium-specific training required by the construction and shipyards standards must be provided more often than what the HCS alone would require; after receiving initial training (as required by paragraph (h)(1) of the HCS), the beryllium standards require that employees receive annual retraining on the beryllium hazards (29 CFR 1915.1024(m)(4)(i)(C) and 1926.1124(m)(3)(i)(C)).

Second, paragraph (m) of the beryllium standards goes beyond the requirements of 29 CFR 1926.21. Compliance with that standard would not require employers to meet the more exacting requirements of the beryllium standard, such as the annual retraining requirement.

Therefore, other standards do not completely overlap the beryllium standards' communication of hazard requirements. This conclusion supports OSHA's determination not to revoke the standards' ancillary provisions in this final rule.

Recordkeeping, Paragraph (n)

Paragraph (n) of the construction and shipyards standards for beryllium requires employers to make and maintain records of air monitoring data, objective data, medical surveillance, and training. Employers must maintain the records, and make them available to employees and their designated representatives, in accordance with OSHA's records access standard, 29 CFR 1910.1020. In the 2017 final rule, OSHA pointed out that the requirement to maintain records of exposure assessments is critical because the records enable employers to ensure compliance with the exposure assessment provisions, and ascertain which of the standards' provisions are triggered based on the assessments (82 FR at 2729-2730). OSHA described the medical surveillance records requirement as necessary for the protection of employee health and proper enforcement of the standards (82 FR at 2732). Finally, according to OSHA, the creation and maintenance of training records under paragraph (n)(4) permits both OSHA and employers to ensure that the required training occurs on schedule (82 FR at 2733).

In the NPRM, OSHA proposed to remove all recordkeeping requirements for the construction and shipyards beryllium standards as part of the proposed removal of all of the standards' ancillary provisions (82 FR at 29183). Removal of paragraph (n) would have been consistent with the proposed removal of the other ancillary provisions because the recordkeeping provisions are dependent on those other provisions; for example, without the standards' medical surveillance requirements, there would be no medical surveillance records to create or maintain. The proposed removal of the ancillary provisions was based on OSHA's preliminary determination that a number of other OSHA standards apply to the primary operations involving beryllium exposure in construction and shipyards, resulting in duplicative protections (82 FR at 29183).

OSHA did not receive any comments that were responsive to the issue of whether other OSHA standards impose recordkeeping requirements that overlap with or duplicate the requirements in paragraph (n). OSHA's own analysis, however, indicates that there is no overlap with other standards. OSHA's access to employee exposure and medical records standard, 29 CFR 1910.1020, governs the preservation and maintenance of employee exposure and medical records, as well as access to those records for employees and designated representatives. However, the records access standard does not require the creation of those records. Instead, paragraph (n) of the beryllium standards contains the requirements for employers to create records related to beryllium, including records of exposure assessment, medical surveillance, and training. It then refers to 29 CFR 1910.1020 for the requirements governing preservation and maintenance of, and access to, those records (e.g., paragraph (n)(1)(iii)). Paragraph (n) and 29 CFR 1910.1020 are, therefore, complementary, rather than overlapping or duplicative.

OSHA has determined that no other OSHA standards contain recordkeeping requirements that are duplicative of the recordkeeping requirements in paragraph (n) of the beryllium standards for construction and shipyards. This conclusion supports OSHA's determination not to revoke the standard's ancillary provisions in this final rule.

Conclusion

Based on the discussion above, the agency is not finalizing its proposed revocation of the ancillary provisions in the construction and shipyards standards. Instead, OSHA has decided to proceed with a new, more comprehensive proposal to amend the standards that accounts for the protections of other OSHA standards, where appropriate, and maintains a high level of worker protection. The new proposal will also

ensure consistency with the general industry standard, both in terms of the changes made via the DFR in July 2016 (see 83 FR 31045) and the additional changes proposed by OSHA in December 2018 (see 83 FR 63746).

C. Changes to the Compliance Dates in Paragraph (o)

Paragraph (o) of the standards for construction and shipyards sets forth the effective date of the standards as well as the dates for compliance with their requirements. The 2017 final rule set the compliance dates as follows: March 12, 2018, for all obligations of the standards, except for change rooms, which were required to be provided by March 11, 2019, and engineering controls, which had to be implemented by March 10, 2020 (29 CFR 1915.1024(o)(2); 29 CFR 1926.1124(o)(2)). In the NPRM, which was published in June 2017, OSHA announced that it would not enforce the 2017 construction and shipyards standards "without further notice while this new rulemaking is underway" (82 FR at 29183). Subsequently, in March 2018, OSHA stated that it would begin enforcing the PEL and STEL on May 11, 2018 (see Memorandum for Regional Administrators, Delay of Enforcement of the Beryllium Standards under 29 CFR 1910.1024, 29 CFR 1915.1024, and 29 CFR 1926.1124, Mar. 2, 2018, available at: *https://www.osha.gov/laws-regs/standardinterpretations/2018-03-02*). OSHA also clarified in a May 9, 2018, interim enforcement memorandum that it would begin enforcing the construction and shipyards beryllium standards' PEL and STEL on May 11, 2018, but would not enforce any other provisions of those standards absent further notice (see Interim Enforcement Memorandum and Notice of Delay in Enforcement for Certain Provisions of the Beryllium Standards, May 9, 2018, available at: *https://www.osha.gov/laws-regs/standardinterpretations/2018-05-09*). Since May 11,

2018, OSHA has been enforcing only the exposure limits, which are contained in paragraph (c) of both standards.

In the NPRM, OSHA requested comment on whether the agency should delay the compliance dates of the construction and shipyards standards for an additional year (see 82 FR at 29183). This delay "would give affected employers additional time to come into compliance with [the standards'] requirements, which could be warranted by the uncertainty created by this proposal" (82 FR at 29183). After careful consideration of the information received in response to this request for comments, and for the reasons set out below, OSHA has determined that it is appropriate to extend the compliance dates for all ancillary provisions of the construction and shipyards standards for beryllium to [INSERT DATE ONE YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. This final rule has no effect on compliance with the requirements of paragraph (c); compliance with the PEL and STEL has been enforced since May 2018.

OSHA received comments both for and against the proposed delay of the compliance dates for the construction and shipyards standards. Employers and trade associations by and large supported delaying the compliance date by a year (e.g., Document ID 2125, p. 23; 2145, Comments, p. 36; 2141, Comments, pp. 1-2, 11). ABMA stated that, "[s]hould OSHA retain or promulgate any new beryllium standards for construction and shipyards," an additional year would be necessary to allow the industries "sufficient time to prepare for and implement [the] standards" (Document ID 2142, Comments, p. 4). Newport News Shipbuilding stated that additional time was particularly important in order for employers to figure out how to comply with the exposure assessment provisions of the standards for blasting operations (Document ID

2095, p. 1). The Beryllium Health and Safety Committee Task Group, which argued that all ancillary provisions should be retained, nevertheless urged OSHA to implement a one-year compliance deadline delay (see Document ID 2118, pp. 1-2). The Task Group noted that the ancillary provisions impose extensive compliance obligations, and that additional time would be necessary for employers to engage in research and collaboration on the exposure monitoring provisions and to incorporate the medical surveillance obligations into their policies and programs (see Document ID 2118, p. 2). Similarly, several public health and medical experts who strongly opposed revoking the ancillary provisions stated they had no objection to the proposal to extend the compliance dates (see Document ID 2123, p. 3).

The West Virginia Oil and Natural Gas Association argued that the uncertainty over whether the ancillary provisions of the construction and shipyards standards would be eventually withdrawn by OSHA makes a delay of compliance obligations necessary (see Document ID 2122, p. 4; see also 2145, Comments, p. 36). CISC also cited "the posture of this rulemaking and the uncertainty surrounding it" as reasons that the regulated industries would need additional time to determine the impact of any future final rule (Document ID 2125, p. 23). Century Aluminum Company (Century Aluminum) indicated that a delay of the "complex and burdensome" compliance requirements was necessary so that "employers do not spend immense amounts of time and money to comply with requirements that ultimately are amended or rescinded" (Document ID 2141, Comments, p. 11; see also 2141, Attachment 3, pp. 9-10 ("if appropriate revisions to the final Rule cannot be achieved within an adequate period of

time, a stay of the compliance dates may become necessary to avoid unwarranted burdens")).

Other commenters, including labor organizations, public interest groups, and private citizens, firmly opposed OSHA's proposed extension of the compliance dates (e.g., Document ID 2140, p. 9; 2129, p. 11; 2132, p. 2; 2133, p. 4; 2084). These commenters were primarily concerned that any further delay in implementing the standards would prolong workers' exposures to unsafe levels of beryllium, increasing their risk of beryllium-related health effects (e.g., Document ID 2140, p. 9). As Dr. Lee S. Newman stated, "[k]nowing that construction and shipyard workers are at risk for developing incurable lung disease that can be prevented by compliance with this standard, it is morally and ethically indefensible to delay" (Document ID 2136, p. 4). The Union of Concerned Scientists emphasized that, until compliance with the standards is required, "workers will continue to be exposed to beryllium at levels clearly known to be unsafe" (Document ID 2131, p. 2; see also 2130, p. 2). NELP and National Jewish Health also pointed out that employers were given more than a year to comply with most provisions of the standards, and over three years for others, making additional time unnecessary and unwarranted (Document ID 2133, p. 4; 2106, p. 7).

Commenters, furthermore, pointed out that the uncertainty cited by OSHA as a reason for delaying the compliance deadlines was of OSHA's own making. As one private citizen stated, "[t]he government should not first deliberately create uncertainty about a rule and then cite that uncertainty as a reason to weaken the rule and endanger workers" (Document ID 2081; see also 2130, p. 2). Public Citizen noted that, if OSHA were to finalize the rule as proposed, rescinding the vast majority of the current

standards, compliance with the new PEL- and STEL-only standards would be easier and there would be even less justification for the proposed delay (Document ID 2134, p. 4). Similarly, according to NABTU, because OSHA has "not even suggested that it is infeasible for employers to comply with the standard, there is no basis for any further delay in the compliance date" (Document ID 2129, p. 11).

After careful consideration of the comments, and in light of OSHA's intent to propose different amendments to the standards, OSHA has decided to finalize the proposed delay of the compliance deadlines for approximately one year in both the construction and shipyards standards. The effective date of the standards remains unchanged. Amended paragraph (o)(2)(i) states that employers' obligations under the exposure limit requirements in paragraph (c) commenced on March 12, 2018. Thus, paragraph (o)(2)(i) reiterates that those obligations went into effect in conformance with paragraph (o)(2) of the 2017 final rule. Amended paragraph (o)(2)(ii) reflects the new, delayed compliance date of [INSERT DATE ONE YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER] for all other obligations of the standards.

OSHA's decision to delay compliance until [INSERT DATE ONE YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER] reflects the agency's determination that it would be unfair to the regulated community to expect compliance by the dates in the standards given the agency's decisions to retain all ancillary provisions in this final rule and propose different amendments to the standard in a forthcoming proposal. As argued by CISC, the high level of uncertainty inherent in this regulatory posture makes additional time essential (see Document ID 2125, p. 23). In

fact, the regulated community is facing even more uncertainty now than it was in 2017 when the NPRM was published. Requiring compliance with the 2017 final rule, or even requiring employers to expend time and money determining how to comply with 2017 final rule, would make little sense when the standards, as noted by Century Aluminum and ABMA, may ultimately be amended (see Document ID 2141, Comments, p. 11; 2142, Comments, p. 4). In finalizing the proposed compliance date extension but not the proposed revocation of all ancillary provisions, OSHA concurs with commenters like the Beryllium Health and Safety Committee Task Group and several public health and medical experts, all of whom opposed revoking the ancillary provisions but did not object to a delay of the compliance dates (see Document ID 2118, pp. 1-2; 2123, p. 3).

In finalizing the compliance delay, the agency is also being consistent with its 2018 delay of the compliance dates for many of the ancillary provisions in the beryllium standard for general industry (see 83 FR 25536 (June 1, 2018) (NPRM); 83 FR 39351 (Aug. 9, 2018) (final rule)). There, OSHA planned to propose modifications to those ancillary provisions; the agency reasoned that it would not make sense for either the agency or the regulated community for OSHA to begin enforcement of requirements that would be affected by changes made in the upcoming rulemaking. Employers would likely have to take unnecessary measures to comply with provisions that could subsequently be modified, resulting in wasted resources. Furthermore, the compliance date extension for the beryllium general industry standard gave OSHA time to prepare and publish the planned substantive NPRM to amend the standard before employers were required to comply with the affected provisions of the rule (see 83 FR 25536). The reasons OSHA gave in 2018 for delaying compliance with the general industry provisions

are applicable to the agency's current final action in delaying the compliance dates for the ancillary provisions of the construction and shipyards standards. Indeed, the rationale has particular force here. Unlike in general industry, where OSHA planned merely to revise existing requirements in the standard, OSHA here previously proposed to revoke the ancillary provisions of the construction and shipyards standards entirely. As such, employers in these industries likely have not prepared to comply with any portion of these provisions.

In general industry, OSHA proposed to delay the compliance date for certain ancillary provisions to allow the agency time to issue a new proposal and expressed its intention to rely on its de minimis enforcement policy while the rulemaking was pending so that employers could comply with the proposed provisions without risk of a citation (83 FR at 25537). Such an approach was appropriate in the general industry context, where the agency planned to propose discrete changes to provisions that employers otherwise expected to go into full effect. Here, however, OSHA does not believe reliance on its de minimis policy is appropriate. If finalized as proposed, the 2017 NPRM would have eliminated any requirement for employers to comply with the ancillary provisions of the shipyard and construction standards. Given OSHA's decision not to revoke these provisions in this rulemaking and instead to propose revisions to the ancillary provisions in a forthcoming rulemaking action, OSHA believes that it is appropriate to apply a one-year compliance extension to allow employers to prepare to comply. The proposed delay was supported by several commenters (Document ID 2125, p. 23; 2141, p. 11; 2142, p. 4). OSHA also notes that this is consistent with the agency's approach in the 2017 final

rule, where the agency similarly gave all industries one year before any compliance obligations began.

OSHA recognizes the comments highlighting the urgent need for these standards and the effect on workers' health that could occur in the period before compliance is achieved (e.g., Document ID 2136, p. 4; 2130, p. 2). However, OSHA notes that the comments highlighting the high levels of exposure that workers would continue to experience during a compliance delay (e.g. Document ID 2140, p. 9; 2131, p. 2) were submitted in 2017, before OSHA began to enforce any aspects of the standards. Since May 2018, the agency has been enforcing the new, lower exposure limits, providing important protection for workers who were previously exposed above these limits (see Memorandum for Regional Administrators, Delay of Enforcement of the Beryllium Standards under 29 CFR 1910.1024, 29 CFR 1915.1024, and 29 CFR 1926.1124, Mar. 2, 2018, available at: *https://www.osha.gov/laws-regs/standardinterpretations/2018-03-02*). OSHA reiterates that employers must continue to comply with paragraph (c) (the PEL and STEL) as subsequent rulemaking efforts proceeds (see 29 CFR 1915.1024(o)(2)(i) and 29 CFR 1926.1124(o)(2)(i), as amended).

Similarly, OSHA acknowledges the comment, from NABTU, that OSHA has not determined compliance with the 2017 final rule to be infeasible for construction and shipyard employers, and the comment from Public Citizen that compliance with the proposed rule (rescinding all ancillary provisions but retaining the PELs) would have been much easier to achieve than compliance with the 2017 final rule (see Document ID 2129, p. 11; 2134, p. 4). OSHA still considers compliance with the 2017 final rule to be feasible; the agency has not stated otherwise. Regardless of feasibility, however, it would

not make sense for OSHA to require employers to comply with, or prepare to comply with, ancillary provisions that are in a state of flux, especially given that OSHA is enforcing the lower PELs. As for Public Citizen's comment that compliance with a final rule revoking all ancillary provisions would have been simpler for employers to comply with (see Document ID, Attachment 2134, p. 4), OSHA agrees but, as discussed above, the agency is not finalizing that portion of the NPRM.

Finally, OSHA recognizes the comments, from the American Thoracic Society and a private citizen, noting that the current regulatory uncertainty is of OSHA's own making (Document ID 2081; see also Document ID 2130, p. 2). However, as explained herein, OSHA has determined that it is more important to proceed apace with a new proposal than to require compliance with a standard that is subject to change in the near future. The new proposal will account for regulatory overlap, where it exists, be consistent with the general industry beryllium standard, where appropriate, and maintain crucial worker protections.

List of Subjects in 29 CFR Parts 1915 and 1926

Beryllium, Cancer, Chemicals, Hazardous substances, Health, Occupational safety and health.

Authority and Signature

This document was prepared under the direction of Loren Sweatt, Principal Deputy Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor. The agency issues the sections under the following authorities: 29 U.S.C. 653, 655, 657; 40 U.S.C. 3704; 33 U.S.C. 941; Secretary of Labor's Order 1-2012 (77 FR 3912 (1/25/2012)); and 29 CFR part 1911.

Signed at Washington, DC, on September 24, 2019.

Loren Sweatt,
Principal Deputy Assistant Secretary of Labor for Occupational Safety and Health.

Amendments to Standards

For the reasons set forth in the preamble, chapter XVII of title 29, parts 1915 and 1926, of the Code of Federal Regulations is amended as follows:

PART 1915—OCCUPATIONAL SAFETY AND HEALTH STANDARDS FOR SHIPYARD EMPLOYMENT

1. The authority citation for part 1915 continues to read as follows:

Authority: 33 U.S.C. 941; 29 U.S.C. 653, 655, 657; Secretary of Labor's Order No. 12-71 (36 FR 8754); 8-76 (41 FR 25059), 9-83 (48 FR 35736), 1-90 (55 FR 9033), 6-96 (62 FR 111), 3-2000 (65 FR 50017), 5-2002 (67 FR 65008), 5-2007 (72 FR 31160), 4-2010 (75 FR 55355), or 1-2012 (77 FR 3912); 29 CFR part 1911; and 5 U.S.C. 553, as applicable.

2. Amend § 1915.1024 by revising paragraph (o)(2) to read as follows:

§ 1915.1024 Beryllium.

* * * * *

(o) * * *

(2) *Compliance dates*. (i) All obligations contained in paragraph (c) of this standard commence and become enforceable on March 12, 2018; and

(ii) All other obligations of this standard commence and become enforceable on [INSERT DATE ONE YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

PART 1926—SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION

Subpart Z—Toxic and Hazardous Substances

3. The authority citation for subpart Z of part 1926 continues to read as follows:

Authority: 40 U.S.C. 3704; 29 U.S.C. 653, 655, 657; and Secretary of Labor's Order No. 12-71 (36 FR 8754), 8-76 (41 FR 25059), 9-83 (48 FR 35736), 1-90 (55 FR 9033), 6-96 (62 FR 111), 3-2000 (65 FR 50017), 5-2002 (67 FR 65008), 5-2007 (72 FR 31160), 4-2010 (75 FR 55355), or 1-2012 (77 FR 3912) as applicable; and 29 CFR part 1911.

Section 1926.1102 not issued under 29 U.S.C. 655 or 29 CFR part 1911; also issued under 5 U.S.C. 553.

2. Amend § 1926.1124 by revising paragraph (o)(2) to read as follows:

§ 1926.1124 Beryllium.

* * * * *

(o) * * *

(2) *Compliance dates*. (i) All obligations contained in paragraph (c) of this standard commence and become enforceable on March 12, 2018; and

(ii) All other obligations of this standard commence and become enforceable on [INSERT DATE ONE YEAR AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

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