

Testimony of Ronald H. White, M.S.T.  
on behalf of the Center for Effective Government  
to the Occupational Safety and Health Administration

Informal Public Hearing for the Proposed Rule on Occupational Exposure to Respirable  
Crystalline Silica  
April 1, 2014

I appreciate the opportunity to present this testimony on behalf of the Center for Effective Government. My name is Ronald White, and I serve as Director of Regulatory Policy at the Center. The Center for Effective Government, formerly called OMB Watch, is a national policy organization with the aim of ensuring that government operations are open and transparent, that our regulatory system protects people and the environment, and that public officials advance the interests and priorities of working Americans.

The body of scientific evidence, as documented in OSHA's proposed rule and in more detail in OSHA's 2013 documents *Occupational Exposure to Respirable Crystalline Silica - Review of Health Effects Literature and Preliminary Quantitative Risk Assessment* as well as in the *Supplemental Literature Review of Epidemiological Studies on Lung Cancer Associated with Exposure to Respirable Crystalline Silica*, clearly indicates that exposure to silica causes silicosis, chronic obstructive pulmonary disease, lung cancer, chronic kidney disease and autoimmune disorders. CEG believes that OSHA conducted a thorough review and evaluation of the peer-reviewed literature on the health effects associated with exposure to respirable crystalline silica. However, numerous articles regarding the health impacts of occupational silica exposure have been published in the peer-reviewed literature since the conclusion of OSHA's literature review. For a listing of some of this published literature, OSHA is referred to written comments on the proposed rule submitted by the American Public Health Association (APHA), which include an appendix with several articles published in the peer-reviewed literature subsequent to OSHA's literature review. Of particular note is the 2012 study by Chen et al.<sup>1</sup> which found significantly elevated standardized mortality ratios for ischemic heart disease in

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<sup>1</sup> Chen W, Liu Y, Wang H, et al. Long-term exposure to silica dust and risk of total and cause-specific mortality in Chinese workers: a cohort study. *PLoS Med.* 2012; 9(4):e1001206.

silica-exposed workers. The authors conclude that “long-term silica dust exposure was associated with substantially increased mortality among Chinese workers. The increased risk was observed not only for deaths due to respiratory diseases and lung cancer, but also for deaths due to cardiovascular disease”. This finding of an association between silica exposure and increased risk of IHD mortality or incidence, also reported in studies by Steenland and Sanderson (2001)<sup>2</sup>, Weiner et al.<sup>3</sup> (2007), Lu and Zhang (2012)<sup>4</sup> expands the scope of adverse health effects of potential concern from exposure to silica.

The risk of death from silica exposures permitted under the current standards is clearly significant. OSHA’s risk assessment indicates that there is a “very high level of risk remaining at the PEL” for adverse health effects from diseases even at the proposed 50  $\mu\text{g}/\text{m}^3$  level. OSHA’s risk assessment estimates a remaining lifetime excess risk of death associated with silica exposure of 6-26 lung cancer deaths per one thousand workers, 43 deaths from non-malignant respiratory disease (including silicosis) per one thousand workers, and 32 deaths from renal disease per one thousand workers. These risk levels are well in excess of the benchmark of 1/1,000 excess risk over a working lifetime that OSHA has used for other health standards and strongly underscores the need for an action level (AL) set at a substantially lower exposure level to minimize the unavoided health impacts. CEG supports adoption of the proposed the 50  $\mu\text{g}/\text{m}^3$  PEL based on OSHA’s current assessment of the feasibility of controls to achieve this level of exposure, though we note that a threshold limit value equivalent to 25  $\mu\text{g}/\text{m}^3$  (0.025 mg/m<sup>3</sup>, TWA) was set in 2006 by the American Conference of Government Industrial Hygienists and this exposure limit for silica has been adopted by several international countries (e.g., Japan, Italy, and the Canadian provinces of Alberta, Nova Scotia and Saskatchewan). Compared to the current silica PEL of 100  $\mu\text{g}/\text{m}^3$ , the proposed 50  $\mu\text{g}/\text{m}^3$  PEL will prevent over 16,000 silica-related fatalities and more than 28,000 serious illnesses over a 45-year working life, or more than 350 deaths and 630 illnesses annually.

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<sup>2</sup> Steenland K, Sanderson W. Lung cancer among industrial sand workers exposed to crystalline silica. *Am J Epidemiol* 2001;153:695–703.

<sup>3</sup> Weiner J, Barlow L, Sjogren B. Ischemic heart disease mortality among miners and other potentially silica-exposed workers. *Am J Ind Med.* 2007; Jun;50(6):403-8.

<sup>4</sup> Lu Y, Zhang M. [Cohort study of ischemic heart disease among 1817 workers in a foundry]. 2012 Sep;41(5):824-30.

CEG also supports OSHA's proposal to set an action level for silica exposure at  $25 \mu\text{g}/\text{m}^3$ . For workers employed in general industry, exposure to silica that exceeds the AL, rather than the PEL as proposed, for 30 or more days a year should trigger the rule's medical surveillance provisions. As noted in the written comments submitted by the AFL-CIO, requiring medical surveillance based on exceedances of the AL is consistent with OSHA standards for several other toxic chemicals and materials. CEG supports the recommendation from the American Public Health Association that medical surveillance be conducted at least every three years subsequent to an initial examination conducted within 12 – 18 months of the baseline examination, with the clarification that workers are able to request to see a clinician at an earlier interval if there is a concern about shortness of breath, excessive exposure levels, or their ability to use respiratory protection.

We also support periodic exposure monitoring for the general industry categories when silica exposures are at or above the action level, with more frequent assessments required if exposures exceed the PEL. Since the rationale for OSHA's selection of  $50 \mu\text{g}/\text{m}^3$  as the PEL for all affected industries is not based on a level that eliminates significant risk but rather on the feasibility of engineering controls and work practices, CEG recommends that OSHA require reporting of results from the exposure monitoring required when silica exposures are at or above an action level (AL) of  $25 \mu\text{g}/\text{m}^3$  to provide information regarding the ability of controls to reduce exposures below the proposed PEL.

CEG strongly supports a compliance approach for the silica standard based on OSHA's and the industrial hygiene field's longstanding concept of a hierarchy of controls that requires that exposures be reduced primarily through the use of engineering and work practice controls unless the employer can demonstrate that such controls are not feasible. Where engineering and work practices controls are not sufficient to reduce exposures to or below the PEL, the employer is still required to implement feasible controls, supplemented by respiratory protection to comply with the PEL. Limiting exposure to silica at its source through engineering and work practice controls not only protects workers directly involved in the dust-generating operation, but also serves to limit exposures to other workers and the public.

With respect to the construction industry standard, we recommend that Table 1 of the proposed rule should be reviewed within five years and, where necessary, revised with updated information on control technology that is technically and economically feasible to achieve lower exposure levels. We urge OSHA to evaluate the evidence that is submitted to the record of this rulemaking to determine if more recent experience and evidence support the feasibility of a lower limit, and, if so, to set a lower PEL in the final rule.

CEG urges OSHA to prohibit the use of silica sand for abrasive blasting. In the 1974 criteria document supporting the recommended standard of  $50 \mu\text{g}/\text{m}^3$  for occupational exposure to crystalline silica, National Institute for Occupational Safety and Health (NIOSH) noted that silica sand (or other substances containing more than 1% crystalline silica) should be prohibited as abrasive blasting material. The 1992 NIOSH Hazard Alert document 92-102 notes that the use of crystalline silica for blast cleaning operations was prohibited in Great Britain in 1950 and in other European countries in 1966. The NIOSH Alert recommends: "Prohibit silica sand (or other substances containing more than 1% crystalline silica) as an abrasive blasting material and substitute less hazardous materials." OSHA's website lists numerous alternatives to silica sand for abrasive blasting that are feasible and available.

In conclusion, almost forty years after NIOSH issued criteria for a recommended standard limiting occupational exposure for all forms of crystalline silica to a level of  $50 \mu\text{g}/\text{m}^3$  and OSHA published an advanced notice of proposed rulemaking based on the NIOSH criteria, the process for developing a revised exposure limit and related components of a rule to reduce the health impacts of silica exposure on workers has yet to be completed. OSHA's action to adopt a more health protective PEL is long overdue, and should be completed on an accelerated schedule to ensure that workers are provided as soon as possible with the improved health protections afforded by the revised standards.

Thank you for your attention.