

The Occupational Safety and Health Administration's [new proposed regulation](#) to reduce workplace exposure to crystalline silica has been almost 40 years in the making. Also called silicon dioxide (or, more commonly, quartz), crystalline silica occurs abundantly in sand, soil, and rock. OSHA first established a maximum permissible exposure level for crystalline silica in 1970 by adopting a consensus industry standard. Unfortunately, the form of that standard was obsolete by the time it was adopted, and OSHA issued an advance notice of proposed rulemaking to modify it in 1974, but took no further action. Then, in 1994 OSHA [identified](#) crystalline silica as one of a few top priority safety and health hazards, and, two years later, the International Agency for Research on Cancer [concluded](#) that "crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans." In 1998, OSHA listed regulation of silica on its semi-annual agenda of upcoming regulatory actions and, by the fall of 1999, set itself a deadline of June 2000 for issuing a proposed rule. In 2002, OSHA revised the deadline to November 2003 and listed the proposed rule as one of its top priorities. This deadline kept slipping, however, until February 2011, when OSHA sent a draft of the rule to the Office of Information and Regulatory Affairs for interagency review. This review took an unusually-long two-and-a-half years to complete, but culminated in OSHA publishing a [proposal](#) on its website on August 23, 2013.

Given OSHA's [estimate](#) that "the proposed rule will save nearly 700 lives and prevent 1,600 new cases of silicosis per year," one can be forgiven for wondering why the agency has taken so long to issue it. In OSHA's defense, it is a complicated rule. Prolonged workplace exposure to free crystalline silica is associated with scarring of the lungs, leading to silicosis, a progressive, incurable disease that impairs respiratory function. On the other hand, silica is ubiquitous; it is the second most common mineral in the earth's crust, and occurs abundantly as quartz, sand, etc. It is used to manufacture a wide variety of materials, including glass, concrete, and abrasives. Google "silica" and you'll find ads extolling its benefits as a nutritional supplement and beauty treatment. Devising a regulation that minimizes hazardous exposures without banning its beneficial uses [poses real challenges](#).

To further complicate OSHA's task, whether an individual exposed to silica dust develops silicosis depends on a range of individual factors including personal characteristics unrelated to the exposure, such as whether the individual smokes. Filtration by the nose, throat, and upper airways remove larger particles before they reach the innermost depths of the respiratory tract where silicosis damage occurs. The size of dust particles is thus important to determining hazard levels; other important factors include whether the silica was freshly fractured (bad), or whether its surface has been deactivated by contact with other materials (good).

OSHA regulators thus face challenges in developing regulations that adequately address the complexity of biological, mineralogical, chemical, physical, and other characteristics of silica.



Too detailed a definition could induce paralysis; too sweeping a definition could fail to focus resources on hazardous exposures and impose costs without corresponding benefits.

OSHA's proposal has been greeted with enthusiasm by [labor unions](#) and organizations such as the [American Thoracic Society](#), and criticism by [builders and contractors](#) who express concern that the rule would impose unnecessarily prescriptive and costly requirements. (OSHA estimates the rule will cost \$637 million per year.) In a twist that can only heighten discord, OSHA realized after conducting a preliminary regulatory impact analysis that its proposal would affect an industry it had not previously considered—hydraulic fracturing, or “fracking,” which is the subject of heated political debate.

The notice of proposed rulemaking is over 750 pages, and the [preliminary supporting analyses](#) add almost 2,000 more. Once OSHA publishes the proposal in the Federal Register, it plans to give the public 90 days to comment before it begins to evaluate the rulemaking record. Given the complexities of addressing the problems of occupational exposure to crystalline silica, it would not be surprising if there were more twists and turns in this rulemaking before the dust settles on a final rule.

