

Comments of the Sorptive Minerals Institute (SMI)

Comments on OEHHA's draft Chronic Toxicity Summary for Silica by the Sorptive Minerals Institute (SMI) were received in a letter from Lee Coogan, Executive Director, in a letter dated June 19, 2003. The SMI is the industry trade association representing the interests of companies involved in mining, processing, and/or distributing of absorbent mineral-based pet litters and other absorbent mineral-based products throughout Canada, Mexico, and the United States. Minerals on which these products are based include bentonite, attapulgite, diatomite and fuller's earth.

Comment: As noted in section V "Effects of Animal Exposure" of the draft Chronic Toxicity Summary for Silica, we agree that a growing body of evidence indicates that crystalline silica surfaces play an important role in determining silica toxicity. A recent study supported by the SMI, Creutzenberg *et al.* (2003), observed that quartz having "geologically old" surfaces exhibited significantly less toxicity than that of quartz whose surfaces had been freshly fractured. Additional information on the safe exposure to natural crystalline silica can be found in SMI's successful application for a Safe Use Determination under the California Safe Drinking Water and Toxic Substances Act of 1986.

Because of the marked difference in attributes of quartz surfaces produced by different sources, we believe that Reference Exposure Levels (RELs) derived from exposure data for these different sources also will vary. Specifically, evaluations of data from hard rock mining and quarrying operations in which quartz surfaces are fractured are likely to yield much lower RELs than similar evaluations of exposure resulting from dust generated by roads, farming, or clay mining and processing.

In its 1996 assessment of "Ambient Levels and Noncancer Health Effects of Inhaled Crystalline and Amorphous Silica" the United States Environmental Protection Agency (U.S. EPA) references 1992 National PM₁₀ emissions as occurring from the following sources by percent.

Unpaved roads	33.3%
Construction 23.2% Paved roads	17.4%
Agricultural tilling 15.0% Wind erosion	10.1 %
Mining and Quarrying	1.0%

In determining respirable crystalline silica RELs, the OEHHA draft Chronic Toxicity Summary for Silica focuses almost exclusively on data from hard rock mining operations. Recognizing that hard rock mining only represents a fraction of total mining and quarrying, the assessed RELs are based on unique operations that contribute significantly less than 1 % to ambient silica levels and fugitive emissions.

Crystalline silica is ubiquitous in nature, representing approximately 12% of the earth's crust and a similar percent of ambient dust within the United States. The purpose of establishing RELs is to protect the citizens of California, however the complex nature of crystalline silica defies a "one size fits all" regulation. We believe that using RELs primarily based on data from hard rock mining (i.e., freshly fractured silica) to characterize the risk of

exposure to all sources of crystalline silica (the vast majority of which are not freshly fractured) will greatly overestimate the risks from these other sources.

In determining a REL for crystalline silica, we encourage OEHHA to examine three factors: the source of the exposure, the potential levels of exposure, and the nature of the surfaces of the crystalline silica attributable to those exposures. We believe that the inclusion of two or more RELs derived from data associated with one or more of the five major source categories above will significantly improve the scope and applicability of the Chronic Toxicity Summary for Silica.

This letter does not include copies of the cited references, however we would be happy to provide them at your request. In addition, the Sorptive Minerals Institute is continuing to do research on crystalline silica in order to understand better the role of the quartz surfaces in determining biological activity. We would be pleased to share that information with your office. We look forward to assisting you in any way that we can.

Response: *We appreciate that there are differences in the various sources of crystalline silica as well as the impact of the nature of the exposed surfaces. However, at this time, these differences can only be included qualitatively as a source of uncertainty. OEHHA staff is proposing a chronic inhalation REL for respirable, crystalline silica. The silica particles should be like those silica particles to which the workers who get silicosis are exposed. As discussed in the chronic REL summary, several papers have reported that freshly fractured quartz, which has increased surface activity, causes greater inflammation than "aged" quartz. However, as indicated by the levels of inflammatory cells in Table 15, both fresh and aged quartz definitely cause inflammation.*