

Exposure to silica: there is a price to beauty

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This presentation focused on two types of exposures: a) exposure to artificial stone dust b) exposure to silicone gel-filled breast implants.

a) The manufacture of kitchen and bath countertops in Israel is based mainly on artificial stone that contains 93% silica as natural quartz, and ~3500 workers are involved in cutting and processing it. Artificial stone produces high concentrations of silica dust. Over Exposure to crystalline silica may cause silicosis, an irreversible lung disease.

We studied a population of individuals employed in the manufacture of kitchen and bathroom countertops made of an artificial raw material containing more than 90% free crystalline silica. In Israel, according to the Israeli Institute for Occupational Safety and Hygiene, the maximum exposure rate to SiO₂ dust is 0.1 mg/m³ for respirable dust (<7 μm), and 0.3 mg/m³ for floating dust . Importantly, these standards refer to environmental exposure and ignore cumulative internal exposure.

In our study we screen exposed workers by quantitative biometric monitoring of functional and inflammatory parameters. Sixty-eight exposed artificial stone workers were compared to 48 non-exposed individuals (controls).

b) Silicone gel-filled breast implants have been widely used for breast augmentation and reconstruction since the 1960's when the FDA approved them in women over 22 years of age. Concerns have been raised about the safety of those implants, with the focus upon whether silicone leak can spread to regional lymph nodes and remote organs and possibly cause inflammatory and immune response.

Health risk and safety concerns of silicone gel-filled breast implants and the more common complications associated with them include local inflammatory reactions, autoimmune reactions and the migration of silicone fluid to the axillary nodes. They are the subjects of controversies that have remained unresolved for decades.

We report the immunological response to gel elastomer material that was demonstrated by means of a unique laboratory workup as being a causative agent of severe interstitial lung diseases (ILD) linked with silicone implant leakage in 3 cases.