

FieldShield, Inc.

Play it safe!

THE PROBLEM WITH RESPIRABLE PARTICULATE MATTER

A very real problem has been ignored or hidden concerning respirable particulate material (PM) associated with **sand (and/or rubber)** when used as artificial turf infill.

Crystalline silica (quartz) is classified as Group 1 (carcinogenic to humans) by IARC (Int'l Agency for Research on Cancer).

As a result, the Federal government (OSHA) mandates a **warning label** be affixed to all containers holding sand with a crystalline silica (quartz) content exceeding 0.1% by weight or volume or respirable portion, (HSC) 29 CFR 1910.1200. (Sample label attached). Virtually all sand commonly used for artificial turf infill significantly exceeds these mandated thresholds. **The label warns that breathing silica dust can cause severe and permanent lung damage, silicosis, cancer, psoriasis, and that breathing silica dust may not cause noticeable injury or illness, even though permanent lung damage may be occurring.**

Under the MA Toxic Use Reduction Act, crystalline silica, of a respirable size under 10 microns, is listed as toxic. Crystalline silica is also listed, under the CA Clean Air and Water Act (Prop 65) as a carcinogen.

The Health-Hazard: In its occupational use during transportation, handling and installation, respirable particles in concentrations above the TLV (Threshold Limit Value) of .1 mg/M³ are likely produced. More concerning, normal maintenance (sweeping/brushing) and athletic use will likely produce respirable particles (< 3.5 microns), in concentrations above the TLV, to be placed in suspension in the breathing zone. (Please note that the warning label specifically prohibits the dry sweeping of the sand product, which is such a necessary part of normal maintenance and grooming of infilled artificial turf). **This respirable particulate hazard is exacerbated with regard to athletic fields because young lungs and lungs weakened by asthma are significantly more vulnerable to the danger of respirable particulate, especially given the exaggerated, deep respiration triggered by competitive athletic activity.**

A comprehensive study by the San Francisco Recreation and Park Department (http://www.asgi.us/publicdownloads/SFParks_Playfields_8.21.08.pdf) clearly identifies the respirable particulate matter problem associated with the rubber dust as resulting from the size and concentration of the particulate matter (less so, the mass or chemical composition) as it enters the gas-exchange areas of the lungs. The SF Parks study did not specifically consider sand, only rubber, but the science is the same and that science is the genesis of the warning label requirements for silica sand. The .1% threshold



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is considered a predictor of the downstream availability of respirable particles (< 3.5 microns) at a level of unacceptable risk.

The SF Parks study also addressed the problem of “kick-up” (we call it fly-out) and determined that larger particles carry micro-particulate with them when kicked-up by players. These respirable particles (< 3.5 micron) can remain suspended in the breathing zone for 83 minutes. Finer particles can potentially remain suspended for days.

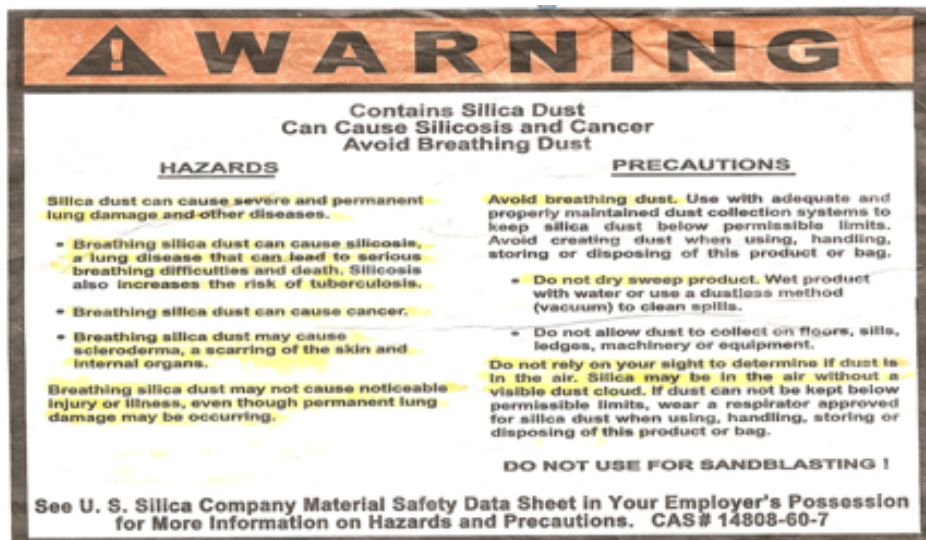
Crystalline silica in sand is a carcinogen, when in respirable form, and is considered toxic by the states of MA and CA. Normal maintenance and athletic use of the artificial turf field with sand and rubber infill will very likely produce suspension of respirable particles in the breathing zone, which is a significant health-hazard. (The risks for children under 12 years old are markedly greater and exaggerated by the deep respiration caused by vigorous athletic activity).

If safer infill alternatives are rejected, criteria must be written into job specifications setting acceptable limits for respirable sand and rubber particulate during installation and use. Furthermore, monitoring of adherence to set limits during the useful life of the turf must also be incorporated into the project specifications and such testing should be performed regularly, immediately after use or maintenance (and when infill is dry). Given the information now available, failure to set, monitor and enforce such limits should be considered negligent and carry commensurate liability.

Respectfully submitted,

Philip Christiansen, PE, MS

TYPICAL FEDERALLY MANDATED WARNING LABEL



Español : Ver al dorso las advertencias en Español.
Français : Lire au dos en Français les précautions à prendre.

NOTE: PLEASE DO NOT REMOVE THIS DOCUMENT FROM THIS BAG.