Q: Is there asbestos in the silica sand mined in Wisconsin?

A. From a geological perspective, there is no reason to expect asbestos in any of its various forms to be present in the sandstones mined in Wisconsin. The very processes that produced the sandstones would have destroyed these minerals before the sand was deposited.

Asbestos is a name for the fibrous form of minerals of the serpentine and amphibole groups. Serpentine $Mg_6Si_4O_{10}(OH)_8$ is the common form of commercial asbestos. Amphiboles such as tremolite – actinolite, $Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$ and cummingtonite – Grunerite $(Fe,Mg)_7Si_8O_{22}(OH)_2$ can also occur in fibrous or asbestiform habit. These minerals are iron – magnesium silicates and form from the action of heat and pressure (metamorphism) on rocks rich in iron and/ or magnesium. Examples include iron rich sediments or magnesium/iron- rich igneous rocks.

These ferromagnesian minerals are generally unstable under severe weathering conditions and break down much faster when exposed to the atmosphere than silica –rich minerals like quartz. The pure quartz sandstones mined in Wisconsin for hydraulic fracturing, foundry sand and other industrial purposes formed as a result of severe weathering of crystalline rocks in the period from approximately 1 billion to 500 million years ago. In this long period of intense weathering ferromagnesian minerals such as serpentine or amphiboles would have been destroyed, and only the highly resistant quartz survived to be deposited and become sandstone.

A study on the St. Peter Sandstone (Tyler, 1936) looked at heavy minerals present in the sandstone and, as would be expected, reported none of the asbestiform minerals. From a geological perspective there is no reason to expect any asbestiform serpentine or amphibole to be present in the sandstones mined in Wisconsin. The very processes that produced the sandstones would have destroyed these minerals long before the sand was deposited.