EARTHQUAKE
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Arizona Rocks 29

Text and photos by Ray Grant

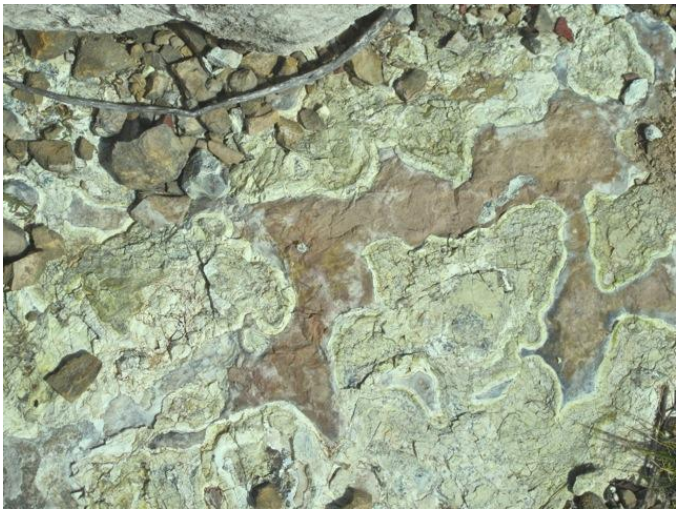
Serpentinite is a metamorphic rock composed of serpentine. Serpentine is the general name used for three minerals, antigorite, chrysotile, and lizardite, all with the formula $Mg_3Si_2O_5(OH)_4$. Antigorite and lizardite are massive forms (they can't be told apart without some special testing) and chrysotile is the fibrous form (asbestos form).

Most serpentinites were originally ultramafic rocks rich in olivine that changes to serpentine during metamorphism. It also forms by the metamorphism of magnesium limestone or dolostone.

In Arizona, the most common serpentinite formed by the replacement of siliceous dolostone from contact metamorphism with diabase sills. Small amounts of serpentine are found at many localities in Arizona, but in Gila County around the Salt River Canyon there was commercial mining of serpentine (the chrysotile asbestos form). In this region there are about 160 small deposits that produced more than 75,000 tons of asbestos between 1914 and 1982. Much of the asbestos from this area was long spinning grade and brought a premium price.

The formation with the serpentinite is the Mescal Limestone. It is Precambrian in age about 1.2 billion years old. It was intruded by diabase about one billion years ago when the asbestos formed. Similar asbestos deposits are found in the Grand Canyon, but transportation problems prevented much mining.

Tailings from asbestos mines in the Salt River Canyon.



Serpentinite replacing Mescal Limestone in Salt River canyon

Serpentinite with both massive and fibrous serpentine from Salt River Canyon