

***Asbestos and Other Mineral Fibers:  
A Roadmap for Scientific Research***

May 4, 2007

William C. Ford

# **Co-Sponsors**

- **American Road and Transportation Builders Association**
- **Associated Builders and Contractors**
- **National Stone, Sand & Gravel Association**
- **U.S. Chamber of Commerce**

# **Fundamental Point**

**Asbestos is a serious human health hazard and a known human carcinogen. Harmful exposure to it must be strictly controlled.**

# **Basic Mineralogy**

# **Basic Mineralogy**

- **Asbestiform minerals**
- **Nonasbestiform minerals**

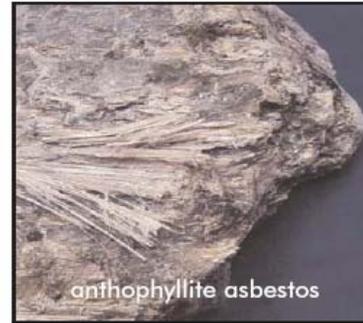
Asbestiform



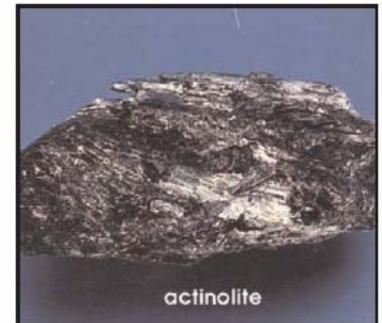
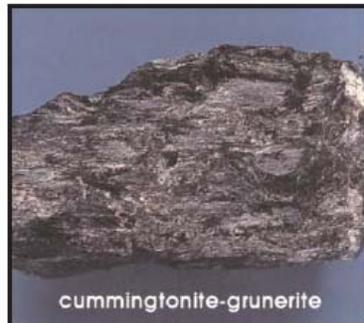
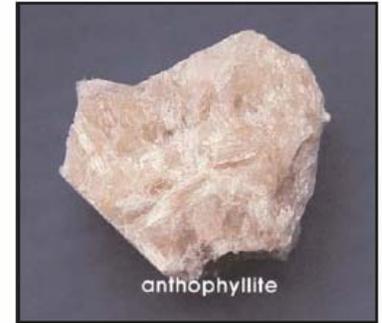
Rock

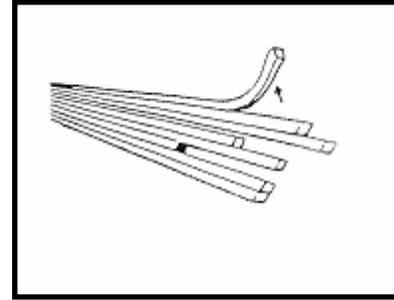
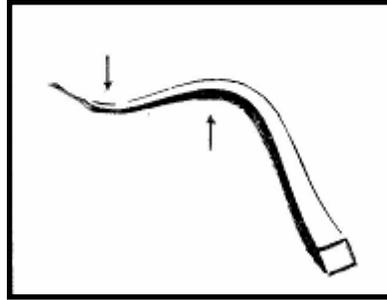
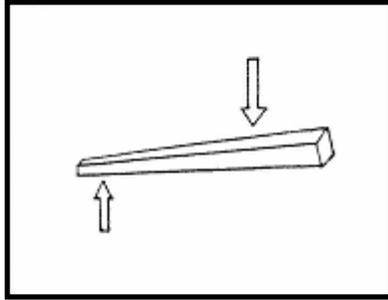


Asbestiform



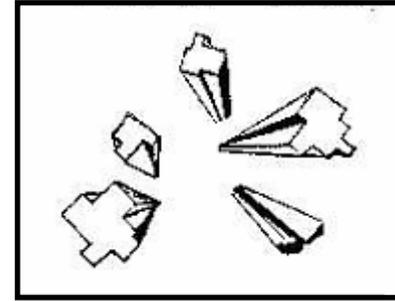
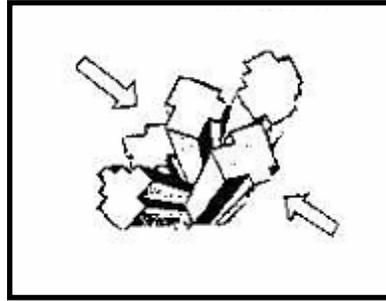
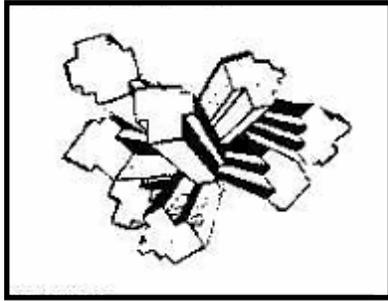
Rock





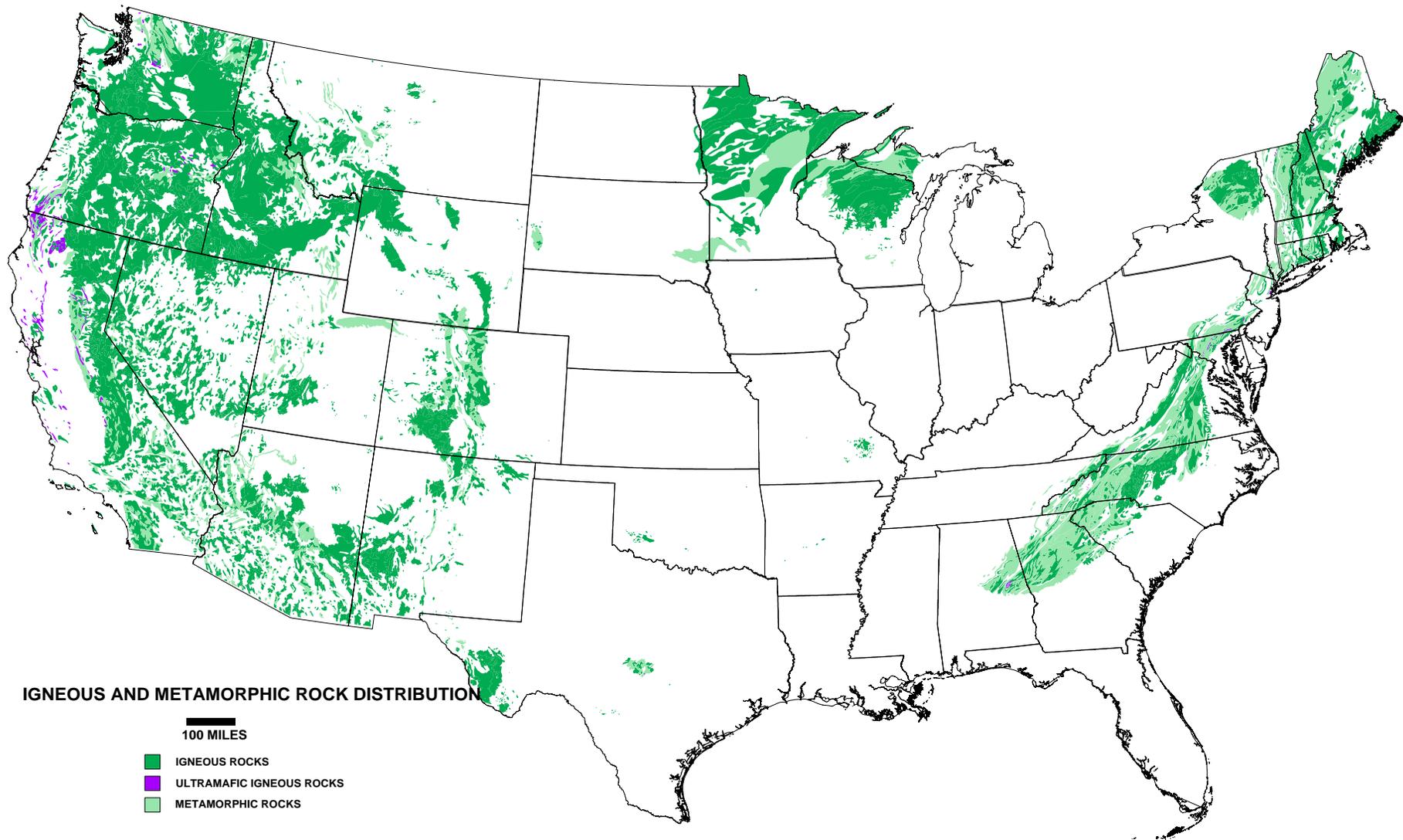
## ASBESTIFORM

As the drawings above illustrate, asbestiform (asbestos-like) minerals consist of fibers that grow almost exclusively in one dimension, are easily bent and occur as bundles of smaller fibers, which are called fibrils. In fact, the bundling effect of asbestiform minerals is a unique distinguishing feature. Some asbestiform minerals display splayed ends. Asbestiform minerals also are long and thin, with aspect (length-to-width) ratios of typically 20:1 to 100:1 or greater. Most asbestiform fibers are less than 0.1 microns in width, and nearly all are less than 0.5 micron. Individual fibers are only visible with the aid of a microscope.



## ROCKS

Unlike asbestiform minerals, some rock-forming minerals grow in several directions at once. Under pressure, unlike asbestiform minerals which bend, these rock-forming minerals fracture easily into particles called cleavage fragments. Of those, many are elongated, some are needle-shaped, and some show stair-step cleavage patterns. Cleavage fragments tend to be shorter and thicker than their asbestiform counterparts; nearly all have widths that exceed 0.5 microns and lengths below about 10 microns.



### IGNEOUS AND METAMORPHIC ROCK DISTRIBUTION

100 MILES

- IGNEOUS ROCKS
- ULTRAMAFIC IGNEOUS ROCKS
- METAMORPHIC ROCKS

# Presenters

- **Dr. Ernest (Gene) McConnell**
- **Dr. Graham Gibbs**
- **Dr. Wayne Berman**