

Exploring Products— Sunblock

What's in your sunblock?



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Try this!

1. Take a piece of black paper.
2. Use a cotton swab to put a small dab of ointment on the paper. Try rubbing it in.
3. Now use a swab to rub in a dab of sunblock. Is it easier to rub in than the ointment?



What's going on?

The sunblock rubs in better than the ointment, because it contains tiny, nanosized particles of zinc oxide. (A nanometer is a billionth of a meter.) The nanoparticles of zinc oxide are so small that they don't reflect visible light, making the sunblock transparent on skin.

The ointment also contains zinc oxide, but the particles are much bigger. These larger zinc oxide particles reflect visible light, so they create a white film. (To see how this works, look at the pictures of white dots on a black background.)



Both products are equally effective at absorbing UV radiation and keeping it from reaching your skin, but many people prefer sunblock that rubs in clear.

Research shows that sunblocks containing nanoparticles of zinc oxide and titanium dioxide are safe to use. The zinc and titanium minerals in the sunblock don't go through the outer layer of healthy, adult skin. Still, some people have concerns about the use of nanoparticles in sunblock and other products.

Many other health and beauty products contain nanosized particles, including hair products, cosmetics, and toothpaste. These products are not regulated by the U.S. Food and Drug Administration (FDA), and are not required to indicate whether their formulations include nanosized particles.

How is this nano?

Sunblocks containing nanoparticles are one of the most common applications of nanotechnology.

Nanotechnology takes advantage of special properties at the nanoscale. For example, the nanoparticles in sunblock are invisible to the human eye because they're smaller than the wavelength of visible light.

Some people are concerned that the particle size of the ingredients may make a difference in how safe they are. That's because materials can act differently when they're nanosized—so just because something is safe on the microscale doesn't necessarily mean it's safe on the nanoscale. More research is needed before we can know for sure.

