



# Mystery Sand

Can sand keep itself dry?

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Try this!



Investigate the two kinds of sand. Can you see or feel a big difference?



Use the eyedropper to put a few drops of water on both kinds of sand. Try tilting the trays gently. Now can you see another big difference?

The blue sand is special. It has a nano-sized coating that repels water! The coating is so thin you can't feel it, but you can see how it makes the sand behave differently.

## What's going on?

The blue sand has been coated with a silicon compound that makes it repel water. The *hydrophobic* ("water fearing") layer is only one nanometer thick, so it looks and feels like regular sand, but it behaves very differently. (A nanometer is a billionth of a meter.)

The other sand is just ordinary sand that's been colored green. It acts like the kind of sand you find at the beach or playground. Water molecules and sand are attracted to each other, so ordinary sand gets wet.



## How is this nano?

Nanotechnology takes advantage of the way things behave differently at the nanoscale to make new products and applications. A nano-coating is all it takes to make ordinary sand extraordinary!



**Hydrophobic sand was invented to clean up oil spills**

Hydrophobic sand was invented to clean up oil spills in water. When the coated sand is poured on a spill, it bonds to the oil (but not the water) and sinks to the bottom, where it can be dredged and treated.

Hydrophobic sand can also be used to protect utilities in cold climates. The hydrophobic sand can be dug through even when the ground is frozen, making repairs easier.