

Nanomaterial hazard

Preliminary research by a team of ASU scientists suggests the presence of nanomaterials in drinking water may be dangerous to humans. Two of the researchers – principal investigator Paul Westerhoff and civil and environmental engineering professor John Crittenden – caution against drawing conclusions from these preliminary results, but they say initial results indicate that certain nanomaterials in water may be toxic.

In the project, the research team simulated liquid found in intestines and introduced into it a layer of colon cells. Then, the cells were exposed to titanium dioxide (TiO₂), a nanomaterial commonly used as white pigment.

The researchers discovered that exposure to TiO₂ dramatically broke down the cellular layer, indicating that the nanomaterial either killed the cells or weakened the cellular junctions.

The results are significant, for two reasons:

- It confirms that the body's epithelial, or surface, cells are the first line of defense against nanomaterials.
- The breakdown of that cellular layer would allow the nanomaterials to get past the epithelial cells and into organ systems.

Assessing the potential adverse effects of the nanomaterials inside cell tissue is the target of the next phase of the ASU research, Westerhoff says.

ASU researchers presented their findings at the 230th national meeting of the American Chemical Society.

Source: Arizona State University

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