

# Nanoparticles cause brain injury in fish

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Scientists at the University of Plymouth have shown, for the first time in an animal, that nanoparticles have a detrimental effect on the brain and other parts of the central nervous system.

They subjected [rainbow trout](#) to [titanium oxide](#) nanoparticles which are widely used as a whitening agent in many products including paints, some personal care products, and with applications being considered for the food industry. They found that the particles caused vacuoles (holes) to form in parts of the brain and for [nerve cells](#) in the brain to die. Although some effects of nanoparticles have been shown previously in [cell cultures](#) and other in vitro systems this is the first time it has been confirmed in a live vertebrate.

The results will be presented at the "6th International meeting on the Environmental Effects on Nanoparticles and Nanomaterials" (21st – 23rd September) at the Royal Society in London.

"It is not certain at this stage of the research whether these effects are caused by the nanoparticles entering the brain or whether it is a secondary effect of nanoparticle chemistry or reactivity", says Professor Richard Handy, lead scientist.

The results of Professor Handy's work and that of other researchers investigating the biological effects of nanoparticles may influence policy regulations on the environmental protection and human safety of nanomaterials.

"It is worrying that the effects on the fish brain caused by these nanoparticles have some parallels with other substances like mercury poisoning, and one concern is that the materials may bioaccumulate and present a progressive or persistent hazard to wildlife and to humans", says Professor Handy.

Provided by Society for Experimental Biology

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