



# Wellness Watchers Global, LLC

## Ten Toxic Warnings On The Use Of Nanotechnology

### The Impact of Nano-Scale Technologies on Food & Agriculture

“In keeping with the Precautionary Principle, all food, feed and beverage products (including nutritional supplements) incorporating manufactured nanoparticles should be removed from the shelves until such time as regulatory regimes are in place that take into account the special characteristics of these materials, and until the products have been shown to be safe.”

*Down on the Farm: The Impact of Nano-scale Technologies on Food and Agriculture, ETC Group publications; November 2004.*

1

1997 – Titanium dioxide/zinc oxide nanoparticles from sunscreen are found to cause free radicals in skin cells, damaging DNA. (Oxford University and Montreal University) Dunford, Salinaro *et al.*<sup>1</sup>

2

March 2002 – Researchers from the Center for Biological and Environmental Nanotechnology (CBEN, Rice University, Houston) report to US EPA that engineered nanoparticles accumulate in the organs of lab animals and are taken up by cells. “*We know that nanomaterials have been taken up by cells. That sets off alarms. If bacteria can take them up then we have an entry point for nanomaterials into the food chain.*” – Dr. Mark Wiesner.<sup>2</sup>

3

March 2003 – Researchers from NASA/Johnson Space Center report that studies on effects of nanotubes on the lungs of rats produced more toxic response than quartz dust. Scientists from DuPont Haskell laboratory present varying but still worrying findings on nanotube toxicity. “*The message is clear. People should take precautions. Nanotubes can be highly toxic.*” – Dr. Robert Hunter (NASA researcher)<sup>3</sup>

4

March 2003 – ETC group publishes first scientific literature survey on nanoparticle toxicity by toxicopathologist Vyvyan Howard. Dr. Howard concludes that the smaller the particle, the higher its likely toxicity and that nanoparticles have various routes into the body and across membranes such as the blood brain barrier. “*Full hazard assessments should be performed to establish the safety of species of particle before manufacturing is licensed. We are dealing with a potentially hazardous process.*” – Dr. Vyvyan Howard.<sup>4</sup>

5

July 2003 – *Nature* reports on work by CBEN scientist Mason Tomson that shows buckyballs can travel unhindered through the soil. “*Unpublished studies by the team show that the nanoparticles could easily be absorbed by earthworms, possibly allowing them to move up the food-chain and reach humans*” – Dr. Vicki Colvin, the Center’s director.<sup>5</sup>

6

January 2004 – Research by Dr. Günter Oberdörster is published showing that nanoparticles are able to move easily from the nasal passageway to the brain. “*The nanotechnology revolution may design particles that are very different chemically from the ones we are exposed to, and they might have very different properties that made them more harmful. We should be vigilant.*” – Professor Ken Donaldson, University of Edinburgh.

**7**

January 2004 – Nanosafety researchers from University of Leuven, Belgium, write in *Nature* that nanoparticles will require new toxicity tests: “We consider that producers of nanomaterials have a duty to provide relevant toxicity test results for any new material, according to prevailing international guidelines on risk assessment. Even some ‘old’ chemical agents may need to be reassessed if their physical state is substantially different from that which existed when they were assessed initially.” – Peter H. M. Hoet, Abderrahim Nemmar and Benoit Nemery, University of Belgium.<sup>7</sup>

**8**

January 2004 – At the first scientific conference on nanotoxicity, Nanotox 2004, Dr. Vyvyan Howard presents initial findings that gold nanoparticles can move across the placenta from mother to fetus.<sup>8</sup>

**9**

February 2004 – Scientists at University of California, San Diego discover that cadmium selenide nanoparticles (quantum dots) can break down in the human body potentially causing cadmium poisoning. “This is probably something the [research] community doesn’t want to hear.” – Mike Sailor, UC San Diego.<sup>9</sup>

**10**

March 2004 – Dr. Eva Oberdörster reports to American Chemical Society meeting that buckyballs cause brain damage in juvenile fish along with changes in gene function. They also are toxic to small crustaceans (water fleas). “Given the rapid onset of brain damage, it is important to further test and assess the risks and benefits of this new technology before use becomes even more widespread.” – Dr. Eva Oberdörster.<sup>10</sup>

#### REFERENCES

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