

Nanosilver: a serious threat to public health

Dr. Rye Senjen
Friends of the Earth Australia

For more information visit <http://nano.foe.org.au>



*... To what extent we have begun to act into nature, in the literal sense of the word, is perhaps best illustrated by a recent casual remark of a scientist who quite seriously suggested that “basic research is when I am doing what I don't know what I am doing ... In this aspect of action...processes are started whose outcome is unpredictable, so that uncertainty rather than frailty becomes the decisive character of human affairs.”
(Hannah Arendt 1958).*

For more information visit <http://nano.foe.org.au>



Key question about nanotechnology products

- **Who will use this technology or product?**
- **Who will benefit from its use and in what form?**
- **Who is responsible and accountable in the long term?**
- **Who will be responsible and accountable, if things go wrong?**

- Any new products need to replace current products that are not sustainable, harmful to humans & the environment & /or lack social value.
- Technological innovation must be driven by the values of precaution

For more information visit <http://nano.foe.org.au>

Risk = Exposure * Hazard?

- “**Effects**” and “**adverse effects**” are not separate **phenomena**, but are on a biological continuum: this requires the wider use of the **precautionary principle**.
- The prevention of long latent period harm, such as cancer, requires early intervention, **using an appropriately low strength of evidence**, to reduce /remove exposure to potential carcinogens.
- Evaluations of the evidence on environmental health hazards that use “criteria” for causation **are biased towards not identifying such hazards**.
- **Conventional cost /benefit analysis is generally biased towards** the short term’ easily quantifiable & specific costs of preventing exposures to environmental health hazards. It is **biased against** the longer term, less easily quantified, diffuse costs of not preventing exposures and **the long term benefits of acting to prevent exposures.**” (Source: David Gee 2009)

For more information visit <http://nano.foe.org.au>



Use of bactericidal (nano) silver

“Consumer products”

- Washing machines
- Textiles
- Baby toys and mats
- Food packaging
- Kitchen and toilet surface coatings
- Surface coatings on public transport
- Personal care products

Medical Uses

- Coating of medical devices
- Wound dressings
- Wound management esp. burns victims
- Disinfecting sprays

Where are bactericides needed and where do they cause harm?

For more information visit <http://nano.foe.org.au>

Comments on AgPURE™ Nanosilver Study

Results

- **Silver in water up to 160 $\mu\text{g/g}$ (160000 $\mu\text{g/kg}$)**
- **Up to 100% of 'harmfull' bacteria are killed**
- **Fibre samples (1 g) were eluated for 3 hrs in water (pH 4).**
(Source: rent-a scientist GMBH)

Comments

- **The chemical condition of the water is vital . Effect of ph, surfactant & oxidizing agents on amount of silver released are very important& can accelerate it. (see Geranio et al. 09)**
- **Rent-a-scientist study was not published in a peer reviewed journal,**
- **Apart from killing most bacteria, the 'study' does not show at what concentrations and under what conditions other organisms might be harmed**

For more information visit <http://nano.foe.org.au>

The myth of silver's "safety" exposed

- 300 000 kg of silver waste enters ecosystem worldwide.
- It is expected that 20 tons of biocidal silver will enter terrestrial ecosystem and 29 tons of biocidal silver will be discarded into European waterways by 2020.
- Silver is a known toxin and nanosilver has enhanced human and environmental toxicity.
- The US EPA views silver in surface waters as a "priority pollutant", and it is after mercury the most toxic metal to aquatic organisms.
- It is also toxic to important soil organisms.
- Microorganism in sewage treatment plants maybe adversely affected.
- Nanosilver may present a serious threat to public health.

For more information visit <http://nano.foe.org.au>



Nanosilver: a serious threat to public health

- The use of nanosilver needs to be preserved for serious medical conditions.
- Preliminary studies suggest that the widespread & at times indiscriminate medical use of nanosilver may already be promoting development of bacterial resistance within a hospital setting.
- The use of nanosilver in consumer goods & environmental applications appears highly likely to exacerbate bacterial resistance developing.
- As yet there are no guidelines on how to prevent this.

For more information visit <http://nano.foe.org.au>



“....there is sufficient evidence to suggest that silver nanoparticles may be harmful to the environment and therefore the use of the precautionary principle should be considered in this case.”
(EMERGNANO, Aitken et al. 2009).

For more information visit <http://nano.foe.org.au>



How to control nanosilver products?

- Silver & nanosilver may have useful applications in the medical arena & hence it's use needs to be strictly controlled.
- Immediate moratorium on the use of all nanosilver products, until appropriate regulation is in place.
- No data, no market.
- The need to follow a strict precautionary approach.

For more information visit <http://nano.foe.org.au>



Questions?

Contact me on :

rye.senjen@foe.org.au

For more information visit <http://nano.foe.org.au>



This paper was produced for a meeting organized by Health & Consumers DG and represents the views of its author on the subject. These views have not been adopted or in any way approved by the Commission and should not be relied upon as a statement of the Commission's or Health & Consumers DG's views. The European Commission does not guarantee the accuracy of the data included in this paper, nor does it accept responsibility for any use made thereof.