Contaminated Babies

Children today are born with many hundreds of man-made chemicals contaminating their small bodies. At critical stages of their development children are especially vulnerable to the toxic effects of contaminants. Toxic chemicals like persistent organic pollutants (POPs), mercury, brominated flame retardants and perfluorochemicals as well as other endocrine disruptors such as pesticides are all found in umbilical cord blood and meconium (first bowel discharge) of newborn babies. [7]

There is now evidence that nanoparticles are adding to this toxic load. National regulators, industries and civil society must act immediately to protect our children from the toxic impacts of nanomaterials.

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"The only things we have at our disposal are knowledge and prevention, the two arms we seem unwilling to adopt, rather preferring to ignore the actual danger: to make the same mistakes we made for asbestos, lead, chlorofluorocarbons and many other poisons we used for decades in spite of clear independent scientific evidence warning us of significant harm."

- Dr Gatti, University of Modena, Italy

Support action on nanomaterials

Help us ensure:

- the application of the **Precautionary Principle** to the assessment and management of synthetic nanomaterials throughout their life cycle;
- measures to prevent or minimize exposure of workers and releases to the environment including ongoing monitoring;
- registration of nanomaterials as *'new chemicals'* with comprehensive assessment of health and safety;
- labeling for products containing nanomaterials including those handled by workers;
- no nanomaterials used in products for baby and pregnant women; and
- the right of countries to accept or reject manufactured nanomaterials.

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Nanoparticles in Newborns

a new intergenerational risk

Do nanoparticles pose a health threat to foetuses, newborns and future generations?

What are nanoparticles ?

Nanosized particles are very tiny, less than 100nm in diameter. Their hazards are known in part from their historical occurrence as waste byproducts of industry and combustion, but recently engineered forms have been developed for a range of uses, including some important medical uses but also many trivial applications. Synthetic nanomaterials are now incorporated into consumer products such as sporting clothes, stain resistant textiles, sunscreens, electronics and packaging. As a relatively new technology, nanomaterials remain unregulated and unlabelled.

What makes nanoparticles toxic?

Nanoparticles are very small and oddly shaped, making them much more toxic than their normal-sized counterparts. Their greater surface area makes them more biologically active than larger particles of the same chemical makeup. Zinc is an essential nutrient yet it is hazardous in nanosize, (e.g., zinc fumes from welding) and can cause permanent lung damage. (1)

Experiments have given us considerable information on nanohazards. Some cause inflammation, leading to uncontrolled growth and cancer. Others cause asbestos like damage - a potentially lethal problem. (2)

Nanosized titanium dioxide has been shown to cause an 'emphysema-like' lung injury in mice when inhaled. (3) Nanosized aluminum oxide can affect and even kill specialized cells in the human brain. (4) Due to their size, nanoparticles may move into cells and damage genetic structures, travel along nerves, and create problems throughout the body.

The diversity of nanoparticles is matched by the diversity of the types of damage they can cause, and many remain poorly studied regarding health hazards.

The passage of nanoparticles from mother to foetus

In 1996, researchers showed that *'fullerenes'*, a common nanoparticle, move into mouse embryos via maternal blood. This severely disrupted foetal development. Fullerenes are used in women's makeup. They were administered into pregnant mice at various doses. Even at the lowest dose, the cell function was damaged. (5)

In 2009, researchers have confirmed the passage of nanoparticles from pregnant mice to their offspring, this time resulting in damage to the genital and cranial nerve systems. Nanosized titanium dioxide is used in a wide range of consumer products. It was administered to pregnant mice. The nanoparticles found their way into the brain and testes of the offspring. (6)

The research demonstrates that once nanoparticles enter the mother's body, through any means - inhalation, ingestion or via skin - harmful nanoparticles can be passed on to her offspring during the crucial early stages of foetal development.

Evidence of Placental Transfer of Nanoparticles in Humans

In Italy, researchers at the University of Modena and Reggio Emilia, have been scanning miscarried foetuses and malformed babies of healthy mothers for evidence of nanoparticles. They have regularly detected the presence of inorganic, nonbiodegradable nanoparticles, Much work is needed to understand the full impacts of nanoparticles on the developing foetus, the newborn and children. (8)

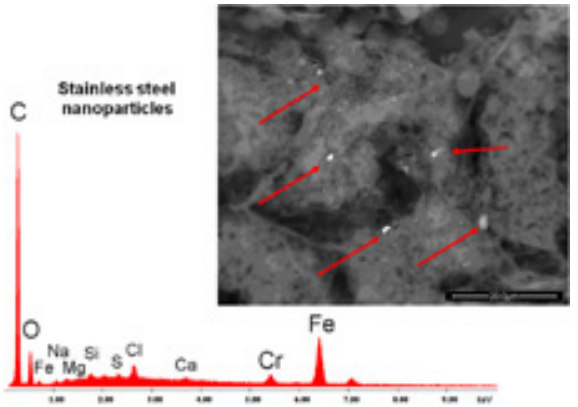

Figure 1 shows an image of nano sized foreign bodies of stainless steel found in the kidneys of a baby born with leukaemia.

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'As a relatively new technology, nanomaterials remain unregulated and unlabelled.'