



P47 : HEALTH RISKS OF NANO SILVER

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Introduction: Nano silver and other forms of silver are widely used today because of their antibacterial properties.

Areas of Usage: In health field, in order to reduce the risk of infection in wound dressings and catheters, nano-silver is used. In end consumer products, especially textiles, powdered detergents and deodorants nano silver compounds are being used in order to destroy odor-producing bacteria.

Effects on Human Health: When taken orally and as respiratorily, silver nanoparticle (AgNP) has been shown to mix in blood and accumulate in body. AgNP accumulation is mainly presented in spleen, liver and kidney as well as other organs. Accumulation in testes was also shown in high doses of silver existence. Chronic silver exposure to skin and/or eyes result permanent blue-gray discoloration that is called "argyria" or "blue skin syndrome". Animal experiments show AgNP exposure results liver enzyme elevations due to liver toxicity. However, liver toxicity has not been observed histologically. Although not observed in oral exposure of AgNP, immune system is the most sensitive target to intravenous AgNP. Genotoxic effects of silver nanoparticles is shown in in-vitro assays.

Risk Assessment: Current risk assessment is based on the "argyria" formation. In employees 0.1 mg/m³ of metallic silver and 0,01 mg/m³ of silver salts threshold values were determined. For all exposure routes in general population the World Health Organization set a total of 5 µg/kg/day limit.

Conclusion: There is need for more information on the environmental and human toxicity and antimicrobial resistance of AgNP. Recent literature has shown some health risks that might occur in case of chronic exposure. However, as there is no sufficient number of studies, risk assessment about the long-term health effects cannot be made. Again, a certain amount should not be exceeded when using the AgNP in end consumer products.

Keywords: Health risk, Nano silver, Risk Assessment