

## **NANOPLASTICS AS A VEHICLE OF ENVIRONMENTAL POLLUTANTS – A HAZARD FOR HUMAN HEALTH**

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Plastic waste degrades into small particles, which depending on their size can be classified as microplastics (0.001 – 5 mm) or nanoplastics (up to a maximum of 0.001 mm), which can be transported by air, water and food. In humans, the main causes of contamination by these particles occur through the airways, contact with personal products and through the consumption of food and water. This causes direct or indirect damage to the body's homeostasis. Studies carried out in the area of nanoplastics verify that due to their size, these particles have the capacity for internalization, making effects in terms of damage to membranes and organelles, inflammation, cytotoxicity, cell death, among others, observable.

In addition to these effects *per se*, nanoplastics are the polymers with the greatest impact on the environment, as they can absorb and, in this way, act as vectors, highly toxic compounds, such as aromatic hydrocarbons, heavy metals, persistent organic pollutants (POPs), disruptors endocrine chemicals (Bisphenol A, Phthalates), among others. In the specific case of POPs, they are directly linked to hormonal, immunological, neurological and reproductive dysfunctions. They remain in the environment for a long time and, once ingested, they have the ability to attach themselves to body fat, blood and body fluids of animals and humans. Packaged products that also contain Bisphenol A in their composition, a known endocrine disruptor, whose exposure is associated with various diseases such as diabetes, polycystic ovary syndrome, infertility, uterine fibroids, among others.

In summary, given the ubiquity of plastics in the environment, potential for transporting other toxic substances, as well as their versatility of absorption through different routes of exposure, it meets the conditions to be considered a hazard for human health.