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## **Guideline Standards for the Management and Disposal of the Waste from the Manufacturing and Processing of Nano-Objects**

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Following the virtual meeting held by the members of the Iranian National Committee of Nanotechnology Standards, Guideline Standards for the Management and Disposal of the Waste from the Manufacturing and Processing of Nano-Objects were approved and prepared for publication.

In recent years, nanotechnology has experienced a radical shift from research laboratories to manufacturing plants and production of consumer products. Manufactured nano-objects can be combined with products to not only enhance their performance, but also to yield novel properties. However, during the production, usage or disposal process of these products, nano-objects might be released and come into contact with humans and the environment.

At present, manufacturers of nanomaterials and the scientific community do not know precisely whether nanomaterials, especially the manufactured ones, pose a health risk to workers, users, and the environment. Nonetheless, it is possible that some nano-object products may be hazardous to human health and the environment.

Due to their nanoscale formulations, manufactured nanomaterials may possess distinct physicochemical properties. They might, therefore, entail risks to human health and the environment, which are quite different from hazards caused by non-nanoscale substances. This implies the necessity of a special guideline to manage and assess the human-specific and environmental hazards and risks associated with the management and disposal of the waste from the manufacturing and processing of manufactured nano-objects.

The standards termed "[Nanotechnologies — Guidelines for the Management and Disposal of Waste from the Manufacturing and Processing of Manufactured Nano-Objects](#)" recently approved by the Institute of Standards and Industrial Research of [Iran \(ISIRI\)](#) provide guidance as for all waste management activities resulting from the fabrication and processing of manufactured nano-objects, and examine uncertainties and the potentials for environmental and human exposure in this emerging technology.

These guidelines apply to all the stakeholders in the waste management chain, including manufacturers of produced nano-objects, their modifiers, as well as waste disposal companies, carriers and recipients of the waste from nanomaterial manufacturing and processing.

However, these standards do not provide guidance for the management and disposal of nanocomposites, waste products derived from consumer products containing nano-objects or waste from random nanomaterials or nano-objects of a natural nature, or the waste from non-nanoscale materials obtained from the fabrication and processing of manufactured nano-objects.

To develop these national standards, two national standards, one international standard as well as a book were used as technical resources. These standards were developed over a course of several technical meetings with the participation of experts from universities, environmental organizations, municipalities, relevant specialized companies and experts from the Nanotechnology Innovation Council.

It should be noted that [Iran](#), as one of the countries active in the ISO229 standard committee, currently possesses [120 approved](#) national nanotechnology standards.