Responsible Handling of Nanotechnology at Evonik

Introduction

The Chemicals Business Area of Evonik Industries is a global leader in specialty chemicals. Research and development play a major role in securing Evonik's sustainability. We regard nanotechnology as a key technology of high commercial relevance due to its general importance in a variety of production processes and products and its wide application spectrum in chemistry.

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Evonik. Power to create.

Opportunities

By exploiting the opportunities that nanotechnology offers and handling it responsibly, we develop new businesses while supporting sustainable development. Nanotechnology contributes toward the development of new products and efficient, resource-conserving solutions for our customers; it also makes major contributions to environmental protection, health, and product quality.

Responsibility and management

Protection of the health of employees, neighbors, and customers and a responsible approach to resources and the environment are integral to Evonik's business. As with all our other products, we produce and market nanomaterials only if the latest available research shows they can be manufactured and applied in a safe and environmentally compatible manner. In this, Evonik follows international principles of Responsible Care®. We achieve safety and environmental protection by means of verifiable management systems.

Risk management and product responsibility

In the manufacture of nanomaterials we provide the maximum possible protection for people and the environment by closed-plant production; for handling these materials we use additional technical precautions such as filters, extraction systems, and, if necessary, personal protective equipment. Regular measurement of particulates in the workplace and routine medical check-ups ensure that these measures are effective.

Product safety is very carefully checked using the latest scientific findings. As required by REACH regulations, we use for this purpose the Chemicals Management System introduced in the Chemicals Business Area for risk assessment of our products. Our measures for the protection of employees, customers, and consumers handling nanomaterials are based on scientific investigations of hazard and risk assessment as well as a large number of epidemiological and toxicological studies. We also support the establishment of new investigation methods tailored to the specific effects of nanomaterials, which allow refinement of risk assessment. In this effort, we work closely with leading research institutions and participate in public research projects at the national and international level.

Open information and dialog

We engage in open dialog on the opportunities and risks of applied nanotechnology. As part of this approach, Evonik freely provides information on the nanomaterials it produces and uses, and shoulders its share of responsibilities in the value chain. The minimum requirements here are defined by the guidelines of the Responsible Care Global Charter, by REACH, and by our obligations under the Global Product Strategy (GPS) of the International Council of Chemical Associations (ICCA). This involves communicating openly within the product chain and providing the public with easily comprehensible information.

Evonik is also committed to making nanotechnology issues transparent for the general public, and participates in dialog events and panel discussions with consumers, environmental associations, local authorities, and international bodies.

Nanomaterials at Evonik

We have several decades of experience in the production and handling of fine-particle substances such as carbon black and silica. These exist as larger aggregates and agglomerates with diameters of the order of a few micrometers. They are generated in production processes by sintering of the primary particles smaller than 100 nm that are initially formed in the reactor, and are therefore also included under the generic term nanomaterials. For special applications, Evonik provides formulations (such as dispersions) containing nano-objects in the form of aggregates smaller than 100 nm. The aggregate is the smallest stable unit in which the primary particles are held together by strong chemical bonding. Evonik also produces and markets nanomodified polymers containing carbon nanotubes (CNTs). In production, the CNTs are firmly embedded in a polymer matrix used as a masterbatch. Evonik also participates in a publicly funded project for research into new dispersion technologies for CNTs in polymers and novel and innovative application fields. We also refine our technologies for targeted production of customized nanomaterials, participate in basic research on nanoparticle genesis, and continue our research on technologies for producing films in the sub-micron range.