

Nanotechnology Standards Update

Safer Nano - Environmental, Health and Safety Best Practices Symposium
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Steve Brown
Intel Corporation

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Processes required to effectively manage nano-materials

- International Standards are needed to facilitate nanotechnology commercialization and social acceptance of nanotechnologies
- International Standards provide industries, societies and academia with common
 - ✓ languages
 - ✓ methods
 - ✓ practices
 - ✓ products

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Slide Source: Akira Ono
National Institute of Advanced Industrial Science and Technology (AIST)

Current International Standards Organizations involved in Development of Nanotechnology Standards

- **American Society for Testing and Materials International (ASTM International)**
 - ❖ *Technical Committee on Nanotechnology E56*
- **International Organization for Standardization (ISO)**
 - ❖ *Technical Committee on Nanotechnologies TC229*

ASTM International

Technical Committee E56 Nanotechnology Scope:

- The development of standards and guidance for nanotechnology & nanomaterials
- The coordination of existing ASTM standardization related to nanotechnology needs. The Committee shall participate in the development of symposia, workshops, and other related activities to enhance the development of standards

ASTM International

Technical Committee E56 Nanotechnology

E56 Subcommittees

[E56.01](#) Terminology & Nomenclature

[E56.02](#) Characterization

[E56.03](#) Environmental & Occupational Health & Safety

[E56.04](#) International Law & Intellectual Property

[E56.05](#) Liaison & International Cooperation

[E56.06](#) Risk Management and Product Stewardship

[E56.90](#) Executive

[E56.91](#) Strategic Planning and Review



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ASTM International

Technical Committee E56 Nanotechnology

Work Items (standards in development)

- [WK8051](#) Standard Terminology for Nanotechnology
- [WK8985](#) Standard Guide for Handling Unbound Engineered Nanoparticles in Occupational Settings
- [WK8705](#) Measurement of particle size distribution of nanomaterials in suspension by Photon Correlation Spectroscopy (PCS)
- [WK8997](#) Standard Practice for Analysis of Hemolytic Properties of Nanoparticles
- [WK9326](#) Standard Practice for Evaluation of the Effect of Nanoparticulate Materials on the Formation of Mouse Granulocyte-Macrophage Colonies
- [WK9327](#) Standard Practice for Evaluation of Cytotoxicity of Nanoparticulate Materials on Porcine Kidney Cells



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ISO Technical Committee TC229 Nanotechnology

First Meeting November 2005

- ❖ 24 participating countries

ISO TC 229 Scope;

- ❖ Support the sustainable and responsible development and global dissemination of these emerging technologies;
- ❖ Facilitate global trade in nanotechnologies, nanotechnology products and nanotechnology enabled systems and products;
- ❖ Improve quality, safety, security, consumer and environmental protection, together with the rational use of natural resources in the context of nanotechnologies;
- ❖ Promote good practice in the production, use and disposal of nano-materials, nanotechnology products and nanotechnology enabled systems and products.



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ISO Technical Committee TC229 Nanotechnology

Specific tasks include developing standards for:

- ❖ terminology and nomenclature;
- ❖ metrology and instrumentation, including specifications for reference materials;
- ❖ test methodologies;
- ❖ modeling and simulation; and
- ❖ science-based health, safety, and environmental practices.



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ISO

Technical Committee TC229

Committee Structure

➤ **WG1 Terminology and Nomenclature led by Canada**

Scope: To define and develop uniform terminology and nomenclature in the field of nanotechnologies. It is intended to facilitate communications to ensure common understanding among interested parties.

➤ **WG2 Measurement and Characterization led by Japan**

Scope: Standardization of metrology and test methods (including reference materials) which is used to characterize nano-materials and nano-structures from the aspect of physical and chemical properties.

➤ **WG3 Health, Safety and Environment led by USA**

Scope: To develop standards in the areas of health, safety, and environmental aspects of nanotechnologies

Help Needed

Both ASTM International and ISO need volunteers to support nanotechnology standards development including Work Item Leaders and Technical Content Experts.

Technical EHS Research Needs

➤ **To develop standards in the areas of health, safety, and environmental aspects of nanotechnologies additional information is needed including:**

- ❖ occupational, environmental, and public exposure and monitoring
- ❖ engineering controls, personal protective equipment, and other measures to assure safety of workers, researchers, and the public
- ❖ epidemiological and environmental surveillance protocols
- ❖ human and ecological bio-kinetics and toxicity
- ❖ disposal, dispersion, and waste treatment of nano-engineered materials
- ❖ methodologies, data quality, and data analysis for risk assessment

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