



ISO/TC 209: Cleanrooms and associated controlled environments

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ISO/TC 209 *Ad Hoc* Nanotechnology Committee

ISO/TC 209 Secretariat: IEST

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***International Workshop on Documentary Standards for
Measurement and Characterization in Nanotechnologies***

Overview of Current Nanotech Standards Program (1)

- **Area(s) of standardization in nanotech related areas:** ISO/TC 209 *Ad Hoc* Nanotech Committee formed in November 2008 currently exploring feasibility of a new WG for contamination control and controlled environment standards in nanotech.
- **Program drivers:** There is currently a demand for laboratory guidance and expected interest for manufacturing in the future.
- **Customers/stakeholders:** semiconductors, electronics, aerospace, automotive, pharmaceuticals, medical devices, biotechnology, food, and nanotechnology
- **Pertinent work completed – standards, technical report, guides, roadmaps, etc.:** Ten standards have been completed and two are in process for traditional contamination control and controlled environments. These will serve as foundations for potential nanotechnology efforts in ISO/TC209.

Overview of Current Nanotech Standards Program (2)

- **Work underway:** IEST has recommended practices (RP-200 {facilities} and RP-205{design for safety}) underway to guide design, construction and operation of nanotech facilities
- **Any prioritization efforts underway:** The ISO/TC 209 *Ad Hoc* Nanotech Committee is currently discussing approach and sequence of work
- **Collaborations (if any):** If a nanotech WG in ISO/TC 209 is launched, enhanced liaisons or joint WGs will be proposed with ISO/TC 229
- **Immediate and medium term plans:** The Ad Hoc Nanotech Committee recommendations will be made at the ISO/TC 209 Plenary meeting during September 2008. If accepted, submissions will be made to ISO
- **Challenges and obstacles:** Contamination control and controlled environments have limited recognition as enabling technologies for nanotech for some processes

Documentary Standards Needs/Gaps

- **Prioritization challenges:** Facility requirements for safety and contamination control will be driven by problems encountered as new products are commercialized—difficult “to get ahead of the curve” because of time to develop standards
- **Fundamental knowledge issues:**
 - Controlled environment requirements for vibration, EM, T, RH and contaminants are unknown for emerging concepts
 - Contemporary techniques have not been tested for nanomaterials
 - Nanobio requirements with respect to regulated industries
- **Measurement and characterization needs:** Low concentration quantification in all media and surfaces. (Air is the most advanced with condensation nuclei counters.)
- **Supporting reference materials:** nanoparticles, well characterized surfaces
- **Pre- and co-normative research needs:** As contamination limits manufacturing in nanoscale dimensions, new technologies may be needed for isolation, cleaning and inspection
- **Market need/demand:** The need for standardization with respect to facilities will build as nanotech industry advances
- **Technical or policy issues:** The anticipated nanotech contamination control WG will be centered in ISO/TC 209—need policies to facilitate alignment with all WG’s in ISO/TC 229 (e.g. common terminology, use and review of documents, identification of experts, participation in road mapping.)