



Standard Guide for Investigation/Study/Assay Tab-Delimited Format for Nanotechnologies (ISA-TAB-Nano): Standard File Format for the Submission and Exchange of Data on Nanomaterials and Characterizations¹

This standard is issued under the fixed designation E2909; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide (ISA-TAB-Nano) specifies the format for representing and sharing information about nanomaterials, small molecules and biological specimens along with their assay characterization data (including metadata, and summary data) using spreadsheet or TAB-delimited files.

1.2 The Appendices Sections contain a detailed listing of ISA-TAB-Nano fields ([Appendix X1](#)), a practical example ([Appendix X2](#)), a discussion of optional files ([Appendix X3](#)), and summary of background ([Appendix X4](#)).

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ISA-TAB Format Specification*:²

[ISA-TAB Release Candidate 1.0 ISA-TAB 1.0](#)

2.2 *Assay Protocol Documents from NCL*:³

[NCL Method GTA-1 \(Version 1.1\) LLC-PK1 Kidney Cytotoxicity Assay](#)

¹ This guide is under the jurisdiction of ASTM Committee E56 on Nanotechnology and is the direct responsibility of Subcommittee E56.01 on Informatics and Terminology.

Current edition approved Feb. 1, 2013. Published April 2013. DOI: 10.1520/E2909-13.

² Available from ISATools, <http://isa-tools.org>.

³ Available from Nanotechnology Characterization Laboratory (NCL), Frederick National Laboratory for Cancer Research, SAIC-Frederick, Inc., P.O. Box B, Frederick, MD 21702-1201, <http://ncl.cancer.gov>.

2.3 *Reports from NCL*:⁴

[NCL200612A Dendrimer-Based MRI Contrast Agents, Prepared for Dendritic Nanotechnologies, Inc. December 2006](#)

3. Significance and Use

3.1 This guide is intended to facilitate the meaningful submission and exchange of nanomaterial descriptions and characterization data (metadata and summary data) along with the other files (raw/derived data files, image files, protocol documents, etc.) among individual researchers and to or from nanotechnology resources. This guide also serves to empower organizations to adopt standard methods for representing data in nanotechnology publications; and to provide researchers with guidelines for representing nanomaterials and characterizations to achieve cross-material comparison. This guide encourages standardization in the field of informatics, where adherence ISA-TAB-Nano concepts nanotechnology to a broader and established bioinformatics community.

3.2 The format of this guide is of a file structure that contains four primary files—investigation, study, assay (ISA), and material files.

3.2.1 In addition, raw or derived data files and any other files (for example, image files, protocol documents) specific to each assay can be shared along with the four primary ISA-TAB-Nano files if the data files are referenced in the primary ISA-TAB-Nano files. The specification does not provide format specification for files other than the four primary files: investigation, study, assay, and material files. The ISA-TAB-Nano investigation file is used for three purposes: (1) to record all declarative information referenced in other files; (2) to

⁴ Available from Nanotechnology Characterization Laboratory (NCL), Frederick National Laboratory for Cancer Research, SAIC-Frederick, Inc., P.O. Box B, Frederick, MD 21702-1201, <http://ncl.cancer.gov>. Download available from <http://ncl.cancer.gov/120406.pdf>.