

Data Standards Briefing Paper

Introduction

The vision for the Environmental Protection Agency's (EPA) data standards program is to promote the efficient sharing of environmental information among EPA, states, tribes, and other information partners through the cooperative development of data standards. In partnership with the Environmental Data Standards Council (EDSC), EPA is developing data standards for environmental information collection and exchange. The use of common data standards among partners will foster consistently defined and formatted data elements and sets of data values, and provide public access to more meaningful data. Data standards are developed by EDSC-sponsored action teams that include members from states, tribes, and EPA. All proposed data standards are submitted for public review before adoption by the EDSC and EPA.

What are Data Standards?

Have you ever reached for a container of milk at the store and noticed it looks less full than the others? This probably doesn't happen very often, thanks, in part, to standards for weights and measurements. When standards are in place, we often don't notice them. We are confident that the quantity of milk purchased is the amount indicated on the label.

So, what is a standard? A standard can be defined as something agreed upon as a model, example, or rule for the measure of quantity, weight, extent, value, or quality. Standards affect almost every facet of our lives. Without standards, processes become unreliable, commerce is impeded, and consumer interests are compromised.

Data standards are documented agreements on representations, formats, and definitions of common data.

Standards have been used for many years. The use of standards was documented in the Civil War, when ammunition sizes had to be standardized to allow soldiers on the battlefield to share ammunition between muskets. And, at one time, the diversity of screw threads for similar applications caused maintenance problems and posed a significant barrier to international trade. A global solution was provided in the form of a metric based standard promulgated by the International Standards Organization (ISO) standards.

Better Data, Greater Access

What do milk cartons and screws have to do with data standards? Standards—whether they are for screws or data—increase the reliability and effectiveness of many things we use. Standardized data is more meaningful, more comparable, and easier to exchange and store. The benefits of data standardization are:

- Improved data quality;
- Increased data compatibility;
- Improved consistency and efficiency of data collection;
- Reduced data redundancy; and
- Improved data access.

The key components of a data standard are data element names, definitions, and formatting rules. Data standards often include information describing procedures, implementation guidelines, and usage requirements. Additionally, standards may enable electronic reporting, data transfer protocols, or other information that facilitates and promotes widespread use.

Who Develops Data Standards?

EPA's Data Standards are developed and approved by the Environmental Data Standards Council (EDSC), a partnership among EPA, States and Tribal partners to develop and agree upon data standards for environmental information collection and exchange. The Council seeks to promote efficient sharing of environmental information between States, EPA and Tribes through the use of data standards to support data exchange and data integration activities. The EDSC has approved the standards for the following subject areas: Date, SIC/NAICS, Latitude/Longitude, Facility Identification, Contact Information, Chemical Identification, Biological Taxonomy, Permits, Tribal Identification, Enforcement and Compliance, and Reporting Water Quality Results for Chemical and Microbiological Analytes.

If EPA establishes a business need for the standard, the Agency proceeds to form an Action Team to develop the Agency business rules for the data standard. The standard will either be interim or final depending on the status of business rules development. The standard and the business rules are submitted to the Chief Information Officer (CIO) and the Quality Information Council (QIC) for approval as an Agency final data standard. The final data standard is posted in the Environmental Data Registry (EDR) and is then available for implementation into EPA information systems. Although approved by the EDSC, EPA has not yet finalized standards for Contact Information and Reporting Water Quality Results for Chemical and Microbiological Analytes. EPA anticipates approving these standards and finalizing relevant business rules shortly.

EPA Has Finalized Data Standards For The Following Nine Areas:

<i>Standard</i>	<i>Conformance Date</i>
Date	9/30/1999 [†]
SIC/NAICS*	9/30/2002 [†]
Latitude/Longitude	2/28/2002 [†]
Facility identification	9/30/2003 [†]
Chemical identification	3/31/2003 [†]
Biological Taxonomy	3/31/2003 [†]
Permits	12/31/2004
Tribal Identification	12/31/2005
Enforcement/Compliance	12/31/2005

* Standard Industrial Classification (SIC) Code/
North American Industry Code System (NAICS)

[†] Conformance Date applies to REI systems only.

Other systems must comply during re-engineering or as new systems are created.

Importance of State and Tribal Implementation of Data Standards

Unlike EPA programs, States and Tribes are not required to conform to data standards. Adoption by the Environmental Data Standards Council means that the standard represents a set of sound practices and that it has been through a established review process. It is up to the individual agency to determine if, when, and how it might use the standard.

Voluntary or not, it is critical to the success of national programs, such as the National Emissions Inventory, that all partners reporting information to the system conform to the standards. If all partners conform to the standards, a common language is established across organizations, and standards can facilitate easier and more accurate information exchange will occur among State and Tribal environmental agencies and EPA.

State and Tribal partners do NOT necessarily need to modify the manner in which they store data in their State/Tribal systems to conform to the standards. Standards are defined as the means of data **exchange**, therefore, the need for internal similarities between State and EPA systems is reduced. In the joint State/Tribal/EPA context, approved standards are intended specifically for data exchange purposes.

How are Data Standards Implemented in the Exchange Network?

The Exchange Network is an Internet and standards-based secure data exchange between partners, built on the principles of integrated information, secure real-time access, and the electronic collection and storage of accurate information. By facilitating the efficient exchange of environmental information among interested parties at all levels of government and the public, the Exchange Network will revolutionize the way information is sent to and received by EPA and its state, tribal and territorial partners.

The Exchange Network is built upon the philosophy that data should reside as close to its source as possible to maintain the highest degree of data quality. The Internet-based Exchange Network uses Data Exchange Templates (DETs) and schemas, data standards, and data Trading Partner Agreements (TPAs) to ensure that data integrity is maintained by clearly defining data needs, and establishing standards for their transmission. Data standards are fundamental to the seamless and unambiguous exchange of data. They help improve the ability of partners (internal and external) to exchange data efficiently and accurately, and assist secondary users of data to understand, interpret, and use data appropriately.

How can I find out more about Data Standards and the Exchange Network?

Environmental Data Standards Council

<http://www.epa.gov/edsc>

EPA Data Standards Web Site (Part of the Environmental Data Registry)

<http://www.epa.gov/edr>

Exchange Network Web Site

<http://www.exchangenetwork.net>

EPA NEI Program Representative - David Misenheimer

misenheimer.david@epa.gov

EPA Data Standards Branch Representatives - Jeff Kohn, Mike Pendleton

kohn.jeffrey@epa.gov

pendleton.michael@epa.gov