

Idaho Technology Authority (ITA)

ENTERPRISE STANDARDS – S4000 – INFORMATION AND DATA

Category: S4265 –Standard for Radon Gas Data

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I. DEFINITION

See ITA Guideline [G105](#) (ITA Glossary of Terms) for definitions.

II. RATIONALE

A statewide Radon layer and data standard, which is part of the Hazards data theme is a critical source of information for the community, many of the trades (developers, plumbers, builders, etc.), realtors and homebuyers, school officials, healthcare professionals, and more. Standardized Radon data supports those groups by showing the percentage of tests with radon results equal to or above the 4.0 pCi/L guidance. This map gives individuals an idea of the radon levels throughout the state.

III. APPROVED STANDARD(S)

See Attachment

IV. APPROVED PRODUCTS(S)

Any GIS Software, either desktop or online, capable of ingesting and displaying Open Geospatial Consortium (OGC) Web Map Standard (WMS) services.

V. JUSTIFICATION

A statewide Radon dataset is a critical source of information as stated under 'II Rationale' in this standard. A data standard facilitates a predictable format, improves collaboration and encourages use of this dataset.

VI. TECHNICAL AND IMPLEMENTATION CONSIDERATIONS

Any GIS Software, either desktop or online, capable of ingesting and displaying Open Geospatial Consortium (OGC) Web Map Standard (WMS) services.

VII. EMERGING TRENDS AND ARCHITECTURAL DIRECTIONS

Data will be shared in accordance with ITA Standard [S4250](#) –Geographic Information System (GIS) Data Sharing Standards.

VIII. PROCEDURE REFERENCE

The format, content, and development of this standard adhere to ITA Policy [P5030](#) - Framework Standards, ITA Standard [S4250](#) - Data Sharing Standards and ITA Standard [S4220](#) - Geospatial Metadata.

IX. REVIEW CYCLE

Review will occur at least annually.

X. CONTACT INFORMATION

For more information, contact the ITA Staff at (208) 605-4064.

REVISION HISTORY

07/20/2023 – Standard Presented to the IGC-EC



STATE OF IDAHO

Idaho Radon Data Standard

Part of the Hazards Theme

Version 1

Effective July 20, 2023

Developed by the Hazards Technical Working Group

Contact

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Radon Gas	

1. Introduction to the Radon Data Standard

Radon is a naturally occurring odorless, tasteless, and invisible radioactive gas that is released when uranium breaks down in the soil. Two out of every five tested homes in Idaho ([DHW Radon & Lung Cancer Brochure](#)) have a concentration of radon gas higher than the 4 pCi/L (picocuries¹⁾ per liter), the concentration at which the EPA recommends homes be fixed to lower exposure to Radon Gas ([EPA Website](#)). Because high levels of radon gas are associated with lung cancer, a statewide radon dataset is a critical source of information for the community, many of the trades (developers, plumbers, builders, etc.), realtors and homebuyers, school officials, healthcare professionals, and more.

A Radon Data Standard is intended to facilitate integration and sharing of up-to-date Radon data and enhance the dissemination and use of Radon information. This standard does not instruct on how Radon databases are designed for internal use.

This standard was developed by the Hazards Technical Working Group, a subgroup of the Idaho Geospatial Council – Executive Committee (IGC-EC). This standard will be reviewed at least annually and updated as needed.

1.1. Mission and Goals of the Standard

The Radon Standard supports a statewide dataset that is consistent with applicable state and national standards. It establishes the minimum attributes and geospatial database schema for the Radon data schema. The Standard will communicate with, and may have similar attributes to, other Idaho Framework data standards. It encourages all Idaho-based agencies with geospatial Radon data to contribute to the Radon Framework.

The Radon Framework will be appropriately shared and beneficial to all. The fields in the Radon Data Standard will be general enough to incorporate basic information without requiring major changes in internal data models. This standard allows for expansion to a more complex data structure and schema.

1.2. Relationship to Existing Standards

This Radon Standard relates to existing standards as follows:

- No other standards apply.

¹⁾ Picocuries refer to the number of radioactive decay events per minute unit per liter.

1.3. Description of the Standard

This standard describes the vision and geospatial data structure of a Radon Framework in the state of Idaho. This standard is devised to be:

- Simple, easy to understand, and logical
- Uniformly applicable, whenever possible
- Flexible and capable of accommodating future expansions
- Dynamic in terms of continuous review

1.4. Applicability and Intended Uses

This standard applies to the Radon element of the Hazards theme of The Idaho Map (TIM).

When implemented this standard will enable access and use of the data. A predictable standard will support data collection, improve data collaboration, help identify and report errors and allow agencies to incorporate this data into their own data products.

This standard does not consider data sharing agreements, contracts, transactions, privacy concerns, or any other issues relating to the acquisition and dissemination of Radon data.

1.5. Standard Development Process

The Hazards Technical Working Group is a voluntary group of private, city, county, tribal, state, and federal representatives. In 2023 the Radon Lead began developing the standard for the Radon Framework using the standard development automation tools developed by the IGC-EC to generate the first draft of the Standard. This standard was then reviewed and edited by the members of the Hazards Technical Working Group.

After initial development the draft standard document was shared with the Idaho Geospatial Council Executive Committee (IGC-EC) and the Idaho Geospatial Council (IGC) in accordance with the review and approval process described in ITA Policy [P5030](#) Framework Standards Development.

1.6. Maintenance of the Standard

This standard will be revised on an annual basis and in accordance with ITA Policy [P5030](#) - Framework Standards Development.

2. Body of the Standard

2.1. Scope and Content

The scope of the Radon Data Standard is to describe a statewide layer which identifies the physical locations and attributes of Radon in Idaho.

2.2. Need

Radon is a key dataset needed for community, real estate (buying and selling a home), and safety. This standard provides the foundation to aggregate Radon data for centralized access and stewardship information.

Radon data is needed to keep track of tests each year, and it helps the Idaho Department of Health and Welfare Environmental Health Program pick areas of focus for outreach and education.

2.3. Participation in the Standard Development

The development of the Radon Data Standard adheres to the ITA Policy [P5030](#) - Framework Standards Development. The Hazards Standard Team tasked with development, invite input and comments from private, county, state, and federal organizations. As the standard is reviewed in accordance with Policy [P5030](#) requirements, there will be opportunity for broad participation and input by stakeholders. The process will be equally broad for input on updates and enhancements to the standard. As with all Idaho Framework standards, public review and comment on the Radon Data Standard is encouraged.

2.4. Integration with Other Standards

The Radon Data Standard follows the same format as other Idaho geospatial framework data standards. The Radon standard may contain some of the same attributes as other framework standards and may adopt the field name, definition, and domain from the other standards to promote consistency.

2.5. Technical and Operation Context

2.5.1. Data Environment

The data environment is a digital polygon with a specific, standardized set of attributes pertinent to the Radon Framework. Radon data shared under this standard must be in a format supporting polygons.

2.5.2. Reference Systems

The Radon Framework will be published in the Web Mercator coordinate system, which is the State of Idaho's single-zone coordinate system. Data is not required to be submitted in the Idaho Transverse Mercator NAD83 (IDTM83) coordinate system but must have a defined coordinate system clearly described in the metadata.

2.5.3. Global Positioning Systems (GPS)

Some data provided might contain geometry from GPS methods, and the provided metadata should describe this, if applicable.

2.5.4. Interdependence of Themes

Radon gas concentrations are reported by zip code. Since at this point in time there is no recognized authoritative zip code the current radon layer is currently based on [U.S. Zip Code Areas published by Esri and sourced from TomTom](#)

2.5.5. Encoding

When data is imported into and exported from the Radon Framework, encoding will take place to convert data formats and attributes.

2.5.6. Resolution

No specific requirements for resolution are specified in this standard. Resolution will be documented in the metadata. Resolution will be documented in the metadata.

2.5.7. Accuracy

No specific requirements for accuracy are specified in this standard. Accuracy will be documented in the metadata.

2.5.8. Edge Matching

No edge matching is required between jurisdictions, or between this and other framework layers.

2.5.9. Unique Identifier

The unique identifier is ZIP_CODE.

2.5.10. Attributes

Attributes for public and intergovernmental distribution are described in Section 3 of this standard.

2.5.11. Stewardship

Perpetual maintenance and other aspects of lifecycle management are essential to Radon Framework. Details of stewards, their roles and responsibilities, and processes are set forth, or are being planned to set forth in a Radon Framework Stewardship Plan and related documents.

2.5.12. Records Management and Archiving

The Idaho Department of Health and Welfare Environmental Health Program keeps data in an excel spreadsheet and updates the map annually. The program also keeps track on how many tests are conducted annually.

2.5.13. Metadata

The Radon Framework metadata will describe the methods used to update and aggregate the individual Radon data contributions, processes or crosswalks performed, definition of attributes, and other required information. This metadata will conform to the metadata standards as set out in ITA Standard [S4220](#) Geospatial Metadata.

3. Data Characteristics

3.1. Minimum Graphic Data Elements

The geometry of the features in Radon Framework is polygon.

3.2. Optional Graphic Data Elements

Not applicable.

3.3. Standard Attribute Schema

Field Name	Data Type	Length	Description	Examples
ZIP_CODE	String	10	Zip code of polygon	83201
PO_NAME	String	100	City associated with the zip code	Pocatello
N	Integer		Number of radon test results for that zip code	100
Percent_High	Integer		The percentage of radon test results that were >3.9	50
NumTestOver3_9	Integer		Number of radon test results that were >3.9	50

3.4. Data Quality

Data quality considerations for Radon include:

- a) All records should have a ZIP_CODE.

Appendix A: References

Radon Gas

Esri, *USA ZIP Code Boundaries*. [USA ZIP Code Boundaries - Overview \(arcgis.com\)](https://www.arcgis.com)

Idaho Department of Health and Welfare. *Radon & Lung Cancer*. [Radon & Lung Cancer Brochure \(idaho.gov\)](https://www.idaho.gov)

Idaho Technology Authority (ITA). *Enterprise Standards S4000 Geographic Information Systems (GIS) Data, Category: S4220 Geospatial Metadata*. <https://ita.idaho.gov/psg/S4220.pdf>

Idaho Technology Authority (ITA). *Information and Data Policy P5000, Category: P5030 Framework Standards Development Policy*. <https://ita.idaho.gov/psg/P5030.pdf>

United States Environmental Protection Agency (EPA). *What is EPA's Action Level for Radon and What Does it Mean?* <https://www.epa.gov/radon/what-epas-action-level-radon-and-what-does-it-mean>

Appendix B: Glossary

See ITA Guideline [G105](#) (ITA Glossary of Terms) for definitions.

Radon Nomination

Framework Data Theme: Hazards

Framework Dataset: Radon

Proposed Framework Dataset Name: Radon

Link to Publication Dataset of Proposed Framework Dataset:

https://services1.arcgis.com/CNPdEkvnGI65jCX8/arcgis/rest/services/ZIP_Codes_joined_to_Radon_Data/FeatureServer

Link to Metadata of Proposed Framework Dataset:

Authoritative Source(s) Description: Idaho Department of Health and Welfare

Link to Data Standard: <Will be added when standard is approved>

Trusted Source Description:

Please attach copies of the agreements between Authoritative Source(s) and Trusted Source.

Minimum Scale of Dataset:

Please describe the proposed maintenance schedule for the dataset: data will be updated as needed.

If this dataset is not a statewide coverage, please describe the methodology for developing or incorporating other data to make a statewide coverage: data coverage is statewide